# Supplementary Online Content

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This supplementary material has been provided by the authors to give readers additional information about their work.

**eMethods. Data Analysis**

Step 1 We regressed the monthly number of preterm male and, separately, female births to Latina women for the 94 months before the 2016 election (i.e., the Obama environment) on the monthly number of *term* births to Latina women in the same month as preterm births (i.e., month *t*) as well as in the two months *after* (i.e., month *t*+1 and *t*+2), and on the monthly number of preterm births among non-Latina women at month *t*. All 3 birth count variables exhibited strong seasonality and were, consistent with convention,[1] differenced at 12 months (i.e., the number of births at month *t* subtracted from those at month *t*+12) to remove seasonality. We specified the regressions as follows.

$$\Delta^{12}Y_t = C + \beta_0\Delta^{12}X_{1t} + \beta_1\Delta^{12}X_{1t+1} + \beta_2\Delta^{12}X_{1t+2} + \beta_3\Delta^{12}X_{2t} + e_t$$

In which $Y_t$ is the differenced monthly number of preterm male or female births to Latina women in the U.S. $\Delta^{12}$ is the "difference operator" that indicates Y, $X_1$, and $X_2$ at *t* were subtracted from Y, $X_1$, and $X_2$ at *t*-12 to remove seasonality from the series. C is a constant. $\beta_0$ through $\beta_3$ are estimated regression coefficients shown in **eTable 1** below. $X_{1t}$ is the monthly number of term male or female births to Latina women in the U.S. $X_{2t}$ is the monthly number of male or female preterm births to non-Latina women in the U.S. e is the error term at month t.

Step 2 We used Box and Jenkins methods[1] to detect autocorrelation including trends, cycles (e.g. seasonality), and/or the tendency to remain temporarily elevated or depressed after high or low values in the residuals of the sex-specific models estimated in step 1. We converted the models estimated in step 1 to Box-Jenkins transfer functions that included parameters that specify any autocorrelation detected in step 2. The general form of the transfer functions were as follows.

$$\Delta^{12}Y_t = C + \beta_0\Delta^{12}X_{1t} + \beta_1\Delta^{12}X_{1t+1} + \beta_2\Delta^{12}X_{1t+2} + \beta_3\Delta^{12}X_{2t} + (1-\theta B^q)/(1-\phi B^p)\alpha_t$$

In which Y, $X_1$, $X_2$, and $\Delta^{12}$ are as defined above. $\beta_0$ through $\beta_3$ are estimated coefficients shown in **eTable 1** below. $\phi$ is an autoregressive coefficient that expresses the tendency of Y to remain elevated or depressed after high or low values. B is the "backshift operator" or value of $\alpha$ at *t*-p or *t*-q. $\theta$ is a moving average coefficient that expresses the proportion of $\alpha$ at time *t*-1 carried into time *t*. $\alpha_t$ is the error term at month *t*.

Step 3 We applied the transfer functions devised in step 2 (i.e., those estimated for the 94 Obama era months) to 103 months ending July 2017 to estimate counterfactuals for the 9 birth cohorts in gestation at the election (i.e. those born from November 2016 through July 2017). We fixed the coefficients in the transfer functions to those estimated in step 2 for the 94 Obama era months. The counterfactuals and observed values appear in **Figure 1** of the main text. The argument that the Trump election increased preterm birth among Latinas implies that the mean of the last 9 residuals of this model (i.e., the observed values less the counterfactual values for months 95 through 103) will significantly exceed the mean of all 103 residuals.

Step 4 To determine if the mean of the last 9 residuals of the model estimated in step 3 differed significantly from the mean of all 103 residuals, we regressed the 103 residuals from the transfer function estimated in step 3 on an exposure variable scored 1 for November through July 2016 and 0 otherwise. The results, as described in the main text, were as follows.

Males: $\alpha_{mt} = -1.28 + 149.14X_t + e_t$

Females: $\alpha_{ft} = 0.19 + 110.58X_t + e_t$

Standard errors for the coefficients on X were 31.02 and 25.02 respectively for males and females. Standard errors for the constants were 9.8 for males and 7.92 for females. The error terms for both regressions had means of 0, constant variance, and exhibited no autocorrelation.

Critical Period Exploration As noted in the main text, we explored birth cohort-specific associations with the election to detect plausible "critical periods" in pregnancy. We regressed the 103 residuals estimated in step 3 on an "election indicator" variable scored 1 for November 2016 and 0 otherwise. The binary variable was specified in the synchronous configuration in which preterm births and the election indicator variable were in the same month, as well as in 8 configurations in which the election preceded births by 1 through 8 months. The results of this regression appear in **eTable 2** below and in **Figure 2** of the main text.

Alternative Tests We conducted two additional tests, as described in the main text, to determine how sensitive our results were to analytic approach. In the first, we proceeded through steps 1 and 2 above but used all 103 monthly test cohorts. We then expanded the transfer function estimated in step 2 to include the binary election variable. This model provided estimates of the unique contribution of all the independent variables described above to temporal variation in sex-specific preterm births to Latina women. **eTable 3** shows the results of this estimation. We infer support for our hypothesis given that the coefficients for the election variable significantly exceed 0 for males (177.80; standard error = 41.73) as well as females (112.77; standard error = 27.82).

In a second robustness check, we again implemented the first two steps described above for all 103 cohorts but then used the methods of Chang, Tiao, and Chen to detect segments of the residuals that formed not only level shifts such as those we hypothesized, but also changes in slope, as well as spike-and-decay sequences.[2] Given the exploratory nature of this approach, we set significance as segments likely to occur by chance once in 100 experiments. Our theory implies a level shift at or near the election. The Chang, Tiao, and Chen method detected an upward level shift among males born to Latina women that included the months August 2016 through July 2017. An upward level shift including October 2016 through July 2017 appeared for females. Other detected segments included 4 decaying spikes for males (down in May 2012 and March 2013; up in October 2012 and November 2013) and one decaying spike (down in March 2014) for females. No slope changes appeared for either sex.

## eMethods 2. Statistical Code and Output

```
THE PC SCA STATISTICAL SYSTEM ( Release 5.2-Enterprise )

COPYRIGHT 1985-1998, SCIENTIFIC COMPUTING ASSOCIATES. ALL RIGHTS RESERVED
SCA PRODUCT  IDENTIFICATION: UTS & EXPERT (GSA OPTIONAL)
SCA SOFTWARE IDENTIFICATION: UC-BERKELEY.NETW ( 98110618 )
RELEASE  DATE:   9/ 1/97

SIZE OF WORKSPACE IS  999000  SINGLE PRECISION WORDS
DATE --  2/ 2/**              TIME -- 23:48:24
--


Input year,month,@
dsfall,nsfall,dsfhisp,nsfhisp,@
dsmall,nsmall,dsmhisp,nsmhisp

YEAR    , A  132  BY   1 VARIABLE, IS STORED IN THE WORKSPACE
MONTH   , A  132  BY   1 VARIABLE, IS STORED IN THE WORKSPACE
DSFALL  , A  132  BY   1 VARIABLE, IS STORED IN THE WORKSPACE
NSFALL  , A  132  BY   1 VARIABLE, IS STORED IN THE WORKSPACE
DSFHISP , A  132  BY   1 VARIABLE, IS STORED IN THE WORKSPACE
NSFHISP , A  132  BY   1 VARIABLE, IS STORED IN THE WORKSPACE
DSMALL  , A  132  BY   1 VARIABLE, IS STORED IN THE WORKSPACE
NSMALL  , A  132  BY   1 VARIABLE, IS STORED IN THE WORKSPACE
DSMHISP , A  132  BY   1 VARIABLE, IS STORED IN THE WORKSPACE
NSMHISP , A  132  BY   1 VARIABLE, IS STORED IN THE WORKSPACE
--


Pro out brief.

PROFILE OF THE CURRENT SESSION:

STYLE OF THIS SESSION . . .   PARTIAL
PROMPTING OF THIS SESSION .    NORMAL
ECHO OF THE INSTRUCTION . .       YES
LEVEL OF OUTPUT . . . . . .     BRIEF
COMPUTATION PRECISION . . .    SINGLE
FILE FOR INSTRUCTIONS . . .         6
FILE FOR OUTPUT . . . . . .        10
WIDTH OF INPUT DEVICE . . .        72
WIDTH OF OUTPUT DEVICE. . .        80
--


Workspace compressed. Novar 1000

THE WORKSPACE IS COMPRESSED
THE MAXIMUM NUMBER OF VARIABLES IS EXPANDED TO1018
--


Sel old year,month,dsfall,nsfall,dsfhisp,@
nsfhisp,dsmall,nsmall,dsmhisp,nsmhisp.@
new years,months,dsfalls,nsfalls,dsfhisps,@
nsfhisps,dsmalls,nsmalls,dsmhisps,nsmhisps.@
span (25,127)
```

```
VARIABLE   YEAR   IS EDITED, THE RESULT IS STORED IN VARIABLE  YEARS
VARIABLE  YEARS   IS  A  103  BY   1  MATRIX
VARIABLE  MONTH   IS EDITED, THE RESULT IS STORED IN VARIABLE  MONTHS
VARIABLE  MONTHS  IS  A  103  BY   1  MATRIX
VARIABLE  DSFALL  IS EDITED, THE RESULT IS STORED IN VARIABLE DSFALLS
VARIABLE DSFALLS  IS  A  103  BY   1  MATRIX
VARIABLE  NSFALL  IS EDITED, THE RESULT IS STORED IN VARIABLE NSFALLS
VARIABLE NSFALLS  IS  A  103  BY   1  MATRIX
VARIABLE DSFHISP  IS EDITED, THE RESULT IS STORED IN VARIABLE DSFHISPS
VARIABLE DSFHISPS IS  A  103  BY   1  MATRIX
VARIABLE NSFHISP  IS EDITED, THE RESULT IS STORED IN VARIABLE NSFHISPS
VARIABLE NSFHISPS IS  A  103  BY   1  MATRIX
VARIABLE  DSMALL  IS EDITED, THE RESULT IS STORED IN VARIABLE DSMALLS
VARIABLE DSMALLS  IS  A  103  BY   1  MATRIX
VARIABLE  NSMALL  IS EDITED, THE RESULT IS STORED IN VARIABLE NSMALLS
VARIABLE NSMALLS  IS  A  103  BY   1  MATRIX
VARIABLE DSMHISP  IS EDITED, THE RESULT IS STORED IN VARIABLE DSMHISPS
VARIABLE DSMHISPS IS  A  103  BY   1  MATRIX
VARIABLE NSMHISP  IS EDITED, THE RESULT IS STORED IN VARIABLE NSMHISPS
VARIABLE NSMHISPS IS  A  103  BY   1  MATRIX
--


nov16=years-years
--


Nov16(95)=1
--


n16step=nov16
--


n16step(96)=1
--


n16step(97)=1
--


n16step(98)=1
--


n16step(99)=1
--


n16step(100)=1
--


n16step(101)=1
--


n16step(102)=1
--
```

```
n16step(103)=1
--


prin years,months,nov16,n16step

YEARS    IS  A   103  BY     1  VARIABLE
MONTHS   IS  A   103  BY     1  VARIABLE
NOV16    IS  A   103  BY     1  VARIABLE
N16STEP  IS  A   103  BY     1  VARIABLE


VARIABLE      YEARS    MONTHS      NOV16   N16STEP
COLUMN-->        1         1          1         1
  ROW
    1     2009.000     1.000       .000      .000
    2     2009.000     2.000       .000      .000
    3     2009.000     3.000       .000      .000
    4     2009.000     4.000       .000      .000
    5     2009.000     5.000       .000      .000
    6     2009.000     6.000       .000      .000
    7     2009.000     7.000       .000      .000
    8     2009.000     8.000       .000      .000
    9     2009.000     9.000       .000      .000
   10     2009.000    10.000       .000      .000
   11     2009.000    11.000       .000      .000
   12     2009.000    12.000       .000      .000
   13     2010.000     1.000       .000      .000
   14     2010.000     2.000       .000      .000
   15     2010.000     3.000       .000      .000
   16     2010.000     4.000       .000      .000
   17     2010.000     5.000       .000      .000
   18     2010.000     6.000       .000      .000
   19     2010.000     7.000       .000      .000
   20     2010.000     8.000       .000      .000
   21     2010.000     9.000       .000      .000
   22     2010.000    10.000       .000      .000
   23     2010.000    11.000       .000      .000
   24     2010.000    12.000       .000      .000
   25     2011.000     1.000       .000      .000
   26     2011.000     2.000       .000      .000
   27     2011.000     3.000       .000      .000
   28     2011.000     4.000       .000      .000
   29     2011.000     5.000       .000      .000
   30     2011.000     6.000       .000      .000
   31     2011.000     7.000       .000      .000
   32     2011.000     8.000       .000      .000
   33     2011.000     9.000       .000      .000
   34     2011.000    10.000       .000      .000
   35     2011.000    11.000       .000      .000
   36     2011.000    12.000       .000      .000
   37     2012.000     1.000       .000      .000
   38     2012.000     2.000       .000      .000
   39     2012.000     3.000       .000      .000
   40     2012.000     4.000       .000      .000
   41     2012.000     5.000       .000      .000
   42     2012.000     6.000       .000      .000
   43     2012.000     7.000       .000      .000
   44     2012.000     8.000       .000      .000
   45     2012.000     9.000       .000      .000
   46     2012.000    10.000       .000      .000
   47     2012.000    11.000       .000      .000
   48     2012.000    12.000       .000      .000
```

```
  49     2013.000     1.000      .000      .000
  50     2013.000     2.000      .000      .000
  51     2013.000     3.000      .000      .000
  52     2013.000     4.000      .000      .000
  53     2013.000     5.000      .000      .000
  54     2013.000     6.000      .000      .000
  55     2013.000     7.000      .000      .000
  56     2013.000     8.000      .000      .000
  57     2013.000     9.000      .000      .000
  58     2013.000    10.000      .000      .000
  59     2013.000    11.000      .000      .000
  60     2013.000    12.000      .000      .000
  61     2014.000     1.000      .000      .000
  62     2014.000     2.000      .000      .000
  63     2014.000     3.000      .000      .000
  64     2014.000     4.000      .000      .000
  65     2014.000     5.000      .000      .000
  66     2014.000     6.000      .000      .000
  67     2014.000     7.000      .000      .000
  68     2014.000     8.000      .000      .000
  69     2014.000     9.000      .000      .000
  70     2014.000    10.000      .000      .000
  71     2014.000    11.000      .000      .000
  72     2014.000    12.000      .000      .000
  73     2015.000     1.000      .000      .000
  74     2015.000     2.000      .000      .000
  75     2015.000     3.000      .000      .000
  76     2015.000     4.000      .000      .000
  77     2015.000     5.000      .000      .000
  78     2015.000     6.000      .000      .000
  79     2015.000     7.000      .000      .000
  80     2015.000     8.000      .000      .000
  81     2015.000     9.000      .000      .000
  82     2015.000    10.000      .000      .000
  83     2015.000    11.000      .000      .000
  84     2015.000    12.000      .000      .000
  85     2016.000     1.000      .000      .000
  86     2016.000     2.000      .000      .000
  87     2016.000     3.000      .000      .000
  88     2016.000     4.000      .000      .000
  89     2016.000     5.000      .000      .000
  90     2016.000     6.000      .000      .000
  91     2016.000     7.000      .000      .000
  92     2016.000     8.000      .000      .000
  93     2016.000     9.000      .000      .000
  94     2016.000    10.000      .000      .000
  95     2016.000    11.000     1.000     1.000
  96     2016.000    12.000      .000     1.000
  97     2017.000     1.000      .000     1.000
  98     2017.000     2.000      .000     1.000
  99     2017.000     3.000      .000     1.000
 100     2017.000     4.000      .000     1.000
 101     2017.000     5.000      .000     1.000
 102     2017.000     6.000      .000     1.000
 103     2017.000     7.000      .000     1.000
--


PSHis=nsmhisps+nsfhisps
--


Step1=nsfalls+nsmalls
```

```
--

PSNHIS=step1-pshis
--

TSHIS=dsfhisps+dsmhisps
--

TSHISa=dsfhisp+dsmhisp
--

Psmhis=nsmhisps
--

psmnh=nsmalls-psmhis
--

psfhis=nsfhisps
--

psfnh=nsfalls-psfhis
--

tsmhis=dsmhisps
--

tsmhisa=dsmhisp
--

tsfhis=dsfhisps
--

tsfhisa=dsfhisp
--

sel old tsmhisa,tsfhisa,tshisa.@
new tsmhis1,tsfhis1,tshis1. Span (26,128)

VARIABLE TSMHISA  IS EDITED, THE RESULT IS STORED IN VARIABLE TSMHIS1
VARIABLE TSMHIS1  IS  A  103  BY   1  MATRIX
VARIABLE TSFHISA  IS EDITED, THE RESULT IS STORED IN VARIABLE TSFHIS1
VARIABLE TSFHIS1  IS  A  103  BY   1  MATRIX
VARIABLE  TSHISA  IS EDITED, THE RESULT IS STORED IN VARIABLE  TSHIS1
VARIABLE  TSHIS1  IS  A  103  BY   1  MATRIX
--

sel old tsmhisa,tsfhisa,tshisa.@
new tsmhis2,tsfhis2,tshis2. Span (27,129)

VARIABLE TSMHISA  IS EDITED, THE RESULT IS STORED IN VARIABLE TSMHIS2
```

```
VARIABLE TSMHIS2  IS  A  103  BY   1  MATRIX
VARIABLE TSFHISA  IS EDITED, THE RESULT IS STORED IN VARIABLE TSFHIS2
VARIABLE TSFHIS2  IS  A  103  BY   1  MATRIX
VARIABLE  TSHISA  IS EDITED, THE RESULT IS STORED IN VARIABLE  TSHIS2
VARIABLE  TSHIS2  IS  A  103  BY   1  MATRIX
--


prin nov16,tshis,tshis1,tshis2

NOV16    IS  A   103  BY     1  VARIABLE
TSHIS    IS  A   103  BY     1  VARIABLE
TSHIS1   IS  A   103  BY     1  VARIABLE
TSHIS2   IS  A   103  BY     1  VARIABLE


VARIABLE     NOV16     TSHIS    TSHIS1    TSHIS2
COLUMN-->       1         1         1         1
  ROW
    1         .000 82043.000 74331.000 80369.000
    2         .000 74331.000 80369.000 77249.000
    3         .000 80369.000 77249.000 80046.000
    4         .000 77249.000 80046.000 81471.000
    5         .000 80046.000 81471.000 87418.000
    6         .000 81471.000 87418.000 86838.000
    7         .000 87418.000 86838.000 86514.000
    8         .000 86838.000 86514.000 82312.000
    9         .000 86514.000 82312.000 76246.000
   10         .000 82312.000 76246.000 79986.000
   11         .000 76246.000 79986.000 76611.000
   12         .000 79986.000 76611.000 69403.000
   13         .000 76611.000 69403.000 76418.000
   14         .000 69403.000 76418.000 72605.000
   15         .000 76418.000 72605.000 73894.000
   16         .000 72605.000 73894.000 75228.000
   17         .000 73894.000 75228.000 79666.000
   18         .000 75228.000 79666.000 81956.000
   19         .000 79666.000 81956.000 81897.000
   20         .000 81956.000 81897.000 78406.000
   21         .000 81897.000 78406.000 76150.000
   22         .000 78406.000 76150.000 79031.000
   23         .000 76150.000 79031.000 74609.000
   24         .000 79031.000 74609.000 67912.000
   25         .000 74609.000 67912.000 73713.000
   26         .000 67912.000 73713.000 69578.000
   27         .000 73713.000 69578.000 72602.000
   28         .000 69578.000 72602.000 75148.000
   29         .000 72602.000 75148.000 77988.000
   30         .000 75148.000 77988.000 81848.000
   31         .000 77988.000 81848.000 79186.000
   32         .000 81848.000 79186.000 74760.000
   33         .000 79186.000 74760.000 73196.000
   34         .000 74760.000 73196.000 74626.000
   35         .000 73196.000 74626.000 72585.000
   36         .000 74626.000 72585.000 67882.000
   37         .000 72585.000 67882.000 71769.000
   38         .000 67882.000 71769.000 66814.000
   39         .000 71769.000 66814.000 71690.000
   40         .000 66814.000 71690.000 72667.000
   41         .000 71690.000 72667.000 78536.000
   42         .000 72667.000 78536.000 81910.000
   43         .000 78536.000 81910.000 78027.000
   44         .000 81910.000 78027.000 77346.000
```

```
  45         .000 78027.000 77346.000 73010.000
  46         .000 77346.000 73010.000 73281.000
  47         .000 73010.000 73281.000 73172.000
  48         .000 73281.000 73172.000 64785.000
  49         .000 73172.000 64785.000 69786.000
  50         .000 64785.000 69786.000 67505.000
  51         .000 69786.000 67505.000 71762.000
  52         .000 67505.000 71762.000 70495.000
  53         .000 71762.000 70495.000 77879.000
  54         .000 70495.000 77879.000 79946.000
  55         .000 77879.000 79946.000 77637.000
  56         .000 79946.000 77637.000 76700.000
  57         .000 77637.000 76700.000 72359.000
  58         .000 76700.000 72359.000 75977.000
  59         .000 72359.000 75977.000 73886.000
  60         .000 75977.000 73886.000 65872.000
  61         .000 73886.000 65872.000 70755.000
  62         .000 65872.000 70755.000 68848.000
  63         .000 70755.000 68848.000 72477.000
  64         .000 68848.000 72477.000 71944.000
  65         .000 72477.000 71944.000 79304.000
  66         .000 71944.000 79304.000 80235.000
  67         .000 79304.000 80235.000 80138.000
  68         .000 80235.000 80138.000 77463.000
  69         .000 80138.000 77463.000 72564.000
  70         .000 77463.000 72564.000 77097.000
  71         .000 72564.000 77097.000 74037.000
  72         .000 77097.000 74037.000 67293.000
  73         .000 74037.000 67293.000 72885.000
  74         .000 67293.000 72885.000 70295.000
  75         .000 72885.000 70295.000 72265.000
  76         .000 70295.000 72265.000 73530.000
  77         .000 72265.000 73530.000 79474.000
  78         .000 73530.000 79474.000 81239.000
  79         .000 79474.000 81239.000 80742.000
  80         .000 81239.000 80742.000 77526.000
  81         .000 80742.000 77526.000 73336.000
  82         .000 77526.000 73336.000 77375.000
  83         .000 73336.000 77375.000 73079.000
  84         .000 77375.000 73079.000 69007.000
  85         .000 73079.000 69007.000 72682.000
  86         .000 69007.000 72682.000 69317.000
  87         .000 72682.000 69317.000 72337.000
  88         .000 69317.000 72337.000 73701.000
  89         .000 72337.000 73701.000 77243.000
  90         .000 73701.000 77243.000 82122.000
  91         .000 77243.000 82122.000 80039.000
  92         .000 82122.000 80039.000 76463.000
  93         .000 80039.000 76463.000 73388.000
  94         .000 76463.000 73388.000 75020.000
  95        1.000 73388.000 75020.000 72312.000
  96         .000 75020.000 72312.000 65317.000
  97         .000 72312.000 65317.000 70995.000
  98         .000 65317.000 70995.000 66348.000
  99         .000 70995.000 66348.000 71662.000
 100         .000 66348.000 71662.000 72366.000
 101         .000 71662.000 72366.000 76351.000
 102         .000 72366.000 76351.000 80438.000
 103         .000 76351.000 80438.000 77804.000
--


prin nov16,tsmhis,tsmhis1,tsmhis2
```

```
NOV16     IS  A   103  BY     1  VARIABLE
TSMHIS    IS  A   103  BY     1  VARIABLE
TSMHIS1   IS  A   103  BY     1  VARIABLE
TSMHIS2   IS  A   103  BY     1  VARIABLE


VARIABLE      NOV16    TSMHIS   TSMHIS1   TSMHIS2
COLUMN-->       1         1         1         1
  ROW
    1         .000 41560.000 37834.000 41105.000
    2         .000 37834.000 41105.000 39509.000
    3         .000 41105.000 39509.000 41120.000
    4         .000 39509.000 41120.000 41895.000
    5         .000 41120.000 41895.000 44597.000
    6         .000 41895.000 44597.000 44580.000
    7         .000 44597.000 44580.000 44079.000
    8         .000 44580.000 44079.000 42130.000
    9         .000 44079.000 42130.000 39163.000
   10         .000 42130.000 39163.000 40680.000
   11         .000 39163.000 40680.000 38874.000
   12         .000 40680.000 38874.000 35514.000
   13         .000 38874.000 35514.000 38830.000
   14         .000 35514.000 38830.000 37044.000
   15         .000 38830.000 37044.000 37852.000
   16         .000 37044.000 37852.000 38484.000
   17         .000 37852.000 38484.000 40614.000
   18         .000 38484.000 40614.000 41601.000
   19         .000 40614.000 41601.000 41692.000
   20         .000 41601.000 41692.000 39837.000
   21         .000 41692.000 39837.000 39065.000
   22         .000 39837.000 39065.000 40049.000
   23         .000 39065.000 40049.000 37849.000
   24         .000 40049.000 37849.000 34691.000
   25         .000 37849.000 34691.000 37467.000
   26         .000 34691.000 37467.000 35788.000
   27         .000 37467.000 35788.000 37256.000
   28         .000 35788.000 37256.000 38458.000
   29         .000 37256.000 38458.000 40109.000
   30         .000 38458.000 40109.000 41842.000
   31         .000 40109.000 41842.000 40299.000
   32         .000 41842.000 40299.000 37858.000
   33         .000 40299.000 37858.000 37500.000
   34         .000 37858.000 37500.000 37795.000
   35         .000 37500.000 37795.000 36697.000
   36         .000 37795.000 36697.000 34597.000
   37         .000 36697.000 34597.000 36643.000
   38         .000 34597.000 36643.000 34174.000
   39         .000 36643.000 34174.000 36760.000
   40         .000 34174.000 36760.000 37186.000
   41         .000 36760.000 37186.000 40202.000
   42         .000 37186.000 40202.000 41460.000
   43         .000 40202.000 41460.000 39850.000
   44         .000 41460.000 39850.000 39401.000
   45         .000 39850.000 39401.000 36880.000
   46         .000 39401.000 36880.000 37128.000
   47         .000 36880.000 37128.000 37137.000
   48         .000 37128.000 37137.000 32870.000
   49         .000 37137.000 32870.000 35985.000
   50         .000 32870.000 35985.000 34546.000
   51         .000 35985.000 34546.000 36504.000
   52         .000 34546.000 36504.000 36093.000
   53         .000 36504.000 36093.000 39906.000
```

```
   54         .000 36093.000 39906.000 40721.000
   55         .000 39906.000 40721.000 39460.000
   56         .000 40721.000 39460.000 39161.000
   57         .000 39460.000 39161.000 37109.000
   58         .000 39161.000 37109.000 38931.000
   59         .000 37109.000 38931.000 37793.000
   60         .000 38931.000 37793.000 33760.000
   61         .000 37793.000 33760.000 36274.000
   62         .000 33760.000 36274.000 35264.000
   63         .000 36274.000 35264.000 37000.000
   64         .000 35264.000 37000.000 36705.000
   65         .000 37000.000 36705.000 40502.000
   66         .000 36705.000 40502.000 40978.000
   67         .000 40502.000 40978.000 40682.000
   68         .000 40978.000 40682.000 39361.000
   69         .000 40682.000 39361.000 36929.000
   70         .000 39361.000 36929.000 39433.000
   71         .000 36929.000 39433.000 37748.000
   72         .000 39433.000 37748.000 34274.000
   73         .000 37748.000 34274.000 37228.000
   74         .000 34274.000 37228.000 36278.000
   75         .000 37228.000 36278.000 36892.000
   76         .000 36278.000 36892.000 37649.000
   77         .000 36892.000 37649.000 40555.000
   78         .000 37649.000 40555.000 41457.000
   79         .000 40555.000 41457.000 41078.000
   80         .000 41457.000 41078.000 39688.000
   81         .000 41078.000 39688.000 37413.000
   82         .000 39688.000 37413.000 39447.000
   83         .000 37413.000 39447.000 37129.000
   84         .000 39447.000 37129.000 35190.000
   85         .000 37129.000 35190.000 37309.000
   86         .000 35190.000 37309.000 35490.000
   87         .000 37309.000 35490.000 36990.000
   88         .000 35490.000 36990.000 37761.000
   89         .000 36990.000 37761.000 39423.000
   90         .000 37761.000 39423.000 41710.000
   91         .000 39423.000 41710.000 40827.000
   92         .000 41710.000 40827.000 39088.000
   93         .000 40827.000 39088.000 37482.000
   94         .000 39088.000 37482.000 38212.000
   95        1.000 37482.000 38212.000 36840.000
   96         .000 38212.000 36840.000 33251.000
   97         .000 36840.000 33251.000 36168.000
   98         .000 33251.000 36168.000 33941.000
   99         .000 36168.000 33941.000 36626.000
  100         .000 33941.000 36626.000 37108.000
  101         .000 36626.000 37108.000 38857.000
  102         .000 37108.000 38857.000 41094.000
  103         .000 38857.000 41094.000 39556.000
--


prin nov16,tsfhis,tsfhis1,tsfhis2

NOV16     IS  A   103  BY     1  VARIABLE
TSFHIS    IS  A   103  BY     1  VARIABLE
TSFHIS1   IS  A   103  BY     1  VARIABLE
TSFHIS2   IS  A   103  BY     1  VARIABLE


VARIABLE      NOV16    TSFHIS   TSFHIS1   TSFHIS2
COLUMN-->       1         1         1         1
```

| ROW | | | | |
|---|---|---|---|---|
| 1 | .000 | 40483.000 | 36497.000 | 39264.000 |
| 2 | .000 | 36497.000 | 39264.000 | 37740.000 |
| 3 | .000 | 39264.000 | 37740.000 | 38926.000 |
| 4 | .000 | 37740.000 | 38926.000 | 39576.000 |
| 5 | .000 | 38926.000 | 39576.000 | 42821.000 |
| 6 | .000 | 39576.000 | 42821.000 | 42258.000 |
| 7 | .000 | 42821.000 | 42258.000 | 42435.000 |
| 8 | .000 | 42258.000 | 42435.000 | 40182.000 |
| 9 | .000 | 42435.000 | 40182.000 | 37083.000 |
| 10 | .000 | 40182.000 | 37083.000 | 39306.000 |
| 11 | .000 | 37083.000 | 39306.000 | 37737.000 |
| 12 | .000 | 39306.000 | 37737.000 | 33889.000 |
| 13 | .000 | 37737.000 | 33889.000 | 37588.000 |
| 14 | .000 | 33889.000 | 37588.000 | 35561.000 |
| 15 | .000 | 37588.000 | 35561.000 | 36042.000 |
| 16 | .000 | 35561.000 | 36042.000 | 36744.000 |
| 17 | .000 | 36042.000 | 36744.000 | 39052.000 |
| 18 | .000 | 36744.000 | 39052.000 | 40355.000 |
| 19 | .000 | 39052.000 | 40355.000 | 40205.000 |
| 20 | .000 | 40355.000 | 40205.000 | 38569.000 |
| 21 | .000 | 40205.000 | 38569.000 | 37085.000 |
| 22 | .000 | 38569.000 | 37085.000 | 38982.000 |
| 23 | .000 | 37085.000 | 38982.000 | 36760.000 |
| 24 | .000 | 38982.000 | 36760.000 | 33221.000 |
| 25 | .000 | 36760.000 | 33221.000 | 36246.000 |
| 26 | .000 | 33221.000 | 36246.000 | 33790.000 |
| 27 | .000 | 36246.000 | 33790.000 | 35346.000 |
| 28 | .000 | 33790.000 | 35346.000 | 36690.000 |
| 29 | .000 | 35346.000 | 36690.000 | 37879.000 |
| 30 | .000 | 36690.000 | 37879.000 | 40006.000 |
| 31 | .000 | 37879.000 | 40006.000 | 38887.000 |
| 32 | .000 | 40006.000 | 38887.000 | 36902.000 |
| 33 | .000 | 38887.000 | 36902.000 | 35696.000 |
| 34 | .000 | 36902.000 | 35696.000 | 36831.000 |
| 35 | .000 | 35696.000 | 36831.000 | 35888.000 |
| 36 | .000 | 36831.000 | 35888.000 | 33285.000 |
| 37 | .000 | 35888.000 | 33285.000 | 35126.000 |
| 38 | .000 | 33285.000 | 35126.000 | 32640.000 |
| 39 | .000 | 35126.000 | 32640.000 | 34930.000 |
| 40 | .000 | 32640.000 | 34930.000 | 35481.000 |
| 41 | .000 | 34930.000 | 35481.000 | 38334.000 |
| 42 | .000 | 35481.000 | 38334.000 | 40450.000 |
| 43 | .000 | 38334.000 | 40450.000 | 38177.000 |
| 44 | .000 | 40450.000 | 38177.000 | 37945.000 |
| 45 | .000 | 38177.000 | 37945.000 | 36130.000 |
| 46 | .000 | 37945.000 | 36130.000 | 36153.000 |
| 47 | .000 | 36130.000 | 36153.000 | 36035.000 |
| 48 | .000 | 36153.000 | 36035.000 | 31915.000 |
| 49 | .000 | 36035.000 | 31915.000 | 33801.000 |
| 50 | .000 | 31915.000 | 33801.000 | 32959.000 |
| 51 | .000 | 33801.000 | 32959.000 | 35258.000 |
| 52 | .000 | 32959.000 | 35258.000 | 34402.000 |
| 53 | .000 | 35258.000 | 34402.000 | 37973.000 |
| 54 | .000 | 34402.000 | 37973.000 | 39225.000 |
| 55 | .000 | 37973.000 | 39225.000 | 38177.000 |
| 56 | .000 | 39225.000 | 38177.000 | 37539.000 |
| 57 | .000 | 38177.000 | 37539.000 | 35250.000 |
| 58 | .000 | 37539.000 | 35250.000 | 37046.000 |
| 59 | .000 | 35250.000 | 37046.000 | 36093.000 |
| 60 | .000 | 37046.000 | 36093.000 | 32112.000 |
| 61 | .000 | 36093.000 | 32112.000 | 34481.000 |
| 62 | .000 | 32112.000 | 34481.000 | 33584.000 |

```
   63         .000 34481.000 33584.000 35477.000
   64         .000 33584.000 35477.000 35239.000
   65         .000 35477.000 35239.000 38802.000
   66         .000 35239.000 38802.000 39257.000
   67         .000 38802.000 39257.000 39456.000
   68         .000 39257.000 39456.000 38102.000
   69         .000 39456.000 38102.000 35635.000
   70         .000 38102.000 35635.000 37664.000
   71         .000 35635.000 37664.000 36289.000
   72         .000 37664.000 36289.000 33019.000
   73         .000 36289.000 33019.000 35657.000
   74         .000 33019.000 35657.000 34017.000
   75         .000 35657.000 34017.000 35373.000
   76         .000 34017.000 35373.000 35881.000
   77         .000 35373.000 35881.000 38919.000
   78         .000 35881.000 38919.000 39782.000
   79         .000 38919.000 39782.000 39664.000
   80         .000 39782.000 39664.000 37838.000
   81         .000 39664.000 37838.000 35923.000
   82         .000 37838.000 35923.000 37928.000
   83         .000 35923.000 37928.000 35950.000
   84         .000 37928.000 35950.000 33817.000
   85         .000 35950.000 33817.000 35373.000
   86         .000 33817.000 35373.000 33827.000
   87         .000 35373.000 33827.000 35347.000
   88         .000 33827.000 35347.000 35940.000
   89         .000 35347.000 35940.000 37820.000
   90         .000 35940.000 37820.000 40412.000
   91         .000 37820.000 40412.000 39212.000
   92         .000 40412.000 39212.000 37375.000
   93         .000 39212.000 37375.000 35906.000
   94         .000 37375.000 35906.000 36808.000
   95        1.000 35906.000 36808.000 35472.000
   96         .000 36808.000 35472.000 32066.000
   97         .000 35472.000 32066.000 34827.000
   98         .000 32066.000 34827.000 32407.000
   99         .000 34827.000 32407.000 35036.000
  100         .000 32407.000 35036.000 35258.000
  101         .000 35036.000 35258.000 37494.000
  102         .000 35258.000 37494.000 39344.000
  103         .000 37494.000 39344.000 38248.000
--

des dsmalls


VARIABLE    NAME    IS   DSMALLS
NUMBER OF OBSERVATIONS       103
NUMBER OF MISSING VALUES       0

                   STATISTIC      STD. ERROR     STATISTIC/S.E.

MEAN            163357.7184        802.7747        203.4914
VARIANCE      66378069.8709
STD DEVIATION     8147.2738
C.  V.              .0499
SKEWNESS           -.1709            .2379
KURTOSIS           -.2658            .4716

                   QUARTILE
```

```
MINIMUM         142759.0000
1ST QUARTILE    158385.0000
MEDIAN          162565.0000
3RD QUARTILE    169610.0000
MAXIMUM         181728.0000

                      RANGE

MAX - MIN        38969.0000
Q3  - Q1         11225.0000


--


des dsfalls



VARIABLE    NAME    IS   DSFALLS
NUMBER OF OBSERVATIONS       103
NUMBER OF MISSING VALUES       0

                   STATISTIC      STD. ERROR     STATISTIC/S.E.

MEAN            155678.4660        771.4831        201.7911
VARIANCE      61304182.1140
STD DEVIATION     7829.6987
C.  V.               .0503
SKEWNESS            -.1216           .2379
KURTOSIS            -.3106           .4716

                   QUARTILE

MINIMUM         136118.0000
1ST QUARTILE    150551.0000
MEDIAN          154723.0000
3RD QUARTILE    161889.0000
MAXIMUM         173357.0000

                      RANGE

MAX - MIN        37239.0000
Q3  - Q1         11338.0000


--


des dsmhisps



VARIABLE    NAME    IS  DSMHISPS
NUMBER OF OBSERVATIONS       103
NUMBER OF MISSING VALUES       0

                   STATISTIC      STD. ERROR     STATISTIC/S.E.

MEAN             38328.2621        239.2368        160.2105
VARIANCE       5895129.0385
STD DEVIATION     2427.9887
C.  V.               .0633
```

```
SKEWNESS              .1693           .2379
KURTOSIS             -.2243           .4716

                   QUARTILE

MINIMUM          32870.0000
1ST QUARTILE     36820.0000
MEDIAN           37849.0000
3RD QUARTILE     40064.0000
MAXIMUM          44597.0000

                      RANGE

MAX - MIN        11727.0000
Q3  - Q1          3244.0000


--


des dsfhisps



VARIABLE    NAME    IS  DSFHISPS
NUMBER OF OBSERVATIONS       103
NUMBER OF MISSING VALUES       0

                   STATISTIC      STD. ERROR     STATISTIC/S.E.

MEAN             36769.8252        234.5537        156.7651
VARIANCE       5666588.3417
STD DEVIATION     2380.4597
C.  V.                .0647
SKEWNESS              .1426           .2379
KURTOSIS             -.4045           .4716

                   QUARTILE

MINIMUM          31915.0000
1ST QUARTILE     35258.0000
MEDIAN           36690.0000
3RD QUARTILE     38392.7500
MAXIMUM          42821.0000

                      RANGE

MAX - MIN        10906.0000
Q3  - Q1          3134.7500


--


des nsmalls



VARIABLE    NAME    IS   NSMALLS
NUMBER OF OBSERVATIONS       103
NUMBER OF MISSING VALUES       0

                   STATISTIC      STD. ERROR     STATISTIC/S.E.
```

```
MEAN             16988.0291        103.9020        163.5005
VARIANCE       1111949.1070
STD DEVIATION     1054.4900
C.  V.               .0621
SKEWNESS             .2370            .2379
KURTOSIS           -.1511            .4716

                  QUARTILE

MINIMUM          14740.0000
1ST QUARTILE     16315.2500
MEDIAN           16953.0000
3RD QUARTILE     17737.7500
MAXIMUM          20089.0000

                     RANGE

MAX - MIN         5349.0000
Q3  - Q1          1422.5000
```

--

des nsfalls

```
VARIABLE    NAME    IS   NSFALLS
NUMBER OF OBSERVATIONS       103
NUMBER OF MISSING VALUES       0

                  STATISTIC      STD. ERROR     STATISTIC/S.E.

MEAN             14628.7282         92.1885        158.6828
VARIANCE        875368.2195
STD DEVIATION      935.6111
C.  V.               .0640
SKEWNESS             .3043            .2379
KURTOSIS             .0338            .4716

                  QUARTILE

MINIMUM          12667.0000
1ST QUARTILE     13930.0000
MEDIAN           14627.0000
3RD QUARTILE     15117.7500
MAXIMUM          17405.0000

                     RANGE

MAX - MIN         4738.0000
Q3  - Q1          1187.7500
```

--

des nsmhisps

```
VARIABLE    NAME    IS  NSMHISPS
NUMBER OF OBSERVATIONS       103
NUMBER OF MISSING VALUES       0

                   STATISTIC      STD. ERROR     STATISTIC/S.E.

MEAN              4226.4660         33.7070        125.3884
VARIANCE        117024.5454
STD DEVIATION      342.0885
C.  V.                .0809
SKEWNESS              .3906           .2379
KURTOSIS              .0652           .4716

                   QUARTILE

MINIMUM           3552.0000
1ST QUARTILE      3985.7500
MEDIAN            4220.0000
3RD QUARTILE      4394.2500
MAXIMUM           5253.0000

                      RANGE

MAX - MIN         1701.0000
Q3  - Q1           408.5000


--


des nsfhisps



VARIABLE    NAME    IS  NSFHISPS
NUMBER OF OBSERVATIONS       103
NUMBER OF MISSING VALUES       0

                   STATISTIC      STD. ERROR     STATISTIC/S.E.

MEAN              3548.4078         28.4964        124.5214
VARIANCE         83640.3811
STD DEVIATION      289.2065
C.  V.                .0815
SKEWNESS              .5568           .2379
KURTOSIS              .4099           .4716

                   QUARTILE

MINIMUM           3009.0000
1ST QUARTILE      3359.5000
MEDIAN            3524.0000
3RD QUARTILE      3685.7500
MAXIMUM           4467.0000

                      RANGE

MAX - MIN         1458.0000
Q3  - Q1           326.2500


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```
nonhm=dsmalls-dsmhisps
--

nonhf=dsfalls-dsfhisps
--

nonhpm=nsmalls-nsmhisps
--

nonhpf=nsfalls-nsfhisps
--

des nonhm


VARIABLE    NAME    IS     NONHM
NUMBER OF OBSERVATIONS       103
NUMBER OF MISSING VALUES       0

                   STATISTIC      STD. ERROR     STATISTIC/S.E.

MEAN            125029.4563        586.1328        213.3125
VARIANCE      35385819.6231
STD DEVIATION     5948.5981
C.  V.               .0476
SKEWNESS            -.2687           .2379
KURTOSIS            -.2445           .4716

                   QUARTILE

MINIMUM         109508.0000
1ST QUARTILE    121593.0000
MEDIAN          125234.0000
3RD QUARTILE    129559.5000
MAXIMUM         137131.0000

                      RANGE

MAX - MIN        27623.0000
Q3  - Q1          7966.5000


--

des nonhf


VARIABLE    NAME    IS     NONHF
NUMBER OF OBSERVATIONS       103
NUMBER OF MISSING VALUES       0

                   STATISTIC      STD. ERROR     STATISTIC/S.E.

MEAN            118908.6408        559.2828        212.6091
VARIANCE      32218118.2913
```

```
STD DEVIATION     5676.1006
C.  V.                .0477
SKEWNESS             -.2146            .2379
KURTOSIS             -.2428            .4716

                   QUARTILE

MINIMUM         104052.0000
1ST QUARTILE    115313.0000
MEDIAN          118810.0000
3RD QUARTILE    122895.8000
MAXIMUM         130536.0000

                      RANGE

MAX - MIN        26484.0000
Q3  - Q1          7582.7500


--


des nonhpm



VARIABLE    NAME    IS    NONHPM
NUMBER OF OBSERVATIONS       103
NUMBER OF MISSING VALUES       0

                   STATISTIC      STD. ERROR     STATISTIC/S.E.

MEAN             12761.5631         71.4830        178.5259
VARIANCE        526311.1504
STD DEVIATION      725.4731
C.  V.                .0568
SKEWNESS              .1536            .2379
KURTOSIS             -.2558            .4716

                   QUARTILE

MINIMUM          11182.0000
1ST QUARTILE     12276.5000
MEDIAN           12733.0000
3RD QUARTILE     13242.5000
MAXIMUM          14836.0000

                      RANGE

MAX - MIN         3654.0000
Q3  - Q1           966.0000


--


des nonhpf



VARIABLE    NAME    IS    NONHPF
NUMBER OF OBSERVATIONS       103
NUMBER OF MISSING VALUES       0
```

```
                   STATISTIC      STD. ERROR     STATISTIC/S.E.

MEAN             11080.3204         64.8137        170.9565
VARIANCE        432683.6512
STD DEVIATION      657.7869
C.  V.               .0594
SKEWNESS             .1719            .2379
KURTOSIS            -.1035            .4716

                   QUARTILE

MINIMUM           9613.0000
1ST QUARTILE     10621.0000
MEDIAN           11099.0000
3RD QUARTILE     11463.0000
MAXIMUM          12938.0000

                      RANGE

MAX - MIN         3325.0000
Q3  - Q1           842.0000


--


uts nam moda. Mod psmhis(12)=con+(0)psmnh(12)+@
(0)tsmhis(12)+(0)tsmhis1(12)+(0)tsmhis2(12)+noise

--


ues mod moda. Hol resi(modar). span 1,94


THE FOLLOWING ANALYSIS IS BASED ON TIME SPAN   1  THRU   94

NONLINEAR ESTIMATION TERMINATED DUE TO:
RELATIVE CHANGE IN (OBJECTIVE FUNCTION)**0.5 LESS THAN  .1000D-02


SUMMARY FOR UNIVARIATE TIME SERIES MODEL --   MODA


-----------------------------------------------------------------------
VARIABLE   TYPE OF    ORIGINAL     DIFFERENCING
          VARIABLE   OR CENTERED
                                       12
 PSMHIS    RANDOM     ORIGINAL     (1-B  )
                                       12
 PSMNH     RANDOM     ORIGINAL     (1-B  )
                                       12
 TSMHIS    RANDOM     ORIGINAL     (1-B  )
                                       12
TSMHIS1    RANDOM     ORIGINAL     (1-B  )
                                       12
TSMHIS2    RANDOM     ORIGINAL     (1-B  )
-----------------------------------------------------------------------


 PARAMETER   VARIABLE  NUM./  FACTOR  ORDER   CONS-     VALUE      STD      T
   LABEL       NAME    DENOM.                 TRAINT               ERROR  VALUE
```

```
  1   CON             CNST      1      0     NONE   -27.7007   14.3789  -1.93
  2          PSMNH    NUM.      1      0     NONE      .1301     .0549   2.37
  3          TSMHIS   NUM.      1      0     NONE      .0672     .0209   3.21
  4         TSMHIS1   NUM.      1      0     NONE      .0062     .0173    .36
  5         TSMHIS2   NUM.      1      0     NONE      .0237     .0161   1.47


EFFECTIVE NUMBER OF OBSERVATIONS . .            82
R-SQUARE . . . . . . . . . . . . . .          .899
RESIDUAL STANDARD ERROR. . . . . . .   .110106E+03
--


uid modar

NAME OF THE SERIES . . . . . . . . . .         MODAR
TIME PERIOD ANALYZED . . . . . . . . . 13  TO    94
MEAN OF THE (DIFFERENCED) SERIES . . .         .0007
STANDARD DEVIATION OF THE SERIES . . .      110.1056
T-VALUE OF MEAN (AGAINST ZERO) . . . .         .0001


AUTOCORRELATIONS

  1- 12     .31  .36  .04  .01  .04  .12  .20  .12  .03 -.23 -.23 -.36
  ST.E.     .11  .12  .13  .13  .13  .13  .13  .14  .14  .14  .14  .15

 13- 24    -.06 -.07  .01 -.03 -.05 -.10  .01 -.01  .13  .01  .11 -.12
  ST.E.     .16  .16  .16  .16  .16  .16  .16  .16  .16  .16  .16  .16


PARTIAL AUTOCORRELATIONS

  1- 12     .31  .29 -.16 -.08  .12  .14  .12 -.05 -.11 -.28 -.10 -.17
  ST.E.     .11  .11  .11  .11  .11  .11  .11  .11  .11  .11  .11  .11

 13- 24     .15  .04 -.07 -.00  .11  .05  .17 -.05 -.00 -.24  .05 -.24
  ST.E.     .11  .11  .11  .11  .11  .11  .11  .11  .11  .11  .11  .11
--


uts nam mod1. Mod psmhis(12)=con+(0)psmnh(12)+@
(0)tsmhis(12)+(0)tsmhis1(12)+(0)tsmhis2(12)+(12)/(1)noise

--


ues mod mod1. Hol resi(mod1r). span 1,94


THE FOLLOWING ANALYSIS IS BASED ON TIME SPAN   1  THRU   94

NONLINEAR ESTIMATION TERMINATED DUE TO:
RELATIVE CHANGE IN (OBJECTIVE FUNCTION)**0.5 LESS THAN  .1000D-02


SUMMARY FOR UNIVARIATE TIME SERIES MODEL --   MOD1


-----------------------------------------------------------------------
VARIABLE   TYPE OF    ORIGINAL     DIFFERENCING
          VARIABLE   OR CENTERED
```

```
                                         12
 PSMHIS    RANDOM     ORIGINAL     (1-B  )
                                         12
 PSMNH     RANDOM     ORIGINAL     (1-B  )
                                         12
 TSMHIS    RANDOM     ORIGINAL     (1-B  )
                                         12
TSMHIS1    RANDOM     ORIGINAL     (1-B  )
                                         12
TSMHIS2    RANDOM     ORIGINAL     (1-B  )
-----------------------------------------------------------------------
```

```
 PARAMETER   VARIABLE  NUM./  FACTOR  ORDER   CONS-     VALUE      STD     T
   LABEL       NAME    DENOM.                 TRAINT               ERROR  VALUE

  1   CON              CNST      1      0     NONE   -34.1430    8.3632  -4.08
  2          PSMNH     NUM.      1      0     NONE      .1369     .0483   2.83
  3          TSMHIS    NUM.      1      0     NONE      .0696     .0172   4.04
  4         TSMHIS1    NUM.      1      0     NONE      .0069     .0127    .55
  5         TSMHIS2    NUM.      1      0     NONE      .0197     .0133   1.48
  6          PSMHIS     MA       1     12     NONE      .7670     .0871   8.80
  7          PSMHIS    D-AR      1      1     NONE      .2359     .1103   2.14


EFFECTIVE NUMBER OF OBSERVATIONS . .            81
R-SQUARE . . . . . . . . . . . . . .          .935
RESIDUAL STANDARD ERROR. . . . . . .   .881706E+02
--


uid mod1r

NAME OF THE SERIES . . . . . . . . . .        MOD1R
TIME PERIOD ANALYZED . . . . . . . . . 14  TO    94
MEAN OF THE (DIFFERENCED) SERIES . . .      -1.2807
STANDARD DEVIATION OF THE SERIES . . .      88.1613
T-VALUE OF MEAN (AGAINST ZERO) . . . .       -.1307


AUTOCORRELATIONS

  1- 12    -.07  .22 -.02  .01  .09  .02  .20  .03  .05 -.18 -.13  .05
  ST.E.     .11  .11  .12  .12  .12  .12  .12  .12  .12  .12  .13  .13

 13- 24    -.06 -.02 -.00 -.03 -.02 -.14  .06 -.07  .06 -.08  .06 -.12
  ST.E.     .13  .13  .13  .13  .13  .13  .13  .13  .13  .13  .13  .13


PARTIAL AUTOCORRELATIONS

  1- 12    -.07  .22  .01 -.04  .09  .04  .18  .05 -.02 -.21 -.19  .09
  ST.E.     .11  .11  .11  .11  .11  .11  .11  .11  .11  .11  .11  .11

 13- 24    -.00 -.12  .01  .04  .06 -.07  .06 -.04 -.02 -.05  .07 -.17
  ST.E.     .11  .11  .11  .11  .11  .11  .11  .11  .11  .11  .11  .11
--


filt old psmhis. New mod1f. mod mod1.


THE FOLLOWING ANALYSIS IS BASED ON TIME SPAN   1  THRU  103
```

```
SERIES  PSMHIS  IS FILTERED USING MODEL   MOD1  , THE RESULT IS IN MOD1F
--


PSMHEXP=psmhis-mod1f
--


input mexp,mobs,mmod1f.

MEXP    , A    9  BY   1 VARIABLE, IS STORED IN THE WORKSPACE
MOBS    , A    9  BY   1 VARIABLE, IS STORED IN THE WORKSPACE
MMOD1F  , A    9  BY   1 VARIABLE, IS STORED IN THE WORKSPACE
--


Des mexp



VARIABLE    NAME    IS      MEXP
NUMBER OF OBSERVATIONS         9
NUMBER OF MISSING VALUES       0

                   STATISTIC      STD. ERROR     STATISTIC/S.E.

MEAN              3944.0755         89.2193         44.2065
VARIANCE         71640.8103
STD DEVIATION      267.6580
C.  V.                .0679
SKEWNESS             -.6802           .7171
KURTOSIS             -.9502          1.3997

                   QUARTILE

MINIMUM           3425.7670
1ST QUARTILE      3691.2710
MEDIAN            3997.0270
3RD QUARTILE      4090.0140
MAXIMUM           4251.3840

                      RANGE

MAX - MIN          825.6167
Q3  - Q1           398.7434


--


Des mobs



VARIABLE    NAME    IS      MOBS
NUMBER OF OBSERVATIONS         9
NUMBER OF MISSING VALUES       0

                   STATISTIC      STD. ERROR     STATISTIC/S.E.

MEAN              4092.0000         84.2036         48.5965
VARIANCE         63812.2500
STD DEVIATION      252.6109
```

```
C.  V.                  .0617
SKEWNESS               -.0396          .7171
KURTOSIS              -1.3091         1.3997

                     QUARTILE

MINIMUM             3698.0000
1ST QUARTILE        3838.2500
MEDIAN              4105.0000
3RD QUARTILE        4224.2500
MAXIMUM             4501.0000

                        RANGE

MAX - MIN            803.0000
Q3  - Q1             386.0000
```

--

```
Des mmod1f
```

```
VARIABLE    NAME    IS    MMOD1F
NUMBER OF OBSERVATIONS         9
NUMBER OF MISSING VALUES       0

                     STATISTIC      STD. ERROR     STATISTIC/S.E.

MEAN                 147.9246         31.6400          4.6752
VARIANCE            9009.7784
STD DEVIATION         94.9199
C.  V.                  .6417
SKEWNESS               -.2180          .7171
KURTOSIS              -1.4309         1.3997

                     QUARTILE

MINIMUM              -13.0740
1ST QUARTILE          67.2747
MEDIAN               145.0880
3RD QUARTILE         215.6662
MAXIMUM              272.2330

                        RANGE

MAX - MIN            285.3070
Q3  - Q1             148.3915
```

--

```
uts nam mod1a. Mod mod1f=(0)n16step(bin)+noise
```

--

```
ues mod mod1a. Hol resi(mod1ar).
```

```
** THE TIME SERIES TO BE ANALYZED HAVE MISSING DATA AT THE
** BEGINNING OR THE USER HAS SPECIFIED TIME SPAN, SOME
** GENERATED SERIES SUCH AS RESIDUALS, FITTED VALUES,
** DISTURBANCE, AND FILTERED SERIES WILL BE SHORTER THAN THE
** ORIGINAL SERIES.


THE FOLLOWING ANALYSIS IS BASED ON TIME SPAN  14  THRU  103

NONLINEAR ESTIMATION TERMINATED DUE TO:
RELATIVE CHANGE IN (OBJECTIVE FUNCTION)**0.5 LESS THAN  .1000D-02


SUMMARY FOR UNIVARIATE TIME SERIES MODEL --  MOD1A


-----------------------------------------------------------------------
VARIABLE   TYPE OF    ORIGINAL     DIFFERENCING
          VARIABLE   OR CENTERED

 MOD1F     RANDOM     ORIGINAL     NONE

N16STEP    BINARY     ORIGINAL     NONE
-----------------------------------------------------------------------


 PARAMETER   VARIABLE  NUM./  FACTOR  ORDER   CONS-     VALUE      STD     T
   LABEL       NAME    DENOM.                 TRAINT                ERROR  VALUE

  1          N16STEP   NUM.      1      0     NONE   147.8617   29.4323   5.02


EFFECTIVE NUMBER OF OBSERVATIONS . .            90
R-SQUARE . . . . . . . . . . . . . . .         .204
RESIDUAL STANDARD ERROR. . . . . . .   .882969E+02
--


uid mod1ar

NAME OF THE SERIES . . . . . . . . . .        MOD1AR
TIME PERIOD ANALYZED . . . . . . . . .  1  TO    90
MEAN OF THE (DIFFERENCED) SERIES . . .      -1.1525
STANDARD DEVIATION OF THE SERIES . . .      88.2894
T-VALUE OF MEAN (AGAINST ZERO) . . . .       -.1238


AUTOCORRELATIONS

  1- 12    -.12  .21 -.03 -.05  .11 -.00  .22  .00  .06 -.17 -.14  .11
  ST.E.     .11  .11  .11  .11  .11  .11  .11  .12  .12  .12  .12  .12

 13- 24    -.10  .04 -.01 -.02 -.01 -.13  .05 -.07  .06 -.11  .08 -.12
  ST.E.     .12  .12  .12  .12  .12  .12  .13  .13  .13  .13  .13  .13


PARTIAL AUTOCORRELATIONS

  1- 12    -.12  .20  .01 -.10  .11  .05  .19  .04 -.00 -.19 -.19  .13
  ST.E.     .11  .11  .11  .11  .11  .11  .11  .11  .11  .11  .11  .11

 13- 24    -.03 -.11  .01  .04  .05 -.06  .02 -.04 -.01 -.09  .09 -.14
  ST.E.     .11  .11  .11  .11  .11  .11  .11  .11  .11  .11  .11  .11
```

```
--


oes mod mod1a

THE FOLLOWING ANALYSIS IS BASED ON TIME SPAN  14  THRU  103


SUMMARY FOR UNIVARIATE TIME SERIES MODEL --  MOD1A

-----------------------------------------------------------------------
VARIABLE   TYPE OF    ORIGINAL     DIFFERENCING
          VARIABLE   OR CENTERED

 MOD1F     RANDOM     ORIGINAL     NONE

N16STEP    BINARY     ORIGINAL     NONE
-----------------------------------------------------------------------

 PARAMETER   VARIABLE  NUM./  FACTOR  ORDER   CONS-     VALUE      STD     T
   LABEL       NAME    DENOM.                TRAINT               ERROR  VALUE

  1          N16STEP   NUM.      1      0     NONE   147.8632   28.1576   5.25


SUMMARY OF OUTLIER DETECTION AND ADJUSTMENT

-------------------------------------
 TIME    ESTIMATE   T-VALUE    TYPE
-------------------------------------
   41    258.067      3.06      AO
-------------------------------------

TOTAL NUMBER OF OBSERVATIONS. . . . . . . . . . . . . . .            90
EFFECTIVE NUMBER OF OBSERVATIONS. . . . . . . . . . . . .            90
RESIDUAL STANDARD ERROR (WITHOUT OUTLIER ADJUSTMENT). .   .882969E+02
RESIDUAL STANDARD ERROR (WITH OUTLIER ADJUSTMENT) . . .   .844727E+02
--


uts nam mod1b. Mod mod1f=(0 to 8)nov16(bin)+noise

--


ues mod mod1b. Hol resi(mod1br).


** THE TIME SERIES TO BE ANALYZED HAVE MISSING DATA AT THE
** BEGINNING OR THE USER HAS SPECIFIED TIME SPAN, SOME
** GENERATED SERIES SUCH AS RESIDUALS, FITTED VALUES,
** DISTURBANCE, AND FILTERED SERIES WILL BE SHORTER THAN THE
** ORIGINAL SERIES.


THE FOLLOWING ANALYSIS IS BASED ON TIME SPAN  14  THRU  103

NONLINEAR ESTIMATION TERMINATED DUE TO:
RELATIVE CHANGE IN (OBJECTIVE FUNCTION)**0.5 LESS THAN  .1000D-02


SUMMARY FOR UNIVARIATE TIME SERIES MODEL --  MOD1B
```

```
--------------------------------------------------------------------------
VARIABLE   TYPE OF    ORIGINAL     DIFFERENCING
           VARIABLE   OR CENTERED

 MOD1F     RANDOM     ORIGINAL     NONE

 NOV16     BINARY     ORIGINAL     NONE
--------------------------------------------------------------------------


 PARAMETER   VARIABLE  NUM./  FACTOR  ORDER   CONS-      VALUE      STD     T
   LABEL       NAME    DENOM.                 TRAINT                ERROR  VALUE

  1           NOV16    NUM.      1      0     NONE    67.0222   82.5787    .81
  2           NOV16    NUM.      1      1     NONE   144.9590   82.5787   1.76
  3           NOV16    NUM.      1      2     NONE    68.0029   82.5787    .82
  4           NOV16    NUM.      1      3     NONE   272.1471   82.5787   3.30
  5           NOV16    NUM.      1      4     NONE   139.1369   82.5787   1.68
  6           NOV16    NUM.      1      5     NONE   173.4951   82.5787   2.10
  7           NOV16    NUM.      1      6     NONE   229.6301   82.5787   2.78
  8           NOV16    NUM.      1      7     NONE   -13.0084   82.5787   -.16
  9           NOV16    NUM.      1      8     NONE   249.3706   82.5787   3.02


EFFECTIVE NUMBER OF OBSERVATIONS . .            82
R-SQUARE . . . . . . . . . . . . . .          .304
RESIDUAL STANDARD ERROR. . . . . . .   .825788E+02
--


uid mod1br

NAME OF THE SERIES . . . . . . . . . .        MOD1BR
TIME PERIOD ANALYZED . . . . . . . . .  9  TO    90
MEAN OF THE (DIFFERENCED) SERIES . . .         .4969
STANDARD DEVIATION OF THE SERIES . . .       82.5773
T-VALUE OF MEAN (AGAINST ZERO) . . . .         .0545


AUTOCORRELATIONS

  1- 12    -.00  .17  .04 -.01  .13  .00  .24  .03  .03 -.16 -.15  .10
  ST.E.     .11  .11  .11  .11  .11  .12  .12  .12  .12  .12  .12  .13

 13- 24    -.14  .03 -.04 -.00 -.02 -.18  .11 -.11  .02  .02 -.01 -.04
  ST.E.     .13  .13  .13  .13  .13  .13  .13  .13  .13  .13  .13  .13


PARTIAL AUTOCORRELATIONS

  1- 12    -.00  .17  .05 -.04  .12  .01  .21  .02 -.04 -.21 -.17  .11
  ST.E.     .11  .11  .11  .11  .11  .11  .11  .11  .11  .11  .11  .11

 13- 24    -.09 -.05  .00  .06  .07 -.10  .08 -.07 -.05  .06  .01 -.14
  ST.E.     .11  .11  .11  .11  .11  .11  .11  .11  .11  .11  .11  .11
--


uts nam modb. Mod psfhis(12)=con+(0)psfnh(12)+@
(0)tsfhis(12)+(0)tsfhis1(12)+(0)tsfhis2(12)+noise

--
```

```
ues mod modb. Hol resi(modbr). span 1,94


THE FOLLOWING ANALYSIS IS BASED ON TIME SPAN   1  THRU   94

NONLINEAR ESTIMATION TERMINATED DUE TO:
RELATIVE CHANGE IN (OBJECTIVE FUNCTION)**0.5 LESS THAN  .1000D-02


SUMMARY FOR UNIVARIATE TIME SERIES MODEL --   MODB


-----------------------------------------------------------------------
VARIABLE   TYPE OF    ORIGINAL     DIFFERENCING
         VARIABLE   OR CENTERED
                                       12
 PSFHIS    RANDOM     ORIGINAL     (1-B  )
                                       12
 PSFNH     RANDOM     ORIGINAL     (1-B  )
                                       12
 TSFHIS    RANDOM     ORIGINAL     (1-B  )
                                       12
TSFHIS1    RANDOM     ORIGINAL     (1-B  )
                                       12
TSFHIS2    RANDOM     ORIGINAL     (1-B  )
-----------------------------------------------------------------------


 PARAMETER   VARIABLE  NUM./  FACTOR  ORDER   CONS-     VALUE      STD     T
   LABEL       NAME    DENOM.                 TRAINT               ERROR  VALUE

  1   CON              CNST      1      0     NONE   -24.2229   11.4199  -2.12
  2          PSFNH     NUM.      1      0     NONE      .1087     .0479   2.27
  3          TSFHIS    NUM.      1      0     NONE      .0768     .0177   4.34
  4         TSFHIS1    NUM.      1      0     NONE      .0151     .0139   1.08
  5         TSFHIS2    NUM.      1      0     NONE      .0057     .0135    .42


EFFECTIVE NUMBER OF OBSERVATIONS . .            82
R-SQUARE . . . . . . . . . . . . . .          .908
RESIDUAL STANDARD ERROR. . . . . . .   .888259E+02
--


uid modbr

NAME OF THE SERIES . . . . . . . . . .        MODBR
TIME PERIOD ANALYZED . . . . . . . . . 13  TO    94
MEAN OF THE (DIFFERENCED) SERIES . . .       -.0002
STANDARD DEVIATION OF THE SERIES . . .      88.8259
T-VALUE OF MEAN (AGAINST ZERO) . . . .        .0000


AUTOCORRELATIONS

  1- 12      .08 -.01  .13  .11  .01  .04  .07  .01  .01  .26  .06 -.33
  ST.E.      .11  .11  .11  .11  .11  .11  .11  .12  .12  .12  .12  .12

 13- 24      .02  .04 -.12 -.07  .13 -.17 -.06  .01  .03 -.14 -.03 -.03
  ST.E.      .13  .13  .13  .13  .13  .14  .14  .14  .14  .14  .14  .14
```

```
PARTIAL AUTOCORRELATIONS

  1- 12     .08 -.02  .13  .09  .00  .03  .05 -.01  .00  .24  .01 -.35
  ST.E.     .11  .11  .11  .11  .11  .11  .11  .11  .11  .11  .11  .11

 13- 24     .01 -.00 -.07 -.02  .15 -.22  .01 -.03  .04  .05  .04 -.22
  ST.E.     .11  .11  .11  .11  .11  .11  .11  .11  .11  .11  .11  .11
--


uts nam mod2. Mod psfhis(12)=con+(0)psfnh(12)+@
(0)tsfhis(12)+(0)tsfhis1(12)+(0)tsfhis2(12)+(10)(12)noise

--


ues mod mod2. Hol resi(mod2r). span 1,94


THE FOLLOWING ANALYSIS IS BASED ON TIME SPAN   1  THRU   94

NONLINEAR ESTIMATION TERMINATED DUE TO:
RELATIVE CHANGE IN (OBJECTIVE FUNCTION)**0.5 LESS THAN  .1000D-02


SUMMARY FOR UNIVARIATE TIME SERIES MODEL --   MOD2


-----------------------------------------------------------------------
VARIABLE   TYPE OF    ORIGINAL     DIFFERENCING
          VARIABLE   OR CENTERED
                                       12
 PSFHIS    RANDOM     ORIGINAL     (1-B  )
                                       12
 PSFNH     RANDOM     ORIGINAL     (1-B  )
                                       12
 TSFHIS    RANDOM     ORIGINAL     (1-B  )
                                       12
TSFHIS1    RANDOM     ORIGINAL     (1-B  )
                                       12
TSFHIS2    RANDOM     ORIGINAL     (1-B  )
-----------------------------------------------------------------------


 PARAMETER   VARIABLE  NUM./  FACTOR  ORDER   CONS-     VALUE      STD     T
   LABEL       NAME    DENOM.                 TRAINT               ERROR  VALUE

  1   CON              CNST      1      0     NONE   -22.8078    7.1604  -3.19
  2          PSFNH     NUM.      1      0     NONE      .1463     .0468   3.13
  3          TSFHIS    NUM.      1      0     NONE      .0676     .0149   4.55
  4         TSFHIS1    NUM.      1      0     NONE      .0195     .0089   2.21
  5         TSFHIS2    NUM.      1      0     NONE      .0067     .0092    .72
  6          PSFHIS     MA       1     10     NONE     -.3915     .1116  -3.51
  7          PSFHIS     MA       2     12     NONE      .6560     .0956   6.86


EFFECTIVE NUMBER OF OBSERVATIONS . .            82
R-SQUARE . . . . . . . . . . . . . .          .936
RESIDUAL STANDARD ERROR. . . . . . .   .742454E+02
--
```

```
uid mod2r

NAME OF THE SERIES . . . . . . . . . .         MOD2R
TIME PERIOD ANALYZED . . . . . . . . . 13  TO    94
MEAN OF THE (DIFFERENCED) SERIES . . .        .1956
STANDARD DEVIATION OF THE SERIES . . .      74.2451
T-VALUE OF MEAN (AGAINST ZERO) . . . .        .0239


AUTOCORRELATIONS

  1- 12     .15  .09  .10  .04  .04 -.07  .01  .01  .03 -.03  .00  .05
  ST.E.     .11  .11  .11  .11  .11  .11  .12  .12  .12  .12  .12  .12

 13- 24     .07  .02 -.08 -.10 -.01 -.16 -.07 -.06  .05  .01 -.01 -.09
  ST.E.     .12  .12  .12  .12  .12  .12  .12  .12  .12  .12  .12  .12


PARTIAL AUTOCORRELATIONS

  1- 12     .15  .06  .08  .01  .03 -.09  .02  .01  .04 -.04  .01  .04
  ST.E.     .11  .11  .11  .11  .11  .11  .11  .11  .11  .11  .11  .11

 13- 24     .07 -.01 -.09 -.10  .03 -.14  .01 -.04  .09 -.01  .02 -.14
  ST.E.     .11  .11  .11  .11  .11  .11  .11  .11  .11  .11  .11  .11
--


filt old psfhis. New mod2f. mod mod2.


THE FOLLOWING ANALYSIS IS BASED ON TIME SPAN   1  THRU  103
SERIES  PSFHIS  IS FILTERED USING MODEL   MOD2  , THE RESULT IS IN MOD2F
--


uts nam mod2b. Mod mod2f=(0)n16step(bin)+noise

--


ues mod mod2b. Hol resi(mod2br).


** THE TIME SERIES TO BE ANALYZED HAVE MISSING DATA AT THE
** BEGINNING OR THE USER HAS SPECIFIED TIME SPAN, SOME
** GENERATED SERIES SUCH AS RESIDUALS, FITTED VALUES,
** DISTURBANCE, AND FILTERED SERIES WILL BE SHORTER THAN THE
** ORIGINAL SERIES.


THE FOLLOWING ANALYSIS IS BASED ON TIME SPAN  13  THRU  103

NONLINEAR ESTIMATION TERMINATED DUE TO:
RELATIVE CHANGE IN (OBJECTIVE FUNCTION)**0.5 LESS THAN  .1000D-02


SUMMARY FOR UNIVARIATE TIME SERIES MODEL --  MOD2B


-----------------------------------------------------------------------
VARIABLE   TYPE OF    ORIGINAL     DIFFERENCING
          VARIABLE   OR CENTERED
```

```
 MOD2F     RANDOM     ORIGINAL     NONE

N16STEP    BINARY     ORIGINAL     NONE
-----------------------------------------------------------------------


 PARAMETER   VARIABLE  NUM./  FACTOR  ORDER   CONS-     VALUE      STD     T
   LABEL       NAME    DENOM.                 TRAINT              ERROR  VALUE

  1          N16STEP   NUM.      1      0     NONE   110.7763   23.9278   4.63


EFFECTIVE NUMBER OF OBSERVATIONS . .           91
R-SQUARE . . . . . . . . . . . . . .         .175
RESIDUAL STANDARD ERROR. . . . . . .   .717834E+02
--


uid mod2br

NAME OF THE SERIES . . . . . . . . . .        MOD2BR
TIME PERIOD ANALYZED . . . . . . . . .  1  TO    91
MEAN OF THE (DIFFERENCED) SERIES . . .        .1764
STANDARD DEVIATION OF THE SERIES . . .      71.7831
T-VALUE OF MEAN (AGAINST ZERO) . . . .        .0234


AUTOCORRELATIONS

  1- 12     .15  .08  .09  .04  .05 -.06 -.00  .01  .05 -.06 -.00  .04
  ST.E.     .10  .11  .11  .11  .11  .11  .11  .11  .11  .11  .11  .11

 13- 24     .07  .03 -.10 -.09  .03 -.16 -.09 -.09  .06  .03  .01 -.08
  ST.E.     .11  .11  .11  .11  .11  .11  .12  .12  .12  .12  .12  .12


PARTIAL AUTOCORRELATIONS

  1- 12     .15  .06  .07  .02  .03 -.09  .01  .01  .06 -.07  .02  .04
  ST.E.     .10  .10  .10  .10  .10  .10  .10  .10  .10  .10  .10  .10

 13- 24     .06  .00 -.10 -.09  .06 -.16 -.01 -.06  .11  .01  .04 -.13
  ST.E.     .10  .10  .10  .10  .10  .10  .10  .10  .10  .10  .10  .10
--


oes mod mod2b

THE FOLLOWING ANALYSIS IS BASED ON TIME SPAN  13  THRU  103


SUMMARY FOR UNIVARIATE TIME SERIES MODEL --  MOD2B

-----------------------------------------------------------------------
VARIABLE   TYPE OF    ORIGINAL     DIFFERENCING
          VARIABLE   OR CENTERED

 MOD2F     RANDOM     ORIGINAL     NONE

N16STEP    BINARY     ORIGINAL     NONE
-----------------------------------------------------------------------
```

```
 PARAMETER   VARIABLE  NUM./  FACTOR  ORDER   CONS-     VALUE      STD     T
   LABEL       NAME    DENOM.                 TRAINT              ERROR  VALUE

  1          N16STEP   NUM.      1      0     NONE   110.7774   22.9210   4.83
```

SUMMARY OF OUTLIER DETECTION AND ADJUSTMENT

```
-------------------------------------
 TIME    ESTIMATE   T-VALUE    TYPE
-------------------------------------
   63   -208.229     -3.03      AO
-------------------------------------
```

```
TOTAL NUMBER OF OBSERVATIONS. . . . . . . . . . . . . .            91
EFFECTIVE NUMBER OF OBSERVATIONS. . . . . . . . . . . .            91
RESIDUAL STANDARD ERROR (WITHOUT OUTLIER ADJUSTMENT). .   .717834E+02
RESIDUAL STANDARD ERROR (WITH OUTLIER ADJUSTMENT) . . .   .687629E+02
--
```

uts nam mod2c. Mod mod2f=(0 to 8)nov16(bin)+noise

--

ues mod mod2c. Hol resi(mod2cr).

** THE TIME SERIES TO BE ANALYZED HAVE MISSING DATA AT THE
** BEGINNING OR THE USER HAS SPECIFIED TIME SPAN, SOME
** GENERATED SERIES SUCH AS RESIDUALS, FITTED VALUES,
** DISTURBANCE, AND FILTERED SERIES WILL BE SHORTER THAN THE
** ORIGINAL SERIES.

THE FOLLOWING ANALYSIS IS BASED ON TIME SPAN  13  THRU  103

NONLINEAR ESTIMATION TERMINATED DUE TO:
RELATIVE CHANGE IN (OBJECTIVE FUNCTION)**0.5 LESS THAN  .1000D-02

SUMMARY FOR UNIVARIATE TIME SERIES MODEL --  MOD2C

```
-----------------------------------------------------------------------
VARIABLE   TYPE OF    ORIGINAL     DIFFERENCING
          VARIABLE   OR CENTERED

 MOD2F     RANDOM     ORIGINAL     NONE

 NOV16     BINARY     ORIGINAL     NONE
-----------------------------------------------------------------------
```

```
 PARAMETER   VARIABLE  NUM./  FACTOR  ORDER   CONS-     VALUE      STD     T
   LABEL       NAME    DENOM.                 TRAINT              ERROR  VALUE

  1            NOV16    NUM.      1      0     NONE   149.5927   69.5361   2.15
  2            NOV16    NUM.      1      1     NONE   115.4649   69.5361   1.66
  3            NOV16    NUM.      1      2     NONE   103.7139   69.5361   1.49
  4            NOV16    NUM.      1      3     NONE   178.4997   69.5361   2.57
  5            NOV16    NUM.      1      4     NONE   100.7980   69.5361   1.45
```

```
  6           NOV16    NUM.      1      5     NONE    69.4913   69.5361   1.00
  7           NOV16    NUM.      1      6     NONE    63.9759   69.5361    .92
  8           NOV16    NUM.      1      7     NONE    49.7765   69.5361    .72
  9           NOV16    NUM.      1      8     NONE   165.6736   69.5361   2.38


EFFECTIVE NUMBER OF OBSERVATIONS . .           83
R-SQUARE . . . . . . . . . . . . . .         .225
RESIDUAL STANDARD ERROR. . . . . . .   .695361E+02
--


uid mod2cr

NAME OF THE SERIES . . . . . . . . . .       MOD2CR
TIME PERIOD ANALYZED . . . . . . . . .  9  TO    91
MEAN OF THE (DIFFERENCED) SERIES . . .       1.6277
STANDARD DEVIATION OF THE SERIES . . .      69.5171
T-VALUE OF MEAN (AGAINST ZERO) . . . .        .2133


AUTOCORRELATIONS

  1- 12     .18  .13  .10  .04  .04 -.01  .07  .07  .01 -.04  .04 -.00
  ST.E.     .11  .11  .12  .12  .12  .12  .12  .12  .12  .12  .12  .12

 13- 24     .02 -.02 -.06 -.09 -.01 -.13 -.05 -.11  .08  .03 -.07 -.11
  ST.E.     .12  .12  .12  .12  .12  .12  .12  .12  .12  .12  .12  .12


PARTIAL AUTOCORRELATIONS

  1- 12     .18  .11  .06  .00  .02 -.03  .07  .05 -.02 -.07  .05 -.01
  ST.E.     .11  .11  .11  .11  .11  .11  .11  .11  .11  .11  .11  .11

 13- 24     .02 -.03 -.07 -.09  .04 -.11 -.01 -.09  .15  .02 -.06 -.13
  ST.E.     .11  .11  .11  .11  .11  .11  .11  .11  .11  .11  .11  .11
--


input stepf

STEPF   , A    9  BY   1 VARIABLE, IS STORED IN THE WORKSPACE
--


Des stepf



VARIABLE    NAME    IS     STEPF
NUMBER OF OBSERVATIONS        9
NUMBER OF MISSING VALUES      0

                   STATISTIC      STD. ERROR     STATISTIC/S.E.

MEAN              3429.7778         66.7622         51.3731
VARIANCE         40114.6944
STD DEVIATION      200.2865
C.  V.                .0584
SKEWNESS            -.5564           .7171
KURTOSIS           -1.2326          1.3997
```

```
                    QUARTILE

MINIMUM           3110.0000
1ST QUARTILE      3177.7500
MEDIAN            3497.0000
3RD QUARTILE      3536.7500
MAXIMUM           3691.0000

                       RANGE

MAX - MIN          581.0000
Q3  - Q1           359.0000


--


PSfHEXP=psfhis-mod2f
--


Prin years,months,psfhis,psfhexp,psmhis,psmhexp

YEARS    IS  A   103  BY     1  VARIABLE
MONTHS   IS  A   103  BY     1  VARIABLE
PSFHIS   IS  A   103  BY     1  VARIABLE
PSFHEXP  IS  A   103  BY     1  VARIABLE
PSMHIS   IS  A   103  BY     1  VARIABLE
PSMHEXP  IS  A   103  BY     1  VARIABLE


VARIABLE      YEARS    MONTHS    PSFHIS   PSFHEXP    PSMHIS   PSMHEXP
COLUMN-->         1         1         1         1         1         1
  ROW
    1      2009.000     1.000  4186.000       ***  4969.000       ***
    2      2009.000     2.000  3678.000       ***  4274.000       ***
    3      2009.000     3.000  4179.000       ***  4806.000       ***
    4      2009.000     4.000  4068.000       ***  4722.000       ***
    5      2009.000     5.000  4228.000       ***  4937.000       ***
    6      2009.000     6.000  4287.000       ***  5062.000       ***
    7      2009.000     7.000  4467.000       ***  5253.000       ***
    8      2009.000     8.000  3975.000       ***  4948.000       ***
    9      2009.000     9.000  3720.000       ***  4344.000       ***
   10      2009.000    10.000  4055.000       ***  4821.000       ***
   11      2009.000    11.000  3542.000       ***  4370.000       ***
   12      2009.000    12.000  3980.000       ***  4677.000       ***
   13      2010.000     1.000  3863.000  3775.954  4625.000       ***
   14      2010.000     2.000  3360.000  3344.503  3995.000  3968.867
   15      2010.000     3.000  3856.000  3945.289  4440.000  4501.207
   16      2010.000     4.000  3625.000  3709.634  4274.000  4270.243
   17      2010.000     5.000  3936.000  3861.382  4338.000  4498.478
   18      2010.000     6.000  3841.000  3888.639  4692.000  4587.037
   19      2010.000     7.000  3852.000  3981.820  4622.000  4777.671
   20      2010.000     8.000  3805.000  3749.825  4614.000  4553.411
   21      2010.000     9.000  3456.000  3478.450  4151.000  4113.557
   22      2010.000    10.000  3956.000  3851.744  4681.000  4578.192
   23      2010.000    11.000  3593.000  3540.557  4323.000  4333.215
   24      2010.000    12.000  3878.000  3866.911  4508.000  4572.536
   25      2011.000     1.000  3761.000  3614.911  4351.000  4445.580
   26      2011.000     2.000  3254.000  3154.539  3811.000  3772.887
   27      2011.000     3.000  3781.000  3664.367  4356.000  4254.964
   28      2011.000     4.000  3296.000  3421.614  4068.000  4104.965
   29      2011.000     5.000  3617.000  3692.407  4373.000  4317.970
```

| | | | | | | |
|---|---|---|---|---|---|---|
| 30 | 2011.000 | 6.000 | 3760.000 | 3831.469 | 4633.000 | 4627.254 |
| 31 | 2011.000 | 7.000 | 3704.000 | 3779.675 | 4588.000 | 4588.333 |
| 32 | 2011.000 | 8.000 | 3706.000 | 3689.641 | 4348.000 | 4516.791 |
| 33 | 2011.000 | 9.000 | 3285.000 | 3260.171 | 3958.000 | 3860.737 |
| 34 | 2011.000 | 10.000 | 3729.000 | 3653.432 | 4345.000 | 4252.593 |
| 35 | 2011.000 | 11.000 | 3371.000 | 3370.717 | 4123.000 | 4114.581 |
| 36 | 2011.000 | 12.000 | 3600.000 | 3639.455 | 4209.000 | 4243.474 |
| 37 | 2012.000 | 1.000 | 3654.000 | 3593.593 | 4099.000 | 4226.446 |
| 38 | 2012.000 | 2.000 | 3141.000 | 3153.940 | 3798.000 | 3710.482 |
| 39 | 2012.000 | 3.000 | 3472.000 | 3478.684 | 4220.000 | 4119.113 |
| 40 | 2012.000 | 4.000 | 3250.000 | 3185.087 | 3787.000 | 3866.291 |
| 41 | 2012.000 | 5.000 | 3524.000 | 3588.437 | 4476.000 | 4217.933 |
| 42 | 2012.000 | 6.000 | 3516.000 | 3648.397 | 4385.000 | 4431.266 |
| 43 | 2012.000 | 7.000 | 3778.000 | 3776.460 | 4550.000 | 4519.015 |
| 44 | 2012.000 | 8.000 | 3684.000 | 3660.472 | 4404.000 | 4434.981 |
| 45 | 2012.000 | 9.000 | 3245.000 | 3194.393 | 3875.000 | 3789.449 |
| 46 | 2012.000 | 10.000 | 3674.000 | 3718.016 | 4475.000 | 4383.241 |
| 47 | 2012.000 | 11.000 | 3481.000 | 3371.531 | 4087.000 | 4036.809 |
| 48 | 2012.000 | 12.000 | 3586.000 | 3509.701 | 4314.000 | 4141.634 |
| 49 | 2013.000 | 1.000 | 3526.000 | 3540.924 | 4152.000 | 4210.311 |
| 50 | 2013.000 | 2.000 | 3024.000 | 2951.293 | 3558.000 | 3501.134 |
| 51 | 2013.000 | 3.000 | 3358.000 | 3351.253 | 3951.000 | 4040.606 |
| 52 | 2013.000 | 4.000 | 3170.000 | 3154.626 | 3634.000 | 3812.499 |
| 53 | 2013.000 | 5.000 | 3440.000 | 3546.953 | 4082.000 | 4188.097 |
| 54 | 2013.000 | 6.000 | 3491.000 | 3434.010 | 4107.000 | 4162.219 |
| 55 | 2013.000 | 7.000 | 3636.000 | 3695.303 | 4482.000 | 4444.095 |
| 56 | 2013.000 | 8.000 | 3569.000 | 3513.254 | 4240.000 | 4307.077 |
| 57 | 2013.000 | 9.000 | 3084.000 | 3161.216 | 3796.000 | 3662.323 |
| 58 | 2013.000 | 10.000 | 3497.000 | 3639.421 | 4225.000 | 4371.004 |
| 59 | 2013.000 | 11.000 | 3250.000 | 3255.233 | 3827.000 | 3982.699 |
| 60 | 2013.000 | 12.000 | 3501.000 | 3611.521 | 4107.000 | 4207.826 |
| 61 | 2014.000 | 1.000 | 3506.000 | 3553.932 | 4151.000 | 4174.656 |
| 62 | 2014.000 | 2.000 | 3009.000 | 3027.599 | 3564.000 | 3599.284 |
| 63 | 2014.000 | 3.000 | 3152.000 | 3360.229 | 3927.000 | 3984.967 |
| 64 | 2014.000 | 4.000 | 3212.000 | 3284.724 | 3771.000 | 3799.471 |
| 65 | 2014.000 | 5.000 | 3518.000 | 3487.543 | 4122.000 | 4193.638 |
| 66 | 2014.000 | 6.000 | 3498.000 | 3549.984 | 4124.000 | 4199.819 |
| 67 | 2014.000 | 7.000 | 3655.000 | 3686.178 | 4499.000 | 4450.437 |
| 68 | 2014.000 | 8.000 | 3398.000 | 3447.360 | 4103.000 | 4246.865 |
| 69 | 2014.000 | 9.000 | 3154.000 | 3217.358 | 3882.000 | 3771.780 |
| 70 | 2014.000 | 10.000 | 3556.000 | 3591.883 | 4333.000 | 4312.390 |
| 71 | 2014.000 | 11.000 | 3281.000 | 3265.765 | 3902.000 | 3930.290 |
| 72 | 2014.000 | 12.000 | 3497.000 | 3588.807 | 4289.000 | 4245.388 |
| 73 | 2015.000 | 1.000 | 3531.000 | 3405.962 | 4098.000 | 4154.488 |
| 74 | 2015.000 | 2.000 | 3065.000 | 2994.745 | 3552.000 | 3568.872 |
| 75 | 2015.000 | 3.000 | 3472.000 | 3397.076 | 4062.000 | 4006.456 |
| 76 | 2015.000 | 4.000 | 3160.000 | 3229.465 | 3870.000 | 3873.797 |
| 77 | 2015.000 | 5.000 | 3480.000 | 3445.474 | 4026.000 | 4101.369 |
| 78 | 2015.000 | 6.000 | 3483.000 | 3524.083 | 4214.000 | 4240.315 |
| 79 | 2015.000 | 7.000 | 3625.000 | 3697.502 | 4391.000 | 4477.546 |
| 80 | 2015.000 | 8.000 | 3457.000 | 3458.362 | 4250.000 | 4178.137 |
| 81 | 2015.000 | 9.000 | 3311.000 | 3180.346 | 3775.000 | 3890.065 |
| 82 | 2015.000 | 10.000 | 3588.000 | 3515.168 | 4252.000 | 4292.173 |
| 83 | 2015.000 | 11.000 | 3291.000 | 3358.152 | 3844.000 | 3868.320 |
| 84 | 2015.000 | 12.000 | 3581.000 | 3577.385 | 4309.000 | 4213.276 |
| 85 | 2016.000 | 1.000 | 3429.000 | 3485.734 | 4031.000 | 4083.055 |
| 86 | 2016.000 | 2.000 | 3224.000 | 3133.144 | 3735.000 | 3641.280 |
| 87 | 2016.000 | 3.000 | 3449.000 | 3393.347 | 4087.000 | 4035.618 |
| 88 | 2016.000 | 4.000 | 3183.000 | 3189.602 | 3818.000 | 3800.924 |
| 89 | 2016.000 | 5.000 | 3476.000 | 3425.537 | 4190.000 | 4067.452 |
| 90 | 2016.000 | 6.000 | 3593.000 | 3504.584 | 4250.000 | 4269.724 |
| 91 | 2016.000 | 7.000 | 3631.000 | 3588.139 | 4451.000 | 4332.513 |
| 92 | 2016.000 | 8.000 | 3645.000 | 3572.073 | 4381.000 | 4245.766 |

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   93     2016.000     9.000  3118.000  3124.247  3844.000  3777.837
   94     2016.000    10.000  3589.000  3474.647  4161.000  4144.675
   95     2016.000    11.000  3363.000  3213.406  3914.000  3846.977
   96     2016.000    12.000  3581.000  3465.534  4238.000  4093.040
   97     2017.000     1.000  3500.000  3396.285  4065.000  3996.997
   98     2017.000     2.000  3116.000  2937.499  3698.000  3425.850
   99     2017.000     3.000  3461.000  3360.201  4105.000  3965.862
  100     2017.000     4.000  3110.000  3040.508  3813.000  3639.503
  101     2017.000     5.000  3497.000  3433.023  4311.000  4081.368
  102     2017.000     6.000  3549.000  3499.223  4183.000  4196.008
  103     2017.000     7.000  3691.000  3525.325  4501.000  4251.627
--

stop
```

**eTable 1.** Estimated Parameters for Step 1 Regressions and Step 2 Transfer Functions for Monthly Male and Female Preterm Births to Latina Women in the United States for the First 94 Months of the Obama Presidency

| | Step 1 regressions | | Step 2 transfer functions | |
|---|---|---|---|---|
| | Males | Females | Males | Females |
| Constant | -27.70 (14.38) | -24.22* (11.42) | -34.21** (8.39) | -22.81** (7.16) |
| Term births (differenced at) to Latina women at month t | 0.07** (0.02) | 0.08** (0.02) | 0.07** (0.02) | 0.07** (0.01) |
| Term births (differenced at 12) to Latina women at month t+1 | 0.01 (0.02) | 0.01 (0.01) | 0.01 (0.01) | 0.02* (0.01) |
| Term Births (differenced at 12) to Latina women at month t+2 | 0.02 (0.0161) | 0.01 (0.01) | 0.02 (0.01) | 0.01 (0.01) |
| Preterm births (differenced at 12) to other women at month t | 0.13* (0.05) | 0.11* (0.05) | 0.14** (0.04) | 0.15** (0.05) |
| Autoregression at p=1 | | | 0.23* (0.11) | none |
| Moving Average at q = 10<br>Moving Average at q = 12 | | | none<br>0.77** (0.08) | -0.39** (0.11)<br>0.67** (0.09) |

*p<.05, 2-tailed test

**p<.01, 2-tailed test

Standard errors are given in parentheses. Births were differenced at 12 months.

**eTable 2.** Estimated Parameters for Regressions of Male and Female Preterm Births to Latina Women on the Presidential Election of November 2016

| | Male | Female |
|---|---|---|
| Constant | 0.55 (9.66) | 1.82 (8.08) |
| Election in month of births | 66.46 (83.14) | 147.76* (69.98) |
| 1 month before births | 144.40 (83.14) | 113.64 (69.98) |
| 2 months before births | 67.44 (83.14) | 101.88 (69.98) |
| 3 months before births | 271.58** (83.14) | 176.67* (69.98) |
| 4 months before births | 138.57 (83.14) | 98.97 (69.98) |
| 5 months before births | 172.93* (83.14) | 67.66 (69.98) |
| 6 months before births | 229.07** (83.14) | 62.15 (69.98) |
| 7 months before births | -13.56 (83.14) | 47.95 (69.98) |
| 8 months before births | 248.82** (83.14) | 163.84* (69.98) |

*p<.05, 2-tailed test

**p<.01, 2-tailed test

Regressions are adjusted for population at risk and preterm births to non-Latina women. Includes 103 months ending July 2017. Standard errors are given in parentheses.

**eTable 3.** Estimated Parameters for Full Transfer Functions for Monthly Male and Female Preterm Births to Latina women in the United States for the 103 Months Beginning January 2009

| | Males | Females |
|---|---|---|
| Constant | -32.39** (8.25) | -23.27** (6.82) |
| Term births (differenced at 12 months) to Latina women at month t | 0.06** (0.02) | 0.14** (0.04) |
| Term births (differenced at 12 months) to Latina women at month t+1 | 0.01 (0.01) | 0.02* (0.01) |
| Term Births (differenced at 12 months) to Latina women at month t+2 | 0.01 (0.01) | 0.01 (0.01) |
| Preterm births (differenced at 12 months) to other women at month t | 0.15** (0.05) | 0.14* (0.04) |
| Election variable (scored 1 for November through July 2016 and 0 otherwise) | 177.80** (41.73) | 112.77** (27.82) |
| Autoregression at p=1 | 0.20* (0.10) | none |
| Moving Average at q = 10<br><br>Moving Average at q = 12 | none<br><br>0.72** (0.09) | -0.36** (0.11)<br><br>0.66** (0.09) |

*p<.05, 2-tailed test

**p<.01, 2-tailed test

Standard errors are given in parentheses. Functions are differenced at 12 months.

## eReferences


1. Box G, Jenkins G, Reinsel G. *Time Series Analysis: Forecasting and Control*. 4th ed. Hoboken, NJ: Wiley, 2008.
2. Chang I, Tiao GC, Chen C. Estimation of time series parameters in the presence of outliers. *Technometrics* 1988;30:193-204.