American Housing Survey

Listing of Programs and Variables Used in CINCH and Rental Dynamics Analysis for 2007 and 2009 American Housing Surveys

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The following 11 programs and one data set have been posted on the American Housing Survey (AHS) Web site:

- CINCH_09_09_DATA: For each control number, this SAS DATA SET file contains the weights used in the forward-looking CINCH analysis (FLCINCHWT) and the weights used in the backward-looking CINCH analysis (BLCINCHWT), along with the variables used to identify CINCH status and rental affordability status. These variables are defined in this document. One can replicate the rental dynamics tables using this file only. To replicate the CINCH tables, one has to use the following SAS codes along with data from the 2007 and 2009 AHS files.

- FORWARD_WEIGHTS_07_09: the program used to create FLCINCHWT.

- BACKWARD_WEIGHTS_07_09: the program used to create BLCINCHWT.

- FORWARD_TABLE_1: the program used to generate Forward-Looking Table 1.

- FORWARD_TABLE_2: the program used to generate Forward-Looking Table 2.

- FORWARD_TABLE_3: the program used to generate Forward-Looking Table 3.

- FORWARD_TABLE_4: the program used to generate Forward-Looking Table 4.

- BACKWARD_TABLE_1: the program used to generate Backward-Looking Table 1.

- BACKWARD_TABLE_2: the program used to generate Backward-Looking Table 2.

- BACKWARD_TABLE_3: the program used to generate Backward-Looking Table 3.

- BACKWARD_TABLE_4: the program used to generate Backward-Looking Table 4.

- RENT_DYNAMICS_07_09: the program used to generate the rental dynamics core tables.

The following pages define the variables that were used to generate the CINCH and rental dynamics tables. The CINCH_07_09_DATA file contains these variables.

Each of the variables defined below is calculated using variables defined elsewhere.

Definitions for SAME, INTLOSS, etc., can be found in the companion document, *Weighting Strategy for 2007-2009 CINCH Analysis*.[1] This document also explains how the weights were derived.

Definitions for NOINT, OWNRENT, and other variables with IN07_ or IN09_ prefixes can be found in the AHS Codebook or the Housing Affordability Data System documentation.[2] The IN07_ and IN09_ prefixes indicate which AHS survey (2007 or 2009) was used for the value of that particular variable.

CONTROL = Control number

This is the scrambled control number from the AHS masterfile. It is used to preserve confidentiality and to enable longitudinal matches to earlier files. It is a character variable of 12 spaces in length.

IN09_REUAD = Reason unit got added to sample – see AHS Codebook for definition.

IN09_SAMEDU = Same HU as last enumeration – see AHS Codebook for a definition of this variable and see the AHS_FAQ for an explanation of the variable.

IN09_SAMEDU2 = "a revised" Same HU as last enumeration.

> The logic used for the code is presented first, and then the interpretation for the various values of SAMEDU2 is given. The code is sequential, that is, later lines will overwrite earlier lines.
>
> IN09_SAMEDU2 = B
>
> IF IN09_SAMEDU = 2, IN09_SAMEDU2 = 1
>
> IF (IN09_SAMEDU = 2 AND (((IN05_NUNIT2 = IN09_NUNIT2) AND (IN07_NUNIT2 NE IN09_NUNIT2)) OR ((IN05_ROOMS = IN09_ROOMS) AND (IN07_ROOMS NE IN09_ROOMS)))) THEN IN09_SAMEDU2 = 2
>
> IF (IN09_SAMEDU = 2 AND ((IN07_NOINT = "B" OR IN07_NOINT LT 30) AND IN09_NOINT GE 30)) THEN IN09_SAMEDU2 = 3
>
> IF (IN09_SAMEDU =2 AND (IN07_NUNIT2 = 4 AND IN09_NOINT = 13)) THEN IN09_SAMEDU2 = 4

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[1] Found on the HUD AHS Web site under CINCH files: http://www.huduser.org/portal/datasets/cinch.html.

[2] Found at http://www.huduser.org/portal/datasets/ahs/ahsprev.html#codebooks and at http://www.huduser.org/portal/datasets/hads/hads.html.

IF (IN09_SAMEDU = 2 AND IN09_SAMEDU2 NE 2 AND (IN09_NUNIT2 = 4 AND (IN07_NUNIT2 = B OR (IN07_NUNIT2 = 4 AND (IN07_BUILT NE IN09_BUILT)) OR IN07_NUNIT2 LT 4))) THEN IN09_SAMEDU = 5

IF (IN09_SAMEDU = 2 AND IN09_NUNIT2 NE 4 AND (IN09_BUILT LT 2007 AND ((IN05_ROOMS = IN07_ROOMS) AND (IN07_ROOMS LT IN09_ROOMS))) AND IN09_NOINT = B) THEN IN09_SAMEDU2 = 6

IF (IN09_SAMEDU = 2 AND IN09_NUNIT2 NE 4 AND (IN09_BUILT LT 2007 AND ((IN05_ROOMS = IN07_ROOMS) AND (IN07_ROOMS GT IN09_ROOMS))) AND IN09_NOINT = B) THEN IN09_SAMEDU2 = 7

IF (IN09_SAMEDU = 2 AND IN09_NUNIT2 NE 4 AND (IN09_BUILT LT 2007 AND ((IN05_ROOMS = IN07_ROOMS) AND (IN07_ROOMS NE IN09_ROOMS))) AND 1 LE IN09_NOINT LE 12) THEN IN09_SAMEDU2 = 8

IN09_SAMEDU2 = B

IF IN09_SAMEDU = 2, IN09_SAMEDU2 = 1

IF (IN09_SAMEDU = 2 AND (((IN05_NUNIT2 = IN09_NUNIT2) AND (IN07_NUNIT2 NE IN09_NUNIT2)) OR ((IN05_ROOMS = IN09_ROOMS) AND (IN07_ROOMS NE IN09_ROOMS)))) THEN IN09_SAMEDU2 = 2

IF (IN09_SAMEDU = 2 AND ((IN07_NOINT = "B" OR IN07_NOINT LT 30) AND IN09_NOINT GE 30)) THEN IN09_SAMEDU2 = 3

IF (IN09_SAMEDU = 2 AND (IN07_NUNIT2 = 4 AND IN09_NOINT = 13)) THEN IN09_SAMEDU2 = 4

IF (IN09_SAMEDU = 2 AND IN09_SAMEDU2 NE 2 AND (IN09_NUNIT2 = 4 AND (IN07_NUNIT2 = B OR (IN07_NUNIT2 = 4 AND (IN07_BUILT NE IN09_BUILT)) OR IN07_NUNIT2 LT 4))) THEN IN09_SAMEDU = 5

IF (IN09_SAMEDU = 2 AND IN09_NUNIT2 NE 4 AND (IN09_BUILT LT 2007 AND ((IN05_ROOMS = IN07_ROOMS) AND (IN07_ROOMS LT IN09_ROOMS))) AND IN09_NOINT = B) THEN IN09_SAMEDU2 = 6

IF (IN09_SAMEDU = 2 AND IN09_NUNIT2 NE 4 AND (IN09_BUILT LT 2007 AND ((IN05_ROOMS = IN07_ROOMS) AND (IN07_ROOMS GT IN09_ROOMS))) AND IN09_NOINT = B) THEN IN09_SAMEDU2 = 7

IF (IN09_SAMEDU = 2 AND IN09_NUNIT2 NE 4 AND (IN09_BUILT LT 2007 AND ((IN05_ROOMS = IN07_ROOMS) AND (IN07_ROOMS NE IN09_ROOMS))) AND 1 LE IN09_NOINT LE 12) THEN IN09_SAMEDU2 = 8

Interpret SAMEDU2 as follows:

     IN09_SAMEDU2 = B Not applicable
     IN09_SAMEDU2 = 1 Not clear why SAMEDU = 2
     IN09_SAMEDU2 = 2 Possibly the wrong unit was interviewed in 2007
     IN09_SAMEDU2 = 3 A new type-C non-interview
     IN09_SAMEDU2 = 4 Vacant mobile home lot that was occupied in 2007
     IN09_SAMEDU2 = 5 Mobile home move in (to a vacant lot, replacing an old mobile home, or replacing a non-mobile home structure) – note that, if IN07_NOINT NE B, this implies either a mobile home move out or a demolition of another structure type
     IN09_SAMEDU2 = 6 Possible merger
     IN09_SAMEDU2 = 7 Possible split
     IN09_SAMEDU2 = 8 Possible merger or split – we cannot tell because the work has not been completed or the unit was not interviewed

BLCINCHWT = Backward-looking CINCH weight
This is the weight applied to 2009 cases in backward-looking CINCH analysis.
00000-99999

FLCINCHWT = Forward-looking CINCH weight
This is the weight applied to 2007 cases in forward-looking CINCH analysis.
00000-99999

IN07 = Observation used in the forward-looking analysis
1 = a unit that is part of the 2007 housing stock and is used in the forward-looking analysis.
This variable has a missing value for all other cases.

IN09 = Observation used in the backward-looking analysis
1 = a unit that is part of the 2009 housing stock and is used in the backward-looking analysis.
This variable has a missing value for all other cases.

IN07_WEIGHT = Final 2007 AHS weight based on 1980 Census geography
00000-99999

IN09_WEIGHT = Final 2009 AHS weight based on 1980 Census geography
00000-99999

IN07_WGT90GEO = Final 2007 AHS weight based on 1990 Census geography
00000-99999

IN09_WGT90GEO = Final 2009 AHS weight based on 1990 Census geography
00000-99999

FLSTATUS = Forward status = status of a 2007 unit in 2009

     1 = in 2007 stock and in 2009 stock:
          IF SAME=1 THEN FLSTATUS=1

2 = in 2007 stock but a loss in 2009 due to conversion or merger:
  IF INTLOSS=1 AND ((32 LE IN09_NOINT LE 33) OR (IN09_SAMEDU2='6'
  OR IN09_SAMEDU2='7' OR IN09_SAMEDU2='8')) THEN FLSTATUS=2

3 = in 2007 stock but a loss in 2009 due to house or mobile home move out:
  IF INTLOSS=1 AND (IN09_NOINT=31 OR IN09_SAMEDU2='4' OR
  (IN07_NUNIT2 = '4' AND IN09_SAMEDU2 = '5')) THEN FLSTATUS=3

4 = in 2007 stock but a loss in 2009 due to nonresidential use:
  IF INTLOSS=1 AND (IN09_NOINT=12 OR IN09_NOINT=14) THEN
  FLSTATUS=4

5 = in 2007 stock but a loss in 2009 due to demolition or disaster:
  IF INTLOSS=1 AND (IN09_NOINT=30 OR (1 LE IN07_NUNIT2 LE 3 AND
  (IN09_NOINT = 13 OR IN09_SAMEDU2 = '5'))) THEN FLSTATUS=5

6 = in 2007 stock but a loss in 2009 due to damage or condemnation:
  IF INTLOSS=1 AND (15 LE IN09_NOINT LE 16) THEN FLSTATUS=6

7 = in 2007 stock but a loss in 2009 for other reason:
  IF INTLOSS=1 AND ((10 LE IN09_NOINT LE 11 AND IN09_SAMEDU2 NE
  '8') OR IN09_NOINT=17 OR (36 LE IN09_NOINT LE 37)) THEN
  FLSTATUS=7

BLSTATUS = Backward status = status of a 2009 unit in 2007

1 = in 2009 stock and in 2007 stock:
  IF SAME=1 THEN BLSTATUS=1

2 = in 2009 stock but not in 2007 stock; added by conversion or merger:
  IF INTADD=1 AND ((6 LE IN09_REVREUAD LE 8) OR
  (IN09_SAMEDU2='6' OR IN09_SAMEDU2='7' OR IN09_SAMEDU2='8'))
  THEN BLSTATUS=2

3 = in 2009 stock but not in 2007 stock; added by house or mobile home move in:
  IF INTADD=1 AND (IN07_NOINT=13 OR (4 LE IN09_REVREUAD LE 5) OR
  IN09_SAMEDU2 ='5') THEN BLSTATUS=3

4 = in 2009 stock but not in 2007 stock; added from nonresidential use:
  IF INTADD=1 AND ((IN07_NOINT=12 OR IN07_NOINT=14) OR
  IN09_REVREUAD=9) THEN BLSTATUS=4

5 = in 2009 stock but not in 2007 stock; added by new construction:
  IF INTNC=1 AND (IN09_REVREUAD=3 OR ((10 LE IN07_NOINT LE 11)
  AND NOT(IN09_SAMEDU2 = '8'))) THEN BLSTATUS=5

6 = in 2009 stock but not in 2007 stock; added from temporary losses in 2007 stock:
IF INTADD=1 AND ((15 LE IN07_NOINT LE 16) AND
NOT(IN09_SAMEDU2='5' OR IN09_SAMEDU2='6' OR IN09_SAMEDU2='7'
OR IN09_SAMEDU2='8')) THEN BLSTATUS=6

7 = in 2009 stock but not in 2007 stock; added from other sources:
IF INTADD=1 AND (IN09_REVREUAD = 10 OR IN07_NOINT = 17) THEN
BLSTATUS=7

The last four variables deal with the concept of rental affordability. Previous rental dynamics studies have classified rents into eight categories based on the ratio of the unit's rent to various income levels. HUD has created a group of data sets called the Housing Affordability Data System (HADS) that provides various types of affordability-related information on AHS units for different survey years. The eight categories are derived from the HADS documentation, and HADS variables are used to define the remaining four variables. Definitions of the variables from the HADS data set are found in *Housing Affordability Data System.*[3]

A unit is considered affordable to the members of a class if the rent of the unit is no greater than 30 percent of the highest monthly income for that class. The eight categories are:

• Non-market: either no cash rent or a subsidized rent.

• Extremely low rent (affordable to renters with incomes less than or equal to 30 percent of local area median income).

• Very low rent (affordable to renters with incomes greater than 30 percent but less than or equal to 50 percent of local area median income).

• Low rent (affordable to renters with incomes greater than 50 percent but less than or equal to 60 percent of local area median income).

• Moderate rent (affordable to renters with incomes greater than 60 percent but less than or equal to 80 percent of local area median income).

• High rent (affordable to renters with incomes greater than 80 percent but less than or equal to 100 percent of local area median income).

• Very high rent (affordable to renters with incomes greater than 100 percent but less than or equal to 120 percent of local area median income).

• Extremely high rent (affordable to renters with incomes greater than 120 percent of local area median income).

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[3] Located at http://www.huduser.org/intercept.asp?loc=/Datasets/hads/HADS_doc.pdf.

FLRENT = 2007 rent category

    1 = a non-market rental unit in 2007:
        IF IN07_OWNRENT='2' AND (IN07_TENURE='3' OR IN07_Assisted=1 OR
        IN07_RENT=1) THEN FLRENT=1

    2 = an extremely low-rent rental unit in 2007:
        IF IN07_OWNRENT='2' AND NOT (IN07_TENURE='3' OR IN07_Assisted=1
        OR IN07_RENT=1) AND IN07_COST08RELAMICAT=1 THEN FLRENT=2

    3 = a very low-rent rental unit in 2007:
        IF IN07_OWNRENT='2' AND NOT (IN07_TENURE='3' OR IN07_Assisted=1
        OR IN07_RENT=1) AND IN07_COST08RELAMICAT=2 THEN FLRENT=3

    4 = a low-rent rental unit in 2007:
        IF IN07_OWNRENT='2' AND NOT (IN07_TENURE='3' OR IN07_Assisted=1
        OR IN07_RENT=1) AND IN07_COST08RELAMICAT=3 THEN FLRENT=4

    5 = a moderate-rent rental unit in 2007:
        IF IN07_OWNRENT='2' AND NOT (IN07_TENURE='3' OR IN07_Assisted=1
        OR IN07_RENT=1) AND IN07_COST08RELAMICAT=4 THEN FLRENT=5

    6 = a high-rent rental unit in 2007:
        IF IN07_OWNRENT='2' AND NOT (IN07_TENURE='3' OR IN07_Assisted=1
        OR IN07_RENT=1) AND IN07_COST08RELAMICAT=5 THEN FLRENT=6

    7 = a very high-rent rental unit in 2007:
        IF IN07_OWNRENT='2' AND NOT (IN07_TENURE='3' OR IN07_Assisted=1
        OR IN07_RENT=1) AND IN07_COST08RELAMICAT=6 THEN FLRENT=7

    8 = an extremely high-rent rental unit in 2007:
        IF IN07_OWNRENT='2' AND NOT (IN07_TENURE='3' OR IN07_Assisted=1
        OR IN07_RENT=1) AND IN07_COST08RELAMICAT=7 THEN FLRENT=8

    . = missing

BLRENT = Current year (2009) rent category

    1 = a non-market rental unit in 2009:
        IF IN09_OWNRENT='2' AND (IN09_TENURE='3' OR IN09_Assisted=1 OR
        IN09_RENT=1) THEN BLRENT=1

    2 = an extremely low-rent rental unit in 2009:
        IF IN09_OWNRENT='2' AND NOT (IN09_TENURE='3' OR IN09_Assisted=1
        OR IN09_RENT=1) AND IN09_COST08RELAMICAT =1 THEN BLRENT=2

3 = a very low-rent rental unit in 2009:
> IF IN09_OWNRENT='2' AND NOT (IN09_TENURE='3' OR IN09_Assisted=1 OR IN09_RENT=1) AND IN09_COST08RELAMICAT =2 THEN BLRENT=3

4 = a low-rent rental unit in 2009:
> IF IN09_OWNRENT='2' AND NOT (IN09_TENURE='3' OR IN09_Assisted=1 OR IN09_RENT=1) AND IN09_COST08RELAMICAT =3 THEN BLRENT=4

5 = a moderate-rent rental unit in 2009:
> IF IN09_OWNRENT='2' AND NOT (IN09_TENURE='3' OR IN09_Assisted=1 OR IN09_RENT=1) AND IN09_COST08RELAMICAT =4 THEN BLRENT=5

6 = a high-rent rental unit in 2009:
> IF IN09_OWNRENT='2' AND NOT (IN09_TENURE='3' OR IN09_Assisted=1 OR IN09_RENT=1) AND IN09_COST08RELAMICAT =5 THEN BLRENT=6

7 = a very high-rent rental unit in 2009:
> IF IN09_OWNRENT='2' AND NOT (IN09_TENURE='3' OR IN09_Assisted=1 OR IN09_RENT=1) AND IN09_COST08RELAMICAT =6 THEN BLRENT=7

8 = an extremely high-rent rental unit in 2009:
> IF IN09_OWNRENT='2' AND NOT (IN09_TENURE='3' OR IN09_Assisted=1 OR IN09_RENT=1) AND IN09_COST08RELAMICAT =7 THEN BLRENT=8

. = missing

FLAFFORD = Forward rental affordability = affordability status in 2009 of 2007 rental unit

1 = a non-market rental unit in 2009:
> IF IN09_OWNRENT='2' AND (IN09_TENURE='3' OR IN09_Assisted=1 OR IN09_RENT=1) THEN FLAFFORD=1

2 = an extremely low-rent rental unit in 2009:
> IF IN09_OWNRENT='2' AND NOT (IN09_TENURE='3' OR IN09_Assisted=1 OR IN09_RENT=1) AND IN09_COST08RELAMICAT =1 THEN FLAFFORD=2

3 = a very low-rent rental unit in 2009:
> IF IN09_OWNRENT='2' AND NOT (IN09_TENURE='3' OR IN09_Assisted=1 OR IN09_RENT=1) AND IN09_COST08RELAMICAT =2 THEN FLAFFORD=3

4 = a low-rent rental unit in 2009:
> IF IN09_OWNRENT='2' AND NOT (IN09_TENURE='3' OR IN09_Assisted=1 OR IN09_RENT=1) AND IN09_COST08RELAMICAT =3 THEN FLAFFORD=4

5 = a moderate-rent rental unit in 2009:
 IF IN09_OWNRENT='2' AND NOT (IN09_TENURE='3' OR IN09_Assisted=1 OR IN09_RENT=1) AND IN09_COST08RELAMICAT =4 THEN FLAFFORD=5

6 = a high-rent rental unit in 2009:
 IF IN09_OWNRENT='2' AND NOT (IN09_TENURE='3' OR IN09_Assisted=1 OR IN09_RENT=1) AND IN09_COST08RELAMICAT =5 THEN FLAFFORD=6

7 = a very high-rent rental unit in 2009:
 IF IN09_OWNRENT='2' AND NOT (IN09_TENURE='3' OR IN09_Assisted=1 OR IN09_RENT=1) AND IN09_COST08RELAMICAT =6 THEN FLAFFORD=7

8 = an extremely high-rent rental unit in 2009:
 IF IN09_OWNRENT='2' AND NOT (IN09_TENURE='3' OR IN09_Assisted=1 OR IN09_RENT=1) AND IN09_COST08RELAMICAT =7 THEN FLAFFORD=8

9 = an owner-occupied unit in 2009:
 IF (IN09_OWNRENT='1') THEN FLAFFORD=9

10 = a vacant or seasonal unit in 2009:
 IF (IN09_VACANCY GE 6) OR (IN09_OWNRENT=. AND IN09_VACANCY LE 5) THEN FLAFFORD=10

11 = a unit not in the 2009 stock:
 IF (10 LE IN09_NOINT) THEN FLAFFORD=11

. = missing

BLAFFORD = Backward rental affordability = affordability status in 2007 of a 2009 rental unit

1 = a non-market rental unit in 2007:
 IF IN07_OWNRENT='2' AND (IN07_TENURE='3' OR IN07_Assisted=1 OR IN07_RENT=1) THEN BLAFFORD=1

2 = an extremely low-rent rental unit in 2007:
 IF IN07_OWNRENT='2' AND NOT (IN07_TENURE='3' OR IN07_Assisted=1 OR IN07_RENT=1) AND IN07_COST08RELAMICAT=1 THEN BLAFFORD=2

3 = a very low-rent rental unit in 2007:
  IF IN07_OWNRENT='2' AND NOT (IN07_TENURE='3' OR IN07_Assisted=1
  OR IN07_RENT=1) AND IN07_COST08RELAMICAT=2 THEN
  BLAFFORD=3

4 = a low-rent rental unit in 2007:
  IF IN07_OWNRENT='2' AND NOT (IN07_TENURE='3' OR IN07_Assisted=1
  OR IN07_RENT=1) AND IN07_COST08RELAMICAT=3 THEN
  BLAFFORD=4

5 = a moderate-rent rental unit in 2007:
  IF IN07_OWNRENT='2' AND NOT (IN07_TENURE='3' OR IN07_Assisted=1
  OR IN07_RENT=1) AND IN07_COST08RELAMICAT=4 THEN
  BLAFFORD=5

6 = a high-rent rental unit in 2007:
  IF IN07_OWNRENT='2' AND NOT (IN07_TENURE='3' OR IN07_Assisted=1
  OR IN07_RENT=1) AND IN07_COST08RELAMICAT=5 THEN
  BLAFFORD=6

7 = a very high-rent rental unit in 2007:
  IF IN07_OWNRENT='2' AND NOT (IN07_TENURE='3' OR IN07_Assisted=1
  OR IN07_RENT=1) AND IN07_COST08RELAMICAT=6 THEN
  BLAFFORD=7

8 = an extremely high-rent rental unit in 2007:
  IF IN07_OWNRENT='2' AND NOT (IN07_TENURE='3' OR IN07_Assisted=1
  OR IN07_RENT=1) AND IN07_COST08RELAMICAT=7 THEN
  BLAFFORD=8

9 = an owner-occupied unit in 2007:
  IF IN07_OWNRENT='1' THEN BLAFFORD=9

10 = a vacant or seasonal unit in 2007:
  IF (IN07_VACANCY GE 6) OR (IN07_OWNRENT=. AND IN07_VACANCY
  LE 5) THEN BLAFFORD=10

11 = a unit added by new construction:
  IF INTNC=1 THEN BLAFFORD=11

12 = a unit not in the 2007 stock but not added through new construction:
  IF INTADD=1 THEN BLAFFORD=12

. = missing