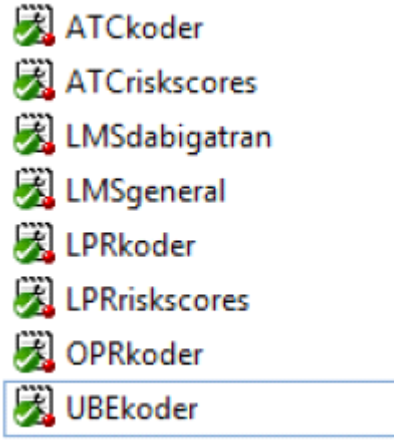
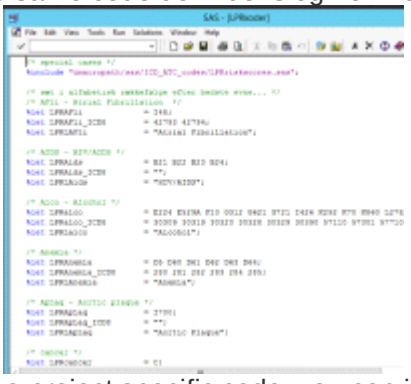
Shared SAS Macros for datamanagement

Friday, 19 May 2023 14.43

Shared macrovariables with codes for medication, diagnosis, operation and investigations
All previously used codes are kept in a shared place for easy re-use. On SDS they are located in your local macro directory under the study: …/macros/sas/ICD_ATC_codes. At DS the location is ../shared_code/SAS/<version number>/ICD_ATC_codes.



The files are to be used in datamanagement and analysis when the default master.sas files is executed. They include a shortcut name for the drug or disease, a text string with name and the codes related to disease/medicine/operation. This is used both for documentation and to ensure reuse of the same code definitions eg. for major bleeding, etc.



If you need a project specific code, you can implement it in master.sas, with the same format as in the XXXKoder.sas file, use the name without prefix in the %Getxxxx macros, eg % getDiag(mydata, &MyDiag).
Default for the code is ICD-10 and ICD-8 is optional. If you do not need ICD-8 you can leave the macro variable blank. The prefix-L option creates a label with the text associated to the diagnosis code. It is used when documenting the dataset.
%let LPRMyDiag = E119;
%let LPRMyDiag_ICD8 = „“;
%let LPRLMyDiag „My single Diabetes code “;
The syntax for codes can be handled manually as described above or with the macro % ICD_ATCDefines.
Keep the names short, preferably under 8 characters. A lot of information will be added to the variable name later, and SAS has a limit of 32 characters in variable names. Start implementing your list in localICD_ATCcodes.sas and when it has been validated consider moving to the shared codes located under ICD_ATC_codes. The actual move has to be approved by Mette or any of the datamanagers.

Data extraction macros - %GetXXX
These macros are recommended to use in querydata.sas. They extract all data of the specified population ready for later datamanagement. This is the macro to use when getting the very first dataset (main population) or supplementary data to a specific population. There can be differences in optional parameters from DS to SDS. Output will be all information available until today.
There are %GetXXX macros for each group: diagnosis, medication, operations and

investigations[1], population and hospital admissions.
All macros produce separate datasets for each codegroup with the postfix „ALL“. An example is given at the end of this section.

Data merge macros - %MergeXXX
This is the macro to use in makefile.sas, when all the basic information is retrieved with %GetXXX macros and stored in the local data library as xxxALL data files. Merge macros are called from makedata.sas and will now select only lines with a valid timestamp from the raw tables that are output from getXXX macros.
The input table, basedata, keeps information only of pnr and IndexDate of the incident in question. The output from the merge macros will be merged on basedata and it can be specified whether to focus on events before or after (or both) compared to the IndexDate. In the template for makedata.sas the basedata table is called work.study.

Reduce macros
Will be called internally from %MergeXXX macros or may be used directly from makedata.sas. Used to reduce tables to one single line for each pnr and IndexDate combination. Will store information about events before and after IndexDate.

Base macros
Used when making the final study population in makedata.sas and called from within a datastep. Will use the output from %mergeXXX macros combined with the IndexDate to rename and restrict which values to keep within a studydataset.

Risk calculation
Calculation of charlson comorbidity index and several Risk scores are available.

Matching
Draw age- and sex-matched controls in a risk-set sampling fashion; i.e for each case subject, corresponding controls are sampled among those still at risk of the event (and of same age, same sex). Sampling is with replacement so that each individual can act as control for several cases; in accordance with risk-set sampling, cases can also act as controls for other (later) cases.
Note: age is measured in whole years. The macro is called outside a datastep.
This macro, **%RiskSetMatch**, also allows for samling controls from at specific source population, say with another disease.

Adherence %DaysCov

Documentation in SAS files

22. maj 2023 15:49

Macros has been made to ease documentation and keep timestamp and information in the log. The initial setting with &ProjectXXX is done in master.sas and can be seen in the template files.

%header
%describeSASchoises
%create_datalist
%create_description
%start_log / %end_log
%getDatasetVarNames

%datacheck
%codecheck

%header

Has been added to the default examples of master.sas, querydata.sas and makedata.sas, will show the information in the log.

MacroVar	**default value**	**Description**
Path	.	print path to project, suggest &ProjectPath
Ajour	.	date of tables, suggest &ProjectDate
dataset	.	Name of project, suggest &ProjectName
initials	.	Initials or use &ProjectOwnerInitials
reason	.	text describing the current state or &Projectdescription

%describeSASchoises

Generate or append to textfile with comments regarding datagenerating process to be included in the report.

MacroVar	**default value**	**Description**
comment	.	text describing the current state or &Projectdescription
Path=	&locallogdir	default out folder
name=	SAScomments	Name of file
newfile=	FALSE	Replace or append

%create_datalist

Makes a textfile with the diagnosis-, operation or medication codes used in the project. Ready for table 1.

MacroVar	**default value**	**Description**
Prefix		LPR, ATC, OPR, UBE or CHARLSON
Dir		output directory, suggest &LocalCodeDir or &LocalOutDir
List		&medlist, &oprlist, &ubelist or &diaglist. If Charlson then .
output		name of resulting textfile
ICD8	FALSE	set to TRUE if LPR is prefix and ICD8 is used.

%start_log

Stores the log in a textfile. Controlled by a global macrovariable „create_log“. When create_log=TRUE the macro is active. Macro is placed in macroutilities.

MacroVar	**default value**	**Description**
path		print log to the library given by path
name		name of log
option	new	if new is not set, then add to existing log

%end_log

Stop log started by %start_log. Only Works if create_log = TRUE. Macro is placed in macroutilities.

MacroVar	**default value**	**Description**
no parameters		

%getDatasetVarNames

MacroVar	default value	Description
dsn		use proc contents on the dataset &dsn
liste		store list of variables in &dsn in liste. All var are lowcase
var1	.	totally forgot the point in this one. Ignore
var2	.	Ignore

%create_description

Makes a textfile or appends to existing a text entry that may be included in the intro.org file for documentation of the datamanagement process.

MacroVar	**default value**	**Description**

%datacheck

Generate a pdf document 'Udtraeksdokumentation.pdf' counting all rows, keys, and idents. Use this file to validate if the dataupdate went ok

MacroVar	**default value**	**Description**
inlib		libname to search for datasets
doclib=	.	Library to store document
key=	v_pnr_encrypted v_cpr_encrypted patient_cpr_encrypted v_recnum k_recnum cpr_encrypted kontakt_id personnummer_encrypted	Variable names to count on
key2=		Additional varialbes to count on

```
%datacheck(data,doclib=&projectpath\log);
```

%codecheck

Generate a pdf document 'Udtraeksdokumentation_<tabel>.pdf' identifying if truncated codes are observed in the dataset. This is for instance usefull if prescription data are available under restriction to certain chapters. Use this file to validate if the dataupdate went ok

MacroVar	**default value**	**Description**
inlib		libname to search for datasets
table		dataset
var		variable with code
len	.	level of truncation
doclib=	.	Library to store document

```
%codecheck(data,lms_epikur,atc,1,doclib=&projectpath\log);
```

%DaysCov

22. maj 2023 15:48

Calculated days covered in a given period relative to indexdate. The function use periods generated by either %ReduceMediPeriods or %jointrt. It is expected that basedata is merged with CPR information as death and emigration is limiting the potential days covered.

MacroVar	**default value**	**Description**
basedata		Input data table with pnr and indexdate
perdata		Input data table with treatment periods
outdata		Output table with pnr, IndexDate and days covered
outvar		Variable name holding days covered
indexdate		Variable name with IndexDate in basedata
pervar		Prefix of variables in perdata holding periods
join=	TRUE	If TRUE periods are merged on basedata

```
/* One year before */
%
daysCov(mydata.studie,work.rivapixper,work.rivaapicDCbeidate,rivaapicDCbei
date,idate,-365,rivaapix);
/* One year after */
%
daysCov(mydata.studie,work.rivapixper,work.rivaapicDCafidate,rivaapicDCafi
date,idate,365,rivaapix);
```

%RiskSetMatch

22. maj 2023 15:47

Risk set match on sex, year of birth within a number of years, age at inclusion and not emmigrated, further criteria can be added - such as with observed disease prior to inclusion

MacroVar	default value	Description
outdata		Output table with casepnr, controlpnr and IndexDate
basedata		Input table with pnr and IndexDate
basedate		IndexDate variable
pop=	master.population	source of controlpopulation, default is entire population
nControls=	5	Number of controls in outdata
difbirthyear=	0	Difference in years of birth cohort
ajour=	today()	Date of version of data
crit=		additional criteria for selection of matches, should be in sql and may use a. to reference the case population and b. the control. Variables with date of birth are internally called casebirth and controlbirth.
concritvar=		list of variables from control source dataset (pop=) that are used in crit=

```
/* Healthy controls */
%RiskSetMatch(Work.matches1,work.cases,idate,nControls=15,difbirthyear=2);
/* disease controls
   with extra criteria that age at disease should be within one year (365
days) */
%RiskSetMatch(Work.matches2,work.cases,idate,nControls=15,difbirthyear=2,
          pop=controls,concritvar=diseasedate,
          crit=abs((diseasedate-controlbirth)-(idate-casebirth))<365);
```

%Riskmacros

22. maj 2023 15:45

Will create a table with riskscores and indivitual riskscore indicators. Output includes: HASBLED, CHADS2, CHA2DS2-VASc, ATRIAstroke, ATRIAbleed and ORBIT. Check documentation created by macro to see if more has been added. Will store documentation for the RiskScores in docpath Will merge the results onto &basetable AND save separate tables &risktable and &indicators.

The name of the variables will include &IndexDate in the name.

MacroVar	**default value**	**Description**
basetable		Input table with pnr and IndexDate
IndexDate		Name of date variable in basedata
risktable		name of output table with result.
indicators		name of output table with calculations leading to result
nof_days		Looking at the period from &IndexDate-nofDays to &IndexDate when using information about medication
docpath		Path to store documentation (textfiles)
ajour		set to &ProjectDate
MergeToInputTable=	TRUE	merge risktable and indicators on input dataset

%multiCoScore

22. maj 2023 15:44

Will create a table with multicomorbidity scores for each pnr in basedata, the name of the output table and the variables will include &IndexDate.
Current implementation supports:

- Charlson's comorbidity score with weights as in original publication (ref).
- Segal et al frailty score (ref),
- HFRS frailty score (ref).

Ref
Segal JB, Chang H-Y, Du Y, Walston JD, Carlson MC, Varadhan R. Development of a Claims-based Frailty Indicator Anchored to a Well-established Frailty Phenotype. Med Care. 2017 Jul;55(7):716-722. doi: 10.1097/MLR.0000000000000729. Erratum in: Med Care. 2017 Dec;55(12):1062. PMID: 28437320; PMCID: PMC5471130.

MacroVar	**default value**	**Description**
score	charlson, segal, hfrs	Select score, select only one score
basedata		Input table with pnr and IndexDate
outlib		output library where charlson table is placed
IndexDate		Name of date variable in basedata
PeriodStart=	.	Default period will be from birth to IndexDate. Else period will start at PeriodStart, hence you need to create a date-variable in the basedata dataset.
ajour=	today()	ajour date of table information, set to &ProjectDate
mergebase=	TRUE	merge scores on input dataset

Weights for score components are given in macros/sas/icd_atc_codes/riskscores.sas and can be altered by including the weight varables with new weights in your local_ics_atc_codes.sas file, they are for example :LPRcharlson1W - LPRcharlson19W.

%baseDiag

22. maj 2023 15:42

Will rename the output from %mergeXXX, output is local variables in function.

MacroVar	**default value**	**Description**
IndexDate		Naming according to IndexDate
sets		Lists with names of tables, typically &diaglist
postfix	.	short prefix-string used when calling %mergeDiag
censordate	&globalend	Name of date variable, time to stop
keepDiag	FALSE	If TRUE: Keep information about the diagnosis, first and last before, and first after. Output variables will extended with FiDiagBeIDate, LaDiagBeIDate, FiDiagAfIDate, FiDiagtypeBeIDate, LaDiagtypeBeIDate, FiDiagtypeAfIDate, DiagAfIDate, DiagtypeAfIdate.**
keepPat	FALSE	If TRUE: Keep information about the pattype, first and last before, and first after. Output variables will extended with FipattypeBeIDate, LaPattypeBeIDate, FiPattypeAfIDate, PattypeAfIDate.**
keepDate	FALSE	If TRUE: Keep information about the date diagnosis, first and last before, and first after. Output variables will extended with FidateBeIDate, dateAfIdate, LadateBeIDate, OutdateAfIDate. **
keepBefore	TRUE	keep information before IndexDate
keepAfter	TRUE	Keep information after IndexDate
keepStatus	TRUE	keep status variables (&var.before) fup = follow up Procedure

~~xxx~~ the variable is planned to be deleted.
** First=Fi, Last=La, Before=Be, After=Af.

%baseOPR

22. maj 2023 15:42

Will rename the output from %mergeXXX, output is local variables in function.

MacroVar	**default value**	**Description**
IndexDate		Naming according to IndexDate
sets		Lists with names of tables, typically &oprlist
censordate	&globalend	Name of date variable, time to stop
keepOpr	FALSE	If TRUE: Keep information about the operation, first and last before, and first after. Output variables will extended with FiOprBeIDate, LaOprBeIDate, oprAfIDate.**
keepOprDiag	FALSE	If TRUE: Keep information about primary diagnose associated then the operation, first and last before, and first after. Output variables will extended with FiOprDiagBeIDate, LaOprDiagBeIDate, oprDiagAfIDate.**
keepPat	FALSE	If TRUE: Keep information about the patient type, first and last before, and first after. Output variables will extended with FipattypeBeIDate, pattypeAfIDate.**
keepDate	FALSE	If TRUE: Keep information about the date of the operation, first and last before, and first after. Output variables will extended with FidateBeIDate, LadateBeIDate, dateAfIDate.**
keepBefore	TRUE	keep information before IndexDate
keepAfter	TRUE	Keep information after IndexDate
keepStatus	TRUE	keep status variables (&var.before~~, &var.fup and &var.fupdate~~) fup = follow up Procedure

~~xxx~~ the variable is planned to be deleted.
** First=Fi, Last=La, Before=Be, After=Af.

%baseMedi

22. maj 2023 15:44

Will rename the output from %mergeXXX, output is local variables in function.

MacroVar	**default value**	**Description**
IndexDate		Naming according to IndexDate
sets		Lists with names of tables, typically &diaglist
censordate	&globalend	Name of date variable, time to stop
keepDrug	FALSE	If TRUE: Keep drug information, first and last before, and first after. Output variables will extended with FiDrugBeIndexDate, LaDrugBeIndexdate, FiDrugAfIndexdate.**
keepPS	FALSE	If TRUE: Keep package size information Output variables will extended with FiPSBeIndexDate, LaPSBeIndexdate, FiPSAfIndexdate. **
keepVol	FALSE	if TRUE: Keep volume information, first and last before, and first after. Output variables will be extended with FiVolBeIndexDate, LaVolBeIndexdate, FiVolAfIndexdate. **
keepVTT	FALSE	if TRUE: Keep volume txt information, first and last before, and first after. Output variables will be FiVTTBeIndexDate, LaVTTBeIndexDate, FiVTTAfIndexdate. **
keepStr	FALSE	If TRUE: Keep strength information, first and last before, and first after. Output variables will be extended with FiSTrBeIndexdate, LaStrBeIndexdate, FiStrAFIndexdate.**
keepUnit	FALSE	If TRUE: Keep unit information, first and last before, first after. Output variables will be extended with FiUnitBeIndexDate, LaUnitBeIndexdate, FiUnitAfIndexDate.**
keepNpack	FALSE	If TRUE: Keep NPack information, first and last before, first after. Output variables will be extended with FiNPackBeIndexDate, LaNPackBeIndexdate, FiNPackAfIndexDate. **
keepDate	FALSE	If TRUE: Keep information about expedition date, first and last before, first after. Output variables will be extended with FiEksdBeIndexDate, LaEksdBeIndexdate, FiEksdAfIndexDate. **
keepBefore	TRUE	keep information before IndexDate
keepAfter	TRUE	keep information after IndexDate
keepStatus	TRUE	keep status variables (&var.before~~, &var.fup and &var.fupdate~~) fup = follow up Procedure
StatusType	1	0: Last package DDD reached until IndexDate 1: Last package prescription less than StatusCrit days before IndexDate
StatusCrit	365	Criteria for StatusType
postfix	.	short prefix-string used when calling %mergeDiag

~~xxx~~ the variable is planned to be deleted.
** First=Fi, Last=La, Before=Be, After=Af.

%ReduceMediPeriods

22. maj 2023 15:39

Will reduce the output from %GetMedi named „outcome“ALL to treatment periods according to basedata and IndexDate. Optional variables indicate if each period is before, including or after IndexDate. Multiple rows pr pnr each indicate a period of treatment. Enddate is estimated according to type: 1) Periods based on drug use per day pr person and ATC code (&drug). Enddate is estimated as last prescription date plus number of pills available in last purchase if dose is average pills per day in the period. If this enddate exceeds startdate of the next period, these periods are joined. Returned maxpack reports available days of treatment at last prescription 2) Periods based on individual dose based on the frequency of acquiring drugs per day per person and ATC code (&drug). 3) Periods based on days between prescriptions (look at fixed period=InclusionDays). Called outside datastep from makedata.sas.

MacroVar	**default value**	**Description**
indata		Input table to be reduced. (output table from % getMedi)
outdata		Name of output table
drug		Variable name identifying the drug.
Type		Type, see description above.
IndexDate=	.	Name of date variable in indata. Defining the date of required treatment status.
Slipdays=	1	Max. allowed days between subsequent prescriptions within same treatment.
Slipscale=	1.5	How many pills did you forget? Allowed increase in observed grace period. Should be missing if only slipdays criteria is wanted.
If Slipdays are preferred to slipscale, then set slipscale to a high number – and vice versa.		
Tabsprday=		Type 1: number of tablets per day
Stddosage=		Type 2: Initial standard dosage
Maxdosage=		Type 2: Upper limit of daily dosage
Mindosage=	.1	Type 2: Lower limit of daily dosage
InclusionDays=		Type 3: Amount of days in an period from purchase (eksd date) until PeriodEnd
ajour=	today()	Will be the ajourdate used when calling %mergeXXX, use ProjectDate
subset=		Allow subsetting of input table, convinient fx to restrict to certain doses
bydrug=	FALSE	If TRUE periods are calculated within ATC codes given in drug variable, otherwise drug will be recoded to display all distict ATC codes.
dosedata=		If given then arguments to stddoseage, mindosage, maxdosage may be variablenames within this dataset,

		comprising one row pr pnr only. Thus only together with type=2.

%jointrt

22. maj 2023 15:40

Treatments periods generated by %ReduceMediPeriods can be joined to union of periods. The function return start and enddate of all unified periods.
Note that is indatalist is not given then the input datasets are assumed to follow this convention: should be named with drug and all be with the same postfix

MacroVar	default value	Description
outdata		Output table to be generated.
name		Name of unified treatment.
list		List of treatments to include. Corresponding to 'drug' in % ReduceMediPeriods
postfix		Postfix used on inputdatasets. See note above!
inlib=	work	Input table to be reduced.
indatalist=		list of input datasets corresponding to 'list', postfix and inlib are ignored.

```
%reduceMediPeriods(mydata.rivaall,work.rivaper,riva,1);
%reduceMediPeriods(mydata.apixaall,work.apixaper,apixa,1);
%jointrt(mydata.rixapixper,rivapix,riva apixa,postfix=per,inlib=work);
/* or */
%jointrt(mydata.rixapixper,rivapix,riva apixa,indatalist=work.rivaper
work.apixaper);
```

%SmoothHosp

22. maj 2023 15:40

The output table from %GetHosp is the basic information used for hospall argument and output hospsmo is a table with complete hospital periods, with a variable for start and stop of admission period and a total number of days. If basedata= is set this dataset is outer joined with all rows, if indexdate= is set then only hospitalisations including indexdate is joined (if available, ie if indexdate is outside hospital then hospital information is missing).
Called from makedata.sas
Provide variables hosp_in, hosp_out, hospdays, hosp_indt, hosp_outdt, hosphours

MacroVar	**default value**	**Description**
hospsmo		Name of output table with smoothed periods
hospall		Name of input table with full history from %GetHosp
ajour	today()	select only input valid at a given date, set to &ProjectDate
NofDays	1	Hospital periods before 2019 seperated by &NofDays or less will be combined to one period
Nofhours	12	Hospital periods under LPR3 (from 2019) seperated by &Nofhours or less will be combined to one period
basedata	.	Input table with IndexDate and pnr, the hospital information will be merged to this table.
IndexDate	.	Name of date variable in basedata. Hospital admission date and number of days in hospital will be added to the basedata table.

%QualDiag

22. maj 2023 15:41

Diagnoses are joined with prescription(medi) and/or procedure(OPR)/investigation(UBE) information to validate the diagnose. A principal application is VTE diagnoses followed by CT-scans or initiated OAC treatment. Called from makedata.sas

MacroVar	**default value**	**Description**
out		Name of output table with diagnoses fulfilling criteria
in		Name of input table diagnoses to evaluate, contain pnr and /datevar/
datevar		Name of diagnosedate variable in input table
basedata=		Name of base population dataset, use if restriction of /in/- dataset is required
keepbasevar=		Variables in /basedata/ required to employ further restriction in /if/ statement
if=		Restriction if needed, see example below
medi=		Name of medication prefixes, as used in %getMedi
medidays=	30	Lookup days relative to /datevar/, if one number: days after; if two numbers days before and days after
oprube=		Name of procedure/investigation prefixes, as used in %GetOpr (% getUbe)
oprubedays=	10 10	Lookup days relative to /datevar/, if one number: days after; if two numbers days before and days after
label=		Postfix added to generated variables, useful if several calls to % QualDiag
ajour=	today()	select only input valid at a given date, set to &ProjectDate
medilib=	mydata	Library with data extracted with %getMedi
oprubelib=	mydata	Library with data extracted with %getOpr (%getUbe)
hospdata=		Sometimes hospitalization information is need, dataset is extacted using %smoothhosp
incident=	TRUE	Restrict to incident event

Use this to get dvt diagnoses with either ultrasound scan of leg or ct scan of chest procedures within 10 days before or 10 days after.
The first call get diagnoses before indexdate (idate) ie for comorbidity, the second after indexdate (idate) ie for outcome (recurrence).
Medication and procedures can be used joint (as either criteria sufficient).

```
%
qualdiag(Work.dvtqualbef,work.dvt,dvtdate,basedata=studie,keepbasevar=idat
e
          if=dvtdate <=idate,
          oprube=ultraleg ctch, oprubedays= 10 10,
ajour=&projectdate,label=bef);
%qualdiag(Work.dvtqualaf,work.dvt,dvtdate,basedata=studie,
```

```
keepbasevar=idate, if=dvtdate >idate,
          oprube=ultraleg ctch, oprubedays= 10 10,
ajour=&projectdate,label=af);
```

%ReduceOPR

22. maj 2023 15:40

Will reduce the output from %GetOPR or %GetUBE named „outcome“ALL according to basedata and IndexDate. Called from the %MergeOpr and %MergeUbe macros.

MacroVar	**default value**	**Description**
indata		Input table to be reduced.
outdata		Output table
outcome		short name for operation procedure
IndexDate	.	Name of date variable
basedata	.	Input table with IndexDate and pnr
ajour	.	Set to &ProjectDate

%ReduceDiag

22. maj 2023 15:37

Will reduce the output from %GetDiag named „outcome“ALL according to basedata and IndexDate. Called from the %MergeDiag macro.

MacroVar	**default value**	**Description**
indata		Input table to be reduced.
outdata		Output table
outcome		short name for diagnosis
IndexDate		Name of date variable, if no value only the first date will be used.
basedata	.	Input table with IndexDate and pnr
ajour	.	Select only input valid at a given date, set to &ProjectDate

Redigér

%ReduceMediStatus

22. maj 2023 15:38

Will reduce the output from %GetMedi named „outcome“ALL according to basedata and IndexDate. Called from the %MergeMedi macro.

MacroVar	**default value**	**Description**
indata		Input table to be reduced.
outdata		Output table
drug		short name for medication
IndexDate		Name of date variable
atc	.	keeps the ATC codes for the drug in question
ajour	.	Select only input valid at a given date, set to &ProjectDate

Redigér

%MergePeriods

22. maj 2023 15:36

Will merge treatment periods generated by %ReduceMediPeriods or %Jointrt on study dataset. Basedata will be added information on 1: the last treatment period ended before indexdate; 2: the treatment period including indexdate; 3: the first treatment period started after indexdate

MacroVar	**default value**	**Description**
basedata		Input table with pnr and IndexDate
perdata		Input dataset with periods
IndexDate		Name of date variable in basedata
pervar		Prefix of period variables

```
%mergePeriods(mydata.studie,work.rivapixper,idate,rivapix)
```

%MergeSocio

22. maj 2023 15:36

Will merge socioeconomic data to the study dataset, basedata must include pnr and idate.

MacroVar	**default value**	**Description**
basedata		Input table with pnr and IndexDate
inlib		library where input table is placed.
outlib		library where resulting table is placed.
IndexDate		Name of date variable in basedata
sets=	.	list of Socio codes, typically &sociolist
ajour=		Select only input valid at a given date, set to &ProjectDate

%MergePOP

22. maj 2023 15:35

Will call MergePOP, will update with information of sex, birthday, deathdate and migration information. Output is merged on basedata table (if present) or stored in &result. Migration is given by two sets of migration dates: udv_dato1 - indv_dato1 and udv_dato2 - indv_dato2, which identifies periods outside DK. The first group is the last period before IndexDate, the latter the first after IndexDate. A person currently emigrated will have indv_dato = 31 dec 2099. A person born outside DK will have indv_dato = 1 jan 1900.

MacroVar	**Default value**	**Description**
Popindata		Only on SDS, output table from %getPOP
outdata		name of output table, often equal to basedata
basedata		input table with pnr and IndexDate, information about the population will be merged to this table if outputdata=basedata.
IndexDate		Name of date variable in basedata
ajour	today()	Select only input valid at a given date, set to &ProjectDate

Redigér

%MergeLAB

22. maj 2023 15:35

Merge information of lab data to the study dataset. Input dataset - basedata - must include pnr and an indexdate. Ajour date has to be set to ProjectDate. Only available on SDS.

MacroVar	**default value**	**Description**
basedata		Input table with pnr and IndexDate
inlib		library where input table is placed.
outlib		library where resulting table is placed.
IndexDate		Name of date variable in basedata
sets	.	list of lab codes, typically &lablist
ajour=	today()	Select only input valid at a given date, set to &ProjectDate
postfix=		Add postfix name to output variable

```
%mergelab(studie,mydata,mydata,idate,&lablist);
```

%MergeOPR

22. maj 2023 15:34

Merge information of operations to the study dataset. Input dataset - basedata - must include pnr and an indexdate. Ajour date has to be set to ProjectDate. This is also used for UBE data on SDS.

MacroVar	**default value**	**Description**
basedata		Input table with pnr and IndexDate
inlib		library where input table is placed.
outlib		library where resulting table is placed.
IndexDate		Name of date variable in basedata
sets	.	list of opr codes, typically &oprlist or &ubelist
ajour	today()	Select only input valid at a given date, set to &ProjectDate
postfix	.	Add postfix name to output variable

Redigér

%MergeMedi

22. maj 2023 15:33

Merge information of specific medication on the study dataset. Input dataset - basedata - must include pnr and an indexdate.

MacroVar	**default value**	**Description**
basedata		Input table with pnr and IndexDate
inlib		library where input table is placed.
outlib		library where resulting table is placed.
IndexDate		Name of date variable in basedata
sets		list with ICD codes, typically &medlist
subset		Restrict to specified prescritions eg according to strnum (dosage)
ajour	today()	Select only input valid at a given date, set to &ProjectDate
postfix	.	short string to add to the diagnosis string

Redigér

%MergeDiag

22. maj 2023 15:33

Merge information of specific diagnosis on the study dataset. Input dataset - basedata - must include pnr and an indexdate.

MacroVar	**default value**	**Description**
basedata		Input table with pnr and IndexDate, e.g. mydata.study or work.study
inlib		Library where input tables are placed.
outlib	Work	Library where resulting tables are placed.
IndexDate		Name of date variable in basedata
sets		List with ICD codes, typically &diaglist
subset	.	Impose restriction to include LPR data e.g. subset=(diagtype=”A” and pattype=„0“), that will only include A diagnoses from hospitalised patients. The subset string will be inserted in the macro code and has to be written in SAS language
postfix	.	Short string to add to the diagnosis string
hosp	.	Dataset with hospitalization periods, as output from smoother. Diagnosis obtained within hospitalization period of IndexDate are ignored.
ajour	today()	Select only input valid at a given date, set to &ProjectDate

Redigér

%GetLAB

22. maj 2023 15:28

Get records with labcodes from the Laboratory database. If basedata is set, the output dataset will only include patients with same pnr as in basedata.

MacroVar	**default value**	**Description**
outlib		Name library to output tables
lablist		List of lab codes
basedata=		Dataset with pnr
basepop=		If set: Create a combined table from the &lablist, and name it &basepop. Output will be a table with pnr, samplingdate, and labvalues. Can be used to get the first population.
fromyear=	2008	Year from which lab data are retreived

```
%getlab(work, &lablist, basedata=&basepnr);
```

%GetSocio

22. maj 2023 15:29

Get records from Bef (civilst)/Faik (famindkom)/Udda (udd) /Indh (socialst).
DS only

MacroVar	**default value**	**Description**
outlib		Name library to output tables
sociolist		List of socio codes : civilst famindkom udd socialst, need to be one or more of (civilst famindkom udd socialst)
Civilstatus		Only for civilst: List of civil status can tab values („9“,„D“,„E“,„F“,„G“,„L“,„O“,„P“,„U“,)
basedata		Dataset with pnr
handlemissing		can now handle missing data by setting to „lastknown“ which will take the last non-missing datapoint and carry forward (will only help if data is missing in gaps)

Redigér

%GetHOSP

22. maj 2023 15:29

Get records with hospitalization periods from the LPR tables. If basedata is set, the output dataset will only include patients with same pnr as in basedata. The macro in addition extracts all records from LPR-3, with insttype=„HOSPITAL“ and contact types ALCA00 (physically attended) and ALCA10 (death)

MacroVar	**default value**	**Description**
outdata		name of output table, e.g. mydata.hosp or (work.)hosp
basedata=	.	Input dataset with pnr
pattype=	0	List of patient types (0 1 2 3) separated with spaces.
fromyear=	1997	Set if start year is later than 1997

Redigér

%GetMFR

22. maj 2023 15:30

Get records from the medicinal birth register. If basedata is set, the output dataset will only include patients with same pnr as in basedata. The resulting dataset is &outlib.mfr&infoAll ie default work.mfrbasisall. Info defines which auxiliary data is to be extracted.
%GetMFR is currently only implemented on SDS

MacroVar	**default value**	**Description**
outlib	work	name of library for output table
focus=	m	m: mother c: child identified by pnr in input dataset
basedata=	.	Cohort to restrict to.
info=	basis	basis: basic data
		andre: mfr_andre_foedselskomblikat
		cardi: mfr_cardiomyopati
		gravi: mfr_graviditetskomplikation
		igang: mfr_igangsaettelse
		infek: mfr_infektioner
		kejse: mfr_kejsersnit
		medic: mfr_medicinske_sygdomme
		misda: mfr_misdannelser
		vesti: mfr_vestimulation
fromyear=	1997	Set if start year is later than 1997

Redigér

%GetSSR

22. maj 2023 15:30

Get records from the social security register. If basedata is set, the output dataset will only include patients with same pnr as in basedata. The resulting dataset is &outlib.SSRAll ie default work.mfrbasisall. See SSR documentation for codes to provider and service. Default provider is general practice

MacroVar	**default value**	**Description**
outlib=	work	name of library for output table
provider=	1 2 3 4 5 01 02 03 04 05	Health care provider type (c_ytype)
service=	.	service code (c_ydelsesnr)
basedata=	.	Cohort to restrict to.
fromyear=	1997	Set if start year is later than 1997

%GetPOP (SDS only)

22. maj 2023 15:31

Get records with information of population age, sex, status and basic demographic data. If basedata is set, the output dataset will only include patients with same pnr. ONLY on SDS

MacroVar	**default value**	**Description**
outdata		name of output table, e.g. mydata.pop or (work.)pop
basedata=	.	Input dataset with pnr

Redigér

%GetMedi

22. maj 2023 15:27

Get records with specificied medication from the LMDB/LMS tables. If basedata is set, the output dataset will only include patients with same pnr as in basedata.

MacroVar	**default value**	**Description**
outlib		name of output library (each file named after the relevant code)
medlist		list of ACT codes (names from ATCkoder)
basedata=	.	Input dataset with pnr
LMDBdata=	master.LMDB	DS only: Can be replaced with local data repository, see % subsetMedi, in order to speed up performance.
basepop=	.	If set: Create a combined table from the &medlist, and name it &basepop. Output will be a table with pnr, eksd, drug (atc-code) and outcome. Eksd will be renamed to IDate. Can be used to get the first population.
fromyear=	.	Only DS

Redigér

%GetOPR

22. maj 2023 15:27

Get records with operation (or investigation if SDS) codes from the LPR tables. If basedata is set, the output dataset will only include patients with same pnr as in basedata.

MacroVar	**default value**	**Description**
outlib		name of output library (each file named after the relevant code)
oprlist		list of OPR codes (names from OPRkoder) including “K”
oprart=	„V“ „P“ „D“	OPR types
basedata=	.	Input dataset with pnr
fromyear=	1997	Set if start year is later than 1997
type=	opr	opr or ube. Look up in ube or opr tables.
Pattype=	0 1 2	Select the pattype
kontakttype=	ALCA00 ALCA10	LPR-3 contact type
insttype=	hospital	LPR-3 Institution type
prioritet=	ATA1 ATA3	LPR-3 priority
Basepop=	.	If set: Create a combined table from the &oprlist, and name it &basepop. Output will be a table with pnr, indate, opr and outcome. Indate will be renamed to Idate. Can be used to get the first population.
Tilopr=	FALSE	Additional code– if set to TRUE, the “tillægskode” column will be used when seaching for the list of OPR codes in oprlist. Implemented for UBE (on SDS). A rule of thumb: a code with Z after chapter letter is an additional code.
UAF=	FALSE	set to TRUE if unresolved information (uafsluttet) is to be added to the tables
source	LPR MINIPAS LPR3SB	Source of disharge information (LPRPSYK only SDS), the output dataset <diag>ALL will include a column 'source'. LPR3SB refers to 'LPR3 midlertidig datamodel'.

Redigér

%GetDiag

22. maj 2023 15:26

Get records with specified diagnoses from the LPR tables with hospital discharge information. If basedata is set, the output dataset will only include patients with same pnr as in basedata.

MacroVar	**default value**	**Description**
outlib		name of output library (each file named after the relevant code)
diaglist		list of ICD-8 and ICD-10 codes (names from LPRkoder).
diagtype=	A B ALGA01 ALGA02	List of diagnosis types, separated with spaces. (C D G H +) are normally not used.
pattype=	0 1 2 3	List of patient types (0 1 2 3) separated with spaces. Not available in LPR3
kontakttype=	ALCA00 ALCA10	LPR3 contact type
insttype=	hospital	LPR3 institution type
priority=	1 2 ATA1 ATA3	LPR: acute/non-acute entry type(indmåde). LPR3: priority type (acute/elective)
ICD8=	FALSE	set to true if ICD-8 code is to be used
basedata=		Input dataset with pnr
fromyear=	1977	set to start year, if later than 1977
LPRdata=	Master.vwLPR	DS only. Can be replaced with a local data repository, see % subsetDiag - will speedup performance
basepop=		If set: Create a combined table from the &diaglist, and name it &basepop. Output will be a table with pnr, indate, diagnose and outcome. Indate will be renamed to IDate. Can be used to get the first population.
tildiag=	FALSE	set to TRUE if looking at additional diagnosis. A rule of thumb: a code with Z after chapter letter is an additional code.
UAF=	FALSE	if TRUE, include tables that are incomplete in the search (uafsluttede)
SOURCE=	LPR LPRPSYK MINIPAS LPR3SB	Source of disharge information (LPRPSYK only SDS), the output dataset <diag>ALL will include a column 'source'. LPR3SB refers to 'LPR3 midlertidig datamodel'.

Redigér

%ExclDiag

22. maj 2023 15:31

Exclude records with specified diagnoses from an extracted LPR table. The exclusion diagnoses are defined as usual with %ICD_ATCdefines

MacroVar	**default value**	**Description**
lib		name of library with the basediag dataset
basediag		Diagnose label of the basediag dataset, note only one label allowed
excdiag		Diagnose label of codes to be removed, note only one label allowed
New=		Optional new dataset name
Prefix=	D	If diagnoses stored with prefix D, on DS prefix is empty

```
    /* definition to retrieve        */
%ICD_ATCdefines(LPR,cancer,"Cancer",C);
    /* definition to exclude         */
%ICD_ATCdefines(LPR,Bcancer,"Basal Cell carcinoma",C44);
    /* retrieve all cancer diagnoses */
%getDiag(work,cancer)
    /* remove those not wanted       */
%exclDiag(work,cancer,Bcancer);
```