Analyses based on the reconstructed Danish Diabetes Register

Changes in HbA_{1c}

SDC
January 2019
http://bendixcarstensen.com/DMreg/NewAna.pdf
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Contents

Chapter 1

Data

The maintenance of the National Diabetes Register (NDR) has been discontinued by the Health Data Authority (Sundhedsdatastyrelsen). It has been replaced by the Register of Selected Chronic Diseases (RUKS — Register for Udvalgte Kroniske Sygdomme) which however does not encompass precisely the same persons.

A replacement of the NDR with greater precision than both RUKS and NDR has therefore beeen constructed; it is documented in the report
http://BendixCarstensen.com/DMreg/NewReg.pdf, which also documents the construction of the follow-up and prevalence data used in the analyses done here.

```
---------------------------------------
Home: E:/workdata/705093/BXC/demoDM/nyr
Time: 2019-06-03 17:39:38
---------------------------------------
```

Chapter 2

Register with HbA_{1c} measurements

First we read the register file:

```
> system.time( hb <- read_sas("../data/DMhb.sas7bdat") )
   user  system elapsed
   4.03    0.16   18.67
> hb <- cal.yr( as.data.frame(hb) )
> dim( hb )
[1] 474700     27
> names( hb )
 [1] "pnr"    "doAb"   "lab"    "Hb_b"   "doNPR"  "doDVDD" "doOAD"  "doIns"  "doOAD2"
[10] "doIns2" "doPod"  "doDiaB" "sex"    "doBth"  "doDth"  "doDM"   "inCr"   "inCr2"
[19] "doDM2"  "DMtp"   "doAa"   "Hb_a"   "doHb"   "Hb"     "diff"   "difb"   "difa"
```

The file contains two variables with HbA_{1c} measurements, `Hb_b` made at `doAb` which is the *last* measurment *before* `doDM`, and `Hb_a` made at `doAb` which is the *first* measurment *doDM* `doDM`. The variables `Hb` and `doHb`

A brief overview of the available HbA_{1c}measurements and the dstance to date of diagnosis:

```
> ( wh <- c( grep("Hb", names( hb ) ),
+            grep("oA", names( hb ) ),
+            grep("if", names( hb ) ) ) )
[1]  4 22 23 24  2 21 25 26 27
> table( hb$doDM>2010 )
 FALSE   TRUE
335658 139042
> summary( hb[hb$doDM>2010, wh ] )
      Hb_b             Hb_a             doHb             Hb              doAb
 Min.   : 11.00   Min.   :  0.00   Min.   :2009   Min.   :  0.00   Min.   :2009
 1st Qu.: 47.00   1st Qu.: 43.00   1st Qu.:2013   1st Qu.: 44.00   1st Qu.:2012
 Median : 52.00   Median : 48.00   Median :2015   Median : 50.00   Median :2015
 Mean   : 60.26   Mean   : 52.24   Mean   :2015   Mean   : 55.78   Mean   :2014
 3rd Qu.: 66.00   3rd Qu.: 55.00   3rd Qu.:2016   3rd Qu.: 60.00   3rd Qu.:2016
 Max.   :185.00   Max.   :214.00   Max.   :2019   Max.   :214.00   Max.   :2017
 NA's   :87961    NA's   :38931    NA's   :36358  NA's   :36359    NA's   :87961
      doAa            diff             difb              difa
 Min.   :2010   Min.   :-3107.0   Min.   :   0.00   Min.   :   1
 1st Qu.:2014   1st Qu.: -787.0   1st Qu.:   5.00   1st Qu.:  69
 Median :2015   Median :  -48.0   Median :  11.00   Median : 237
```

```
 Mean   :2015    Mean   : -420.8   Mean   :  69.13   Mean   : 525
 3rd Qu.:2016    3rd Qu.:    7.0   3rd Qu.:  40.00   3rd Qu.: 879
 Max.   :2019    Max.   : 2356.0   Max.   :2436.00   Max.   :3107
 NA's   :38930   NA's   :36358     NA's   :87961     NA's   :38930
> fCtable( with( hb, addmargins( table(!is.na(Hb_b),!is.na(Hb_a) ) ) ) )
           FALSE      TRUE       Sum

FALSE    215,082   208,537   423,619
TRUE       2,572    48,509    51,081
Sum      217,654   257,046   474,700
```

We restrict the dataset to those diagnosed after 2010-01-01, because this where there is a HbA_{1c} measurment in the interval from 90 days before to 30 days after `doDM`:

```
> hbb <- subset( hb, doDM>2010 )
> hbx <- subset( hbb, ( !is.na(doAb) & !is.na(Hb_b) & doDM-doAb<(90/365.25) ) |
+                     ( !is.na(doAa) & !is.na(Hb_a) & doAa-doDM<(30/365.25) ) )
> # if no measurement before or the after is more than 3 times closer
> hbx <- transform( hbx, Hb = ifelse( is.na(Hb_b) |
+                                   ( !is.na(Hb_a) &
+                                     !is.na(Hb_b) &
+                                    (doAa-doDM) < ((doDM-doAb)/3) ),
+                                     Hb_a,
+                                     Hb_b ) )
```

We can list the number of persons included after 2010, and how many of these who have a HbA_{1c} measurement:

```
> bb <- addmargins( with( hbb, table( P=floor(doDM), sex, DMtp ) ) )
> xx <- addmargins( with( hbx, table( P=floor(doDM), sex, DMtp ) ) )
> fCtable( bb, row.vars=1, w=7 )
     sex        1                        2                      Sum
     DMtp      T1      T2     Sum      T1      T2     Sum      T1       T2      Sum
P
2010          598  11,966  12,564     412   9,427   9,839   1,010   21,393   22,403
2011          542  13,413  13,955     400  11,161  11,561     942   24,574   25,516
2012          525  11,039  11,564     345   9,110   9,455     870   20,149   21,019
2013          497   8,727   9,224     409   6,960   7,369     906   15,687   16,593
2014          508   8,693   9,201     405   6,566   6,971     913   15,259   16,172
2015          521   9,633  10,154     408   7,480   7,888     929   17,113   18,042
2016          522  10,451  10,973     366   7,958   8,324     888   18,409   19,297
Sum         3,713  73,922  77,635   2,745  58,662  61,407   6,458  132,584  139,042
> fCtable( xx, row.vars=1, w=7 )
     sex        1                        2                      Sum
     DMtp      T1      T2     Sum      T1      T2     Sum      T1       T2      Sum
P
2010           56   1,820   1,876      48   1,361   1,409     104    3,181    3,285
2011          111   2,314   2,425      60   1,816   1,876     171    4,130    4,301
2012          113   2,417   2,530      59   1,927   1,986     172    4,344    4,516
2013          111   1,769   1,880      72   1,428   1,500     183    3,197    3,380
2014          210   4,182   4,392     161   3,140   3,301     371    7,322    7,693
2015          291   5,523   5,814     240   4,169   4,409     531    9,692   10,223
2016          342   7,423   7,765     243   5,347   5,590     585   12,770   13,355
Sum         1,234  25,448  26,682     883  19,188  20,071   2,117   44,636   46,753
> fCtable( xx*100/bb, row.vars=1, d=1, w=7 )
```

```
     sex        1                    2                  Sum
     DMtp      T1      T2     Sum     T1      T2     Sum     T1      T2     Sum
P
2010          9.4    15.2    14.9   11.7    14.4    14.3   10.3    14.9    14.7
2011         20.5    17.3    17.4   15.0    16.3    16.2   18.2    16.8    16.9
2012         21.5    21.9    21.9   17.1    21.2    21.0   19.8    21.6    21.5
2013         22.3    20.3    20.4   17.6    20.5    20.4   20.2    20.4    20.4
2014         41.3    48.1    47.7   39.8    47.8    47.4   40.6    48.0    47.6
2015         55.9    57.3    57.3   58.8    55.7    55.9   57.2    56.6    56.7
2016         65.5    71.0    70.8   66.4    67.2    67.2   65.9    69.4    69.2
Sum          33.2    34.4    34.4   32.2    32.7    32.7   32.8    33.7    33.6
```

A very crude simple analysis is a spline model for HbA_{1c} separately for T1 and T2 and men and women:

```
> m1 <- glm( Hb ~ Ns( doDM, knots=seq(2010,2017,,4) ), data = subset(hbx,DMtp=="T1"&sex==1) )
> f1 <- glm( Hb ~ Ns( doDM, knots=seq(2010,2017,,4) ), data = subset(hbx,DMtp=="T1"&sex==2) )
> m2 <- glm( Hb ~ Ns( doDM, knots=seq(2010,2017,,8) ), data = subset(hbx,DMtp=="T2"&sex==1) )
> f2 <- glm( Hb ~ Ns( doDM, knots=seq(2010,2017,,8) ), data = subset(hbx,DMtp=="T2"&sex==2) )
> pf <- data.frame( doDM=seq(2010,2017,0.1) )
> par( mar=c(3,3,1,1), mgp=c(3,1,0)/1.6, las=1, bty="n" )
> matshade( pf$doDM, cbind( ci.pred( m1, pf ),
+                           ci.pred( f1, pf ),
+                           ci.pred( m2, pf ),
+                           ci.pred( f2, pf ) ), plot=TRUE,
+           lty=rep(c("22","solid"),each=2), lend="butt", lwd=3,
+           col=c("blue","red"), xaxt="n", xlim=c(2009.8,2017), ylim=c(30,120),
+           xlab="Date of inclusion", ylab=expression('Mean '*HbA[1][c]*' (mmol/mmol)') )
> axis( side=1, at=2010:2017, labels=NA )
> axis( side=1, at=2010:2016+0.5, labels=2010:2016, tcl=0 )
> axis( side=2, at=3:11*10, labels=NA )
```

To further explore the pattern we make a quantile regression for a select set of quantiles:

```
> library( quantreg )
> qnt <- c(5,10,25,50,75,90,95)/100
> nq <- length( qnt )
> slopes <- NArray( list( sex=c("M","F"),
+                         qnt=qnt*100,
+                        when=c("<2012",">2011"),
+                             c("Est","lo","hi") ) )
> prq <- NULL
> for( q in qnt )
+    {
+ ml <- rq( Hb ~ pmin(doDM-2012,0)+pmax(doDM-2012,0), tau=q, data = subset(hbx,DMtp=="T2"&sex=
+ fl <- rq( Hb ~ pmin(doDM-2012,0)+pmax(doDM-2012,0), tau=q, data = subset(hbx,DMtp=="T2"&sex=
+ slopes["M",paste(q*100),,] <- ci.exp( ml, subset="doDM", Exp=FALSE )
+ slopes["F",paste(q*100),,] <- ci.exp( fl, subset="doDM", Exp=FALSE )
+ m <- rq( Hb ~ Ns( doDM, knots=seq(2010,2017,,8) ), tau=q, data = subset(hbx,DMtp=="T2"&sex==
+ f <- rq( Hb ~ Ns( doDM, knots=seq(2010,2017,,8) ), tau=q, data = subset(hbx,DMtp=="T2"&sex==
+ prq <- cbind( prq, predict( m, newdata=pf, interval="confidence" ),
+                    predict( f, newdata=pf, interval="confidence" ) )
+    }
> colnames( prq ) <- apply( expand.grid( c("M","ml","mu",
+                                          "W","wl","wu"), qnt*100 ), 1, paste, collapse="" )
> round( cbind( pf$doDM, prq[,5:12] )[1+0:14*5,], 1 )
          wl 5 wu 5  M10 ml10 mu10  W10 wl10 wu10
1  2010.0 35.6 40.1 41.0 40.6 41.3 40.0 38.1 41.9
```

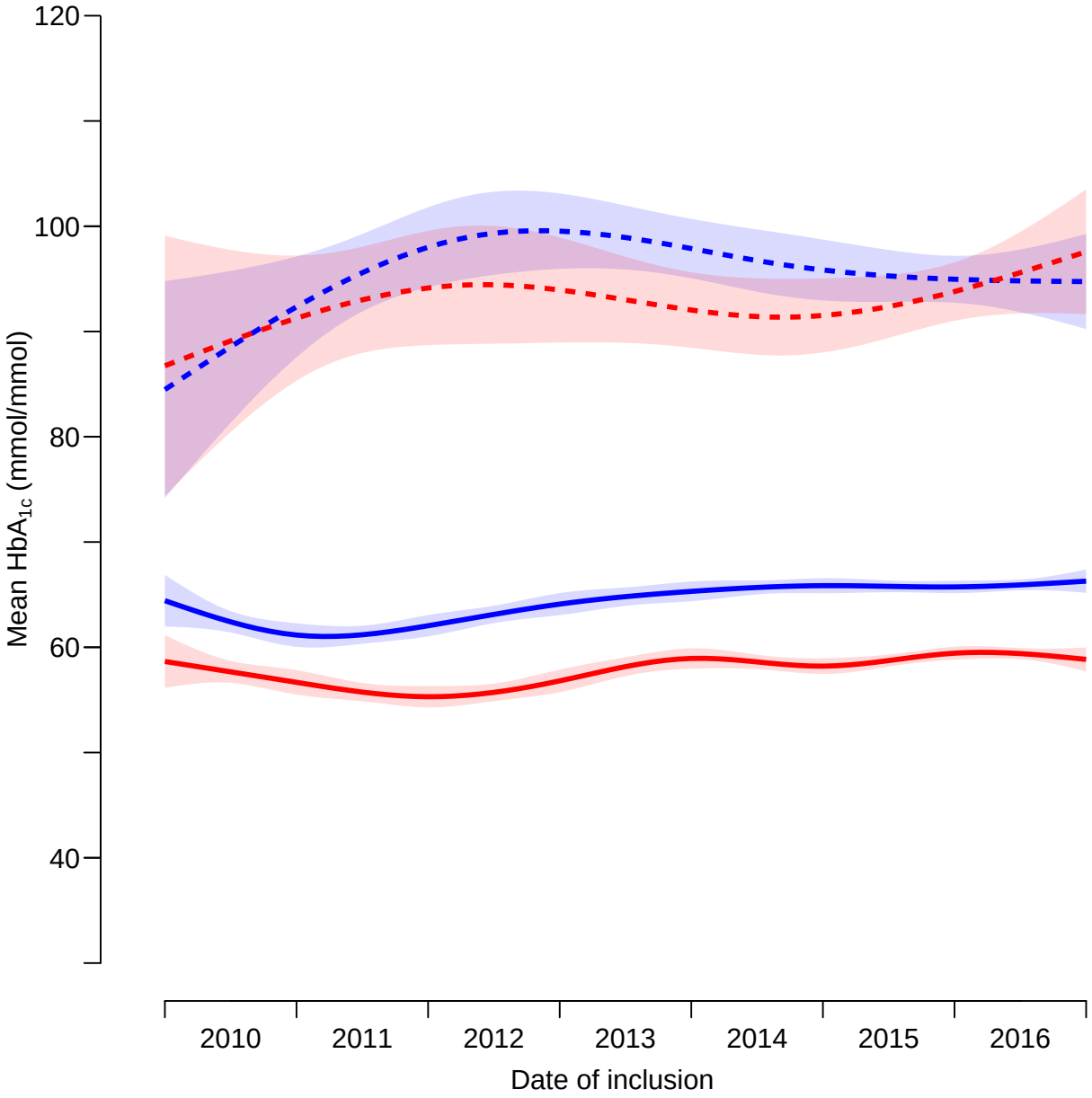

Figure 2.1: *Mean HbA_{1c} separately for men (blue) and women (red) and T1D (broken lines) and T2D (full lines). The shaded areas indicate 95% confidence intervals.* `./graph/hba-lm`

```
6  2010.5 36.0 37.8 41.0 40.7 41.3 40.0 39.2 40.8
11 2011.0 35.8 37.3 41.0 40.5 41.5 40.0 39.4 40.6
16 2011.5 36.6 37.6 41.0 40.6 41.5 40.0 39.6 40.4
21 2012.0 36.9 38.2 41.6 41.1 42.1 40.0 39.5 40.5
26 2012.5 36.2 37.9 43.0 42.6 43.5 40.0 39.4 40.6
31 2013.0 34.8 37.4 44.5 43.9 45.1 40.0 39.1 40.9
36 2013.5 34.2 36.4 45.0 44.5 45.5 40.0 39.0 41.0
41 2014.0 33.8 36.2 45.0 44.4 45.5 40.0 38.6 41.4
46 2014.5 34.4 36.1 44.8 44.5 45.2 40.1 39.1 41.0
51 2015.0 35.2 37.0 45.1 44.7 45.5 40.7 39.8 41.5
56 2015.5 36.6 38.0 46.0 45.7 46.3 42.0 41.4 42.6
```

```
61 2016.0 37.2 38.9 46.9 46.5 47.2 43.1 42.4 43.8
66 2016.5 36.8 38.1 47.1 46.8 47.4 42.9 42.2 43.6
71 2017.0 34.7 37.2 46.9 46.3 47.5 41.9 40.2 43.7
```

```
> round( ftable( slopes, row.vars=2:1 ), 1 )
```

```
        when <2012           >2011
              Est   lo   hi   Est   lo   hi
qnt sex
5   M         0.0 -0.3  0.3   1.1  0.9  1.2
    F         0.0 -0.8  0.8   0.0 -0.2  0.2
10  M         0.8  0.5  1.1   1.1  1.0  1.2
    F        -0.2 -0.9  0.5   0.7  0.5  0.9
25  M         1.7  1.2  2.1   0.6  0.5  0.7
    F        -0.2 -0.5  0.2   0.9  0.8  1.0
50  M         0.0 -0.6  0.6   0.9  0.7  1.0
    F        -0.1 -0.6  0.4   0.6  0.4  0.7
75  M         0.5 -1.9  3.0   1.2  0.6  1.8
    F        -2.3 -4.1 -0.5   1.2  0.8  1.6
90  M         0.6 -1.5  2.7   0.3 -0.2  0.7
    F        -3.7 -7.7  0.3   1.2  0.4  2.0
95  M         2.8  0.3  5.3  -0.4 -1.0  0.2
    F        -4.5 -8.0 -1.0   0.9  0.1  1.7
```

```
> par( mar=c(3,1,1,1), mfrow=c(1,2), mgp=c(3,1,0)/1.6, oma=c(0.2,0,1,0) )
>  plotEst( rbind( slopes["M",,"<2012",], '%ile'=NA ),
+           y=c(1:7,7.1)+0.2, col="blue", lwd=2, cex=1.5,
+           xlim=c(-5,5), xtic=-5:5, txtpos=c(1:7,7.5) )
> linesEst( slopes["F",,"<2012",], y=1:7-0.2, col="red" , lwd=2, cex=1.5 )
>  abline(v=0)
>  plotEst( rbind( slopes["M",,">2011",], '%ile'=NA ),
+           y=c(1:7,7.1)+0.2, col="blue", lwd=2, cex=1.5,
+           xlim=c(-5,5), xtic=-5:5, txtpos=c(1:7,7.5) )
> linesEst( slopes["F",,">2011",], y=1:7-0.2, col="red" , lwd=2, cex=1.5 )
> abline(v=0)
> mtext( c("2010-2011","2012-2016"), at =c(1,3)/4, outer=TRUE, side=3, line=0 )
> mtext( rep("Change in mmol/mol / year",2), at =c(1,3)/4, outer=TRUE, side=1, line=-1 )
```

```
> par( mar=c(3,3,1,1), mgp=c(3,1,0)/1.6, las=1, bty="n" )
> matshade( pf$doDM, prq, xlim=c(2009.8,2017), ylim=c(30,120), plot=T,
+           lty=1, type="l", lwd=rep(c(1,2,3,4,3,2,1),each=2), col=c("blue","red"), xaxt="n",
+           xlab="Date of diagnosis",
+           ylab=expression(HbA[1][c]*' (mmol/mmol)') )
> axis( side=1, at=2010:2017, labels=NA )
> axis( side=1, at=2010:2016+0.5, labels=2010:2016, tcl=0 )
> axis( side=2, at=3:11*10, labels=NA )
> text( 2010-0.1, (prq[1,1:nq*6-2]+
+                  prq[1,1:nq*6-5])/2,
+       paste( qnt*100 ), adj=1 )
> text( par("usr")[1]+0.02, par('usr')[4], "%ile", adj=c(0,1) )
> abline( h=48, lty=3 )
```

```
> par( mar=c(3,3,1,1), mgp=c(3,1,0)/1.6, las=1, bty="n" )
> matshade( pf$doDM, prq, xlim=c(2009.8,2017), ylim=c(30,120), plot=T,
+           lty=1, type="l", lwd=rep(c(1,2,3,4,3,2,1),each=2),
+           col=c("blue","transparent"), xaxt="n",
```

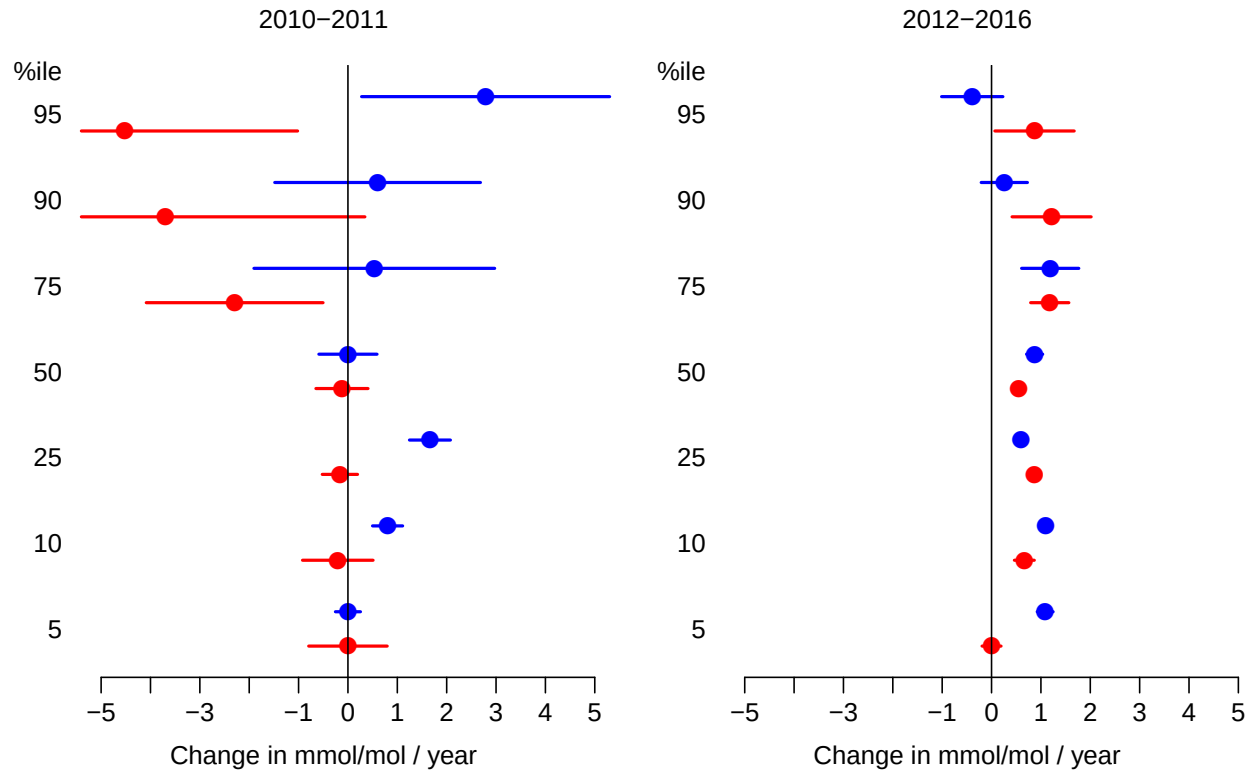

Figure 2.2: *Slopes, . . .* `./graph/hba-slopes`

```
+           xlab="Date of diagnosis",
+           ylab=expression(HbA[1][c]*' (mmol/mmol)') )
> axis( side=1, at=2010:2017, labels=NA )
> axis( side=1, at=2010:2016+0.5, labels=2010:2016, tcl=0 )
> axis( side=2, at=3:11*10, labels=NA )
> text( 2010-0.1, prq[1,1:nq*6-5], paste( qnt*100 ), adj=1 )
> text( par("usr")[1]+0.02, par('usr')[4], "%ile", adj=c(0,1) )
> abline( h=48, lty=3 )


> par( mar=c(3,3,1,1), mgp=c(3,1,0)/1.6, las=1, bty="n" )
> matshade( pf$doDM, prq, xlim=c(2009.8,2017), ylim=c(30,120), plot=T,
+           lty=1, type="l", lwd=rep(c(1,2,3,4,3,2,1),each=2),
+           col=c("transparent","red"), xaxt="n",
+           xlab="Date of diagnosis",
+           ylab=expression(HbA[1][c]*' (mmol/mmol)') )
> axis( side=1, at=2010:2017, labels=NA )
> axis( side=1, at=2010:2016+0.5, labels=2010:2016, tcl=0 )
> axis( side=2, at=3:11*10, labels=NA )
> text( 2010-0.1, prq[1,1:nq*6-2], paste( qnt*100 ), adj=1 )
> text( par("usr")[1]+0.02, par('usr')[4], "%ile", adj=c(0,1) )
> abline( h=48, lty=3 )


----------------------
2019-06-03 at 17:40:10
Time elapsed: 00:00:32
----------------------
```

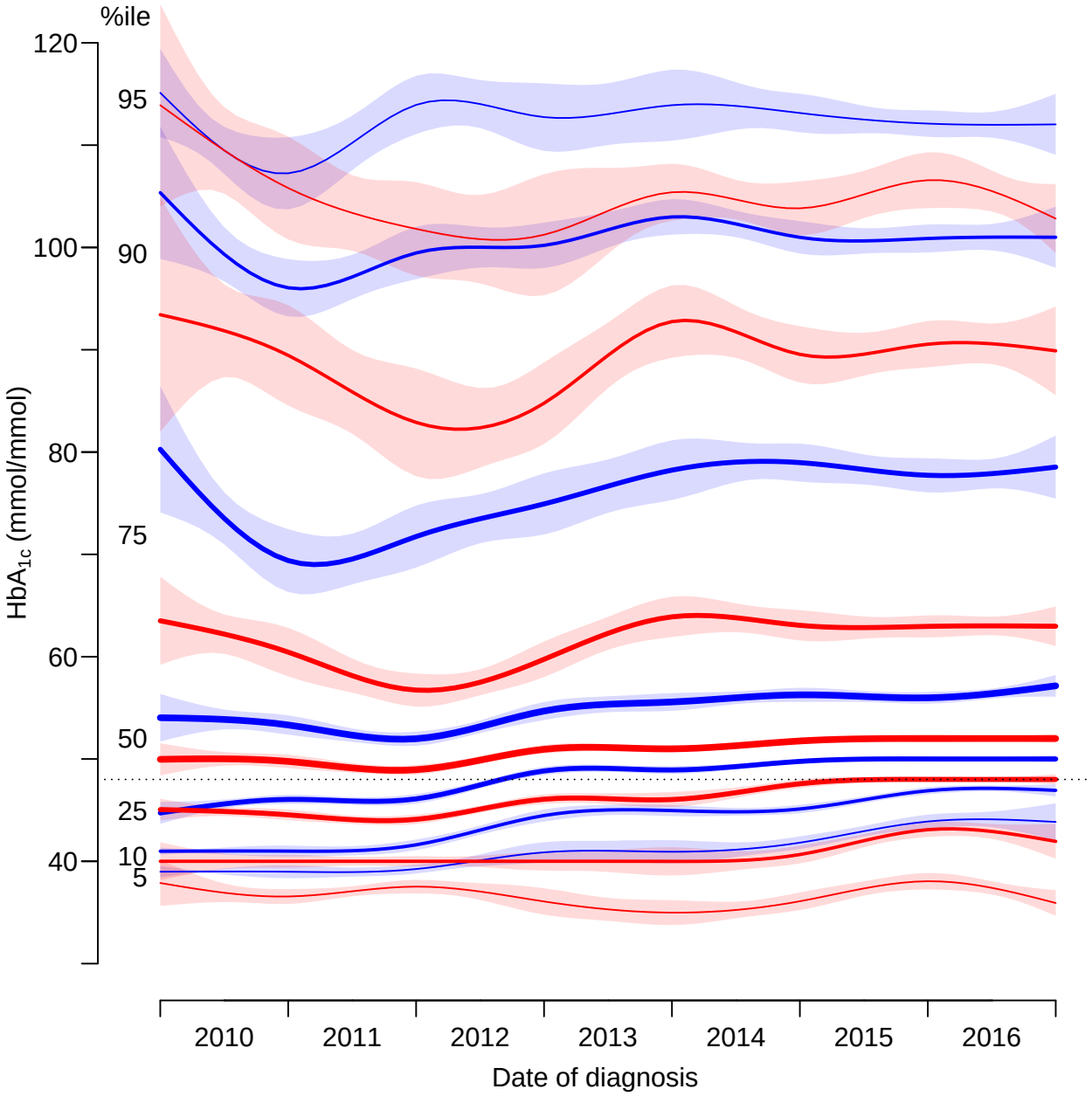

Figure 2.3: *Quantile regression for the HbA_{1c} for T2D, red curves are for women and blue for men; the percentiles are indicated at the l.h.s of the curves. The shaded areas indicate 95% confidence intervals.* `./graph/hba-qr`

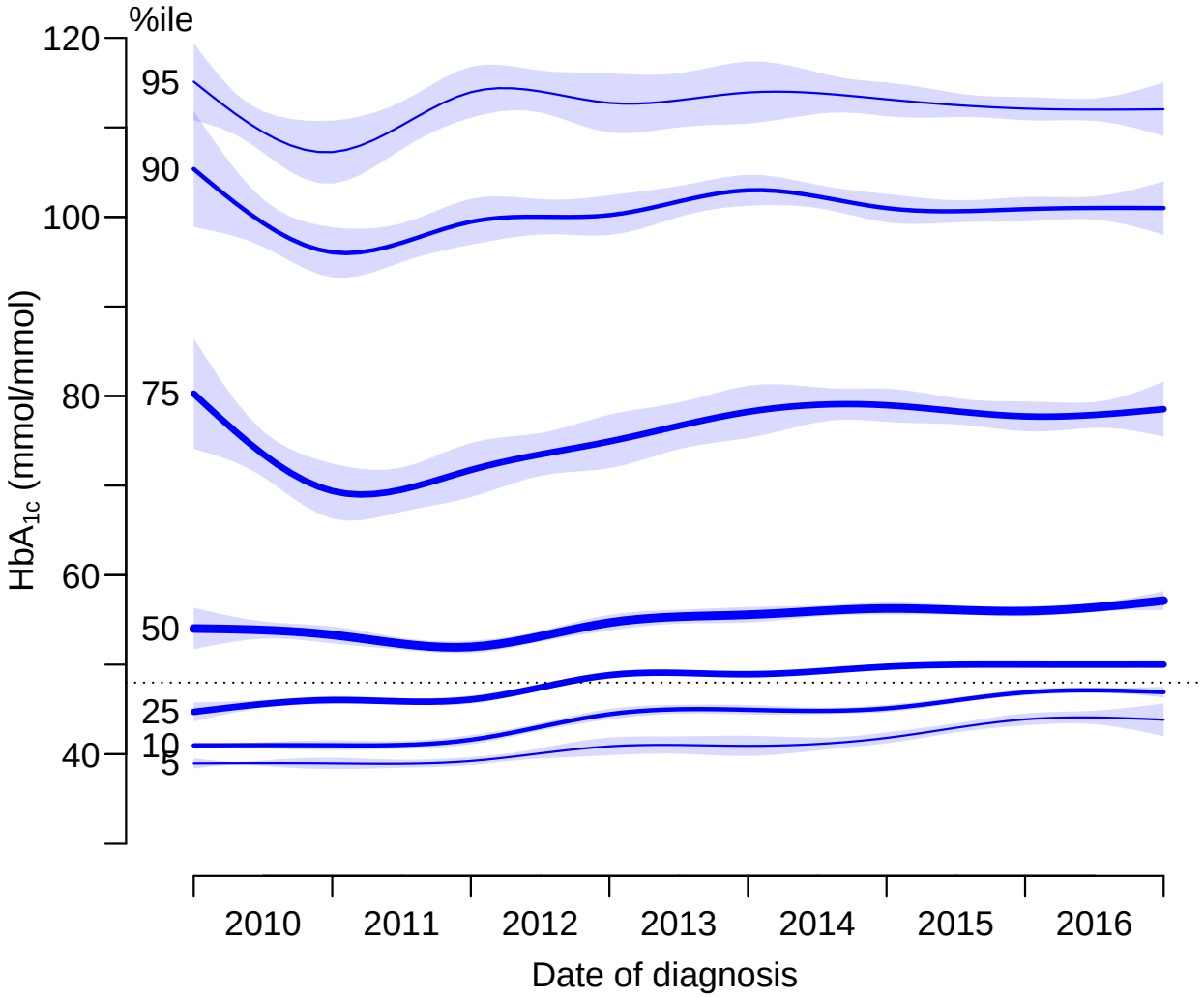

Figure 2.4: *Quantile regression for the HbA_{1c} for T2D men; the percentiles are indicated at the l.h.s of the curves. The shaded areas indicate 95% confidence intervals.* `./graph/hba-qrm`

Figure 2.5: *Quantile regression for the HbA_{1c} for T2D women; the percentiles are indicated at the l.h.s of the curves. The shaded areas indicate 95% confidence intervals.* `./graph/hba-qrf`

Chapter 3

SAS programs

3.1 10-labka

Reads the labka database and extracts the HbA_{1c} measurements.

```
1                                  "Program: 10-labka.sas"  13:28 Tuesday, November 27, 2018

NOTE: Copyright (c) 2002-2012 by SAS Institute Inc., Cary, NC, USA.
NOTE: SAS (r) Proprietary Software 9.4 (TS1M3)
      Licensed to FORSKNING 1, Site 50800722.
NOTE: This session is executing on the X64_SRV12  platform.



NOTE: Updated analytical products:

      SAS/STAT 14.1

NOTE: Additional host information:

 X64_SRV12 WIN 6.2.9200  Server

NOTE: SAS initialization used:
      real time           0.09 seconds
      cpu time            0.10 seconds


NOTE: AUTOEXEC processing beginning; file is
      E:\workdata\705093\BXC\demoDM\sas\optslibs.sas.


NOTE: AUTOEXEC processing completed.

1          proc contents  data = ekstn.lab_dm_forsker ; run ;

NOTE: PROCEDURE CONTENTS used (Total process time):
      real time           0.15 seconds
      cpu time            0.03 seconds

NOTE: The PROCEDURE CONTENTS printed page 1.

2
3          data hb ;
4            set  ekstn.lab_dm_forsker ( obs = max
5                                       rename = ( LABORATORIUM_IDCODE = lab
6                                                  SAMPLINGDATE = doA ) ) ;
7            keep pnr hb lab doA moA unit value ;
8            if ( ANALYSISCODE in ('NPU27412'
9                                  'NPU27300'
```

```
10                                 'DNK35249'
11                                 'NPU29296'
12                               /* 'NPU03835' Fishy values appear, always in [0,1] */
13                                 'NPU02307') ) ;
14           hb = input( translate(value,'.',','), 12. ) ; /* Respects decimal points */
15           unit = translate( unit, 'l', 'L' ) ;
16           moA = doA ;
17         run ;

NOTE: Invalid argument to function INPUT at line 14 column 8.
( deleted )
NOTE: Mathematical operations could not be performed at the following places. The results
      of the operations have been set to missing values.
      Each place is given by: (Number of times) at (Line):(Column).
      61 at 14:8
NOTE: There were 299280470 observations read from the data set EKSTN.LAB_DM_FORSKER.
NOTE: The data set WORK.HB has 18069165 observations and 7 variables.
NOTE: DATA statement used (Total process time):
      real time           27:17.33
      cpu time            1:29.14


18
19         proc tabulate  data = hb  missing  noseps ;
20           class lab doA moA unit ;
21             var hb ;
22           table all lab,
23                 all * f=comma10.
24                 doA * f=6.
25                 / rts = 5 ;
26           table all moA,
27                 hb * unit * ( n * f=comma9.
28                               ( p10 p25 p50 p75 p90 ) * f=5.1 )
29                 / rts = 9 ;
30           format doA year4.
31                  moA yymmc7. ;
32         run ;

NOTE: There were 18069165 observations read from the data set WORK.HB.
NOTE: At least one W.D format was too small for the number to be printed. The decimal may
      be shifted by the "BEST" format.
NOTE: The PROCEDURE TABULATE printed pages 2-4.
NOTE: PROCEDURE TABULATE used (Total process time):
      real time           5.35 seconds
      cpu time            20.23 seconds


33
34         * There are exactly two records for each HbA1c measurement, one
35           in mmol/l and one in mmol/mol, so we select mmol/mol records only ;
36
37         data DMdat.hb ;
38           set hb ( where = ( unit eq 'mmol/mol' )
39                    label = 'HbA1c measurements from LABKA' ) ;
40           keep pnr hb lab doA ;
41         run ;

NOTE: There were 9035975 observations read from the data set WORK.HB.
      WHERE unit='mmol/mol';
NOTE: The data set DMDAT.HB has 9035975 observations and 4 variables.
NOTE: DATA statement used (Total process time):
      real time           4.40 seconds
      cpu time            2.78 seconds


42
43         /*
44         proc sort data = hb ;
45           by pnr doA ;
46         run ;
```

```
47
48         proc print data = hb  ( obs=2000 ) ;
49         *  where substr(unit,1,4) ne 'mmol' ;
50           var lab hb value unit doA ;
51           format doA ddmmyy10. ;
52         run ;
53         */

NOTE: SAS Institute Inc., SAS Campus Drive, Cary, NC USA 27513-2414
NOTE: The SAS System used:
      real time           27:27.54
      cpu time            1:52.31
```

3.1.1 10-labka.lst

```
The SAS System                                        13:28 Tuesday, November 27, 2018   1

The CONTENTS Procedure

Data Set Name        EKSTN.LAB_DM_FORSKER          Observations          299280470
Member Type          DATA                          Variables             12
Engine               V9                            Indexes               0
Created              13/09/2018 14:26:47           Observation Length    416
Last Modified        13/09/2018 14:26:47           Deleted Observations  0
Protection                                         Compressed            NO
Data Set Type                                      Sorted                YES
Label
Data Representation  WINDOWS_64
Encoding             wlatin1  Western (Windows)


                          Engine/Host Dependent Information

Data Set Page Size          32768
Number of Data Set Pages    3836930
First Data Page             *
Max Obs per Page            78
Obs in First Data Page      73
Number of Data Set Repairs  0
Filename                    E:\rawdata\705093\Opdatering_2018\Eksterne
                            data\lab_dm_forsker.sas7bdat
Release Created             9.0401M5
Host Created                X64_SR12R2


              Alphabetic List of Variables and Attributes

 #    Variable                        Type    Len    Format    Informat

 5    ANALYSISCODE                    Char     17    $17.      $17.
 6    LABORATORIUM_IDCODE             Char      *    $3.       $3.
10    REFERENCEINTERVAL_LOWERLIMIT    Char     70    $70.      $70.
11    REFERENCEINTERVAL_UPPERLIMIT    Char     70    $70.      $70.
12    REKVIRENT_IDTYPE                Char     80    $80.      $80.
 9    RESULTTYPE                      Char     80    $80.      $80.
 *    SAMPLINGDATE                    Num       8    DATE9.    DATE9.
 4    SAMPLINGTIME                    Num       8    TIME8.    TIME8.
 8    UNIT                            Char     16    $16.      $16.
 7    VALUE                           Char     12    $12.      $12.
 *    pnr                             Char     12    $12.      $10.
 *    rekvirent_id                    Char     34    $34.


 Sort Information

Sortedby       pnr
Validated      YES
```

```
Character Set  ANSI
```

		doA								
	All	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	N	N	N	N	N	N	N	N	N	N	N
All	18,069,165	10	121	375662	497539	739059	861169	2.29E6	2.9E6	3.84E6	4.01E6
lab											
AA	1,749,269	.	.	.	16052	43366	68848	310289	334000	364430	377763
AK	643,924	.	.	.	.	.	*	119204	138055	146370	149335
AMH	167,701	.	5	.	5523	10046	6774	13603	18672	42452	41985
ASK	10	.	.	.	.	.	.	.	.	*	7
BBH	771,664	.	22	.	.	.	8527	55402	79777	225379	240878
CNF	587,410	.	.	.	.	.	298	105091	121361	131067	138635
EPI	*	.	.	.	.	.	.	*	.	.	.
ESB	590,684	.	.	.	.	.	.	12772	59646	189127	201445
FH	59,366	.	.	*	15327	25549	18432	57	.	.	.
FR	4,745	.	.	.	.	4	*	4731	*	6	.
GEN	710,099	.	14	.	*	784	13340	29426	43169	257878	227520
GLO	143,224	.	*	.	2135	8475	6087	14218	23636	23266	37808
HEH	273,705	*	34	.	.	.	14600	43589	58016	53599	60927
HHL	787,485	*	20	*	11633	19213	13448	28560	39377	247192	261041
HI	1,633,766	.	4	.	75762	120394	102828	196712	262933	292821	349532
HJ	746,163	.	.	*	6804	19348	30106	134100	142699	153002	160629
HOS	423,248	.	.	.	.	.	14	76550	88106	94213	99969
KO	469,558	.	.	.	.	*	6	5326	47857	152667	160980
KPL	2,449,681	.	.	235208	258368	356500	488824	541348	569433	.	.
KS	224,090	.	.	.	.	.	768	42311	47657	49591	52001
NYK	36	.	.	.	.	.	.	*	*	14	7
OUK	1,040,648	.	.	.	.	.	24	45561	114588	333215	336258
PVO	*	.	.	.	.	.	.	*	.	.	.
RAS	570,665	.	.	.	.	.	*	105301	122881	128527	132010
RHB	217,595	6	18	.	13970	16615	16426	29299	34178	36288	42920
RN	4,269	.	.	.	4269	.	.	.	.	.	.
RON	229,629	.	.	*	10619	17800	15853	29463	40715	41788	44486
SA	822,751	.	.	.	.	6	*	21246	87778	267828	275241
SDC	327,372	.	*	10012	47454	48749	40455	42124	36609	38014	35245
SHH	1,279	.	.	.	.	.	.	4	.	.	557
SL	516,142	.	.	.	.	6	.	115758	139044	106590	96814
STO	662,705	.	.	.	.	6	12	101080	114655	163138	175934
SVK	421,865	.	.	.	.	.	.	.	45208	139031	144831
THI	318,581	.	.	.	2648	8236	12989	57305	62132	66358	66946
UKN	207,277	.	.	130437	26971	43956	2502	.	.	.	3411
VAS	6	.	.	.	*	4	.	.	.	.	.
VE	292,549	.	.	.	.	.	.	5437	29291	96635	97226

```
(Continued)

The SAS System                                13:28 Tuesday, November 27, 2018   3
```

	doA
	2018
	N
All	2.56E6
lab	
AA	234521
AK	90958
AMH	28641
ASK	.
BBH	161679
CNF	90958

```
EPI      .
ESB 127694
FH       .
FR       .
GEN 137966
GLO  27597
HEH  42938
HHL 166998
HI  232780
HJ   99473
HOS  64396
KO  102720
KPL      .
KS   31762
NYK     12
OUK 211002
PVO      .
RAS  81944
RHB  27875
RN       .
RON  28904
SA  170650
SDC  28708
SHH    718
SL   57930
STO 107880
SVK  92795
THI  41967
UKN      .
VAS      .
VE   63960
```


hb

UNIT

	mmol/l						mmol/mol					
	N	P10	P25	P50	P75	P90	N	P10	P25	P50	P75	P90
All	9,033,156	5.5	5.9	6.5	7.5	9.4	9,035,948	32.0	35.0	39.0	46.0	59.0
moA												
2008:12	5	5.2	6.0	6.2	6.2	7.0	5	30.0	35.0	36.0	37.0	42.0
2009:01	55	5.3	5.7	6.3	7.4	10.6	56	31.0	34.0	37.5	44.5	67.0
2009:03	*	5.7	5.7	7.2	8.7	8.7	*	33.0	33.0	43.5	54.0	54.0
2009:04	*	7.7	7.7	8.5	9.7	9.7	*	47.0	47.0	53.0	61.0	61.0
2010:01	2,434	5.8	6.2	7.0	8.1	9.8	2,434	34.0	37.0	42.0	50.0	62.0
2010:02	10,535	5.8	6.3	7.1	8.4	10.3	10,532	34.0	38.0	43.0	52.0	65.0
2010:03	13,864	5.8	6.3	7.0	8.2	10.0	13,866	34.0	38.0	42.0	51.0	63.0
2010:04	22,943	5.8	6.3	7.1	8.4	10.3	22,947	34.0	38.0	43.0	52.0	65.0
2010:05	25,618	5.8	6.3	7.0	8.4	10.3	25,615	34.0	38.0	42.0	52.0	65.0
2010:06	19,937	5.8	6.3	7.1	8.2	10.1	19,935	34.0	38.0	43.0	51.0	64.0
2010:07	7,726	5.8	6.3	7.0	8.1	9.7	7,726	34.0	38.0	42.0	50.0	61.0
2010:08	14,756	5.8	6.5	7.1	8.4	10.1	14,758	34.0	38.0	43.0	52.0	64.0
2010:09	20,553	5.8	6.3	7.1	8.2	10.0	20,562	34.0	38.0	43.0	51.0	63.0
2010:10	16,086	5.8	6.3	7.0	8.1	10.0	16,093	34.0	38.0	42.0	50.0	63.0
2010:11	17,765	5.8	6.3	7.1	8.4	10.4	17,776	34.0	38.0	43.0	52.0	66.0
2010:12	15,595	5.8	6.3	7.3	8.7	10.8	15,606	34.0	38.0	44.0	54.0	68.0
2011:01	24,355	5.9	6.5	7.3	8.9	11.1	24,362	34.0	39.0	44.0	56.0	70.0
2011:02	20,103	5.8	6.3	7.1	8.5	10.6	20,106	34.0	38.0	43.0	53.0	67.0
2011:03	22,582	5.8	6.3	7.1	8.5	10.6	22,599	34.0	38.0	43.0	53.0	67.0
2011:04	21,797	5.8	6.3	7.1	8.7	10.8	21,802	34.0	38.0	44.0	54.0	68.0
2011:05	26,171	6.0	6.5	7.1	8.5	10.6	26,172	36.0	39.0	43.0	53.0	67.0
2011:06	19,053	5.8	6.3	7.1	8.4	10.4	19,055	35.0	38.0	43.0	52.0	66.0
2011:07	11,066	5.8	6.3	7.1	8.4	10.4	11,071	34.0	38.0	43.0	52.0	66.0
2011:08	20,366	5.8	6.3	7.1	8.4	10.4	20,368	34.0	38.0	43.0	52.0	66.0

2011:09	19,828	5.8	6.3	7.1	8.2	10.3	19,835	34.0	38.0	43.0	51.0	65.0
2011:10	21,376	5.8	6.3	7.0	8.5	10.8	21,379	34.0	38.0	42.0	53.0	68.0
2011:11	24,770	5.8	6.3	7.0	8.5	10.6	24,780	34.0	38.0	42.0	53.0	67.0
2011:12	17,269	5.8	6.3	7.1	8.5	10.8	17,272	34.0	38.0	43.0	53.0	68.0
2012:01	34,326	5.8	6.3	7.1	8.7	10.8	34,333	34.0	38.0	43.0	54.0	69.0
2012:02	22,188	5.8	6.3	7.1	8.7	10.9	22,190	34.0	38.0	43.0	54.0	69.0
2012:03	29,858	5.8	6.3	7.0	8.4	10.6	29,865	34.0	37.0	42.0	52.0	67.0
2012:04	40,246	5.8	6.3	7.0	8.2	10.3	40,246	34.0	37.0	42.0	51.0	65.0
2012:05	37,549	5.8	6.2	6.8	7.9	10.0	37,555	34.0	37.0	41.0	49.0	63.0
2012:06	28,238	5.8	6.2	6.8	8.1	10.1	28,249	34.0	37.0	41.0	50.0	64.0
2012:07	17,650	5.7	6.2	6.8	7.9	10.1	17,655	33.0	37.0	41.0	49.0	64.0
2012:08	31,202	5.8	6.2	6.8	8.1	10.1	31,208	34.0	37.0	41.0	50.0	64.0
2012:09	33,231	5.7	6.2	6.6	7.7	9.5	33,233	33.0	37.0	40.0	47.0	60.0
2012:10	29,954	5.7	6.0	6.6	7.5	9.3	29,958	33.0	36.0	40.0	46.0	58.0
2012:11	39,120	5.6	6.0	6.6	7.6	9.8	39,124	33.0	36.0	40.0	47.0	62.0
2012:12	25,933	5.7	6.1	6.6	7.9	9.8	25,934	33.0	36.0	40.0	49.0	62.0
2013:01	48,943	5.6	6.0	6.6	7.8	10.0	48,961	33.0	36.0	40.0	48.0	63.0
2013:02	35,985	5.5	5.8	6.5	7.6	9.7	35,992	32.0	34.0	39.0	46.0	61.0
2013:03	31,916	5.5	5.8	6.4	7.3	9.0	31,917	32.0	34.0	38.0	44.0	57.0
2013:04	61,225	5.5	5.9	6.5	7.5	9.5	61,257	32.0	35.0	39.0	46.0	60.0
2013:05	51,889	5.5	5.8	6.4	7.3	9.2	51,911	32.0	34.0	38.0	44.0	57.0
2013:06	23,331	5.5	5.8	6.5	7.4	9.3	23,334	32.0	34.0	39.0	45.0	58.0
2013:07	14,697	5.5	5.8	6.3	7.3	9.2	14,700	32.0	34.0	38.0	45.0	57.0
2013:08	22,570	5.5	5.8	6.3	7.3	8.9	22,573	32.0	34.0	38.0	44.0	55.0
2013:09	24,725	5.4	5.8	6.3	7.1	8.9	24,725	31.0	34.0	38.0	43.0	55.0
2013:10	30,816	5.4	5.8	6.3	7.1	8.9	30,818	31.0	34.0	38.0	43.0	56.0
2013:11	43,139	5.4	5.8	6.3	7.3	9.2	43,152	31.0	34.0	38.0	44.0	58.0
2013:12	41,263	5.4	5.8	6.3	7.4	9.2	41,312	31.0	34.0	38.0	45.0	57.0
2014:01	76,157	5.5	5.8	6.4	7.5	9.6	76,194	32.0	34.0	39.0	46.0	60.0
2014:02	91,385	5.4	5.8	6.4	7.4	9.4	91,410	32.0	34.0	38.0	45.0	59.0
2014:03	105,533	5.5	5.8	6.4	7.4	9.3	105,572	32.0	34.0	38.0	45.0	58.0
2014:04	91,450	5.5	5.8	6.4	7.4	9.3	91,488	32.0	35.0	38.0	45.0	58.0
2014:05	97,780	5.5	5.8	6.4	7.4	9.2	97,838	32.0	35.0	38.0	45.0	58.0
2014:06	97,753	5.5	5.9	6.5	7.5	9.3	97,786	32.0	35.0	39.0	46.0	58.0
2014:07	53,157	5.5	5.9	6.5	7.5	9.4	53,182	32.0	35.0	39.0	46.0	59.0
2014:08	90,512	5.5	6.0	6.5	7.5	9.2	90,535	32.0	35.0	39.0	46.0	57.0
2014:09	135,825	5.5	5.9	6.4	7.4	9.1	135,863	32.0	35.0	39.0	45.0	57.0
2014:10	109,324	5.5	5.8	6.4	7.2	9.0	109,356	32.0	34.0	38.0	44.0	56.0
2014:11	107,679	5.5	5.8	6.4	7.3	9.1	107,705	32.0	34.0	38.0	44.0	57.0
2014:12	86,168	5.4	5.8	6.4	7.4	9.3	86,206	32.0	34.0	38.0	45.0	58.0
2015:01	113,801	5.5	5.9	6.4	7.5	9.5	113,871	32.0	35.0	39.0	46.0	60.0
2015:02	98,560	5.5	5.8	6.4	7.4	9.4	98,605	32.0	34.0	38.0	45.0	59.0
2015:03	118,106	5.5	5.9	6.5	7.4	9.3	118,168	32.0	35.0	39.0	45.0	58.0
2015:04	105,570	5.5	5.9	6.4	7.4	9.3	105,615	32.0	35.0	38.0	45.0	58.0
2015:05	99,738	5.5	5.9	6.5	7.4	9.3	99,782	32.0	35.0	39.0	45.0	58.0
2015:06	115,109	5.5	6.0	6.5	7.5	9.4	115,153	32.0	35.0	39.0	46.0	59.0
2015:07	65,742	5.5	6.0	6.5	7.5	9.4	65,767	32.0	36.0	39.0	46.0	59.0
2015:08	105,984	5.6	6.0	6.5	7.6	9.4	106,019	33.0	36.0	39.0	46.0	59.0
2015:09	168,056	5.6	6.0	6.5	7.5	9.3	168,110	33.0	36.0	39.0	46.0	58.0
2015:10	157,242	5.6	6.0	6.5	7.4	9.2	157,281	33.0	36.0	39.0	45.0	58.0
2015:11	168,782	5.5	5.9	6.5	7.4	9.3	168,830	32.0	35.0	39.0	45.0	58.0
2015:12	133,759	5.5	6.0	6.5	7.6	9.5	133,814	32.0	35.0	39.0	47.0	60.0
2016:01	166,350	5.5	5.9	6.5	7.6	9.7	166,417	32.0	35.0	39.0	46.0	61.0
2016:02	159,700	5.5	5.9	6.4	7.5	9.5	159,762	32.0	35.0	39.0	46.0	60.0
2016:03	163,272	5.5	5.9	6.5	7.5	9.5	163,341	32.0	35.0	39.0	46.0	59.0
2016:04	172,178	5.5	5.9	6.4	7.4	9.3	172,246	32.0	35.0	39.0	45.0	59.0
2016:05	169,806	5.5	5.9	6.5	7.5	9.4	169,887	32.0	35.0	39.0	46.0	59.0
2016:06	170,628	5.5	6.0	6.5	7.6	9.4	170,697	33.0	35.0	39.0	47.0	59.0
2016:07	90,157	5.5	6.0	6.5	7.6	9.5	90,206	32.0	35.0	39.0	46.0	59.0
2016:08	170,758	5.6	6.0	6.6	7.7	9.4	170,818	33.0	36.0	40.0	47.0	59.0
2016:09	176,902	5.5	5.9	6.5	7.5	9.3	176,947	32.0	35.0	39.0	46.0	58.0
2016:10	159,855	5.5	5.9	6.4	7.3	9.2	159,911	32.0	35.0	38.0	45.0	57.0
2016:11	181,852	5.5	5.9	6.4	7.4	9.3	181,887	32.0	35.0	39.0	45.0	58.0
2016:12	138,439	5.4	5.8	6.4	7.5	9.4	138,473	32.0	35.0	39.0	46.0	59.0
2017:01	183,822	5.4	5.8	6.4	7.4	9.5	184,000	32.0	34.0	38.0	45.0	60.0
2017:02	154,883	5.5	5.9	6.4	7.5	9.4	154,895	32.0	35.0	38.0	46.0	59.0
2017:03	199,738	5.5	5.9	6.4	7.4	9.3	199,800	32.0	35.0	38.0	45.0	59.0
2017:04	134,561	5.5	5.9	6.4	7.4	9.3	134,604	32.0	35.0	39.0	46.0	59.0
2017:05	184,629	5.5	5.9	6.4	7.4	9.3	184,664	32.0	35.0	38.0	45.0	58.0
2017:06	174,895	5.5	5.9	6.5	7.5	9.3	174,940	32.0	35.0	39.0	46.0	58.0

2017:07	98,048	5.5	5.9	6.4	7.4	9.3	98,073	32.0	35.0	38.0	45.0	58.0
2017:08	182,164	5.5	5.9	6.4	7.5	9.3	182,216	32.0	35.0	39.0	46.0	58.0
2017:09	181,449	5.5	5.9	6.4	7.4	9.2	181,486	32.0	35.0	38.0	45.0	57.0
2017:10	178,409	5.5	5.8	6.4	7.3	9.1	178,446	32.0	35.0	38.0	44.0	57.0
2017:11	194,719	5.5	5.8	6.3	7.3	9.1	194,783	32.0	34.0	38.0	44.0	57.0
2017:12	138,549	5.4	5.8	6.4	7.5	9.4	138,568	32.0	34.0	38.0	46.0	59.0
2018:01	201,803	5.4	5.8	6.3	7.4	9.4	201,816	32.0	34.0	38.0	45.0	59.0
2018:02	161,774	5.4	5.8	6.3	7.4	9.4	161,803	32.0	34.0	38.0	45.0	59.0
2018:03	171,635	5.4	5.8	6.4	7.4	9.3	171,654	32.0	34.0	38.0	45.0	58.0
2018:04	184,196	5.4	5.8	6.3	7.3	9.2	184,237	31.0	34.0	38.0	45.0	58.0
2018:05	193,889	5.4	5.8	6.3	7.3	9.1	193,928	32.0	34.0	38.0	44.0	57.0
2018:06	157,363	5.5	5.9	6.4	7.5	9.3	157,395	32.0	35.0	38.0	46.0	58.0
2018:07	87,320	5.5	5.9	6.4	7.4	9.3	87,330	32.0	35.0	38.0	45.0	58.0
2018:08	119,634	5.5	5.9	6.4	7.5	9.3	119,649	32.0	35.0	38.0	46.0	58.0

3.2 11-labDM

Matches the HbA_{1c} measurements with the persons in the DMreg.

```
1                                  "Program: 11-labDM.sas"
                                                    16:41 Wednesday, November 28, 2018

NOTE: Copyright (c) 2002-2012 by SAS Institute Inc., Cary, NC, USA.
NOTE: SAS (r) Proprietary Software 9.4 (TS1M3)
      Licensed to FORSKNING 1, Site 50800722.
NOTE: This session is executing on the X64_SRV12  platform.



NOTE: Updated analytical products:

      SAS/STAT 14.1

NOTE: Additional host information:

 X64_SRV12 WIN 6.2.9200  Server

NOTE: SAS initialization used:
      real time           0.09 seconds
      cpu time            0.09 seconds


NOTE: AUTOEXEC processing beginning; file is
      E:\workdata\705093\BXC\demoDM\sas\optslibs.sas.


NOTE: AUTOEXEC processing completed.

1          proc sort  data = dmdat.hb  out = hb ;
2            by pnr doA ;
3          run ;

NOTE: There were 9035975 observations read from the data set DMDAT.HB.
NOTE: The data set WORK.HB has 9035975 observations and 4 variables.
NOTE: PROCEDURE SORT used (Total process time):
      real time           4.40 seconds
      cpu time            4.37 seconds


4
5          data dmlb dmla ; * HbA1c before and after doDM ;
6            merge hb
7            dmdat.dmreg ( in = r ) ;
8            by pnr ;
9            * Only diabetes patients ;
```

```
10          if r ;
11          if doA le doDM then output dmlb ; * includes those with missing doA ;
12          if doA gt doDM then output dmla ;
13        run ;

NOTE: There were 9035975 observations read from the data set WORK.HB.
NOTE: There were 474700 observations read from the data set DMDAT.DMREG.
NOTE: The data set WORK.DMLB has 347034 observations and 20 variables.
NOTE: The data set WORK.DMLA has 2774638 observations and 20 variables.
NOTE: DATA statement used (Total process time):
      real time           2.40 seconds
      cpu time            2.26 seconds


14
15        data dmlb ; set dmlb ; by pnr ; if  last.pnr ;

NOTE: There were 347034 observations read from the data set WORK.DMLB.
NOTE: The data set WORK.DMLB has 266162 observations and 20 variables.
NOTE: DATA statement used (Total process time):
      real time           0.13 seconds
      cpu time            0.14 seconds


16        data dmla ; set dmla ; by pnr ; if first.pnr ;
17
18        * Merge and find the closest date and measurement before and after ;

NOTE: There were 2774638 observations read from the data set WORK.DMLA.
NOTE: The data set WORK.DMLA has 257047 observations and 20 variables.
NOTE: DATA statement used (Total process time):
      real time           0.62 seconds
      cpu time            0.59 seconds


19        data dmhb ;
20          merge dmlb ( rename = ( doA = doAb
21                                  hb = Hb_b ) )
22                dmla ( rename = ( doA = doAa
23                                  hb = Hb_a ) ) ;
24          by pnr ;
25        * Derive the closest date and measurement ;
26          if ( doAb le .z ) then do ;  doHb = doAa ; Hb = Hb_a ; end ;
27          if ( doAa le .z ) then do ;  doHb = doAb ; Hb = Hb_b ; end ;
28          if ( doAb gt .z ) and ( doAa gt .z )
29             then do ;
30             if ( doDM-doAb le doAa-doDM )
31                then do ; doHb = doAb ; Hb = Hb_b ; end ;
32                else do ; doHb = doAa ; Hb = Hb_a ; end ;
33             end ;
34          diff = doDM - doHb ;
35          difb = doDM - doAb ;
36          difa = doAa - doDM ;
37          format doAb doAa doHb doDM2 ddmmyy10. ;
38        run ;

NOTE: Missing values were generated as a result of performing an operation on missing
      values.
      Each place is given by: (Number of times) at (Line):(Column).
      215081 at 34:15   423619 at 35:15   217653 at 36:15
NOTE: There were 266162 observations read from the data set WORK.DMLB.
NOTE: There were 257047 observations read from the data set WORK.DMLA.
NOTE: The data set WORK.DMHB has 474700 observations and 27 variables.
NOTE: DATA statement used (Total process time):
      real time           0.40 seconds
      cpu time            0.39 seconds


39
40        proc sort  data = dmhb  out = dmdat.dmhb  nodupkey ;
```

```
41          by pnr ;
42        run ;

NOTE: There were 474700 observations read from the data set WORK.DMHB.
NOTE: 0 observations with duplicate key values were deleted.
NOTE: The data set DMDAT.DMHB has 474700 observations and 27 variables.
NOTE: PROCEDURE SORT used (Total process time):
      real time           0.75 seconds
      cpu time            0.62 seconds


43
44        proc contents  data = dmdat.dmhb ;
45        run ;

NOTE: PROCEDURE CONTENTS used (Total process time):
      real time           0.03 seconds
      cpu time            0.03 seconds

NOTE: The PROCEDURE CONTENTS printed page 1.

46
47        proc tabulate  data = dmdat.dmhb  missing  noseps ;
48          where doDM ge '01jan2010'd ;
49          class doDM dmtp ;
50            var Hb Hb_b Hb_a  diff difa difb ;
51          table Hb Hb_b Hb_a,
52                all doDM,
53                dmtp * ( n * f=comma6.
54                     nmiss * f=comma7.
55                        ( p10 p25 p50 p75 p90 ) * f=4. )
56                / rts = 9 ;
57          table diff difb difa,
58                all doDM,
59                dmtp * ( n * f=comma6.
60                     nmiss * f=comma7.
61                        ( p10 p25 p50 p75 p90 ) * f=4. )
62                / rts = 9 ;
63          format doDM yymmc7. ;
64        run ;

NOTE: There were 139341 observations read from the data set DMDAT.DMHB.
      WHERE doDM>='01JAN2010'D;
NOTE: At least one W.D format was too small for the number to be printed. The decimal may
      be shifted by the "BEST" format.
NOTE: The PROCEDURE TABULATE printed pages 2-7.
NOTE: PROCEDURE TABULATE used (Total process time):
      real time           0.40 seconds
      cpu time            0.31 seconds


NOTE: SAS Institute Inc., SAS Campus Drive, Cary, NC USA 27513-2414
NOTE: The SAS System used:
      real time           9.34 seconds
      cpu time            8.82 seconds
```

3.2.1 11-labDM.lst

```
The SAS System                                  16:41 Wednesday, November 28, 2018   1

The CONTENTS Procedure

Data Set Name        DMDAT.DMHB                Observations          474700
Member Type          DATA                      Variables             27
Engine               V9                        Indexes               0
Created              28/11/2018 16:42:05       Observation Length    200
Last Modified        28/11/2018 16:42:05       Deleted Observations  0
```

```
Protection                                        Compressed           NO
Data Set Type                                     Sorted               YES
Label
Data Representation  WINDOWS_64
Encoding             wlatin1  Western (Windows)


                     Engine/Host Dependent Information

Data Set Page Size          65536
Number of Data Set Pages    1452
First Data Page             *
Max Obs per Page            327
Obs in First Data Page      308
Number of Data Set Repairs  0
ExtendObsCounter            YES
Filename                    E:\workdata\705093\BxC\demoDM\DATA\dmhb.sas7bdat
Release Created             9.0401M3
Host Created                X64_SRV12


                      Alphabetic List of Variables and Attributes

 #   Variable   Type   Len   Format      Informat      Label

20   DMtp       Char     *                            Type of DM
24   Hb         Num      8
22   Hb_a       Num      8
 4   Hb_b       Num      8
27   difa       Num      8
26   difb       Num      8
25   diff       Num      8
21   doAa       Num      8   DDMMYY10.   DATE9.
 *   doAb       Num      8   DDMMYY10.   DATE9.
14   doBth      Num      8   DDMMYY10.
16   doDM       Num      8   DDMMYY10.
19   doDM2      Num      8   DDMMYY10.
 6   doDVDD     Num      8   DDMMYY10.
12   doDiaB     Num      8   DDMMYY10.   IS8601DA10.   Øjenscreeningsdato
15   doDth      Num      8   DDMMYY10.
23   doHb       Num      8   DDMMYY10.
 8   doIns      Num      8   DDMMYY10.
10   doIns2     Num      4   DDMMYY10.
 5   doNPR      Num      8   DDMMYY10.   DATE9.
 7   doOAD      Num      8   DDMMYY10.
 9   doOAD2     Num      4   DDMMYY10.
11   doPod      Num      8   DDMMYY10.
17   inCr       Char     *                            Inclusion criterion
18   inCr2      Char     5                            Inclusion criterion - 2nd dispense
 *   lab        Char     *   $3.         $3.
 *   pnr        Char    12   $12.        $10.          Personnummer
13   sex        Num      8


   Sort Information

Sortedby       pnr
Validated      YES
Character Set  ANSI
Sort Option    NODUPKEY

The SAS System                                  16:41 Wednesday, November 28, 2018   2

Hb

                                        Type of DM

                          T1                                        T2

          N     NMiss  P10  P25  P50  P75  P90    N     NMiss  P10  P25  P50  P75  P90
```

All	4,696	1,790	40	51	68	97	121	98,185	34,670	39	44	49	58	82
doDM														
2010:01	97	46	42	49	60	71	89	969	470	39	43	49	59	76
2010:02	62	26	37	45	62	75	86	860	391	38	42	48	57	76
2010:03	59	21	35	45	54	72	89	1,051	506	38	42	49	57	75
2010:04	46	20	43	49	65	79	113	870	406	38	43	49	58	79
2010:05	51	26	45	58	64	81	95	958	403	38	42	48	58	84
2010:06	57	31	39	52	61	82	102	4,647	1,821	39	42	46	52	63
2010:07	52	20	35	52	65	84	99	696	296	38	42	47	55	76
2010:08	66	35	42	49	59	70	95	795	363	38	43	48	56	75
2010:09	57	17	39	50	67	86	118	991	522	39	43	49	57	77
2010:10	42	27	40	52	63	83	109	976	439	38	43	49	57	74
2010:11	55	22	38	44	55	72	100	1,076	493	38	43	48	57	73
2010:12	63	22	41	49	64	82	109	1,053	456	39	43	49	57	78
2011:01	63	18	48	52	62	82	103	1,014	473	38	43	48	58	83
2011:02	62	29	34	51	68	85	111	904	417	38	43	49	58	77
2011:03	77	17	40	54	66	76	109	1,230	548	38	43	49	57	79
2011:04	36	18	40	53	68	89	114	1,032	404	37	43	48	55	74
2011:05	56	24	38	44	62	81	110	1,280	551	38	42	47	54	73
2011:06	43	15	43	50	62	75	105	4,264	1,713	38	42	46	51	60
2011:07	58	14	40	49	61	77	115	1,155	497	37	41	45	51	63
2011:08	63	23	40	54	63	88	117	1,301	541	38	41	46	52	68
2011:09	55	24	45	53	62	98	114	1,392	585	38	42	46	53	68
2011:10	53	28	42	50	67	89	123	1,234	508	38	42	47	54	76
2011:11	66	23	44	50	62	82	118	1,375	547	38	42	47	54	71
2011:12	50	28	43	55	66	84	113	1,177	475	38	42	47	56	72
2012:01	72	33	44	52	65	81	113	1,173	401	38	43	48	56	75
2012:02	46	12	36	51	66	85	117	1,110	406	39	42	48	55	75
2012:03	60	17	39	49	64	91	116	1,325	460	38	42	47	54	74
2012:04	37	16	37	46	68	106	139	1,012	333	39	43	48	56	81
2012:05	63	26	35	42	58	100	119	1,224	421	39	43	48	54	74
2012:06	63	23	43	48	61	85	106	2,911	1,024	39	43	48	53	65
2012:07	40	19	38	52	61	79	107	823	279	38	42	48	55	70
2012:08	50	25	42	45	61	78	104	982	347	38	43	48	55	73
2012:09	55	20	40	46	62	93	128	1,118	368	38	43	48	54	71
2012:10	59	28	41	51	64	86	117	1,170	427	38	43	48	56	74
2012:11	49	24	38	51	65	97	126	1,189	459	39	43	48	55	72
2012:12	36	14	42	51	59	82	105	971	329	39	43	48	54	70
2013:01	75	30	40	50	68	102	124	1,048	342	38	43	48	57	79
2013:02	66	29	39	51	65	88	107	957	311	37	43	48	56	74
2013:03	60	20	41	52	66	85	116	956	351	37	43	48	56	79
2013:04	65	21	40	48	61	91	118	994	336	38	43	49	56	80
2013:05	45	19	41	51	64	91	125	985	298	38	43	49	59	83
2013:06	61	14	36	40	55	67	90	1,672	559	39	44	48	54	67
2013:07	38	13	41	49	63	80	100	705	256	37	42	47	54	69
2013:08	52	18	37	43	50	69	108	776	240	38	42	46	53	68
2013:09	34	18	35	43	52	70	86	957	319	39	43	48	55	69
2013:10	49	22	37	43	52	70	97	901	323	38	43	48	55	69
2013:11	58	24	40	49	61	74	115	944	325	38	43	48	56	75
2013:12	48	27	38	48	60	81	110	856	276	38	43	49	57	83
2014:01	65	33	37	46	63	88	117	961	318	39	44	50	61	83
2014:02	63	15	40	48	79	105	120	868	286	39	45	51	60	89
2014:03	62	24	44	53	81	106	129	1,065	358	39	45	51	63	90
2014:04	47	19	32	48	75	106	124	856	283	38	45	51	64	93
2014:05	57	29	41	49	70	94	118	981	308	39	45	51	61	88
2014:06	44	13	36	44	71	90	115	1,113	372	39	45	50	59	85
2014:07	47	19	47	62	82	101	137	787	218	40	46	51	62	87
2014:08	56	20	44	54	73	110	130	796	267	38	45	51	63	93
2014:09	57	16	39	56	90	111	133	1,078	353	39	45	51	63	91
2014:10	51	22	36	41	63	95	122	1,008	292	40	46	52	65	92
2014:11	62	21	37	44	66	92	119	1,053	311	39	45	50	61	89
2014:12	53	17	41	53	68	98	119	998	316	39	46	52	64	87
2015:01	48	29	39	53	76	121	133	1,008	303	40	46	51	66	91
2015:02	59	20	38	56	86	109	131	1,032	327	40	46	51	63	89
2015:03	60	19	38	50	78	100	123	1,216	372	40	45	51	63	91
2015:04	51	22	37	46	85	99	115	1,016	336	41	46	51	64	93
2015:05	60	21	38	53	90	112	139	1,063	282	40	46	51	62	90
2015:06	62	11	44	60	82	106	130	1,259	335	41	46	50	60	86
2015:07	46	19	39	52	61	92	112	868	237	41	46	51	64	90

2015:08	53	19	49	63	84	102	131	967	278	41	46	51	63	90
2015:09	71	21	45	59	81	115	129	1,250	316	41	48	53	67	95
2015:10	69	21	54	69	89	114	132	1,242	345	42	48	52	64	93
2015:11	56	16	45	68	92	115	132	1,201	324	42	48	52	65	91
2015:12	64	11	52	72	91	114	132	1,191	356	42	48	53	66	95
2016:01	75	16	47	76	94	111	134	1,218	311	41	48	54	71	99
2016:02	66	15	45	68	93	121	151	1,278	345	42	49	54	68	95
2016:03	61	28	38	65	94	110	117	1,206	369	43	49	54	71	96
2016:04	49	19	49	80	94	123	139	1,321	375	42	49	54	67	92
2016:05	43	12	39	48	91	108	120	1,232	348	41	48	53	69	97
2016:06	58	21	39	60	93	120	134	1,373	393	42	48	53	65	93
2016:07	44	14	45	66	93	109	137	878	257	41	49	54	72	98
2016:08	62	31	44	65	96	116	132	1,103	340	42	48	52	67	96
2016:09	43	24	38	52	91	130	136	1,217	386	41	48	53	67	94
2016:10	53	15	39	55	79	105	130	1,052	335	39	48	53	69	95
2016:11	55	18	51	77	92	104	128	1,228	361	42	48	53	67	94
2016:12	54	14	38	57	92	109	121	1,143	342	42	49	54	72	95

Hb_b

Type of DM

	T1							T2						
	N	NMiss	P10	P25	P50	P75	P90	N	NMiss	P10	P25	P50	P75	P90
All	1,982	4,504	39	61	91	114	132	49,099	83,756	41	46	52	64	92
doDM														
2010:01	0	143	.	.	.	.	.	5	1,434	43	44	92	104	120
2010:02	*	85	99	99	99	105	105	140	1,111	45	49	58	87	111
2010:03	6	74	48	52	82	127	135	222	1,335	42	48	55	70	102
2010:04	8	58	41	74	109	146	180	203	1,073	43	48	55	78	99
2010:05	11	66	45	49	73	127	133	312	1,049	42	46	55	74	97
2010:06	5	83	44	52	65	82	88	753	5,715	40	43	46	53	72
2010:07	7	65	35	54	78	99	112	152	840	40	43	50	59	80
2010:08	10	91	36	42	49	95	111	178	980	43	46	52	63	98
2010:09	10	64	47	68	97	123	136	263	1,250	40	46	52	65	92
2010:10	4	65	60	72	93	109	115	238	1,177	41	46	53	66	99
2010:11	5	72	30	53	55	97	103	277	1,292	39	46	52	65	92
2010:12	12	73	38	45	75	109	122	303	1,206	41	46	53	67	92
2011:01	12	69	55	70	80	91	97	270	1,217	42	46	53	69	97
2011:02	9	82	63	84	85	101	124	242	1,079	42	45	51	66	91
2011:03	8	86	38	76	101	127	150	336	1,442	40	46	52	63	90
2011:04	13	41	34	79	105	114	126	328	1,108	41	45	51	59	89
2011:05	10	70	41	42	84	110	150	419	1,412	40	44	49	58	80
2011:06	*	55	62	62	64	85	85	1,008	4,969	38	42	45	51	60
2011:07	13	59	40	47	91	115	122	361	1,291	39	42	46	52	68
2011:08	15	71	68	85	107	119	143	384	1,458	40	43	47	54	75
2011:09	16	63	43	47	100	121	130	396	1,581	39	44	49	58	87
2011:10	14	67	46	61	112	130	139	364	1,378	40	43	49	57	87
2011:11	17	72	48	59	71	108	145	416	1,506	40	44	49	62	96
2011:12	14	64	44	60	71	98	123	353	1,299	39	44	49	59	86
2012:01	17	88	43	68	83	109	124	387	1,187	40	45	50	61	90
2012:02	8	50	38	51	84	109	139	344	1,172	41	45	51	61	93
2012:03	15	62	39	54	87	120	150	405	1,380	40	44	49	60	96
2012:04	14	39	39	93	105	132	158	416	929	41	45	51	67	91
2012:05	24	65	39	45	100	121	130	492	1,153	41	46	50	60	86
2012:06	12	74	44	56	82	110	120	874	3,061	41	44	48	53	69
2012:07	11	48	37	38	47	120	123	270	832	39	45	50	61	93
2012:08	6	69	43	43	82	114	175	326	1,003	41	46	51	63	95
2012:09	16	59	39	57	100	124	137	405	1,081	41	46	50	57	80
2012:10	13	74	45	65	109	117	130	404	1,193	41	46	50	58	90
2012:11	14	59	38	80	99	133	143	422	1,226	40	45	51	62	90
2012:12	13	37	40	42	63	94	130	322	978	42	46	51	60	85
2013:01	29	76	34	76	99	117	149	385	1,005	41	46	51	62	91
2013:02	16	79	39	83	99	114	137	377	891	39	45	51	63	87
2013:03	17	63	43	65	94	108	143	331	976	38	44	51	65	92

2013:04	21	65	48	84	91	120	143	365	965	39	46	52	65	91
2013:05	18	46	41	54	91	125	145	422	861	40	47	52	65	93
2013:06	12	63	33	34	38	66	103	518	1,713	40	44	48	53	73
2013:07	4	47	39	67	98	116	131	226	735	38	42	49	54	70
2013:08	8	62	33	37	45	61	139	240	776	38	43	48	55	76
2013:09	*	49	44	44	75	136	136	316	960	40	45	49	56	80
2013:10	5	66	36	44	101	120	160	303	921	38	45	49	56	85
2013:11	18	64	37	40	70	94	118	324	945	38	45	50	61	87
2013:12	18	57	35	42	79	102	125	328	804	40	45	51	65	99
2014:01	25	73	37	43	85	103	130	429	850	40	47	53	72	98
2014:02	34	44	40	76	101	113	129	512	642	42	49	53	70	96
2014:03	38	48	49	70	93	109	135	689	734	42	48	53	68	97
2014:04	29	37	33	48	86	107	124	568	571	41	48	54	73	102
2014:05	25	61	43	73	89	106	129	653	636	41	48	52	65	93
2014:06	22	35	34	41	80	104	128	744	741	40	46	51	62	92
2014:07	25	41	56	78	93	131	160	534	471	40	47	51	69	93
2014:08	27	49	39	65	85	117	133	540	523	39	46	51	63	93
2014:09	29	44	38	56	103	119	139	877	554	40	46	52	64	92
2014:10	34	39	36	41	84	107	128	759	541	41	48	53	70	93
2014:11	44	39	36	40	78	102	123	752	612	40	46	52	64	93
2014:12	34	36	41	50	73	104	131	713	601	41	48	53	69	93
2015:01	32	45	49	70	107	127	133	745	566	42	48	53	68	93
2015:02	41	38	38	63	89	118	129	756	603	41	48	53	67	92
2015:03	35	44	38	68	93	114	126	882	706	41	47	52	67	95
2015:04	39	34	33	45	85	101	115	753	599	41	48	53	68	98
2015:05	35	46	43	78	96	129	141	777	568	42	48	52	66	95
2015:06	43	30	64	75	95	115	134	884	710	42	47	51	63	91
2015:07	26	39	39	53	88	101	132	616	489	42	48	52	66	95
2015:08	34	38	38	67	90	110	137	699	546	41	47	52	65	95
2015:09	53	39	47	59	81	115	129	1,056	510	42	48	53	68	96
2015:10	53	37	57	72	96	117	132	1,144	443	43	48	52	64	93
2015:11	46	26	56	70	99	119	135	1,130	395	42	48	52	65	90
2015:12	55	20	52	72	91	110	125	1,120	427	43	49	53	66	94
2016:01	65	26	39	76	94	112	134	1,151	378	42	48	54	70	98
2016:02	57	24	44	79	97	126	152	1,210	413	43	49	54	67	94
2016:03	54	35	37	57	94	109	117	1,160	415	44	49	54	69	96
2016:04	42	26	48	80	93	117	131	1,248	448	43	49	54	67	91
2016:05	36	19	39	48	91	110	120	1,186	394	41	49	53	68	97
2016:06	50	29	47	59	94	121	133	1,327	439	43	48	53	65	93
2016:07	34	24	45	72	96	107	135	843	292	42	49	54	70	97
2016:08	54	39	36	83	98	120	136	1,042	401	43	48	52	67	96
2016:09	34	33	38	62	96	130	136	1,183	420	42	49	53	65	93
2016:10	47	21	46	57	83	108	130	1,005	382	40	48	53	68	96
2016:11	48	25	48	77	91	100	119	1,187	402	42	48	53	66	93
2016:12	46	22	35	54	89	107	121	1,100	385	43	49	54	71	94

Hb_a

Type of DM

	T1							T2						
	N	NMiss	P10	P25	P50	P75	P90	N	NMiss	P10	P25	P50	P75	P90
All	4,532	1,954	39	48	60	78	104	95,777	37,078	38	43	47	54	71
doDM														
2010:01	97	46	42	49	60	71	89	969	470	39	43	49	58	76
2010:02	62	26	37	45	59	71	84	856	395	37	42	48	55	73
2010:03	59	21	35	45	52	66	81	1,046	511	37	42	48	56	71
2010:04	46	20	41	48	64	74	86	859	417	37	42	48	55	72
2010:05	49	28	43	56	63	76	86	941	420	38	42	46	55	68
2010:06	57	31	39	49	58	79	102	4,628	1,840	39	42	46	52	62
2010:07	50	22	36	50	63	84	99	690	302	38	42	46	54	72
2010:08	65	36	42	49	58	69	84	791	367	38	42	47	55	71
2010:09	54	20	39	45	62	75	99	974	539	38	42	48	55	69
2010:10	42	27	40	48	63	76	109	965	450	38	43	48	55	67
2010:11	54	23	39	46	55	69	99	1,065	504	38	42	48	55	70

2010:12	62	23	41	49	63	75	89	1,042	467	38	43	48	54	74
2011:01	62	19	45	51	58	78	99	1,001	486	37	42	47	56	76
2011:02	62	29	34	50	64	92	111	891	430	38	42	48	56	72
2011:03	76	18	43	53	66	75	103	1,210	568	38	42	48	55	73
2011:04	35	19	39	49	62	69	93	1,015	421	37	42	46	53	66
2011:05	54	26	38	47	59	76	106	1,260	571	37	41	45	52	64
2011:06	43	15	43	49	61	74	105	4,232	1,745	38	42	45	51	58
2011:07	58	14	38	49	60	69	98	1,137	515	37	41	45	50	60
2011:08	62	24	40	51	60	72	91	1,284	558	38	41	45	51	64
2011:09	53	26	45	52	59	76	106	1,374	603	38	41	46	52	64
2011:10	51	30	42	48	65	82	116	1,226	516	37	41	46	53	70
2011:11	66	23	43	50	61	78	112	1,358	564	38	42	46	52	65
2011:12	48	30	42	55	62	75	102	1,167	485	38	41	46	53	68
2012:01	70	35	41	51	62	75	97	1,157	417	38	42	46	54	71
2012:02	45	13	36	51	65	77	116	1,097	419	38	42	46	53	71
2012:03	57	20	38	49	62	90	100	1,304	481	38	42	46	53	67
2012:04	35	18	39	44	58	71	118	998	347	38	42	46	53	68
2012:05	61	28	34	41	54	71	106	1,209	436	38	42	46	53	69
2012:06	62	24	42	48	60	73	106	2,883	1,052	39	43	47	52	62
2012:07	39	20	37	51	60	78	124	814	288	38	42	46	53	67
2012:08	50	25	42	45	62	78	105	969	360	38	42	46	53	67
2012:09	53	22	40	46	57	75	105	1,099	387	38	42	46	53	67
2012:10	58	29	40	49	61	84	103	1,154	443	38	43	47	53	68
2012:11	46	27	35	50	58	75	103	1,174	474	38	42	46	53	67
2012:12	36	14	39	47	56	70	94	948	352	39	42	47	52	64
2013:01	73	32	40	47	58	87	116	1,031	359	37	42	47	54	69
2013:02	65	30	40	47	60	75	97	930	338	37	42	46	53	67
2013:03	59	21	40	47	62	76	94	932	375	37	42	47	53	71
2013:04	62	24	40	47	59	83	110	972	358	37	42	47	53	68
2013:05	44	20	38	49	59	79	93	961	322	37	42	46	53	68
2013:06	59	16	37	43	55	66	90	1,653	578	39	43	47	53	65
2013:07	38	13	41	49	63	80	100	687	274	38	42	46	53	66
2013:08	49	21	39	43	50	63	108	761	255	38	41	45	51	63
2013:09	34	18	35	43	52	69	81	943	333	39	43	47	54	66
2013:10	48	23	37	43	52	66	89	885	339	38	43	47	54	66
2013:11	56	26	37	48	56	71	106	931	338	38	43	47	54	69
2013:12	47	28	36	45	58	76	102	845	287	38	43	48	54	72
2014:01	63	35	39	46	55	71	106	945	334	39	43	48	56	72
2014:02	63	15	39	47	64	76	110	849	305	38	43	48	55	75
2014:03	58	28	42	48	61	83	118	1,035	388	38	43	48	56	72
2014:04	44	22	32	42	57	76	113	832	307	38	43	48	57	78
2014:05	56	30	37	44	57	71	88	956	333	39	43	48	56	74
2014:06	43	14	36	42	57	72	96	1,074	411	39	43	48	55	67
2014:07	46	20	41	48	66	87	109	763	242	39	44	48	57	73
2014:08	56	20	43	50	63	91	120	767	296	38	43	48	58	78
2014:09	54	19	39	51	67	90	120	1,030	401	38	43	48	56	74
2014:10	50	23	37	41	57	71	89	963	337	39	44	49	59	83
2014:11	59	24	36	41	55	75	105	1,021	343	39	43	48	56	77
2014:12	52	18	42	49	59	71	98	967	347	39	44	50	59	78
2015:01	45	32	41	49	60	73	110	976	335	39	44	49	57	77
2015:02	57	22	39	47	60	87	106	985	374	39	44	49	56	77
2015:03	60	19	36	47	65	80	97	1,164	424	39	44	48	57	79
2015:04	44	29	37	40	56	72	101	982	370	40	44	49	57	78
2015:05	59	22	38	46	57	89	107	1,026	319	40	44	48	56	73
2015:06	59	14	39	50	62	77	106	1,210	384	40	44	48	55	71
2015:07	46	19	38	47	58	85	101	835	270	39	44	48	56	72
2015:08	50	22	46	56	67	90	113	932	313	40	44	48	56	76
2015:09	70	22	40	51	73	91	120	1,199	367	40	45	49	59	81
2015:10	67	23	48	53	66	89	115	1,191	396	40	45	49	58	77
2015:11	53	19	37	49	64	86	108	1,151	374	40	44	49	58	78
2015:12	61	14	45	54	67	85	99	1,151	396	40	45	49	58	82
2016:01	71	20	42	49	67	81	103	1,153	376	39	44	49	60	85
2016:02	64	17	38	50	63	79	106	1,203	420	40	45	49	58	77
2016:03	55	34	38	48	60	77	105	1,146	429	40	45	49	57	77
2016:04	46	22	42	53	69	91	124	1,254	442	40	45	49	58	78
2016:05	38	17	39	46	65	92	112	1,182	398	39	44	49	58	77
2016:06	53	26	39	46	62	92	116	1,302	464	40	45	49	57	77
2016:07	42	16	41	51	57	77	113	824	311	40	45	50	61	81
2016:08	56	37	40	47	61	84	102	1,053	390	40	45	49	58	79
2016:09	35	32	37	46	69	91	131	1,139	464	40	44	48	57	76

2016:10	48	20	37	49	58	90	104	978	409	38	44	49	58	81
2016:11	52	21	43	49	77	98	121	1,148	441	40	45	49	58	79
2016:12	44	24	38	48	60	82	112	1,073	412	40	45	49	60	82

The SAS System 16:41 Wednesday, November 28, 2018 5

diff

Type of DM

	T1							T2						
	N	NMiss	P10	P25	P50	P75	P90	N	NMiss	P10	P25	P50	P75	P90
All	4,696	1,790	-2E3	-916	-69	0	*	98,186	34,669	-1E3	-784	-49	7	24
doDM														
2010:01	97	46	-2E3	-2E3	-2E3	-385	-97	969	470	-2E3	-2E3	-1E3	-163	-82
2010:02	62	26	-2E3	-2E3	-2E3	-451	-92	860	391	-2E3	-2E3	-1E3	-81	5
2010:03	59	21	-2E3	-2E3	-1E3	-267	0	1,051	506	-2E3	-2E3	-1E3	-32	8
2010:04	46	20	-2E3	-2E3	-1E3	-21	0	870	406	-2E3	-2E3	-1E3	-14	8
2010:05	51	26	-2E3	-2E3	-2E3	-314	0	958	403	-2E3	-2E3	-706	*	13
2010:06	57	31	-2E3	-2E3	-1E3	-499	-1	4,647	1,821	-2E3	-2E3	-1E3	-161	12
2010:07	52	20	-2E3	-2E3	-1E3	-214	14	696	296	-2E3	-2E3	-1E3	-45	18
2010:08	66	35	-2E3	-2E3	-1E3	-84	0	795	363	-2E3	-1E3	-1E3	-38	8
2010:09	57	17	-2E3	-2E3	-959	-38	0	991	522	-2E3	-2E3	-1E3	-4	12
2010:10	42	27	-2E3	-2E3	-1E3	-567	-1	976	439	-2E3	-1E3	-1E3	-27	10
2010:11	55	22	-2E3	-2E3	-1E3	-175	-2	1,076	493	-2E3	-2E3	-1E3	-21	13
2010:12	63	22	-2E3	-2E3	-1E3	-42	5	1,053	456	-2E3	-2E3	-1E3	0	13
2011:01	63	18	-2E3	-2E3	-697	-93	0	1,014	473	-2E3	-1E3	-607	-3	10
2011:02	62	29	-2E3	-2E3	-1E3	-24	0	905	416	-2E3	-1E3	-1E3	-3	12
2011:03	77	17	-2E3	-2E3	-1E3	-405	-1	1,230	548	-2E3	-1E3	-994	-8	13
2011:04	36	18	-2E3	-2E3	-1E3	0	0	1,032	404	-2E3	-1E3	-979	*	15
2011:05	56	24	-2E3	-2E3	-1E3	-96	13	1,280	551	-2E3	-1E3	-719	*	18
2011:06	43	15	-2E3	-2E3	-1E3	-60	-1	4,264	1,713	-2E3	-1E3	-966	-92	21
2011:07	58	14	-2E3	-2E3	-927	-9	0	1,155	497	-2E3	-1E3	-838	-5	42
2011:08	63	23	-2E3	-2E3	-972	-2	0	1,301	541	-2E3	-1E3	-900	-10	28
2011:09	55	24	-2E3	-1E3	-199	0	0	1,392	585	-2E3	-1E3	-781	-12	15
2011:10	53	28	-2E3	-1E3	-476	-1	0	1,234	508	-2E3	-1E3	-806	-12	16
2011:11	66	23	-2E3	-1E3	-681	-43	0	1,375	547	-2E3	-1E3	-800	-4	13
2011:12	50	28	-2E3	-1E3	-934	0	*	1,177	475	-1E3	-1E3	-740	-1	13
2012:01	72	33	-2E3	-1E3	-773	-7	0	1,173	401	-1E3	-1E3	-701	0	13
2012:02	46	12	-1E3	-1E3	-832	-123	0	1,110	406	-1E3	-1E3	-720	0	20
2012:03	60	17	-2E3	-1E3	-900	-1	0	1,325	460	-1E3	-1E3	-700	-1	14
2012:04	37	16	-1E3	-875	-281	0	0	1,012	333	-1E3	-895	-418	4	17
2012:05	63	26	-1E3	-1E3	-629	0	9	1,224	421	-1E3	-859	-593	7	21
2012:06	63	23	-1E3	-1E3	-806	-182	0	2,911	1,024	-1E3	-844	-605	-18	27
2012:07	40	19	-2E3	-1E3	-747	-30	12	823	279	-1E3	-802	-579	*	18
2012:08	50	25	-1E3	-1E3	-739	-237	0	982	347	-1E3	-760	-537	0	18
2012:09	55	20	-1E3	-1E3	-552	0	0	1,118	368	-1E3	-825	-511	4	18
2012:10	59	28	-1E3	-1E3	-669	-23	0	1,170	427	-1E3	-698	-488	0	19
2012:11	49	24	-1E3	-1E3	-482	0	0	1,189	459	-1E3	-738	-459	*	19
2012:12	36	14	-1E3	-1E3	-393	0	0	971	329	-1E3	-725	-442	*	14
2013:01	75	30	-1E3	-977	-386	0	0	1,048	342	-1E3	-673	-395	*	15
2013:02	66	29	-1E3	-937	-186	-1	0	957	311	-1E3	-588	-357	5	21
2013:03	60	20	-1E3	-915	-357	-3	0	956	351	-1E3	-832	-347	*	20
2013:04	65	21	-984	-676	-350	0	*	994	336	-1E3	-888	-343	4	17
2013:05	45	19	-1E3	-888	-304	0	25	985	298	-982	-558	-280	7	26
2013:06	61	14	-1E3	-867	-322	-165	10	1,672	559	-921	-612	-269	-26	33
2013:07	38	13	-864	-807	-239	-160	-1	705	256	-919	-777	-244	0	51
2013:08	52	18	-912	-802	-385	-117	10	776	240	-850	-741	-221	-83	32
2013:09	34	18	-938	-780	-258	-138	-41	957	319	-819	-409	-176	-49	14
2013:10	49	22	-928	-701	-172	-96	-1	901	323	-808	-560	-146	-28	15
2013:11	58	24	-783	-394	-84	0	10	944	325	-767	-643	-105	-2	11
2013:12	48	27	-809	-658	-79	0	0	856	276	-760	-626	-84	*	12
2014:01	65	33	-855	-665	-230	0	12	961	318	-709	-587	-47	4	15
2014:02	63	15	-966	-611	0	0	7	868	286	-647	-293	0	7	17
2014:03	62	24	-623	-180	0	0	*	1,065	358	-630	-191	*	8	20
2014:04	47	19	-590	-270	0	0	*	856	283	-589	-166	*	11	28
2014:05	57	29	-761	-499	-109	0	0	981	308	-578	-132	*	9	25

2014:06	44	13	-600	-492	-69	0	*	1,113	372	-517	-92	0	10	33
2014:07	47	19	-619	-196	0	0	4	787	218	-491	-99	*	11	34
2014:08	56	20	-476	-302	-4	0	*	796	267	-463	-68	0	9	44
2014:09	57	16	-566	-375	-2	0	*	1,078	353	-382	-13	5	12	30
2014:10	51	22	-423	-362	0	0	26	1,008	292	-403	-44	4	14	35
2014:11	62	21	-325	-123	0	0	33	1,053	311	-393	-285	*	13	36
2014:12	53	17	-356	-268	0	0	7	998	316	-364	-261	4	12	36
2015:01	48	29	-342	-235	0	0	8	1,008	303	-316	-146	*	9	38
2015:02	59	20	-282	-139	0	0	21	1,032	327	-280	-114	4	12	37
2015:03	60	19	-410	-242	-1	0	5	1,216	372	-264	-173	*	12	46
2015:04	51	22	-175	-11	0	*	14	1,016	336	-218	-143	*	12	34
2015:05	60	21	-239	-142	0	0	5	1,063	282	-203	-120	*	12	38
2015:06	62	11	-173	-95	0	0	0	1,259	335	-173	-97	*	11	36
2015:07	46	19	-408	-107	-1	0	5	868	237	-136	-72	*	9	29
2015:08	53	19	-294	-28	0	0	*	967	278	-103	-41	*	8	27
2015:09	71	21	-35	-3	0	*	8	1,250	316	-77	-5	5	10	24
2015:10	69	21	-12	-1	0	0	*	1,242	345	-35	0	7	14	34
2015:11	56	16	-74	0	0	0	7	1,201	324	-27	0	6	14	36
2015:12	64	11	-9	0	0	*	6	1,191	356	-26	*	6	13	29
2016:01	75	16	-1	0	0	0	17	1,218	311	-26	0	6	14	40
2016:02	66	15	-55	0	0	0	*	1,278	345	-15	*	6	13	28
2016:03	61	28	-1	0	0	*	21	1,206	369	-13	*	7	14	32
2016:04	49	19	-38	0	0	0	6	1,321	375	-24	*	6	15	38
2016:05	43	12	-36	-1	0	0	14	1,232	348	-24	0	6	14	33
2016:06	58	21	-35	-1	0	0	6	1,373	393	-13	*	6	14	33
2016:07	44	14	-165	-1	0	0	*	878	257	-8	*	6	14	34
2016:08	62	31	-7	0	0	0	6	1,103	340	-28	0	5	13	40
2016:09	43	24	-44	-1	0	*	*	1,217	386	-14	*	6	14	33
2016:10	53	15	-5	0	0	*	17	1,052	335	-24	0	6	14	41
2016:11	55	18	-1	0	0	0	*	1,228	361	-18	*	7	14	33
2016:12	54	14	-12	0	0	0	26	1,143	342	-16	0	5	13	28

difb

Type of DM

	T1							T2						
	N	NMiss	P10	P25	P50	P75	P90	N	NMiss	P10	P25	P50	P75	P90
All	1,982	4,504	0	0	0	6	102	49,099	83,756	*	5	11	42	182
doDM														
2010:01	0	143	.	.	.	.	.	5	1,434	0	0	*	*	*
2010:02	*	85	0	0	*	6	6	140	1,111	*	*	7	11	14
2010:03	6	74	0	0	*	10	11	222	1,335	*	4	8	18	30
2010:04	8	58	0	0	*	*	5	203	1,073	0	4	8	21	34
2010:05	11	66	0	0	0	6	8	312	1,049	0	4	8	17	33
2010:06	5	83	0	8	14	22	27	753	5,715	5	10	27	56	95
2010:07	7	65	0	14	22	126	550	152	840	*	7	20	39	66
2010:08	10	91	0	*	62	70	77	178	980	*	5	14	63	116
2010:09	10	64	0	0	0	*	68	263	1,250	*	6	12	50	135
2010:10	4	65	0	0	*	9	16	238	1,177	0	5	11	33	78
2010:11	5	72	0	4	14	33	147	277	1,292	*	7	14	50	175
2010:12	12	73	0	0	6	13	14	303	1,206	*	6	12	46	200
2011:01	12	69	0	0	0	*	7	270	1,217	0	4	9	27	124
2011:02	9	82	0	0	0	*	4	242	1,079	0	6	10	28	190
2011:03	8	86	0	*	*	10	258	336	1,442	*	6	13	49	240
2011:04	13	41	0	0	0	*	177	328	1,108	*	5	12	42	182
2011:05	10	70	0	0	14	39	58	419	1,412	*	7	15	50	237
2011:06	*	55	0	0	0	14	14	1,008	4,969	6	15	64	153	366
2011:07	13	59	0	0	0	24	109	361	1,291	4	13	47	151	327
2011:08	15	71	0	0	0	*	48	384	1,458	*	8	40	132	372
2011:09	16	63	0	0	0	7	143	396	1,581	*	7	22	127	252
2011:10	14	67	0	0	0	10	44	364	1,378	*	7	20	118	296
2011:11	17	72	0	0	0	14	372	416	1,506	*	6	14	70	313
2011:12	14	64	0	0	*	8	205	353	1,299	*	6	13	71	295
2012:01	17	88	0	0	*	7	310	387	1,187	*	6	13	71	262

2012:02	8	50	0	0	*	172	308	344	1,172	*	7	18	61	385
2012:03	15	62	0	0	0	*	63	405	1,380	*	6	14	94	406
2012:04	14	39	0	0	0	0	42	416	929	0	5	10	33	245
2012:05	24	65	0	0	0	30	163	492	1,153	*	7	14	35	154
2012:06	12	74	0	0	*	15	46	874	3,061	5	11	38	122	405
2012:07	11	48	0	*	87	201	392	270	832	*	6	15	75	257
2012:08	6	69	0	0	*	75	214	326	1,003	*	6	17	100	223
2012:09	16	59	0	0	0	4	45	405	1,081	*	7	14	88	321
2012:10	13	74	0	0	0	7	289	404	1,193	*	7	17	64	218
2012:11	14	59	0	0	0	*	9	422	1,226	*	6	14	68	253
2012:12	13	37	0	0	0	*	252	322	978	*	7	13	67	249
2013:01	29	76	0	0	0	6	134	385	1,005	*	6	11	76	344
2013:02	16	79	0	0	0	*	8	377	891	*	7	15	65	301
2013:03	17	63	0	0	0	29	311	331	976	*	7	16	75	428
2013:04	21	65	0	0	0	5	23	365	965	*	5	13	38	322
2013:05	18	46	0	0	*	25	86	422	861	*	7	14	50	260
2013:06	12	63	*	6	210	333	373	518	1,713	6	13	47	152	506
2013:07	4	47	0	*	7	126	245	226	735	*	10	51	203	713
2013:08	8	62	0	9	96	461	1245	240	776	4	9	94	339	768
2013:09	*	49	0	0	*	202	202	316	960	4	8	37	231	506
2013:10	5	66	0	4	7	174	191	303	921	*	7	31	205	539
2013:11	18	64	0	0	4	42	203	324	945	*	6	14	213	588
2013:12	18	57	0	0	0	212	963	328	804	0	5	11	118	574
2014:01	25	73	0	0	0	57	233	429	850	0	*	8	23	244
2014:02	34	44	0	0	0	6	26	512	642	0	*	7	18	56
2014:03	38	48	0	0	0	*	17	689	734	*	4	8	20	65
2014:04	29	37	0	0	0	*	98	568	571	*	4	10	27	90
2014:05	25	61	0	0	0	0	143	653	636	*	5	9	25	84
2014:06	22	35	0	0	0	8	102	744	741	*	6	13	49	158
2014:07	25	41	0	0	0	*	20	534	471	*	5	12	40	224
2014:08	27	49	0	0	0	5	553	540	523	*	4	11	59	178
2014:09	29	44	0	0	0	12	168	877	554	*	5	10	30	156
2014:10	34	39	0	0	0	20	272	759	541	*	5	11	31	87
2014:11	44	39	0	0	0	34	378	752	612	*	6	13	47	171
2014:12	34	36	0	0	0	*	158	713	601	*	5	10	33	106
2015:01	32	45	0	0	0	5	17	745	566	*	4	8	33	133
2015:02	41	38	0	0	0	12	138	756	603	*	5	10	30	144
2015:03	35	44	0	0	0	13	105	882	706	*	5	11	43	169
2015:04	39	34	0	0	*	73	354	753	599	*	5	12	39	198
2015:05	35	46	0	0	0	*	23	777	568	*	6	12	41	148
2015:06	43	30	0	0	0	0	19	884	710	*	6	13	44	270
2015:07	26	39	0	0	0	6	26	616	489	*	4	10	36	227
2015:08	34	38	0	0	0	*	11	699	546	*	5	10	46	200
2015:09	53	39	0	0	0	7	20	1,056	510	*	5	8	22	137
2015:10	53	37	0	0	0	*	7	1,144	443	*	4	9	26	110
2015:11	46	26	0	0	0	*	17	1,130	395	*	4	9	28	91
2015:12	55	20	0	0	0	5	34	1,120	427	*	4	8	22	75
2016:01	65	26	0	0	0	*	26	1,151	378	*	4	9	33	104
2016:02	57	24	0	0	0	*	37	1,210	413	*	4	8	20	82
2016:03	54	35	0	0	0	7	133	1,160	415	*	4	9	23	73
2016:04	42	26	0	0	0	*	31	1,248	448	*	4	9	27	97
2016:05	36	19	0	0	0	14	91	1,186	394	*	4	9	28	91
2016:06	50	29	0	0	0	8	49	1,327	439	*	4	8	23	84
2016:07	34	24	0	0	0	0	14	843	292	*	*	8	24	97
2016:08	54	39	0	0	0	5	133	1,042	401	*	4	9	32	103
2016:09	34	33	0	0	0	*	147	1,183	420	*	4	9	25	98
2016:10	47	21	0	0	0	5	18	1,005	382	*	4	9	29	114
2016:11	48	25	0	0	0	0	11	1,187	402	*	5	9	29	92
2016:12	46	22	0	0	0	5	226	1,100	385	0	*	8	21	80

difa

Type of DM

	T1							T2						
	N	NMiss	P10	P25	P50	P75	P90	N	NMiss	P10	P25	P50	P75	P90

All	4,532	1,954	4	52	296	1019	1657	95,778	37,077	27	70	236	874	1475
doDM														
2010:01	97	46	97	385	1501	2090	2213	969	470	82	168	1141	1729	2144
2010:02	62	26	122	481	1688	2075	2271	856	395	62	121	1441	2041	2142
2010:03	59	21	70	273	1370	1730	2114	1,046	511	39	89	1145	1645	2100
2010:04	46	20	21	193	1429	2007	2148	859	417	28	109	1393	1656	2054
2010:05	49	28	167	726	1944	2021	2110	941	420	27	145	1058	1580	2029
2010:06	57	31	84	499	1357	1886	2082	4,628	1,840	86	258	1336	1595	1995
2010:07	50	22	80	425	1366	1937	2295	690	302	52	191	1314	1629	2003
2010:08	65	36	77	141	1456	1881	2086	791	367	38	198	1273	1525	1939
2010:09	54	20	32	233	1266	1853	1974	974	539	56	195	1255	1664	1923
2010:10	42	27	41	567	1407	1929	2356	965	450	63	157	1226	1541	1886
2010:11	54	23	5	310	1336	1846	2114	1,065	504	56	146	1185	1638	1847
2010:12	62	23	44	395	1232	1589	1863	1,042	467	36	116	1149	1554	1834
2011:01	62	19	56	376	975	1731	1782	1,001	486	34	125	843	1363	1784
2011:02	62	29	*	99	1122	1719	1897	892	429	48	135	1097	1392	1771
2011:03	76	18	34	562	1245	1698	1870	1,210	568	41	140	1055	1617	1750
2011:04	35	19	31	234	1231	1663	1818	1,015	421	33	208	1038	1401	1708
2011:05	54	26	146	275	1126	1685	1764	1,260	571	61	235	1000	1379	1694
2011:06	43	15	11	76	1114	1554	1685	4,232	1,745	82	223	982	1280	1635
2011:07	58	14	31	168	957	1573	1678	1,137	515	64	192	946	1231	1622
2011:08	62	24	43	163	1079	1574	1703	1,284	558	57	167	921	1281	1609
2011:09	53	26	*	52	489	1130	1646	1,374	603	43	131	869	1145	1550
2011:10	51	30	*	132	824	1483	1778	1,226	516	40	113	848	1208	1533
2011:11	66	23	15	146	858	1414	1572	1,358	564	49	138	821	1106	1518
2011:12	48	30	24	42	1133	1503	1603	1,167	485	35	112	787	1070	1476
2012:01	70	35	21	116	922	1344	1653	1,157	417	36	98	757	1095	1434
2012:02	45	13	52	410	892	1358	1467	1,097	419	42	96	742	1197	1434
2012:03	57	20	9	177	911	1331	1570	1,304	481	36	103	720	1270	1414
2012:04	35	18	6	91	663	1251	1504	998	347	30	131	671	1037	1324
2012:05	61	28	6	250	664	1214	1371	1,209	436	33	195	658	942	1321
2012:06	62	24	14	302	917	1247	1568	2,883	1,052	69	190	626	934	1270
2012:07	39	20	17	207	853	1274	1783	814	288	40	179	598	839	1232
2012:08	50	25	62	244	739	1156	1387	969	360	43	145	562	823	1216
2012:09	53	22	*	90	568	1166	1276	1,099	387	56	141	538	969	1198
2012:10	58	29	23	480	695	1101	1253	1,154	443	37	137	509	752	1157
2012:11	46	27	18	132	537	1033	1092	1,174	474	48	134	480	871	1112
2012:12	36	14	18	112	591	1029	1169	948	352	38	133	468	985	1129
2013:01	73	32	*	84	523	980	1156	1,031	359	41	112	420	823	1065
2013:02	65	30	*	47	360	942	1291	930	338	44	95	397	836	1059
2013:03	59	21	8	43	462	962	1344	932	375	31	195	382	911	1043
2013:04	62	24	*	41	403	880	1108	972	358	35	259	392	903	1058
2013:05	44	20	18	270	563	945	1208	961	322	47	239	334	838	1021
2013:06	59	16	149	225	440	900	1037	1,653	578	103	210	300	806	941
2013:07	38	13	5	160	239	807	864	687	274	107	195	287	801	972
2013:08	49	21	108	235	484	810	1162	761	255	86	163	266	757	880
2013:09	34	18	66	142	277	794	938	943	333	60	125	203	626	855
2013:10	48	23	48	109	235	751	951	885	339	47	102	190	696	839
2013:11	56	26	8	62	295	641	951	931	338	28	77	151	665	808
2013:12	47	28	4	55	128	666	809	845	287	32	65	142	647	799
2014:01	63	35	7	140	402	675	992	945	334	25	50	140	616	755
2014:02	63	15	*	39	202	697	1012	849	305	19	40	104	568	666
2014:03	58	28	4	35	167	623	1107	1,035	388	15	47	121	532	672
2014:04	44	22	*	31	158	515	622	832	307	21	44	132	520	669
2014:05	56	30	4	49	154	529	1126	956	333	19	42	114	484	642
2014:06	43	14	9	80	229	504	629	1,074	411	17	55	92	394	599
2014:07	46	20	18	40	98	504	690	763	242	28	51	92	417	542
2014:08	56	20	*	36	83	411	498	767	296	14	34	93	395	559
2014:09	54	19	*	8	67	404	725	1,030	401	14	40	96	391	551
2014:10	50	23	5	40	227	390	649	963	337	17	37	98	358	487
2014:11	59	24	4	45	133	426	1042	1,021	343	17	45	106	347	485
2014:12	52	18	6	34	100	285	433	967	347	22	46	107	317	454
2015:01	45	32	4	50	134	324	451	976	335	15	40	96	277	406
2015:02	57	22	*	31	106	256	584	985	374	15	39	94	267	420
2015:03	60	19	4	32	168	351	768	1,164	424	19	41	108	239	407
2015:04	44	29	*	41	147	300	762	982	370	17	40	106	203	353
2015:05	59	22	*	32	126	261	616	1,026	319	19	46	110	187	360
2015:06	59	14	*	21	105	173	245	1,210	384	21	56	94	163	337
2015:07	46	19	*	17	93	156	408	835	270	21	46	83	136	317

2015:08	50	22	*	4	48	165	807	932	313	13	31	74	108	280
2015:09	70	22	*	9	46	82	297	1,199	367	13	31	70	120	333
2015:10	67	23	*	4	41	94	142	1,191	396	14	35	75	129	340
2015:11	53	19	*	9	54	133	416	1,151	374	14	30	71	114	323
2015:12	61	14	*	28	56	103	240	1,151	396	14	34	67	113	282
2016:01	71	20	*	4	54	145	510	1,153	376	12	29	63	107	323
2016:02	64	17	4	45	83	205	393	1,203	420	15	33	71	113	321
2016:03	55	34	*	24	79	263	426	1,146	429	15	34	76	110	320
2016:04	46	22	*	8	52	181	511	1,254	442	14	33	68	129	309
2016:05	38	17	*	9	43	232	484	1,182	398	13	30	76	116	262
2016:06	53	26	*	21	60	109	267	1,302	464	13	34	75	105	260
2016:07	42	16	*	29	91	214	390	824	311	13	33	64	103	201
2016:08	56	37	*	10	56	183	367	1,053	390	14	31	68	104	239
2016:09	35	32	*	12	44	171	412	1,139	464	14	33	69	108	236
2016:10	48	20	*	19	62	165	439	978	409	15	32	73	123	314
2016:11	52	21	*	*	32	109	218	1,148	441	13	30	69	105	252
2016:12	44	24	*	16	69	199	399	1,073	412	14	33	69	101	251