Decision tree for Transportation Population:

```
is_lowincome = FALSE:
:...region in {Northeast,Southwest}: N (324/130)
:   region = Northwest:
:   :...chronic_count <= 1: N (39/6)
:   :   chronic_count > 1:
:   :   :...rural in {Rural,Semi-Rural,Urban}: N (46/14)
:   :       rural = Suburban: Y (22/8)
:   region = Central:
:   :...rural in {Rural,Semi-Rural}: N (68/32)
:   :   rural = Suburban: Y (77/30)
:   :   rural = Urban:
:   :   :...chronic_count > 4: N (6)
:   :       chronic_count <= 4:
:   :       :...gender = F: Y (64/28)
:   :           gender = M: N (25/7)
:   region = Southeast:
:   :...gender = M: Y (83/39)
:       gender = F:
:       :...rural in {Suburban,Urban}: N (181/72)
:           rural = Rural:
:           :...age <= 73: N (11/3)
:           :   age > 73: Y (2)
:           rural = Semi-Rural:
:           :...age <= 73: N (37/12)
:               age > 73: Y (11/2)
is_lowincome = TRUE:
:...chronic_count > 4: N (31/9)
    chronic_count <= 4:
    :...rural = Semi-Rural: Y (62/24)
        rural = Rural:
        :...region in {Northeast,Southwest}: N (7/2)
        :   region = Northwest: Y (5/1)
        :   region = Central:
        :   :...age <= 64: N (7/1)
        :   :   age > 64: Y (5/1)
        :   region = Southeast:
        :   :...chronic_count <= 2: N (7/2)
        :       chronic_count > 2: Y (6/1)
        rural = Urban:
        :...chronic_count <= 0:
        :   :...age <= 77: Y (28/11)
        :   :   age > 77: N (4/1)
        :   chronic_count > 0:
        :   :...age <= 66: N (71/25)
        :       age > 66: Y (65/29)
        rural = Suburban:
        :...region in {Central,Southwest}: Y (39/16)
            region = Northwest:
            :...chronic_count <= 1: N (3)
            :   chronic_count > 1: Y (10/2)
            region = Northeast:
            :...age <= 50: N (3)
            :   age > 50:
            :   :...chronic_count <= 3: Y (17/4)
            :       chronic_count > 3: N (4/1)
            region = Southeast:
            :...chronic_count <= 1: N (26/10)
                chronic_count > 1:
                :...chronic_count <= 3: Y (26/7)
                    chronic_count > 3: N (8/2)


Evaluation on training data (1430 cases):

          Decision Tree
        ----------------
        Size      Errors

          36  532(37.2%)   <<


         (a)   (b)    <-classified as
        ----  ----
         579   203    (a): class N
         329   319    (b): class Y


       Attribute usage:

       100.00%       is_lowincome
        81.75%       region
        66.64%       rural
        44.48%       chronic_count
        28.95%       gender
        18.53%       age


Time: 0.0 secs
```

Decision tree for Financial Assistance Population:

```
is_lowincome = TRUE:
:...rural = Suburban: N (283/120)
:   rural = Rural:
:   :...gender = F: Y (16/5)
:   :   gender = M:
:   :   :...chronic_count <= 0: Y (4)
:   :       chronic_count > 0: N (51/19)
:   rural = Semi-Rural:
:   :...region in {Northeast,Southeast}: Y (101/46)
:   :   region in {Northwest,Southwest}: N (26/9)
:   :   region = Central:
:   :   :...chronic_count <= 0: Y (10/2)
:   :       chronic_count > 0: N (41/18)
:   rural = Urban:
:   :...region in {Central,Northwest}: Y (143/62)
:       region = Northeast: N (58/25)
:       region = Southeast:
:       :...chronic_count <= 4: Y (82/40)
:       :   chronic_count > 4: N (9)
:       region = Southwest:
:       :...gender = F: N (6/2)
:           gender = M: Y (33/14)
is_lowincome = FALSE:
:...chronic_count <= 1: N (256/96)
    chronic_count > 1:
    :...rural = Rural: N (38/14)
        rural = Suburban:
        :...chronic_count <= 2: Y (52/16)
        :   chronic_count > 2:
        :   :...age <= 64: Y (31/14)
        :       age > 64: N (33/11)
        rural = Semi-Rural:
        :...chronic_count <= 2: N (31/9)
        :   chronic_count > 2:
        :   :...chronic_count <= 3: Y (21/10)
        :       chronic_count > 3:
        :       :...age <= 66: Y (9/1)
        :           age > 66: N (14/5)
        rural = Urban:
        :...region in {Northeast,Southwest}: N (55/20)
            region = Northwest: Y (11/5)
            region = Southeast:
            :...age <= 78: Y (47/22)
            :   age > 78: N (5)
            region = Central:
            :...age > 71: Y (11/1)
                age <= 71:
                :...chronic_count <= 4: N (27/11)
                    chronic_count > 4: Y (5/1)


Evaluation on training data (1509 cases):

          Decision Tree
        ----------------
        Size      Errors

          30  598(39.6%)   <<


         (a)   (b)    <-classified as
        ----  ----
         574   239    (a): class N
         359   337    (b): class Y


       Attribute usage:

       100.00%       is_lowincome
        83.04%       rural
        55.86%       chronic_count
        44.40%       region
        12.06%       age
         7.29%       gender


Time: 0.0 secs
```

Decision tree for Loneliness Population:

```
chronic_count <= 2:
:...rural = Rural:
:   :...age <= 63: N (13/1)
:   :   age > 63: Y (28/11)
:   rural = Suburban:
:   :...is_lowincome = FALSE:
:   :   :...region in {Northwest,Southeast}: N (47/18)
:   :   :   region = Central:
:   :   :   :...age <= 65: N (15/5)
:   :   :   :   age > 65: Y (11/1)
:   :   :   region = Northeast:
:   :   :   :...age <= 56: Y (5/1)
:   :   :   :   age > 56: N (13/5)
:   :   :   region = Southwest:
:   :   :   :...chronic_count <= 0: N (2)
:   :   :       chronic_count > 0:
:   :   :       :...chronic_count <= 1: Y (4/1)
:   :   :           chronic_count > 1: N (4/1)
:   :   is_lowincome = TRUE:
:   :   :...region in {Central,Northwest}: N (14/5)
:   :       region = Northeast:
:   :       :...chronic_count <= 0: Y (4)
:   :       :   chronic_count > 0: N (10/4)
:   :       region = Southwest:
:   :       :...chronic_count <= 0: Y (2)
:   :       :   chronic_count > 0: N (4/1)
:   :       region = Southeast:
:   :       :...chronic_count <= 1: Y (10/1)
:   :           chronic_count > 1:
:   :           :...age <= 66: Y (4)
:   :               age > 66: N (3)
:   rural = Semi-Rural:
:   :...region = Central: N (18/5)
:   :   region = Southwest: Y (15/3)
:   :   region = Northeast:
:   :   :...chronic_count <= 0: Y (3)
:   :   :   chronic_count > 0: N (16/5)
:   :   region = Northwest:
:   :   :...is_lowincome = TRUE: N (4/1)
:   :   :   is_lowincome = FALSE:
:   :   :   :...chronic_count <= 0: N (3/1)
:   :   :       chronic_count > 0: Y (6/1)
:   :   region = Southeast:
:   :   :...chronic_count <= 0: Y (5)
:   :       chronic_count > 0:
:   :       :...chronic_count <= 1: Y (8/2)
:   :           chronic_count > 1:
:   :           :...age > 77: Y (3)
:   :               age <= 77:
:   :               :...age <= 60: Y (7/2)
:   :                   age > 60: N (7)
:   rural = Urban:
:   :...region = Central:
:       :...gender = F: Y (28/10)
:       :   gender = M: N (25/9)
:       region = Northwest:
:       :...gender = F: N (10/3)
:       :   gender = M:
:       :   :...is_lowincome = FALSE: Y (2)
:       :       is_lowincome = TRUE: N (3/1)
:       region = Southwest:
:       :...gender = M: Y (11/3)
:       :   gender = F:
:       :   :...chronic_count <= 0: Y (4/1)
:       :       chronic_count > 0: N (12/3)
:       region = Northeast:
:       :...is_lowincome = FALSE:
:       :   :...gender = F:
:       :   :   :...chronic_count <= 1: N (12/4)
:       :   :   :   chronic_count > 1: Y (8/3)
:       :   :   gender = M:
:       :   :   :...age <= 60: N (2)
:       :   :       age > 60: Y (2)
:       :   is_lowincome = TRUE:
:       :   :...chronic_count <= 0: N (3)
:       :       chronic_count > 0:
:       :       :...age <= 65: Y (5/1)
:       :           age > 65: N (5/1)
:       region = Southeast:
:       :...is_lowincome = TRUE:
:           :...age <= 66: Y (8)
:           :   age > 66:
:           :   :...age <= 82: N (13/3)
:           :       age > 82: Y (2)
:           is_lowincome = FALSE:
:           :...chronic_count <= 0:
:               :...gender = M: N (8/3)
:               :   gender = F:
:               :   :...age <= 61: Y (4)
:               :       age > 61: N (4/1)
:               chronic_count > 0:
:               :...gender = F: N (23/7)
:                   gender = M:
```

```
:                   :...age <= 71: Y (5/1)
:                       age > 71: N (3)
chronic_count > 2:
:...region = Northwest: N (23/6)
    region = Northeast:
    :...rural = Semi-Rural: Y (17/6)
    :   rural = Urban: N (26/5)
    :   rural = Rural:
    :   :...chronic_count > 4: N (2)
    :   :   chronic_count <= 4:
    :   :   :...age <= 72: N (2)
    :   :       age > 72: Y (2)
    :   rural = Suburban:
    :   :...age > 73: N (4)
    :       age <= 73:
    :       :...gender = F: N (3/1)
    :           gender = M: Y (4/1)
    region = Southwest:
    :...chronic_count > 4: N (8/1)
    :   chronic_count <= 4:
    :   :...rural = Rural: N (3/1)
    :       rural = Semi-Rural:
    :       :...age <= 64: Y (2)
    :       :   age > 64: N (3/1)
    :       rural = Suburban:
    :       :...is_lowincome = FALSE: N (3/1)
    :       :   is_lowincome = TRUE: Y (6/1)
    :       rural = Urban:
    :       :...is_lowincome = FALSE: Y (8/2)
    :           is_lowincome = TRUE: N (6)
    region = Central:
    :...rural = Rural:
    :   :...chronic_count <= 3: Y (4/1)
    :   :   chronic_count > 3: N (8/2)
    :   rural = Suburban:
    :   :...age <= 55: N (4)
    :   :   age > 55: Y (15/6)
    :   rural = Semi-Rural:
    :   :...age <= 66: N (9)
    :   :   age > 66:
    :   :   :...chronic_count > 3: Y (2)
    :   :       chronic_count <= 3:
    :   :       :...age <= 75: N (2)
    :   :           age > 75: Y (2)
    :   rural = Urban:
    :   :...chronic_count <= 3: N (14/6)
    :       chronic_count > 3:
    :       :...chronic_count > 4: Y (9/4)
    :           chronic_count <= 4:
    :           :...age <= 60: N (5)
    :               age > 60: Y (6/1)
    region = Southeast:
    :...is_lowincome = FALSE: N (57/21)
        is_lowincome = TRUE:
        :...age > 78: N (3)
            age <= 78:
            :...rural = Rural: Y (0)
                rural = Semi-Rural:
                :...chronic_count <= 3: N (2)
                :   chronic_count > 3: Y (4/1)
                rural = Urban:
                :...age <= 51: N (2)
                :   age > 51: Y (8/1)
                rural = Suburban:
                :...chronic_count <= 3: Y (4/1)
                    chronic_count > 3:
                    :...age <= 69: N (2)
                        age > 69: Y (3/1)


Evaluation on training data (777 cases):

          Decision Tree
        ----------------
        Size      Errors

          92  200(25.7%)   <<


         (a)   (b)    <-classified as
        ----  ----
         355    68    (a): class N
         132   222    (b): class Y


       Attribute usage:

       100.00%       chronic_count
        94.72%       region
        88.29%       rural
        49.55%       is_lowincome
        32.82%       age
        22.27%       gender
```

Decision tree for Food Insecurity Population:

```
is_lowincome = FALSE:
:...chronic_count <= 1: N (191/71)
:   chronic_count > 1:
:   :...rural in {Semi-Rural,Urban}: Y (205/92)
:       rural = Rural:
:       :...chronic_count <= 4: N (18/6)
:       :   chronic_count > 4: Y (4)
:       rural = Suburban:
:       :...region in {Northwest,Southeast,Southwest}: N (52/19)
:           region = Central:
:           :...age <= 73: N (18/2)
:           :   age > 73: Y (5/1)
:           region = Northeast:
:           :...age <= 71: Y (22/5)
:               age > 71: N (3)
is_lowincome = TRUE:
:...rural = Semi-Rural: Y (126/51)
    rural = Rural:
    :...gender = F: Y (10/4)
    :   gender = M: N (45/17)
    rural = Suburban:
    :...region in {Central,Southwest}: N (83/38)
    :   region in {Northeast,Northwest}: Y (75/29)
    :   region = Southeast:
    :   :...age <= 71: Y (42/17)
    :       age > 71:
    :       :...chronic_count <= 1: Y (6/2)
    :           chronic_count > 1: N (12/1)
    rural = Urban:
    :...region = Central: Y (80/31)
        region = Northwest:
        :...chronic_count <= 3: Y (23/10)
        :   chronic_count > 3: N (6/2)
        region = Southeast:
        :...age <= 50: Y (11/1)
        :   age > 50: N (79/33)
        region = Southwest:
        :...gender = F: N (4/1)
        :   gender = M: Y (25/8)
        region = Northeast:
        :...gender = F: Y (7/1)
            gender = M:
            :...age <= 67: Y (32/10)
                age > 67: N (23/5)


Evaluation on training data (1207 cases):

          Decision Tree
        ----------------
        Size      Errors

          27  457(37.9%)   <<


         (a)   (b)    <-classified as
        ----  ----
         339   262    (a): class N
         195   411    (b): class Y


       Attribute usage:

       100.00%      is_lowincome
        84.18%      rural
        50.37%      region
        46.81%      chronic_count
        20.96%      age
        12.10%      gender


Time: 0.0 secs
```