revised 1/17/97

Renting, hiring, and sharing equipment

changes from 11/14/96 version

Diagonal entries in each household by household matrix now code the combination of kinds of equipment that the household uses.

If a the location from which equipment is hired/rented/shared is unknown, it is coded in an additional column of either the household by household matrix $\mathbf{X}^v$ (if it is within the village) or $\mathbf{W}^v$ if it is outside the village. If the household is within the village but the Ban Lek Ti is unknown then the tie is coded in column n+1 in $\mathbf{X}^v$. If the household is outside the village, but its location is unknown we code this in an additional column (column q+1) in the household by province matrix $\mathbf{W}^v$. This is slightly different from the extra columns in "siblings" and "help with rice harvest" where the q+1 column was for ties to people abroad. For equipment ties I believe there are no ties to households that are abroad.

changes from the previous version:

Three kinds of equipment (heavy duty tractor, walking tractor, and water pump) and types of arrangements (rent, hire, share) are now coded in a single valued relation.

Electric generators are not included -- the frequency distribution showed that no one rents, hires, or shares electric generators.

Aggregating ties

For each of the three kinds of equipment (heavy duty tractor, walking tractor, and water pump) there are three kinds of arrangements (rent, hire, share) and for each of these nine combinations (equipment by kind of arrangement) there are up to three possible households/places named. We will aggregate all kinds of equipment and kinds of arrangements into a single set of matrices (X^v, Y^v, Z^v, W^v) for each village.

To code aggregate ties we will accumulate responses to all renting, hiring, and or sharing equipment questions. The instructions adapt the instructions for coding a single kind of arrangement for a single kind of equipment, repeat the coding process for each kind of tie and sum the results into a count of the number of times household i mentioned household j across all three kinds of equipment and three kinds of arrangements.

Coding for hiring heavy duty tractor:

The following instructions code ties for hiring a heavy duty tractor. These instructions can be used for all other hiring, renting, or sharing of different kinds of equipment using the appropriate substitutions of variables (described below).   The result is four matrices for each village in which valued ties count the number of kinds of equipment rented, hired or shared by household i from household, village, district or province j.

Relevant variables for hiring heavy duty tractor:

Q6.13A1   use a heavy duty tractor

Q6.13A3   hire heavy duty tractor or not
Q6.13A41   1st place hire heavy duty tractor
Q6.13A42   2nd place hire heavy duty tractor
Q6.13A43   3rd place hire heavy duty tractor

Coding instructions:

If Q6.13A1 = 0 then go to next kind of equipment (Q6.13B1, Q6.13D1)

      (comment: the household does not use a heavy duty tractor.)

If Q6.13A1 not equal to 0 then code a tie from the household to itself x^v_{ii} . Use the codes

1 only uses heavy duty tractor
2 only uses walking tractor
3 only uses water pump
4 uses heavy duty tractor and walking tractor
5 uses heavy duty tractor and water pump
6 uses walking tractor and water pump
7 uses all three kinds of equipment

      (comment: the household uses a heavy duty tractor. The value of x^v_{ii} will
      likely change as the uses of other kinds of equipment are coded --
      variables Q6.13B1 and Q6.13D1.)

go to variable Q6.13A3

If Q6.13A3 = 2 or 8 then go to renting (or sharing) this kind of equipment (Q6.13A5 or Q6.13A7)

      (comment: the household does not hire a heavy duty tractor)

If Q6.13A3 = 1 then go to question Q6.13A41

(comment: the household hires a heavy duty tractor)

Q6.13A41 is the number of the household/village/district/province from which a heavy duty tractor is hired

(comment: Here we sort out whether the tie in Q6.13A41 is to a household in the village, household in another village, district, or province. From here we will branch to the instructions for the appropriate matrix to code ties: household by household, household by village, household by district, or household by province.)

If the first digit of Q6.13A41 = 2 then a household in the village (or split village) has been named, skip to instructions for coding ties to households in the village or split village

If the first digit of Q6.13A41 = 3 and digits 2 - 9 are not 99999999 then a household from another village has been named, skip to instructions for coding ties to households in another village. If digits 2 - 9 are 99999999 then the location of the household is unknown and will be coded in the additional column in the village by province matrix, skip to instructions for coding ties to other provinces

If the first digit of Q6.13A41 = 4 then a household from another district has been named, skip to instructions for coding ties to households in another district

If the first digit of Q6.13A41 = 5 then a household from another province has been named, skip to instructions for coding ties to households in another province

If Q6.13A41 = 999999998 then location it is inapplicable go to the next named household (Q6.13A42 or Q6.13A43)

If Q6.13A41 = 999999999 then location it is unknown -- we will code this in an additional column in the household by province matrix (column q+1), skip to instructions for coding ties to other provinces

• skip to here if a household in the village or split village is named

If digits 2-9 of Q6.13A41 are 99999999 then the responding household does not know the Ban Lek Ti number of the household, but it is in the same village. We will code this in an additional column (n + 1) in the household by household matrix

$$X^v_{i(n+1)} = X^v_{i(n+1)} + 1$$

If digits 6-9 of Q6.13A41 are 0000 then the village is not a split village, otherwise digits 6-9 of Q6.13A41 code the village number for a split village

> (I am assuming that we will treat a split village as a single village and that the index j will be for an ordered list of households that includes households from both villages.)

digits 2-5 of Q6.13A41 code the Ban Lek Ti of the 1st household named as a place where the responding household hires a heavy duty tractor.

let j = the position of the household named in columns 2-5 of Q6.13A41 in the ordered list of households for the village or split village

$$x^v_{ij} = x^v_{ij} + 1$$

> (comment: responding household i has named household j as a household where it hires a heavy duty tractor, so the value of the tie is increased by one)

go to the next named place for hiring a heavy duty tractor (Q6.13A42 or Q6.13A43)

•   skip to here if a household in another village is named

Digits 2-5 of Q6.13A41 code the village number of the named household

let j = the position of the village named in columns 2-5 of Q6.13A41 in the ordered list of villages

$$y^v_{ij} = y^v_{ij} + 1$$

> (comment: responding household i has named a household from village j, so the value of the tie is increased by one)

go to the next named place for hiring a heavy duty tractor (Q6.13A42 or Q6.13A43)

•   skip to here if a household in another district is named

digits 2-5 of Q6.13A41 code the district number of the named household

let j = the position of the district named in columns 2-5 of Q6.13A41 in the ordered list of districts

$$z^v_{ij} = z^v_{ij} + 1$$

> (comment: responding household i has named a household from district j, so the value of the tie is increased by one)

go to the next named place for hiring a heavy duty tractor (Q6.13A42 or Q6.13A43)

- skip to here if a household in another province is named

    (comment: two kinds of ties are coded in this matrix: ties from households to provinces, and ties to households with unknown location)

If Q6.13A41 is 399999999 or 999999999 then the responding household does not know the location of the household (either does not know the village number or doesn't have any information). This will be recorded in the additional column (q+1) in the household by province matrix

$$w^v_{i(q+1)} = w^v_{i(q+1)} + 1$$

    (comment: a tie from household i to a household with an unknown location is coded in the additional column of $\mathbf{W}^v$)

Otherwise, digits 2-5 of Q6.13A41 code the province number of the named household

let j = the position of the province named in columns 2-5 of Q6.13A41 in the ordered list of provinces

$$w^v_{ij} = w^v_{ij} + 1$$

    (comment: responding household i has named a household from province j, so the value of the tie is increased by one)

go to the next named place for hiring a heavy duty tractor (Q6.13A42 or Q6.13A43)

After coding hiring a heavy duty tractor, code renting and then sharing a heavy duty tractor.

After coding kinds of arrangements for the heavy duty tractor, code arrangements for small tractor and for water pump.

For each village the ties for three kinds of equipment and three kinds of arrangements are aggregated into the set of matrices: $\mathbf{X}^v$, $\mathbf{Y}^v$, $\mathbf{Z}^v$, and $\mathbf{W}^v$. Additional ties will be added to the count of ties, across all kinds of equipment and kinds of arrangements.

The instructions above can be adapted to code all hiring, renting, and sharing of agricultural equipment by substituting the appropriate variables.

renting and sharing a heavy duty tractor:

The instructions for coding renting and sharing a heavy duty tractor are identical to the instructions for coding hiring a heavy duty tractor, except that the following sets of questions

renting a heavy duty tractor:
Q6.13A5   rent heavy duty tractor or not
Q6.13A61   1st place rent heavy duty tractor
Q6.13A62   2nd place rent heavy duty tractor
Q6.13A63   3rd place rent heavy duty tractor

replace questions:

Q6.13A3   hire heavy duty tractor or not
Q6.13A41   1st place hire heavy duty tractor
Q6.13A42   2nd place hire heavy duty tractor
Q6.13A43   3rd place hire heavy duty tractor

in the instructions above.

Similarly for

sharing a heavy duty tractor:
Q6.13A7   share heavy duty tractor or not
Q6.13A81   1st place share heavy duty tractor
Q6.13A82   2nd place share heavy duty tractor
Q6.13A83   3rd place share heavy duty tractor

Similar substitutions are used to code renting, hiring, and sharing of walking tractors and water pumps.

For hiring, renting and sharing a walking tractor the sets of questions are:

Q6.13B1   use a walking tractor

Q6.13B3   hire walking tractor or not
Q6.13B41   1st place hire walking tractor
Q6.13B42   2nd place hire walking tractor
Q6.13B43   3rd place hire walking tractor

Q6.13B5   rent walking tractor or not
Q6.13B61   1st place rent walking tractor
Q6.13B62   2nd place rent walking tractor
Q6.13B63   3rd place rent walking tractor

Q6.13B7   share walking tractor or not
Q6.13B81   1st place share walking tractor

Q6.13B82   2nd place share walking tractor
Q6.13B83   3rd place share walking tractor

For hiring, renting and sharing a water pump the sets of questions are:

Q6.13D1   use a water pump

Q6.13D3   hire water pump or not
Q6.13D41   1st place hire water pump
Q6.13D42   2nd place hire water pump
Q6.13D43   3rd place hire water pump

Q6.13D5   rent water pump or not
Q6.13D61   1st place rent water pump
Q6.13D62   2nd place rent water pump
Q6.13D63   3rd place rent water pump

Q6.13D7   share water pump or not
Q6.13D81   1st place share water pump
Q6.13D82   2nd place share water pump
Q6.13D83   3rd place share water pump