

```

*****
*****
**      HOSPITAL CARE IN THE LAST YEAR OF LIFE      **
**                                                    **
**      Overview:  Project Code Guide                **
*****
*****

```

This file reproduces all the Stata 7.0 code that we used to generate the most salient aspects of our analysis of the dataset (we omit the cleaning chores and some confirmatory, cross-check analyses).

This file, which is the compilation of smaller files, is organized as follows:

- 1) Stage 1 processing
  - input dihd exec.do
    - calls input dihd.do and runs for each year
  - input dihd.do
    - inputs linked death certificate-hospitalization data
    - calls dupolap\_cleanandflag.do
    - calls ccc assignment.do
    - calls proc assignment.do
    - outputs dihdprepYY.dta
- 2) Stage 2 processing
  - process dihd.do
    - outputs dihdprocess9096.dta
    - generates output for Table 1
- 3) Analysis, Tables and Figures
  - table2.do
  - table3.do
  - table4.do
  - model\_freqhosp.do
    - runs negative binomial regressions
    - generates graphs for Figure 1
  - figure2 data.do
    - requires output of majkey2cccat.do as input
    - outputs a file to be read into Excel to generate figure

We hope you find this useful.

Chris Feudtner and David DiGiuseppe

```

*****
**      INPUT DIHD EXEC.DO      **
*****

```

```
local execdir "d:\feudtner"
```

```
log using "`execdir'\input dihd exec.smcl", replace
```

```
set mem 10m
```

```
do "`execdir'\input dihd.do" 90
do "`execdir'\input dihd.do" 91
do "`execdir'\input dihd.do" 92
do "`execdir'\input dihd.do" 93
do "`execdir'\input dihd.do" 94
do "`execdir'\input dihd.do" 95
do "`execdir'\input dihd.do" 96
```

```
log close
```

```
*****  
** INPUT DIHD.DO **  
*****
```

```
*****  
*** CONTROL STATEMENTS *****  
*****
```

```
*** change default input directory  
cd "d:\dihd data"
```

```
*** setup alias for output directory  
local outdir = "d:\feudtner"
```

```
*** setup target upper limit for peds patients  
local topage = 24.99
```

```
*** open log file  
*log using "`outdir'\input dihd`1'.log", replace
```

```
*****  
** Program: input dihd.do **  
** ** **  
** Created: 07May01-28May01 **  
** ** **  
** By: DDiGiuseppe **  
** ** **  
** Purpose: Create initial analysis dset from DIHD source data **  
** ** **  
** Source: CFeudtner provided CDROM with one Stata dset for **  
** each year of 1987-1996...each dset is DIHD for ALL deaths**  
** occurring in that calendar year...according to CDjacket **  
** CD cut on 10Jan01 **  
** ..NOTE: this file is all death certs FULLY JOINED to the**  
** CHARS data with respect to inclusion of the CHARS recs **  
** however, where a join occurred successfully, the death **  
** cert variables are only filled in for the MOST RECENT **  
** CHARS rec **  
** ** **  
** Algo: 1) Read in data for one year **  
** 2) Subset pediatric pool **  
** 3) Identify duplicate/overlapping stays **  
** 4) Flag transfers in and out **  
** 5) Count stays and hospitalizations **  
** 6) Set countable hospital days **  
** 7) Write cal year subset out to hard drive **  
** ** **  
*****
```

```
*****  
*** SETUP CAL YEAR PROGRAM *****  
*****
```

```
*****  
*** INPUT DATA *****  
*****  
#delimit ;
```

```

local commonvar
  "majkey minkey admno admdy admyr dismo disdy disyr deathmo deathdy deathyr
  birthyr birthmo birthdy drg
  adcount age dage admsor admtly status hosp zip dsex dzip sex race hisp
  ucod exinj diag1-diag5 procl-proc3 icd1-icd5 charge";
#delimit cr

if `1' < 93 {

  #delimit ;
  use `commonvar'
  if (dage >= 0 & dage <= `topage') | (age >= 0 & age <= `topage')
  using dihd`1'a.dta, clear;
  #delimit cr

  gen str6 diag6 = ""
  gen str6 diag7 = ""
  gen str6 diag8 = ""
  gen str6 diag9 = ""

  gen str5 proc4 = ""
  gen str5 proc5 = ""
  gen str5 proc6 = ""

}

else {

  #delimit ;
  use `commonvar' diag6-diag9 proc4-proc6
  if (dage >= 0 & dage <= `topage') | (age >= 0 & age <= `topage')
  using dihd`1'a.dta, clear;
  #delimit cr

}

*****
*** RECODE DATES *****
*****

*** create date vars from separate components
gen date_adm = mdy(admmo,admdy,1900+admyr)
  label variable date_adm "Admission Date"
gen date_dis = mdy(dismo,disdy,1900+disyr)
  label variable date_dis "Discharge Date"

*** 21may01 deathyr is stored as 2 digits
***   from 1987-1991 and 4 digits 1992-1996
gen dthyr = deathyr
  replace dthyr = dthyr+1900 if deathyr < 100
gen date_dth = mdy(deathmo,deathdy,dthyr)
  label variable date_dth "Date of Death"

*** 09aug01 calc birthdate and age at death
gen date_bir = mdy(birthmo,birthdy,birthyr)
  label variable date_bir "Date of Birth"

format date_adm date_dis date_dth date_bir %d
drop admmo admdy admyr dismo disdy disyr deathmo deathdy deathyr dthyr
drop birthmo birthdy birthyr

```

```

*****
*** FILL DOWN DEATH CERT VARS *****
*****

*** flag rec originally matched to death certificate
gen dcrec = 0
  replace dcrec = 1 if date_dth != .
  label variable dcrec "Original DIHD link"

*** tack dage onto each util record
***  sort so last util rec (ie, age at death) first in order
***  for recs without any util, set age_death equal dage
***  for recs with util, set age_death on all recs to dage of first
sort majkey dage

quietly by majkey: replace dage = dage[_n-1] if (dage == .) & (majkey != .) & (_n != 1)

quietly by majkey: replace dsex = dsex[_n-1] if (dsex == .) & (majkey != .) & (_n != 1)

quietly by majkey: replace race = race[_n-1] if (race == .) & (majkey != .) & (_n != 1)

#delimit ;
quietly by majkey:
  replace date_dth = date_dth[_n-1] if (date_dth == .) & (majkey != .) & (_n != 1);
#delimit cr

#delimit ;
quietly by majkey:
  replace date_bir = date_bir[_n-1] if (date_bir == .) & (majkey != .) & (_n != 1);
#delimit cr

label variable dage "Age at death"
label variable dsex "Sex"
label variable race "Race"

*****
*** REFINE AGE FILTER *****
*****

*** delete recs with A) age_dth missing (util recs for someone who
***  died in calyear at age > upper limit for peds but had util in
***  chars at an age <= upper limit) or B) age_dth > upper limit
***  (who got in because filter used both age and dage)
***  do in separate stage so log will show how many dropped due
***  do each step
drop if dage > `topage'

drop if dage == .

*** delete recs with date_dth missing
drop if date_dth == .

*** 22aug01 there are a few recs with
***  dage = -1 (looked at one of these and date_bir AFTER date_dth)
***  ...drop those
drop if date_dth < date_bir

*** 20sep01 found a few cases where date_adm precedes date_bir
***  so dropped those

drop if date_adm < date_bir

```

```

*****
*****
*** BASELINE VARS *****
*****
*****

gen reccnt = 1
  label variable reccnt "Observation counter"

gen patcnt = 0
  label variable patcnt "Patient counter"
  sort majkey date_adm date_dis
  quietly by majkey: replace patcnt = 1 if (majkey != .) & (_n == _N)

gen dthcnt = 0
  replace dthcnt = 1 if dcrec == 1
  label variable dthcnt "Individual death counter"

*****
*** INITIALIZE UTIL COUNTERS *****
*****

gen stay_cnt = .
  label variable stay_cnt "Stay counter - hosp perspective"
  replace stay_cnt = 1 if majkey != .

gen hosp_cnt = .
  label variable hosp_cnt "Hospitalization counter - pat perspective"
  replace hosp_cnt = 1 if majkey != .

gen hospdays = .
  label variable hospdays "Calendar days pat in hospital"
  replace hospdays = date_dis-date_adm+1 if majkey != .

*****
*** TIMING OF STAYS *****
*****

gen tim2dth = .
  replace tim2dth = date_dth-date_dis if majkey != .
  label variable tim2dth "Number of days stay prior to death"

*****
*****
*** CONTIGUOUS TO DEATH *****
*****
*****

*** 25may01 flag if death occurred during a stay
gen staydth = .
  replace staydth = 0 if majkey != .
  replace staydth = 1 if tim2dth == 0
  label variable staydth "Stay contiguous to death"

*****
*****
*** DUPLICATE/OVERLAPPING RECS *****
*****
*****

do "`outdir'\dupolap_cleanandflag"

```

```

*****
*** CREATE UNLUP REC COUNTER *****
*****

gen undupcnt = recnt
  replace undupcnt = 0 if stay_cnt == 0
  label variable undupcnt "Rec count after dup stays removed"

*****
*** FLAG 2YR PRIOR to DEATH *****
*****

gen yr0_2 = 0
  replace yr0_2 = 1 if tim2dth <= (365.25*2) | majkey == .

*** note: if crosstab patcnt with yr0_2, will not get accurate
*** patcnt because patcnt set above not based on admit timing
*** ...simply catches one (first) majkey value not sorted
*** on any other criteria

*****
*** FLAG 1YR PRIOR to DEATH *****
*****

gen yr0_1 = 0
  replace yr0_1 = 1 if tim2dth <= 365.25 | majkey == .

*****
*** ASSIGN ANY HOSP FLAGS *****
*****

gen anyhosp = 0
gen anyhospdth = 0
  quietly replace anyhosp = 1 if hosp_cnt == 1
  quietly replace anyhospdth = 1 if hosp_cnt == 1 & staydth == 1

  label variable anyhosp "Any hospitalization occurred"
  label variable anyhospdth "Any hospitalization occurred at death"

*****
*** ASSIGN CCCs *****
*****

do "`outdir'\ccc assignment"

*****
*** ASSIGN PROC CATEGORIES *****
*****

do "`outdir'\proc assignment"

*****

```

```
*****
*** Save file *****
*****
*****

drop duprec1 duprec2 duprec3 embed firstrec lastrec olap minkey dcrec

gen str2 fileyr = "`1'"
  label variable fileyr "Source file calendar year"

*****
*** CREATE MAJKEY VALUES *****
*****
*** 12sep01 records from death certs with no util
***   have no majkey value

sort fileyr majkey

gen majkey2 = 0

by fileyr majkey: replace majkey2 = 9000000 + real(fileyr)*10000 + 1 if majkey == . & _n == 1
by fileyr majkey: replace majkey2 = majkey2[_n-1] + 1 if majkey == . & _n != 1

replace majkey = majkey2 if majkey == .
drop majkey2

*****
*** ASSIGN newborn status *****
*****

gen byte newborn = 0
gen byte csection = 0
gen byte normalnewb = 0

*** 06feb02 with CF decided to change identification of newborn rec to
***   date_admit <= date_bir+1
***   ...to see previous algo, look at input dihd 020206.do
***   ...NOTE: this approach may mark more than one rec per person as the birthrec,
***   e.g., if stay1 is 25feb96-25feb96 and stay2 is 25feb96-29feb96...will need to
***   account for this downstream

replace newborn = 1 if date_adm <= (date_bir + 1)

*** 06feb02 first set all newborns as normal then reset below
replace normalnewb = 1 if newborn == 1

local i = 1
while `i' <= 9 {

  replace csection = 1 if substr(trim(diag`i'),1,4) == "7634"

  *** 06feb02 calling normal newborn anyone with drg = 391
  ***   ...some of these have non V3 icd9 codes, but most are V053 (vacc for viral hepatitis),
  ***   7671 (scalp injury), 7746 (jaundice)
  replace normalnewb = 0 if newborn == 1 & drg != 391

  local i = `i' + 1
}

*** 25feb02 found people with CCC across all years where there are 2 overlapping recs such as
```

```
*** 01feb-01feb, 01feb-02feb where hosp differs, birthdate = 01feb, days are zeroed
*** out of first due to transfer/olap algo but first has non-normal newborn flag
*** and second has normal newborn flag
*** ...which means more when not restrict to CCC
*** ...this causes probs because potentially normal newborn rec being
*** counted in earliest admit algo
*** ...there is dilemma as to which status to trust (normal v. nonnormal) but least
*** complex solution is to call disrcepat recs normal newborn
*** ...to do so, adding normal newborn status to nonnormal recs
gsort majkey -normalnewb
```

```
by majkey: replace normalnewb = 1 if newborn == 1 & normalnewb == 0 & normalnewb[_n-1] == 1
```

```
*****
*** TRISOMY status *****
*****
*** 17oct01 isolate trisomy 13 and 18 cases
```

```
gen byte trisomy13 = 0
gen byte trisomy18 = 0
gen byte trisomy1318 = 0
```

```
replace trisomy13 = 1 if substr(trim(ucod1),1,4) == "7581"
replace trisomy18 = 1 if substr(trim(ucod1),1,4) == "7582"
```

```
replace trisomy1318 = 1 if trisomy13 | trisomy18
```

```
*****
*** SAVE file *****
*****
save "`outdir'\dihdprep`1'.dta", replace
```

```
*log close
```

```
*****
** DUPOLAP_CLEANAND FLAG.DO **
*****
```

```
*****
** Program: dupolap_cleanandflag.do **
** **
** Created: 07May01-28May01...copied to own file 09aug01 **
** **
** By: DDiGiuseppe **
** **
*****
```

```
*****
*****
*** DUPLICATE/OVERLAPPING RECS *****
*****
*****
```

```
*** GOAL: 19may01 -- in counting days, we do not want to
*** double count transfer days that show up in both the
*** sending hospital stay and the receiving hospital stay
*** ...most of the so called duplicate recs appear to be
*** valid transfers however there are some recs that
```

```

*** seem to be actual duplicates or partial duplicates
*** (i.e., overlapping stays)...in either case we do not
*** want to double count any calendar days for any patient

```

```

*** THIS PORTION OF CODE DEALS WITH TRANSFERS BASED ON
*** ADMIT AND DISCHARGE DATES ONLY AND NOT ADMISSION
*** SOURCE OR DISCHARGE STATUS

```

```

*** The subprogram below will be used in each pass of assessing
*** duplicate/overlap recs by sorting according to
*** the arguments passed in and identifying which
*** recs are in question, which is/are first/not first
*** and which is/are last/not last

```

```

***SUBPROGRAM BEGIN*****

```

```

capture program drop olapsort
program define olapsort
  gsort `1' `2'

```

```

  *** olap used in debugging

```

```

capture drop olap

```

```

gen olap = .

```

```

  quietly by `1': replace olap = 1 if (majkey != .) & (_N != 1)

```

```

capture drop firstrec

```

```

gen firstrec = .

```

```

  quietly by `1': replace firstrec = 0 if (majkey != .) & (_N != 1) & (_n != 1)

```

```

  quietly by `1': replace firstrec = 1 if (majkey != .) & (_N != 1) & (_n == 1)

```

```

capture drop lastrec

```

```

gen lastrec = .

```

```

  quietly by `1': replace lastrec = 0 if (majkey != .) & (_N != 1) & (_n != _N)

```

```

  quietly by `1': replace lastrec = 1 if (majkey != .) & (_N != 1) & (_n == _N)

```

```

end

```

```

***SUBPROGRAM END*****

```

```

*****
*** DUPLICATE/OVERLAPPING RECS - 1st pass**
*****

```

```

*** WHAT: flag multiples of recs sharing date_adm and date_dis
*** ...this flag will be used below in counting
*** hosp days

```

```

*** WHY: these could be either a) true duplicate recs OR
*** transfers where b) admit and disch are same day at
*** both hosps or c) admit and disch are diff days
*** but both recs share same admit and same disch
*** due to some input error

```

```

*** HOW: this flag is set to missing for all recs
*** ...then reset to zero for the duplicate rec with the
*** highest adcount value
*** ...reset to one for duplicate rec with the lower value

```

```

*** USAGE: on these, we do not want to count any days
*** where duprecl = 1
*** ...do not count stay for the duplicate if same hosp
*** ...only count hospitalization for one rec

```

```

*** TRANSFERS: also begin creating a flag to count transfers in
*** and out based on dates and hospital id...will also create a flag
*** downstream to count transfers based on admission source

```

```

*** for transfers, even though the mult stays have same dates,
***   there could be differing hosp ids indicating an error
***   in date recording...the duprec vars handle such errors
***   for day counting by allowing us to zero out those days,
***   but we still want to count the transfer
***   ...on this first pass, we count the rec with the
***   highest adcount (duprec1 = 0) as the transfer in (receiving)
***   hospital and other as transfer out
***   ...NOTE - need to go to _n+1 to compare hosp ids
***   ...only pairs (no triplets) found in 1995 but code written to
***   handle triplets

*** 5/26/01 in this pass do not need to set staydth for associated
***   stays since all share same disch date (staydth will already
***   be 1 for all dup/olap recs)

*** generate vars used in first pass
gen byte duprec1 = .
  label variable duprec1 "Duplicate date_adm and date_dis"

*** generate vars used in all passes
gen byte xfrin1 = .
  label variable xfrin1 "Transfer in based on dates"
gen byte xfrou1 = .
  label variable xfrou1 "Transfer out based on dates"
gen str4 prevhosp = ""
  label variable prevhosp "Previous hospital (transfer in)"
gen str4 nexthosp = ""
  label variable nexthosp "Next hospital (transfer out)"

*** set up sort criteria
local sortpfx = "majkey date_adm date_dis"
local sortsfx = "-adcount"

*** run sort program
olapsort "`sortpfx'" "`sortsfx'"

*** assign duplicate/overlap status
quietly by `sortpfx': replace duprec1 = 1 if firstrec == 0
quietly by `sortpfx': replace duprec1 = 0 if firstrec == 1

*** assign transfer out status
quietly by `sortpfx': replace xfrou1 = 1 if firstrec == 0 & hosp != hosp[_n-1]
quietly by `sortpfx': replace nexthosp = hosp[_n-1] if xfrou1 == 1

*** assign transfer in status
quietly by `sortpfx': replace xfrin1 = 1 if lastrec == 0 & hosp != hosp[_n+1]
quietly by `sortpfx': replace prevhosp = hosp[_n+1] if xfrin1 == 1

*** adjust util ***
*** discount stay if duplicate rec and not a transfer (true duplicate)
  replace stay_cnt = 0 if duprec1 == 1 & xfrou1 != 1
*** discount hospitalization and days if overlapping rec
  replace hosp_cnt = 0 if duprec1 == 1
  replace hospdays = 0 if duprec1 == 1

*****
*** DUPLICATE/OVERLAPPING RECS - 2nd pass**
*****

*** WHAT: flag multiples of recs sharing date_adm

```

```

*** WHY: this phenomenon can happen when either a) a patient
***   is admitted and discharged on same day to another hosp
***   (so 2nd stay admit is same as 1st admit date) OR
***   b) there is one stay that is e.g., Jun1-Jun7 and second
***   stay of Jun1-Jun10
***   ...the records from the first pass above will also
***   get flagged here, such that the rec with duprec1 = 1
***   will also have duprec2 = 1 (that is the one with
***   the lower adcount value)

*** HOW: this flag is set to missing for all recs
***   ...then reset to zero for the record with the furthest
***   out discharge date
***   ...set to one for the record(s) with the earlier discharge date

*** USAGE: we will not want to count any days from
***   rec where duprec2 = 1
***   ...do not count hospitalization if duplicate
***   ...do not count stay if not transfer out (i.e., if at same hosp)

*** for transfers, count the non-first record as a transfer in
***   if the hosp id is different and other(s) as transfer out
***   ...the case of the dates of the first rec are wholly
***   contained in the second rec (e.g., stay1 jun1-jun7 and
***   stay2 jun1-jun10) does not matter because days will not
***   be counted for stay1 and transfer will be counted only
***   if hosp ids differ
***   ...HOWEVER, there are cases where stay1: jan11-jan11,
***   stay2: jan11-jan14, stay3: jan11-apr27
***   ...in 3 examples found, hosp id different
***   among all 3 recs of all 3 cases...therefore want to count
***   one transfer for second rec and one for third even though
***   only going to count days of third
***   ...for the FIRST PASS recs that are also SECOND PASS recs,
***   the xfr replacement here in SECOND PASS should be
***   consistent with what was done in FIRST PASS since FIRST
***   sorted by -adcount and assigned ;

*** generate vars used in second pass
gen byte duprec2 = .
  label variable duprec2 "Duplicate date_adm"

*** set up sort criteria
local sortpfx = "majkey date_adm"
local sortsfx = "date_dis adcount"

*** run sort program
olapsort "`sortpfx'" "`sortsfx'"

*** assign duplicate/overlap status
quietly by `sortpfx': replace duprec2 = 0 if lastrec == 1
quietly by `sortpfx': replace duprec2 = 1 if lastrec == 0

*** assign transfer out status...not overwritten if set in previous pass
quietly by `sortpfx': replace xfrou1 = 1 if xfrou1 == . & lastrec == 0 & hosp != hosp[_n+1]
  quietly by `sortpfx': replace nexthosp = hosp[_n+1] if nexthosp == "" & xfrou1 == 1
  quietly by `sortpfx': replace staydth = 1 if staydth == 0 & xfrou1 == 1 & staydth[_N] == 1

*** assign transfer in status...not overwritten if set in previous pass
quietly by `sortpfx': replace xfrin1 = 1 if xfrin1 == . & firstrec == 0 & hosp != hosp[_n-1]
  quietly by `sortpfx': replace prevhosp = hosp[_n-1] if prevhosp == "" & xfrin1 == 1

*** adjust util ***
*** discount stay if duplicate rec and not a transfer (true duplicate)

```

```

replace stay_cnt = 0 if duprec1 == . & duprec2 == 1 & xfrout1 != 1
*** discount hospitalization and days if overlapping rec
replace hosp_cnt = 0 if duprec1 == . & duprec2 == 1
replace hospdays = 0 if duprec1 == . & duprec2 == 1

```

```

*****
*** DUPLICATE/OVERLAPPING RECS - 3rd pass**
*****

```

```

*** WHAT: flag multiples of recs sharing date_dis

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```

*** WHY: there are valid transfer recs where someone
*** stayed e.g., Jun1-Jun7 then transferred to another
*** hosp for a stay of Jun7-Jun7
*** ...the records from the first pass above will also
*** get flagged here, such that the rec with duprec1 = 1
*** will also have duprec3 = 1 (that is the one with
*** the lower adcount value...(note that when date_adm
*** is different, the rec with the higher adcount may
*** get assigned 1 depending on how date_adm is between
*** the recs in question)

```

```

*** HOW: recs are sorted by date_dis, date_adm and descending
*** adcount
*** ...then reset to zero for the rec with the earliest admit
*** date
*** ...set to one for the record with the later admit date

```

```

*** USAGE: we will not want to count the days from the rec
*** with duprec3 = 1
*** ...do not count hospitalization if duplicate
*** ...do not count stay if not transfer out (i.e., if at same hosp)

```

```

*** transfers handled slightly differently
*** ...if have stay1: jun1-jun8, stay2: jun6-8, and
*** stay3: jun7-8, then presumably stay2 and stay3 are
*** receiving hosps so want to count those as xfr in...due
*** to sort these are those with later admit dates which
*** are also those with duprec3=1 so do not need to use
*** (duprec3!=. and _n...) code
*** ...NOTE in the case of FIRST PASS recs (same adm/dis)
*** which are also THIRD PASS recs, xfr flags would conflict
*** due to the differences needed in sorting between FIRST
*** and THIRD so below xfr flags only replaced for non-duprec1
*** cases

```

```

*** generate vars used in third pass
gen byte duprec3 = .
label variable duprec3 "Duplicate date_dis"

```

```

*** set up sort criteria
local sortpfx = "majkey date_dis"
local sortsfx = "date_adm -adcount"

```

```

*** run sort program
olapsort "`sortpfx'" "`sortsfx'"

```

```

*** assign duplicate/overlap status
quietly by `sortpfx': replace duprec3 = 0 if firstrec == 1
quietly by `sortpfx': replace duprec3 = 1 if firstrec == 0

```

```

*** assign transfer out status...not overwritten if set in previous pass

```

```

*** ...need to use duprec1 in filter so do not flag both in pair from
*** first pass
*** do not need to reset staydth since all dup/olap recs share same
*** date_dis
#delimit ;
quietly by `sortpfx':
  replace xfrout1 = 1 if xfrout1 == . & duprec1 == . & lastrec == 0 & hosp != hosp[_n+1];
#delimit cr
  quietly by `sortpfx': replace nexthosp = hosp[_n+1] if nexthosp == "" & xfrout1 == 1

*** assign transfer in status...not overwritten if set in previous pass
#delimit ;
quietly by `sortpfx':
  replace xfrin1 = 1 if xfrin1 == . & firstrec == 0 & duprec1 == . & hosp != hosp[_n-1];
#delimit cr
  quietly by `sortpfx': replace prevhosp = hosp[_n-1] if prevhosp == "" & xfrin1 == 1

*** adjust util ***
*** NOTE for pass 3, discounting receiving stay whereas pass 2 discounts
*** sending stay
*** discount stay if duplicate rec and not a transfer (true duplicate)
  replace stay_cnt = 0 if duprec1 == . & duprec2 == . & duprec3 == 1 & xfrin1 != 1
*** discount hospitalization and days if overlapping rec
  replace hosp_cnt = 0 if duprec1 == . & duprec2 == . & duprec3 == 1
  replace hospdays = 0 if duprec1 == . & duprec2 == . & duprec3 == 1

*****
*** DUPLICATE/OVERLAPPING RECS - 4th pass**
*****

*** WHAT: flag recs where current rec admit date
*** overlaps previous discharge date

*** WHY: apart from the issues above, there are
*** valid transfers where the discharge date
*** of the sending hospital stay equals the admit
*** date of the receiving hospital stay...in 1995
*** development work, most cases are pairs where
*** stay1 disch date = stay2 admit date
*** ...however there are cases where
*** a) stay1 disch date = stay2 admit date, AND
*** b) stay2 disch date = stay3 admit date...
*** in this case we don't want to count one day
*** from each of stay2 and stay3
*** ...there are ALSO embedded stays (actually just
*** one in 1995) where the admit and disch date
*** of stay2 fall completely within stay 1, such as
*** stay1: jun01-jun10
*** stay2: jun05-jun05
*** in this case do not want to count any days of
*** embedded rec

*** HOW: the code sorts the recs by date_adm, date_dis
*** and ascending adcount and tests a recs admit date
*** against the previous recs discharge date
*** ...initially set to missing but reset to one
*** if current admit date is earlier or equal to previous
*** discharge date
*** ...day correction: in the case where
*** a current recs admit date equals the previous recs
*** discharge date, we just want to discount 1 day
*** so correction value calculated as previous disch date

```

```

*** minus current admit PLUS one...this calculation
*** will also capture more days for discounting in the
*** event that the current admit is less than (but not
*** equal to) the previous disch date

*** generate vars used in fourth pass
gen byte embed = .
  label variable embed "Stay embedded in previous stay"

*** set up sort criteria
local sortpfx = "majkey"
local sortsfx = "date_adm date_dis adcount"

*** run sort program
olaport "`sortpfx'" "`sortsfx'"

*** olap var assignment will not work for these type of transfers so
*** reassign...olap used for debugging and staydth filldown
drop olap
gen olap = .
  quietly by `sortpfx': replace olap = 1 if lastrec == 0 & date_dis >= date_adm[_n+1]
  quietly by `sortpfx': replace olap = 1 if firstrec == 0 & date_adm <= date_dis[_n-1]

*** assign xfrou status...excluding recs dealt with in passes 1-3
#delimit ;
quietly by `sortpfx':
  replace xfrou1 = 1 if xfrou1 == . & lastrec == 0 & hosp != hosp[_n+1] &
    date_dis >= date_adm[_n+1];
  gen nonxfrou = .;
  replace nonxfrou = 1 if xfrou1 == . & lastrec == 0 & date_dis >= date_adm[_n+1] &
    hosp == hosp[_n+1];
#delimit cr
  quietly by `sortpfx': replace nexthosp = hosp[_n+1] if nexthosp == "" & xfrou1 == 1

*** assign transfer in status...excluding recs dealt with in passes 1-3
*** 28may01 nonxfr var needed for resetting days on overlapping recs with
*** same hosp id
#delimit ;
quietly by `sortpfx':
  replace xfrin1 = 1 if xfrin1 == . & firstrec == 0 & date_adm <= date_dis[_n-1] &
    hosp != hosp[_n-1];
  gen nonxfrin = .;
  replace nonxfrin = 1 if xfrin1 == . & firstrec == 0 & date_adm <= date_dis[_n-1] &
    hosp == hosp[_n-1];
  quietly by `sortpfx': replace prevhosp = hosp[_n-1] if prevhosp == "" & xfrin1 == 1;

*** look for embedded recs;
quietly by majkey:
  replace embed = 1 if (majkey != .) & (_n != 1) & date_adm <= date_dis[_n-1] &
    date_dis <= date_dis[_n-1] & (duprec2[_n-1] != 1) & (duprec3 != 1);
#delimit cr

*** adjust util ***
*** discount stay/hosp if transfer in same hospital
#delimit ;
quietly by `sortpfx':
  replace stay_cnt = 0 if majkey != . & duprec1 == . & duprec2 == . & duprec3 == . &
    hosp == hosp[_n+1] & date_dis >= date_adm[_n+1];
  replace stay_cnt = 0 if embed == 1;
  replace hosp_cnt = 0 if stay_cnt == 0;

*** discount hospitalization and days if overlapping rec;
  replace hosp_cnt = 0 if duprec1 == . & duprec2 == . & duprec3 == . & xfrou1 == 1 &

```

```
embed[_n+1] != 1;
```

```
quietly by majkey:
```

```
replace hospdays = hospdays-(date_dis-date_adm[_n+1]+1) if duprec1 == . & duprec2 == . &
duprec3 == . & (xfrou1 == 1 | nonxfrou == 1) & embed != 1;
```

```
replace hospdays = 0 if embed == 1;
```

```
#delimit cr
```

```
*** 25feb02 after all this noticed that there was still at least one case where
*** transfer day being double counted where 17feb-17feb, 17feb-8mar, 8mar-18mar
*** and duprec2 on 2nd rec is 0 (v. missing) so 4th pass
*** at resetting days does not reduce 8mar on 2nd rec
*** ...therefore make one more pass that searches for such cases and decrements
*** days and count
```

```
#delimit ;
```

```
quietly by majkey:
```

```
replace hospdays = hospdays-1 if (duprec1 != . | duprec2 != . | duprec3 != .) &
(xfrou1 == 1 | nonxfrou == 1) & embed != 1 &
majkey == majkey[_n+1] & hospdays > 0 & hospdays[_n+1] > 0;
```

```
replace hosp_cnt = 0 if (duprec1 != . | duprec2 != . | duprec3 != .) &
(xfrou1 == 1 | nonxfrou == 1) & embed != 1 &
majkey == majkey[_n+1] & hospdays > 0 & hospdays[_n+1] > 0;
```

```
#delimit cr
```

```
drop nonxfrin nonxfrou
```

```
*** fill down staydth var
```

```
gsort majkey -date_dis -date_adm
```

```
#delimit ;
```

```
quietly by majkey:
```

```
replace staydth = 1 if staydth == 0 & olap == 1 & date_dis >= date_adm[_n-1] &
staydth[_n-1] == 1;
```

```
#delimit cr
```

```
*** drop embedded rec
```

```
*drop if embed == 1
```

```
*** re-sort in chronological order
```

```
gsort majkey date_adm date_dis adcount
```

```
*****
** CCC ASSIGNMENT.DO **
*****
```

```
*****
*** ASSIGN TRAUMA *****
*****
```

```
gen trauma = 0
```

```
replace trauma = 1 if exinj > 1 & exinj <= 5
```

```
drop exinj
```

```
*****
*** ASSIGN CCCs *****
*****
```

```
*** rename UCOD var for handling in the subprogram
```

```
rename ucod ucod1
```

```
***SUBPROGRAM BEGIN*****
```

```
capture program drop cccassgn
program define cccassgn
```

```
#delimit ;
local cccdefn
    ". = .
```

```
318.0/318.2 = 1
319         = 1
330.0/337.9 = 1
343.0/343.9 = 1
345.0/345.91 = 1
359.0/359.3 = 1
740.0/742.9 = 1
```

```
425.0/425.4 = 2
426.0/427.4 = 2
427.6/427.9 = 2
429.1       = 2
745.0/746.9 = 2
747.1/747.9 = 2
```

```
277.00/277.01 = 3
748.0/748.9   = 3
770.7         = 3
```

```
585.0        = 4
753.00/753.99 = 4
```

```
555.0/555.9 = 5
556.0/556.9 = 5
571.4/571.9 = 5
750.3       = 5
751.1/751.3 = 5
751.5/751.9 = 5
```

```
42          = 6
279.0/279.9 = 6
282.0/282.4 = 6
282.5/282.62 = 6
284.0       = 6
288.1/288.2 = 6
446.1       = 6
```

```
270.0/270.9 = 7
271.0/271.9 = 7
272.0/272.9 = 7
275.0/275.3 = 7
277.2/277.9 = 7
```

```
259.4       = 8
553.3       = 8
737.3       = 8
756.0/756.7 = 8
758.00/758.99 = 8
759.70/759.99 = 8
```

```
140.0/239.9 = 9
```

```
798.0       = 10
```

```
765.0       = 11
765.1       = 11
```

769 = 11

\*=0";

#delimit cr

```
*** OBJECTIVE is to create CCC vars that will allow ability to flag each record as
*** 1) CCC in UCOD
*** 2) CCC in other death cert icd9 codes
*** 3) CCC in any disch dx
*** These record-level designations will be used downstream to assign
*** each person to
*** a) a single CCC OR
*** b) the category Mult CCC OR
*** c) No CCC

*** 06jul01 The above groupings will all be trumped by trauma, SIDS,
*** Prematurity/IRDS in the UCOD field -- trauma has its own var
*** but SIDS and Prem/IRDS are handled in the ccc coding since
*** UCOD is scanned just like with CCCs -- the assignment into
*** official CCC categories will happen downstream
```

```
*** The program below is run once for each of the following lists of dx codes:
*** - ucod (death cert)
*** - icd1 - icd5 (death cert)
*** - diag1 - diag9 (epi)
*** The program
*** 1) creates cccSFXn where SFX = ucod,icd,diag and n = 1,1-5,1-9
*** 2) assigns cccSFXn value of 0-9 where 1-9 are CCCs per code above
*** ...thus these values show whether each dx code being scanned
*** hit a CCC and which CCC was hit
*** 3) create cccAASFX where AA is an abbreviation for each of 9 CCCs
*** 4) assigns cccAASFX 0 or 1
*** ...it is this var that will get used downstream in assigning an
*** individual to the CCC categories
```

```
*** convert dx codes into numeric format and recode
local i = 1
while `i' <= `2' {
  gen ccc`1'`i' = .
  #delimit ;
  quietly replace ccc`1'`i' =
    real(substr(trim(`1'`i'),1,3)+string(.)+substr(trim(`1'`i'),4,.));
  #delimit cr
  quietly recode ccc`1'`i' `cccdefn'
  quietly replace ccc`1'`i' = 0 if ccc`1'`i' == . & majkey != .
  local i = `i' + 1
}
```

```
*** create flag for each ccc and sids, prim/irds
local ccclist = "nm cv resp renal gi hemimm metab congen malig sids prirds"
local j = 1
while `j' <= 11 {
  local k : word `j' of `ccclist'
  gen ccc`k'`1' = 0
  local j = `j' + 1
}
```

```
*** fill flags
local k = 1
while `k' <= `2' {
  quietly replace cccnm`1' = 1 if ccc`1'`k' == 1
```

```

quietly replace ccccv`1'      = 1 if ccc`1``k' == 2
quietly replace cccresp`1'    = 1 if ccc`1``k' == 3
quietly replace cccrenal`1'   = 1 if ccc`1``k' == 4
quietly replace cccgi`1'      = 1 if ccc`1``k' == 5
quietly replace ccchemimm`1'  = 1 if ccc`1``k' == 6
quietly replace cccmetab`1'   = 1 if ccc`1``k' == 7
quietly replace ccccongen`1'  = 1 if ccc`1``k' == 8
quietly replace cccmalig`1'   = 1 if ccc`1``k' == 9
quietly replace cccsids`1'    = 1 if ccc`1``k' == 10
quietly replace cccprirds`1'  = 1 if ccc`1``k' == 11
local k = `k' + 1
}

label variable cccnm`1'       "CCC=NM `3'"
label variable ccccv`1'       "CCC=CV `3'"
label variable cccresp`1'     "CCC=Resp `3'"
label variable cccrenal`1'    "CCC=Renal `3'"
label variable cccgi`1'       "CCC=GI `3'"
label variable ccchemimm`1'   "CCC=Hem/Imm `3'"
label variable cccmetab`1'    "CCC=Metabolic `3'"
label variable ccccongen`1'   "CCC=Cong/Genetic `3'"
label variable cccmalig`1'    "CCC=Malignancy `3'"
label variable cccsids`1'     "CCC=SIDS `3'"
label variable cccprirds`1'   "CCC=Primi/IRDS `3'"
/*
*** drop intermediate vars
local l = 1
while `l' <= `2' {
    drop ccc`1``l' `1``l'
    local l = `l' + 1
}
*/
end
***SUBPROGRAM END*****

*** Execute the program for each type of Dx code
cccassgn ucod 1 UCOD

cccassgn icd 5 TRANSAX

cccassgn diag 9 DISCH_DX

*** drop sids and prim/irids flags which are not used in
*** classification
drop cccsidsicd cccprirdsicd cccsidsdiag cccprirdsdiag

*****
** PROC ASSIGNMENT.DO **
*****

***SUBPROGRAM BEGIN*****
capture program drop procassgn
program define procassgn

#delimit ;
local surgdefn
    ". = ."
    0/5.99      = 1
    6/7.99      = 2
    8/16.99     = 3
    18/20.99    = 4

```

21/29.99 = 5  
30/34.99 = 6  
35/37.64 = 7  
39 = 7  
37.7/37.89 = 8  
39.65 = 9  
39.95 = 10  
41/41.03 = 11  
41.31 = 12  
42/54.99 = 13  
43.11 = 14  
55/59.99 = 15  
60/64.99 = 16  
65/71.99 = 17  
72/75.99 = 18  
76/84.99 = 19  
85/86.99 = 20  
86.07 = 21  
87/88.39 = 22  
87.03 = 23  
88.4/88.68 = 24  
88.91/88.97 = 25  
93.9/93.92 = 26  
96.04 = 27  
96.70/96.72 = 28  
99.04 = 29  
99.05 = 30  
99.15 = 31  
99.25 = 32  
\* = 33"  
;

capture label drop surgval

label define surgval

- 1 "Nervous System"
- 2 "Endocrine"
- 3 "Eye"
- 4 "Ear"
- 5 "Nose/Mouth"
- 6 "Respiratory"
- 7 "CV Procedure"
- 8 "Cardiac Pacer"
- 9 "ECMO"
- 10 "Hemodialysis"
- 11 "BMT"
- 12 "BM Biopsy"
- 13 "GI"
- 14 "PEG Tube"
- 15 "Urinary"
- 16 "Male GU"
- 17 "Female GU"
- 18 "OB"
- 19 "Musculskel"
- 20 "Integument"
- 21 "Vascular Port"
- 22 "Dx Radiol"
- 23 "Head CT"
- 24 "Angiography"
- 25 "MRI"
- 26 "Assist Vent"
- 27 "ETT Insertion"
- 28 "Mechanical Vent"
- 29 "RBC Tx"

```

30 "Plt Tx"
31 "HA/TPN"
32 "CA Chemo"
33 "Other"
;

```

```
#delimit cr
```

```
*** convert proc codes into numeric format and recode
```

```

local i = 1
while `i' <= 6 {
  gen surg`i' = .
  #delimit ;
  quietly replace surg`i' =
    real(substr(trim(proc`i'),1,2)+string(.)+substr(trim(proc`i'),3,.));
  #delimit cr
  quietly recode surg`i' `surgdefn'
  quietly replace surg`i' = 0 if surg`i' == . & majkey != .
  drop proc`i'
  local i = `i' + 1
}

```

```

*** create flag for each surg type and fill by scanning procl-6
*** and a flag for each surg type occurring during hospitalization
*** during which death occurred

```

```

#delimit ;
local surglist
  "nerv endo eye ear nose resp cv card ecmo hemo bmt bmbi gi peg urin male fem
  ob musc intg vasc rad hdct angi mri assv ett mech rbc plt hatp chem oth";
local surgname
  "Nervous_System Endocrine Eye Ear Nose_Mouth Respiratory CV_Procedure
  Cardiac_Pacer ECMO Hemodialysis BMT BM_Biopsy GI PEG_Tube Urinary
  Male_GU Female_GU OB Musculskel Integument Vascular_Port Dx_Radiol
  Head_CT Angiography MRI Assist_Vent ETT_Insertion Mechanical_Vent RBC_Tx Plt_Tx
  HA_TPN CA_Chemo Other";

```

```
#delimit cr
```

```

local i = 1
local j : word count `surglist'
while `i' <= `j' {

  local k : word `i' of `surglist'
  local l : word `i' of `surgname'

  gen surg`k' = 0
  gen surg`k'dth = 0

  local m = 1
  while `m' <= 6 {
    quietly replace surg`k' = 1 if surg`m' == `i'
    quietly replace surg`k'dth = 1 if surg`m' == `i' & staydth == 1
    local m = `m' + 1
  }

  label variable surg`k' "Surg=`l' Occurred"
  label variable surg`k'dth "Surg=`l' Occurred at death hospitalization"

  local i = `i' + 1
}

```

```
gen surgvent = 0
```

```

  replace surgvent = 1 if surgassv == 1 | surgmech == 1 | surggett == 1
  label variable surgvent "Any mech vent"

```

```

gen surgventdth = 0
  replace surgventdth = 1 if surgassvdth == 1 | surgmechdth == 1 | surgettdth == 1
  label variable surgventdth "Any mech vent at death hospitalization"
gen surganyoth = 0
  #delimit ;
  replace surganyoth = 1 if
1 | (surgnerv == 1 | surgendo == 1 | surgeye == 1 | surgear == 1 | surgnose == 1 | surgresp ==
1 |   surgcv == 1 | surgcard == 1 | surgecmo == 1 | surghemo == 1 | surgbmt == 1 | surgbmbi ==
1 |   surggi == 1 | surgpeg == 1 | surgurin == 1 | surgmale == 1 | surgfem == 1 | surgob ==
1 |   surgmusc == 1 | surgintg == 1 | surgvasc == 1 | surgrad == 1 | surghdct == 1 | surgangi ==
1 |   surgmri == 1 | surgrbc == 1 | surgplt == 1 | surghatp == 1 | surgchem == 1 | surgoth ==
1);
  #delimit cr
  label variable surganyoth "Any other proc"
gen surganyothdth = 0
  #delimit ;
  replace surganyothdth = 1 if
1 | (surgnervdth == 1 | surgendodth == 1 | surgeyedth == 1 | surgeardth == 1 | surgnosedth ==
1 | surgrespdth == 1 |
1 |   surgcvdth == 1 | surgcarddth == 1 | surgecmodth == 1 | surghemodth == 1 | surgbmdth ==
1 |   surgbmbidth == 1 |
1 |   surggidth == 1 | surgpegdth == 1 | surgurindth == 1 | surgmaledth == 1 | surgfemdth ==
1 |   surgobdth == 1 |
1 |   surgmusc dth == 1 | surgintgdth == 1 | surgvascdth == 1 | surgraddth == 1 | surghdctdth ==
1 |   surgangidth == 1 |
1 |   surgmridth == 1 | surgrbcdth == 1 | surgpltdth == 1 | surghatpdth == 1 | surgchemdth ==
1 |   surgothdth == 1);
  #delimit cr
  label variable surganyoth "Any other proc"

*** drop intermediate vars
drop surg1-surg6

#delimit ;
drop surgnerv surgendo surgeye surgear surgnose surgresp
  surgcv surgcard surgecmo surghemo surgbmt surgbmbi
  surggi surgpeg surgurin surgmale surgfem surgob
  surgmusc surgintg surgvasc surgrad surghdct surgangi
  surgmri surgrbc surgplt surghatp surgchem surgoth surgassv surgmech surgett
  surgnervdth surgendodth surgeyedth surgeardth surgnosedth surgrespdth
  surgcvdth surgcarddth surgecmodth surghemodth surgbmdth surgbmbidth
  surggidth surgpegdth surgurindth surgmaledth surgfemdth surgobdth
  surgmusc dth surgintgdth surgvascdth surgraddth surghdctdth surgangidth
  surgmridth surgrbcdth surgpltdth surghatpdth surgchemdth surgothdth surgassvdth
surgmechdth surgettdth;
#delimit cr

end
***SUBPROGRAM END*****

*** Execute the program
procassgn

*****
** PROCESS DIHD.DO **
*****

```

```
*****  
*** CONTROL STATEMENTS *****  
*****  
  
*** change default input directory  
cd "d:\feudtner"  
  
*** setup alias for output directory  
local outdir = "d:\feudtner"  
  
*** open log file  
log using "`outdir'\process dihd", replace  
  
*****  
** Program: process dihd.do ***  
** ***  
** Created: 21May01 ***  
** ***  
** By: DDiGiuseppe ***  
** ***  
** Purpose: Create initial analysis dset from DIHD source data ***  
** ***  
** Source: individual cal year file (87-96) created by ***  
*** input dihd.do (run by input dihd exec.do) ***  
** ***  
** Algo: 1) Combine all years into one file ***  
** 2) Assign analysis vars ***  
** ***  
*****  
  
*****  
*** INPUT DATA *****  
*****  
  
clear  
  
set mem 25m  
  
use dihdprep`1', clear  
  
append using dihdprep91  
append using dihdprep92  
append using dihdprep93  
append using dihdprep94  
append using dihdprep95  
append using dihdprep96  
  
*****  
*** DROP VARS NOT NEEDED FOR COLLAPSE *****  
*****  
  
#delimit ;  
*drop zip hosp age sex admt y admsor status dzip staydth date_adm date_dis  
 prevhosp nexthosp;  
#delimit cr  
  
*****  
*** EARLIEST ADMIT *****  
*****  
*** 04sep01 create var that holds earliest admit date in the two year
```

```

***   period prior to death

*** 07feb02 note: this puts all non-normalnewb recs within 1 year of death
***   ahead of the normalnewb rec even though the date_adm of normalnewb
***   will precede dates of non-normalnewb admit recs for a normalnewborn
***   ...this is okay because just trying to find the earliest nonnormal admit

sort majkey yr0_1 normalnewb date_adm

gen earliestadm0_1 = .
  format earliestadm0_1 %d

*** 17oct01 added normalnewb to by and if cond so earliest admit not considered
***   to be normal newborn admit
by majkey yr0_1 normalnewb: replace earliestadm0_1 = date_adm if _n == 1 & yr0_1 == 1 & normalnewb
== 0

*** fill down earliest admit date
sort majkey earliestadm0_1

#delimit ;
by majkey: replace earliestadm0_1 = earliestadm0_1[_n-1] if (earliestadm0_1 == .) &
(majkey != .) & (_n != 1);
#delimit cr

*** 11feb02 fill down newborn so on last rec after collapse and can determine
***   which infants dont have a newborn rec and therefore need to be deleted
***   ...actually do this with new var called newbornflag since newborn is
***   incorporated in util counting and as such wont be accurate on last rec
***   for newborn status
gen newbornflag = newborn

gsort majkey -newbornflag

#delimit ;
by majkey: replace newbornflag = newbornflag[_n-1] if (newbornflag == 0) & newbornflag[_n-1] == 1
&
(majkey != .) & (_n != 1);
#delimit cr

*****
***  TERMINAL HOSPITALIZATION DAYS *****
*****
gen termhospdays = 0
  replace termhospdays = hospdays if staydth == 1

*****
***  INFO FOR MODELING DIFF IN FREQ OF ADMITS DURING LAST YEAR ***
*****
***   ..right now tim2dth is calcd as date_dth-date_dis so 365 is the year
***   prior to death such that date_dth is 366
***   ..want to create 7 groups: 12 mos ago thru 7 mos ago, 6 mos ago,
***   5 mos ago, 4 mos ago, 3 mos ago, 2 mos ago, 1 mo ago
***   ..if divide 365 by 12 get 30.4 -- cutoffs based on that
***   ..using >= means, eg, month 1 will be 30 days prior to death plus
***   day of death

local dayspermonth 30.4

```

```

*** ...right now, hosp_cnt gets zeroed out when more than one rec is
*** part of same hospitalization...current algo usually zeroes out
*** the hosp_cnt on earlier rec but for modeling we are technically counting
*** admits
*** ...therefore first need to create adm_cnt which is equal in summary
*** to hosp_cnt but is 1 for rec with earliest admit date

```

```
sort majkey date_adm date_dis
```

```

gen adm_cnt = 1
  replace adm_cnt = . if hosp_cnt == .
by majkey: replace adm_cnt = 0 if _n != 1 & (hosp_cnt == 1 | (hosp_cnt == 0 & hosp_cnt[_n-1] == 0)
| (hosp_cnt == 0 & hosp_cnt[_n-1] == 1)) & date_adm <= date_dis[_n-1]

```

```

*** ...the hospdays var most often (but not necessarily always)
*** subtracts one day from the first of a pair of overlapping stays (so as not to double count)
*** the shared day
*** ...from some adhoc testing it looks like most number of recs in a transfer sequence is 3
*** ...that is, a >> b >> c such that a gets adm_cnt = 1 and b,c get = 0 and potential to double
*** count 2 days
gen adm_loos = 0

```

```

*** 30mar02 first set loos for 3 recs in a row
  by majkey: replace adm_loos = hospdays[_n+2] + hospdays[_n+1] + hospdays if adm_cnt == 1 &
adm_cnt[_n+1] == 0 & adm_cnt[_n+2] == 0

```

```

*** 30mar02 second set loos for 2 recs in a row, given that not set above (since first 2 of 3
would otherwise qualify)
  by majkey: replace adm_loos = hospdays[_n+1] + hospdays if adm_loos == 0 & adm_cnt == 1 &
adm_cnt[_n+1] == 0

```

```

*** 30mar02 third set stand alone recs, given not yet set
  replace adm_loos = hospdays if adm_loos == 0 & adm_cnt == 1

```

```

*** 28mar02 use this var to control whether a month var has been set
gen cntadmset = 0

```

```

*** 28mar02 use this for testing
gen adm2dth = date_dth - date_adm

```

```

*** 30mar02 added cntloos_ coding which is weighted admits based on loos
gen cntadm_m1 = 0
  replace cntadm_m1 = 1 if yr0_1 == 1 & adm_cnt == 1 & date_adm >= round((date_dth -
`dayspermonth'),1)
  replace cntadmset = 1 if cntadm_m1 == 1
gen cntloos_m1 = 0
  replace cntloos_m1 = adm_loos if cntadm_m1 == 1

```

```

gen cntadm_m2 = 0
  replace cntadm_m2 = 1 if yr0_1 == 1 & adm_cnt == 1 & cntadmset == 0 & date_adm >=
round((date_dth - `dayspermonth'*2),1)
  replace cntadmset = 1 if cntadm_m2 == 1
gen cntloos_m2 = 0
  replace cntloos_m2 = adm_loos if cntadm_m2 == 1

```

```

gen cntadm_m3 = 0
  replace cntadm_m3 = 1 if yr0_1 == 1 & adm_cnt == 1 & cntadmset == 0 & date_adm >=
round((date_dth - `dayspermonth'*3),1)
  replace cntadmset = 1 if cntadm_m3 == 1
gen cntloos_m3 = 0
  replace cntloos_m3 = adm_loos if cntadm_m3 == 1

```

```

gen cntadm_m4 = 0
  replace cntadm_m4 = 1 if yr0_1 == 1 & adm_cnt == 1 & cntadmset == 0 & date_adm >=
round((date_dth - `dayspermonth'*4),1)
  replace cntadmset = 1 if cntadm_m4 == 1
  gen cntlos_m4 = 0
  replace cntlos_m4 = adm_los if cntadm_m4 == 1

gen cntadm_m5 = 0
  replace cntadm_m5 = 1 if yr0_1 == 1 & adm_cnt == 1 & cntadmset == 0 & date_adm >=
round((date_dth - `dayspermonth'*5),1)
  replace cntadmset = 1 if cntadm_m5 == 1
  gen cntlos_m5 = 0
  replace cntlos_m5 = adm_los if cntadm_m5 == 1

gen cntadm_m6 = 0
  replace cntadm_m6 = 1 if yr0_1 == 1 & adm_cnt == 1 & cntadmset == 0 & date_adm >=
round((date_dth - `dayspermonth'*6),1)
  replace cntadmset = 1 if cntadm_m6 == 1
  gen cntlos_m6 = 0
  replace cntlos_m6 = adm_los if cntadm_m6 == 1

gen cntadm_m12m7 = 0
  replace cntadm_m12m7 = 1 if yr0_1 == 1 & adm_cnt == 1 & cntadmset == 0 & date_adm >= (date_dth -
365)
  replace cntadmset = 1 if cntadm_m12m7 == 1
  gen cntlos_m12m7 = 0
  replace cntlos_m12m7 = adm_los if cntadm_m12m7 == 1

```

```

*****
*** COLLAPSE VARS OVER STAYS *****
*****

```

```

*** this sort order must be mimiced below so last record
*** with accumulated information per patient is kept
sort fileyr majkey adcount

```

```

*** put all vars to be accumulated in macros
*** ...separte by those that are straight accumulation (invars1)
*** and those that will be reset to 0/1 post accumulation
#delimit ;
local invars1 "recnt undupcnt patcnt stay_cnt hosp_cnt charge
  hospdays termhospdays xfrin1 xfrou1
  cntadm_m1 cntadm_m2 cntadm_m3 cntadm_m4 cntadm_m5 cntadm_m6 cntadm_m12m7
  cntlos_m1 cntlos_m2 cntlos_m3 cntlos_m4 cntlos_m5 cntlos_m6 cntlos_m12m7";

```

```

local invars2
  "anyhosp anyhospdth newborn trisomy13 trisomy18 trisomy1318
  trauma
  cccnmucod ccccvcod cccrespucod cccrenaluod cccgiucod cccchemimucod cccmetabucod
  ccccongenucod cccmaligucod cccsidsucod cccprirdsucod
  cccnmicd ccccvicd cccrespicd cccrenalicd cccgiicd cccchemimicd cccmetabicd
  ccccongenicd cccmaligicd
  cccnmidiag ccccvidiag cccrespidiag cccrenaldiag cccgidiag cccchemimidiag cccmetabidiag
  ccccongenidiag cccmaligidiag
  surgvent surganyoth surgventdth surganyothdth";
#delimit cr

```

```

*** this subsection sets all missing counts to zero and
*** zeros out counts if the record is earlier than 2 years

```

```

*** pre-death (may need to modify if look at other time periods)
tokenize `invars1' `invars2'
while "`1'" != "" {
  quietly replace `1' = 0 if `1' == .
  quietly replace `1' = 0 if yr0_1 == 0 | (yr0_1 == 1 & normalnewb == 1)
  quietly gen cum`1' = 0
  macro shift
}

local arrayutil "`invars1' `invars2'"
local i = 1
local n : word count `arrayutil'
while `i' <= `n' {
  local varutil : word `i' of `arrayutil'
  quietly by fileyr majkey: replace cum`varutil' = `varutil' if majkey == .
  quietly by fileyr majkey: replace cum`varutil' = sum(`varutil') if majkey != .
  local i = `i' + 1
}

drop `invars1' `invars2'

*****
*** RESET CUMULATIVE CCC VARS TO 0/1 *****
*****

local arrayccc `invars2'

local i = 1
local n : word count `arrayccc'
while `i' <= `n' {
  local varccc : word `i' of `arrayccc'
  quietly replace cum`varccc' = 1 if cum`varccc' >= 1
  local i = `i' + 1
}

*****
*** HOLD LAST PER PERSON RECORD ONLY *****
*****

*** need to sort exactly as above at beginning of COLLAPSE block
sort fileyr majkey adcount

by fileyr majkey: drop if _n != _N

*** dthcnt should be 1 for all kept recs, check it
tab dthcnt, missing

*****
*** DROP INFANTS WITHOUT NEWBORN REC *****
*****

*** 11feb02 many infants do not have a newborn rec
***   ...discard any infant for whom we do not have birth rec
***   ...note: this should be age < 1 and NOT age <= 1 since looking at 1 year
***   ...that is, if subject made it to 1 year of life, we are not requiring
***   that a newborn rec be present...technically, someone who died on on day
***   367 of life may be expected to be seen to have first hosp at day 1 of life
***   as probably would still have been in the hosp -- also, long stay newborns
***   could go well into second year and

```

```
tab newbornflag if dage < 1 & yr0_1 == 1
```

```
drop if dage < 1 & newbornflag == 0
```

```
*****
*** ASSIGN INDIV CCC STATUS *****
*****
```

```
*** create vars for hits of multiple cccs
```

```
#delimit ;
```

```
egen multidc =
```

```
  rsum(cumcccnmicd cumcccvcid cumccrespicd cumccrenalicd cumccgiicd cumccchemimmicd
        cumcccmetabid cumccccongenicd cumcccmaligid);
```

```
egen multdiag =
```

```
  rsum(cumcccnmdiag cumcccvcdiag cumccrespdiag cumccrenaldiag cumccgidiag cumccchemimmdiag
        cumcccmetabdiag cumccccongendiag cumcccmaligdiag);
```

```
#delimit cr
```

```
*** initialize all to 0 = no CCC
```

```
gen byte ccccat = 0
```

```
*** start with ucod, each indiv should have only 1
```

```
  replace ccccat = 1 if cumcccprirdsucod
```

```
  replace ccccat = 2 if cumcccsidsucod
```

```
  replace ccccat = 3 if cumtrauma
```

```
  replace ccccat = 4 if cumcccvcucod
```

```
  replace ccccat = 5 if cumcccnmucod
```

```
  replace ccccat = 6 if cumcccmaligucod
```

```
  replace ccccat = 7 if cumccrespucod
```

```
  replace ccccat = 8 if cumccrenalucod
```

```
  replace ccccat = 9 if cumccgiucod
```

```
  replace ccccat = 10 if cumccchemimmucod
```

```
  replace ccccat = 11 if cumccccongenucod
```

```
  replace ccccat = 12 if cumcccmetabucod
```

```
*** if ucod does not reset ccccat, move on to TRANSAX codes
```

```
  replace ccccat = 4 if ccccat == 0 & multidc == 1 & cumcccvcid
```

```
  replace ccccat = 5 if ccccat == 0 & multidc == 1 & cumcccnmicd
```

```
  replace ccccat = 6 if ccccat == 0 & multidc == 1 & cumcccmaligid
```

```
  replace ccccat = 7 if ccccat == 0 & multidc == 1 & cumccrespicd
```

```
  replace ccccat = 8 if ccccat == 0 & multidc == 1 & cumccrenalicd
```

```
  replace ccccat = 9 if ccccat == 0 & multidc == 1 & cumccgiicd
```

```
  replace ccccat = 10 if ccccat == 0 & multidc == 1 & cumccchemimmicd
```

```
  replace ccccat = 11 if ccccat == 0 & multidc == 1 & cumccccongenicd
```

```
  replace ccccat = 12 if ccccat == 0 & multidc == 1 & cumcccmetabid
```

```
*** if mult ccc according to TRANSAX, assign to mult category
```

```
  replace ccccat = 13 if ccccat == 0 & multidc > 1
```

```
*** if TRANSAX does not reset ccccat from zero, move on to disch dx codes
```

```
  replace ccccat = 4 if ccccat == 0 & multdiag == 1 & cumcccvcdiag
```

```
  replace ccccat = 5 if ccccat == 0 & multdiag == 1 & cumcccnmdiag
```

```
  replace ccccat = 6 if ccccat == 0 & multdiag == 1 & cumcccmaligdiag
```

```
  replace ccccat = 7 if ccccat == 0 & multdiag == 1 & cumccrespdiag
```

```
  replace ccccat = 8 if ccccat == 0 & multdiag == 1 & cumccrenaldiag
```

```
  replace ccccat = 9 if ccccat == 0 & multdiag == 1 & cumccgidiag
```

```
  replace ccccat = 10 if ccccat == 0 & multdiag == 1 & cumccchemimmdiag
```

```
  replace ccccat = 11 if ccccat == 0 & multdiag == 1 & cumccccongendiag
```

```
  replace ccccat = 12 if ccccat == 0 & multdiag == 1 & cumcccmetabdiag
```

```
*** if mult ccc according to disch dx codes, assign to mult category
```

```

replace ccccat = 13 if ccccat == 0 & multdiag > 1

*** set all zeros to highest number for printing in tables
replace ccccat = 14 if ccccat == 0

#delimit ;
drop cumcccnmucod cumccccvucod cumccrespuod cumcccrenalucod cumcccgiucod cumcccchemimmucod
  cumcccmetabucod cumccccongenucod cumcccmaligucod
  cumcccnmicd cumccccvicd cumccrespicd cumcccrenalicd cumcccgiicd cumcccchemimmicd
  cumcccmetabicd cumccccongenicd cumcccmaligicd
  cumcccnmdiag cumccccvdiag cumccrespdia g cumcccrenaldiag cumcccgidiag cumcccchemimmdiag
  cumcccmetabdiag cumccccongenidiag cumcccmaligdiag multicd multdiag;
#delimit cr

#delimit ;
label define ccccatval
  1 "Prematurity/IRDS"
  2 "SIDS"
  3 "Trauma"
  4 "Cardiovascular CCC"
  5 "Neuromuscular CCC"
  6 "Malignancy CCC"
  7 "Respiratory CCC"
  8 "Renal CCC"
  9 "GI CCC"
  10 "Hematology/Immunology CCC"
  11 "Genetic/Congenital CCC"
  12 "Metabolic CCC"
  13 "Multiple CCCs"
  14 "Other";
#delimit cr

label values ccccat ccccatval

*****
*** RACE/ETHNICITY *****
*****

gen byte raceethn = .
  replace raceethn = 1 if race == 1 & inlist(hisp,0,9)
  replace raceethn = 2 if race == 2 & inlist(hisp,0,9)
  replace raceethn = 3 if inlist(race,4,5,6,7,8,11,12,13,14,15)
  replace raceethn = 4 if race == 3
  replace raceethn = 5 if (inlist(race,1,2,10,98,99) & inrange(hisp,1,6)) | race == 9
  replace raceethn = 6 if (race == 10 & inlist(hisp,0,9))
  replace raceethn = 7 if inlist(race,98,99) & inlist(hisp,0,9)

la var raceethn "Race/ethnicity"

#delimit ;
label define raceethnval
  1 "White, non-Hispanic"
  2 "Black, non-Hispanic"
  3 "Asian/Pacific Islander"
  4 "Native American"
  5 "Hispanic"
  6 "Other"
  7 "Unknown";
#delimit cr

label values raceethn raceethnval

```

```
*****
*** AGE GROUPS *****
*****
```

```
gen byte agegrp = .
  replace agegrp = 1 if dage == 0 & (date_dth-date_bir) <= 30
  replace agegrp = 2 if dage == 0 & (date_dth-date_bir) > 30
  replace agegrp = 3 if inrange(dage,1,4)
  replace agegrp = 4 if inrange(dage,5,9)
  replace agegrp = 5 if inrange(dage,10,14)
  replace agegrp = 6 if inrange(dage,15,24)
  replace agegrp = 7 if agegrp == .

  la var agegrp "7 age groups (labeled values)"

#delimit ;
label define agegrpval
  1 "<= 30 days"
  2 "2-11 mos"
  3 "1-4 yrs"
  4 "5-9 yrs"
  5 "10-14 yrs"
  6 "15-24 yrs"
  7 "unknown";
#delimit cr

label values agegrp agegrpval

gen byte agegrp2 = .
  replace agegrp2 = 1 if inrange(dage,0,1)
  replace agegrp2 = 2 if inrange(dage,2,24)
  replace agegrp2 = 3 if agegrp2 == .

  la var agegrp2 "1=under 2y, 2=older"

#delimit ;
label define agegrp2val
  1 "< 2 yrs"
  2 ">= 2 yrs"
  3 "unknown";
#delimit cr

label values agegrp2 agegrp2val

gen byte agegrp3 = .
  replace agegrp3 = 1 if dage == 0 & (date_dth-date_bir) < 7
  replace agegrp3 = 2 if agegrp3 == . & dage == 0 & (date_dth-date_bir) <= 21
  replace agegrp3 = 3 if agegrp3 == . & dage == 0 & (date_dth-date_bir) <= 180
  replace agegrp3 = 4 if agegrp3 == . & inrange(dage,0,1)
  replace agegrp3 = 5 if dage >= 2

  la var agegrp3 "5 age groups (labeled values)"

#delimit ;
label define agegrp3val
  1 "< 1 week"
  2 "1-3 weeks"
  3 "1-6 months"
  4 "7-23 months"
  5 ">= 2 years";
#delimit cr
```

```
label values agegrp3 agegrp3val
```

```
gen byte agegrp4 = .
  replace agegrp4 = 1 if dage == 0 & (date_dth-date_bir) < 182
  replace agegrp4 = 2 if agegrp4 == . & ((dage == 0 & (date_dth-date_bir) >= 182) | dage > 0)

la var agegrp4 "1=under 6m, 2=older"

#delimit ;
label define agegrp4val
  1 "< 6 months"
  2 ">= 6 months";
#delimit cr

label values agegrp4 agegrp4val
```

```
gen byte agegrp5 = .
  replace agegrp5 = 1 if dage == 0
  replace agegrp5 = 2 if inrange(dage,1,24)
  replace agegrp5 = 3 if agegrp5 == .

la var agegrp5 "1=under 1y, 2=older"

#delimit ;
label define agegrp5val
  1 "< 1 yr"
  2 ">= 1 yr"
  3 "unknown";
#delimit cr

label values agegrp5 agegrp5val
```

```
gen byte agegrp6 = .
  replace agegrp6 = 1 if dage == 0 & (date_dth-date_bir) < 7
  replace agegrp6 = 2 if agegrp6 == . & dage == 0 & (date_dth-date_bir) <= 21
  replace agegrp6 = 3 if agegrp6 == . & dage == 0 & (date_dth-date_bir) <= 180
  replace agegrp6 = 4 if agegrp6 == . & dage == 0
  replace agegrp6 = 5 if dage >= 1

la var agegrp6 "5 age groups (labeled values)"

#delimit ;
label define agegrp6val
  1 "< 1 week"
  2 "1-3 weeks"
  3 "1-6 months"
  4 "7-11 months"
  5 ">= 1 years";
#delimit cr

label values agegrp6 agegrp6val
```

```
gen byte agegrp7 = .
  replace agegrp7 = 1 if dage == 0 & (date_dth-date_bir) < 7
  replace agegrp7 = 2 if agegrp7 == . & dage == 0 & (date_dth-date_bir) < 30
  replace agegrp7 = 3 if agegrp7 == . & dage == 0 & (date_dth-date_bir) < 365
  replace agegrp7 = 4 if agegrp7 == . & dage >= 1

la var agegrp7 "4 age groups (labeled values)"

#delimit ;
label define agegrp7val
```

```

1 "< 1 week"
2 "1-4 weeks"
3 "1-12 months"
4 ">= 1 years";
#delimit cr

```

```
label values agegrp7 agegrp7val
```

```

*****
*** TABLE 1 *****
*****

```

```

*** 11feb02 added this block
tab dsex, missing
tab agegrp, missing
tab raceethn, missing
tab ccccat, missing

```

```

*****
*** TABLE 2 *****
*****

```

```
*do "d:\feudtner\table2.do"
```

```

*****
*** FIGURE 1 *****
*****

```

```
*do "d:\feudtner\figure1.do"
```

```

*****
*** FIGURE 2 *****
*****

```

```
*do "d:\feudtner\figure2.do"
```

```

*****
*** FILE CLEANUP *****
*****

```

```
#delimit ;
```

```

drop adcount hosp zip age admtly admsor status diag* hisp sex race icd* inf* date_adm date_dis
tim2dth
  staydth prevhosp nexthosp yr0_2 cccd* ccci* cccu* normalnewb;
#delimit cr

```

```

la var cumanyhosp "Any hospitalization"
la var cumanyhospdth "Any hospitalization at death"
*la var cumnewborn "Newborn hosp rec present"
la var newbornflag "Newborn hosp rec present"
la var cumtrisomy13 "Trisomy 13 UCOD"
la var cumtrisomy18 "Trisomy 18 UCOD"
la var cumtrisomy1318 "Trisomy 13 or 18 UCOD"
la var ccccat "CCC category"
la var cumreccnt "Orig recs in file"
la var cumundupcnt "Undup recs in file"
la var cumpatcnt "Patient counter"
la var cumstay_cnt "Num stays - hosp perspective"
la var cumhosp_cnt "Num hospitalizations - pat perspective"

```

```

la var cumhospdays "Num days in hosp"
*la var cumhospdays182 "Num days in hosp - 6mo lookback"
la var cumtermhospdays "Num days terminal hospitalization"
la var cumxfrin1 "Num transfers in"
la var cumxfout1 "Num transfers out"

save "`outdir'\dihdprocess9096.dta", replace

log close

*****
** TABLE2.DO **
*****

*****
*** CONTROL STATEMENTS *****
*****

*** open log file
*log using "`outdir'\table2.smcl", replace

*****
** Program: table2.do **
** **
** Created: 21aug01 **
** **
** By: DDiGiuseppe **
** **
** Purpose: Table 2 numbers (after running process dihd.do) **
** **
*****

#delimit ;
local invars
"anyhosp anyhospdth
surgvent surganyoth
surgventdth surganyothdth";
#delimit cr

gen byte tbl2grp = .
replace tbl2grp = 1 if ccccat == 1
replace tbl2grp = 2 if ccccat == 2
replace tbl2grp = 3 if ccccat == 3
replace tbl2grp = 4 if inrange(ccccat,4,13)
replace tbl2grp = 5 if ccccat == 14

#delimit ;
label define tbl2grpval
1 "Prematurity/IRDS"
2 "SIDS"
3 "Trauma"
4 "CCC"
5 "Other";
#delimit cr

label values tbl2grp tbl2grpval

sort tbl2grp

```

```
tab tbl2grp agegrp5, row missing
```

```
local i = 1
local n : word count `invars'
while `i' <= 5 {
  local j = 1
  while `j' <= `n' {
    local currvar : word `j' of `invars'
    tab agegrp5 cum`currvar' if tbl2grp == `i', row missing
    local j = `j' + 1
  }
  local i = `i' + 1
}
```

```
*** 22feb02 all cases ***
local n : word count `invars'
local j = 1
while `j' <= `n' {
  local currvar : word `j' of `invars'
  tab agegrp5 cum`currvar', row missing
  local j = `j' + 1
}
```

```
*log close
```

```
*****
** TABLE3.DO **
*****

*****
** Program: table3.do **
** **
** Created: 16apr02 **
** **
** By: DDiGiuseppe **
** **
** Purpose: Table 3 (after running process dihd.do) **
** **
*****
```

```
log using d:\feudtner\table3, replace
```

```
gen byte noutil = 0
  replace noutil = 1 if earliestadm0_1 == .

*** where earliest adm date not assigned, insert date of death
replace earliestadm0_1 = date_dth if earliestadm0_1 == .
```

```
*** 25feb02 check how many in each agegrp w/ CCC have no admission
tab agegrp7 noutil if inrange(ccccat,4,13), missing
```

```
gen time2hosp_ltlwk = .
  replace time2hosp_ltlwk = earliestadm0_1 - date_bir if agegrp7 == 1 & noutil == 0
  replace time2hosp_ltlwk = 2 if inrange(time2hosp_ltlwk,2,6)
```

```

#delimit ;
label define time2hosp_lt1wkval
  0 "Day 0"
  1 "Day 1"
  2 "Day 2-6";
#delimit cr

label values time2hosp_lt1wk time2hosp_lt1wkval

tab time2hosp_lt1wk if agegrp7 == 1 & inrange(ccccat,4,13),missing
tab time2hosp_lt1wk if agegrp7 == 1,missing

*** 25feb02 generate info for next age group (lt 1 month)
***   ...this has 29 days as max since >= 30 is at least 1 month old
gen time2temp_lt1mo = .
  replace time2temp_lt1mo = earliestadm0_1 - date_bir if agegrp7 == 2 & noutil == 0

gen time2hosp_lt1mo = time2temp_lt1mo
  replace time2hosp_lt1mo = 2 if inrange(time2temp_lt1mo,2,6)
  replace time2hosp_lt1mo = 3 if inrange(time2temp_lt1mo,7,13)
  replace time2hosp_lt1mo = 4 if inrange(time2temp_lt1mo,14,29)

#delimit ;
label define time2hosp_lt1moval
  0 "Day 0"
  1 "Day 1"
  2 "Day 2-6"
  3 "Week 2"
  4 "Week 3-4";
#delimit cr

label values time2hosp_lt1mo time2hosp_lt1moval

tab time2hosp_lt1mo if agegrp7 == 2 & inrange(ccccat,4,13),missing
tab time2hosp_lt1mo if agegrp7 == 2,missing

*** 25feb02 generate info for next age group (lt 1 yr)
***   ...this caps at 364 since at 365 you are 1 yr old
gen time2temp_lt1yr = .
  replace time2temp_lt1yr = earliestadm0_1 - date_bir if agegrp7 == 3 & noutil == 0

gen time2hosp_lt1yr = time2temp_lt1yr
  replace time2hosp_lt1yr = 2 if inrange(time2temp_lt1yr,2,6)
  replace time2hosp_lt1yr = 3 if inrange(time2temp_lt1yr,7,13)
  replace time2hosp_lt1yr = 4 if inrange(time2temp_lt1yr,14,29)
  replace time2hosp_lt1yr = 5 if inrange(time2temp_lt1yr,30,59)
  replace time2hosp_lt1yr = 6 if inrange(time2temp_lt1yr,60,89)
  replace time2hosp_lt1yr = 7 if inrange(time2temp_lt1yr,90,119)
  replace time2hosp_lt1yr = 8 if inrange(time2temp_lt1yr,120,149)
  replace time2hosp_lt1yr = 9 if inrange(time2temp_lt1yr,150,179)
  replace time2hosp_lt1yr = 10 if inrange(time2temp_lt1yr,180,209)
  replace time2hosp_lt1yr = 11 if inrange(time2temp_lt1yr,210,239)
  replace time2hosp_lt1yr = 12 if inrange(time2temp_lt1yr,240,269)
  replace time2hosp_lt1yr = 13 if inrange(time2temp_lt1yr,270,299)
  replace time2hosp_lt1yr = 14 if inrange(time2temp_lt1yr,300,329)
  replace time2hosp_lt1yr = 15 if inrange(time2temp_lt1yr,330,364)

#delimit ;
label define time2hosp_lt1yrval

```

```

0 "Day 0"
1 "Day 1"
2 "Day 2-6"
3 "Week 2"
4 "Week 3-4"
5 "Month 2"
6 "Month 3"
7 "Month 4"
8 "Month 5"
9 "Month 6"
10 "Month 7"
11 "Month 8"
12 "Month 9"
13 "Month 10"
14 "Month 11"
15 "Month 12";
#delimit cr

label values time2hosp_ltlyr time2hosp_ltlyrval

tab time2hosp_ltlyr if agegrp7 == 3 & inrange(ccccat,4,13),missing
tab time2hosp_ltlyr if agegrp7 == 3,missing

*** 25feb02 generate info for next age group (ge 1 yr)
***     ...start date is one year prior to death (365 days)
***     although birthday is day zero...CF may want to use 364 in calc
gen time2temp_gelyr = .
    replace time2temp_gelyr = earliestadm0_1 - (date_dth-365) if agegrp7 == 4 & noutil == 0
*** 25feb02 since earliestadm0_1 based on disch date, there will be some negative numbers, reset
those to 365
    replace time2temp_gelyr = 365 if time2temp_gelyr < 0

gen time2hosp_gelyr = .
    replace time2hosp_gelyr = 1 if inrange(time2temp_gelyr,0,29)
    replace time2hosp_gelyr = 2 if inrange(time2temp_gelyr,30,59)
    replace time2hosp_gelyr = 3 if inrange(time2temp_gelyr,60,89)
    replace time2hosp_gelyr = 4 if inrange(time2temp_gelyr,90,119)
    replace time2hosp_gelyr = 5 if inrange(time2temp_gelyr,120,149)
    replace time2hosp_gelyr = 6 if inrange(time2temp_gelyr,150,179)
    replace time2hosp_gelyr = 7 if inrange(time2temp_gelyr,180,209)
    replace time2hosp_gelyr = 8 if inrange(time2temp_gelyr,210,239)
    replace time2hosp_gelyr = 9 if inrange(time2temp_gelyr,240,269)
    replace time2hosp_gelyr = 10 if inrange(time2temp_gelyr,270,299)
    replace time2hosp_gelyr = 11 if inrange(time2temp_gelyr,300,329)
    replace time2hosp_gelyr = 12 if inrange(time2temp_gelyr,330,365)

#delimit ;
label define time2hosp_gelyrval
1 "Month 1"
2 "Month 2"
3 "Month 3"
4 "Month 4"
5 "Month 5"
6 "Month 6"
7 "Month 7"
8 "Month 8"
9 "Month 9"
10 "Month 10"
11 "Month 11"
12 "Month 12";
#delimit cr

```

```
label values time2hosp_gelyr time2hosp_gelyrval
```

```
*** 16apr02 the if clause is slightly different here because for age < 1y we restricted to
*** recs with at least one hosp whereas older kids did not need
*** ...noutil kids included which only applies to oldest age group
tab time2hosp_gelyr if agegrp7 == 4 & inrange(ccccat,4,13), missing
tab time2hosp_gelyr if agegrp7 == 4, missing
```

```
tab agegrp7 noutil, missing
```

```
log close
```

```
*****
** TABLE4.DO **
*****

*****
** Program: table4.do **
** **
** Created: 17apr02 **
** **
** By: DDiGiuseppe **
** **
** Purpose: Table 4 (after running process dihd.do) **
** **
*****
```

```
log using d:\feudtner\table4, replace
```

```
*** 17apr02 create hospday categories
```

```
gen daycat = .
  replace daycat = 0 if cumhospdays == 0
  replace daycat = 1 if cumhospdays == 1
  replace daycat = 2 if cumhospdays == 2
  replace daycat = 3 if cumhospdays == 3
  replace daycat = 4 if inrange(cumhospdays,4,7)
  replace daycat = 5 if inrange(cumhospdays,8,14)
  replace daycat = 6 if inrange(cumhospdays,15,21)
  replace daycat = 7 if inrange(cumhospdays,22,30)
  replace daycat = 8 if inrange(cumhospdays,31,60)
  replace daycat = 9 if inrange(cumhospdays,61,90)
  replace daycat = 10 if inrange(cumhospdays,91,365)
```

```
#delimit ;
```

```
label define daycatval
```

```
  0 "0"
  1 "1"
  2 "2"
  3 "3"
  4 "4-7"
  5 "8-14"
  6 "15-21"
  7 "22-30"
  8 "31-60"
  9 "61-90"
 10 "91-365"
```

```
;
```

```
#delimit cr
```

```
label values daycat daycatval
```

```

tab daycat if agegrp7 == 1,missing
tab daycat if agegrp7 == 1 & inrange(ccccat,4,13),missing

tab daycat if agegrp7 == 2,missing
tab daycat if agegrp7 == 2 & inrange(ccccat,4,13),missing

tab daycat if agegrp7 == 3,missing
tab daycat if agegrp7 == 3 & inrange(ccccat,4,13),missing

tab daycat if agegrp7 == 4, missing
tab daycat if agegrp7 == 4 & inrange(ccccat,4,13), missing

log close

```

```

*****
**  MODEL_FREQHOSP.DO                               **
*****

*****
** Program: model_freqhosp.do                       ***
**                                               ***
** Created: 28mar02                               ***
**                                               ***
** By:      DDiGiuseppe                           ***
**                                               ***
** Purpose: Neg binomial regression (after running process dihd.do)
** comparing frequency of hospitalization in different periods**
** during last year                               ***
**                                               ***
*****

```

```
log using d:\feudtner\model_freqhosp.smcl, replace
```

```

*****
*** 30mar02 create pgm to perform neg bin regression on pairs of periods
*** when called below

***SUBPROGRAM BEGIN*****
capture program drop nbrpgm
program define nbrpgm

    *** 30mar02 use temp modeling dset
    use d:\feudtner\TEMP_modeldset, clear

    local perlist "B C D E F G"
    local cccnam `1'
    local cccif "`2'"
    local admlos $admlog

    *** 30mar02 set up baseline var for graphing
    gen ir_A_`cccnam' = 1

    foreach perx in `perlist' {
        xi: nbreg admcount i.period age_days if inlist(period,"A","`perx'") `cccif', exp(permos)
    }
    cluster(majkey) irr nolog

    *** 30mar02 coefficient estimates are saved into a matrix called e(b)

```

```

*** ...from stata programming manual (p.177) it looks like in order to use these values
must
*** first save them into a new matrix
*** ...save these into new matrix then output value
*** ...this will output all estimates to first rec even if not used in estimation so that
*** i can then use first rec to graph
capture matrix drop tempb
matrix tempb = get(_b)
gen ir_`perx'`cccnam' = exp(tempb[1,1])
}

*** 30mar02 keep first row only with coeff estimates
keep if _n == 1

*** 30mar02 gen row id for transpose
gen id = 1

*** 30mar02 transpose and drop irrelevant vars
reshape long ir_, i(id) j(perx) string
keep id ir_ perx

*** 30mar02 convert period to number for graphing
gen perxnum = 1
replace perxnum = 2 if substr(perx,1,1) == "B"
replace perxnum = 3 if substr(perx,1,1) == "C"
replace perxnum = 4 if substr(perx,1,1) == "D"
replace perxnum = 5 if substr(perx,1,1) == "E"
replace perxnum = 6 if substr(perx,1,1) == "F"
replace perxnum = 7 if substr(perx,1,1) == "G"

graph ir_ perxnum, saving(rrh_`admlos'`cccnam',replace) t1("$admlog_`cccnam'")

end
***SUBPROGRAM END*****
*****

*** 30mar02 create pgm that will read in either straight admits or los-weighted admits

***PROGRAM BEGIN*****
capture program drop nbrpreppgm
program define nbrpreppgm

local admlos `1'
global admlog `1'

#delimit ;
use majkey ccccat date_bir date_dth dage
cumcnt`admlos'_m12m7 cumcnt`admlos'_m6 cumcnt`admlos'_m5 cumcnt`admlos'_m4 cumcnt`admlos'_m3
cumcnt`admlos'_m2 cumcnt`admlos'_m1
using d:\feudtner\dihdprocess9096, clear;
#delimit cr

*** 28mar02 keep only ccc cases
keep if inrange(ccccat,4,13)

*** 28mar02 keep only those at least one year old
keep if dage > 0

*** 28mar02 rename admit cnt vars so easier to deal with after reshaping

```

```

rename cumcnt`admlos'_m12m7 admcountA
rename cumcnt`admlos'_m6 admcountB
rename cumcnt`admlos'_m5 admcountC
rename cumcnt`admlos'_m4 admcountD
rename cumcnt`admlos'_m3 admcountE
rename cumcnt`admlos'_m2 admcountF
rename cumcnt`admlos'_m1 admcountG

```

```

reshape long admcount, i(majkey) j(period) string

```

```

*** 28mar02 set up age at midpoint of period
***   ...periods are based on months of 30.4 days (365/12)
***   ...need to do this starting from date_dth and working
***   backwards since that is how the periods were created
***   in process dihd.do

```

```

local daysperperiod 30.4

```

```

gen dayGmid = date_dth - round(`daysperperiod',1) + 15
gen dayFmid = date_dth - round(`daysperperiod'*2,1) + 15
gen dayEmid = date_dth - round(`daysperperiod'*3,1) + 15
gen dayDmid = date_dth - round(`daysperperiod'*4,1) + 15
gen dayCmid = date_dth - round(`daysperperiod'*5,1) + 15
gen dayBmid = date_dth - round(`daysperperiod'*6,1) + 15
gen dayAmid = date_dth - 365 + 182

```

```

*** 28mar02 age at midpoint of period
gen age_days = .
  replace age_days = dayGmid - date_bir if period == "G"
  replace age_days = dayFmid - date_bir if period == "F"
  replace age_days = dayEmid - date_bir if period == "E"
  replace age_days = dayDmid - date_bir if period == "D"
  replace age_days = dayCmid - date_bir if period == "C"
  replace age_days = dayBmid - date_bir if period == "B"
  replace age_days = dayAmid - date_bir if period == "A"

```

```

drop day*

```

```

*** 28mar02 set up var containing number of months for each period
gen permos = 1
  replace permos = 6 if period == "A"

```

```

*** 30mar02 save output to perm file so can run nbreg prog mult ways
save d:\feudtner\TEMP_modeldset, replace

```

```

*** 28mar02 run neg bin regs for all cccs
nbrpgm all

```

```

*** 28mar02 run neg bin regs for cardiac
nbrpgm cardiac "& ccccat == 4" 4

```

```

*** 28mar02 run neg bin regs for neuro
nbrpgm neuro "& ccccat == 5" 5

```

```

*** 28mar02 run neg bin regs for cancer
nbrpgm cancer "& ccccat == 6" 6

```

```

end

```

```

***PROGRAM END*****

```

```
set more off  
cd d:\feudtner  
*** 30mar02 run program for unweighted admits  
nbrpreppgm adm  
*** 30mar02 run program for weighted admits  
nbrpreppgm los  
  
#delimit ;  
graph using rrh_adm_all rrh_adm_cardiac rrh_adm_neuro rrh_adm_cancer  
rrh_los_all rrh_los_cardiac rrh_los_neuro rrh_los_cancer,  
saving(rrh,replace);  
#delimit cr  
  
log close
```

```
*****  
** FIGURE2 DATA.DO **  
*****  
  
*****  
** Program: figure2 data.do **  
** **  
** Created: 06sep01 **  
** **  
** By: DDiGiuseppe **  
** **  
** Purpose: output Figure 2 data for spreadsheet reconstruction**  
** of figure **  
** **  
*****
```

```
*****  
*** INPUT DATA *****  
*****
```

```
clear  
set more off  
set mem 25m  
use dihdprep`1', clear  
append using dihdprep91  
append using dihdprep92  
append using dihdprep93  
append using dihdprep94  
append using dihdprep95  
append using dihdprep96  
keep majkey date_dth date_adm date_dis dage  
  
*** 12sep01 sample data  
*use dihdprepxx, clear
```

```
*****
```

```

*** ATTACH CCC INFO *****
*****
*** 12sep01 this code needs to use each hosp rec
***   which means multiple recs per person, however
***   ccc status is assigned after collapsing over
***   mult recs to get 1 rec per person...so ccc
***   status saved in separate file (see process dihd.do
***   and majkey2ccccat.do) and merged in here

sort majkey

merge majkey using majkey2ccccat
  tabulate _merge

keep if _merge == 3

drop _merge

*****
*** KEEP CCC folks only *****
*****

keep if inrange(ccccat,4,13)

keep if dage >= 1

drop dage ccccat

*****
*** FIGURE 2 *****
*****

*** 26feb02 need to sort so that additional criteria to avoid double counting works
***   ...see below
sort majkey date_adm date_dis

gen testdate = .

*** set number of days from death interested in viewing
local dayhold = 365

local i = 0
gen str2 j = ""
while `i' <= `dayhold' {
  quietly replace testdate = date_dth - (`dayhold' - `i')

  quietly replace j = "00" if `i' < 10
  quietly replace j = "0" if `i' >= 10 & `i' < 100
  quietly replace j = "" if `i' >= 100
  local j = j

  gen int x`j'`i' = 0
  quietly replace x`j'`i' = 1 if testdate >= date_adm & testdate <= date_dis & (majkey !=
majkey[_n-1] | x`j'`i'[_n-1] != 1)

  gen int y`j'`i' = 0
  quietly replace y`j'`i' = sum(x`j'`i')

  local i = `i' + 1
}

```

```

format testdate %d

drop x*

*** keep only last record
keep if _n == _N

*** tranpose dataset
reshape long y, i(majkey) j(day) string

*** convert string var to numeric for graphing
gen x = real(day)

keep y x

*** label for x-axis
#delimit ;
label define xval
  365 "Death"
  274 "-3 mo"
  182 "-6 mo"
  91 "-9 mo"
  0 "-1 yr";
#delimit cr

label values x xval

*** convert count into proportion
*** 26feb02 hardcoded to 1345 which is num obs from describe
*** run before dropping all but last obs of all obs, all people (above) and running
*** adhoc code to hold last obs of each person (by majkey: drop if _n != _N)
gen yp = round(y/1345,0.001)

*** 23apr02 numbers for Excel
save d:\feudtner\figure2, replace

*****
** MAJKEY2CCCCAT.DO **
*****

*****
*** CONTROL STATEMENTS *****
*****

*** open log file
*log using "`outdir'\majkey2cccat.smcl", replace

*****
** Program: majkey2cccat.do **
** **
** Created: 12sep01 **
** **
** By: DDiGiuseppe **
** **
** Purpose: mapping to use in figure 2 **

```

```
**      (after running process dihd.do)          ***
**                                              ***
** Edits:                                       ***
**                                              ***
*****
```

```
keep majkey ccccat
sort majkey
save majkey2cccat, replace
```

```
*****
*****
***** FINIS *****
*****
*****
```