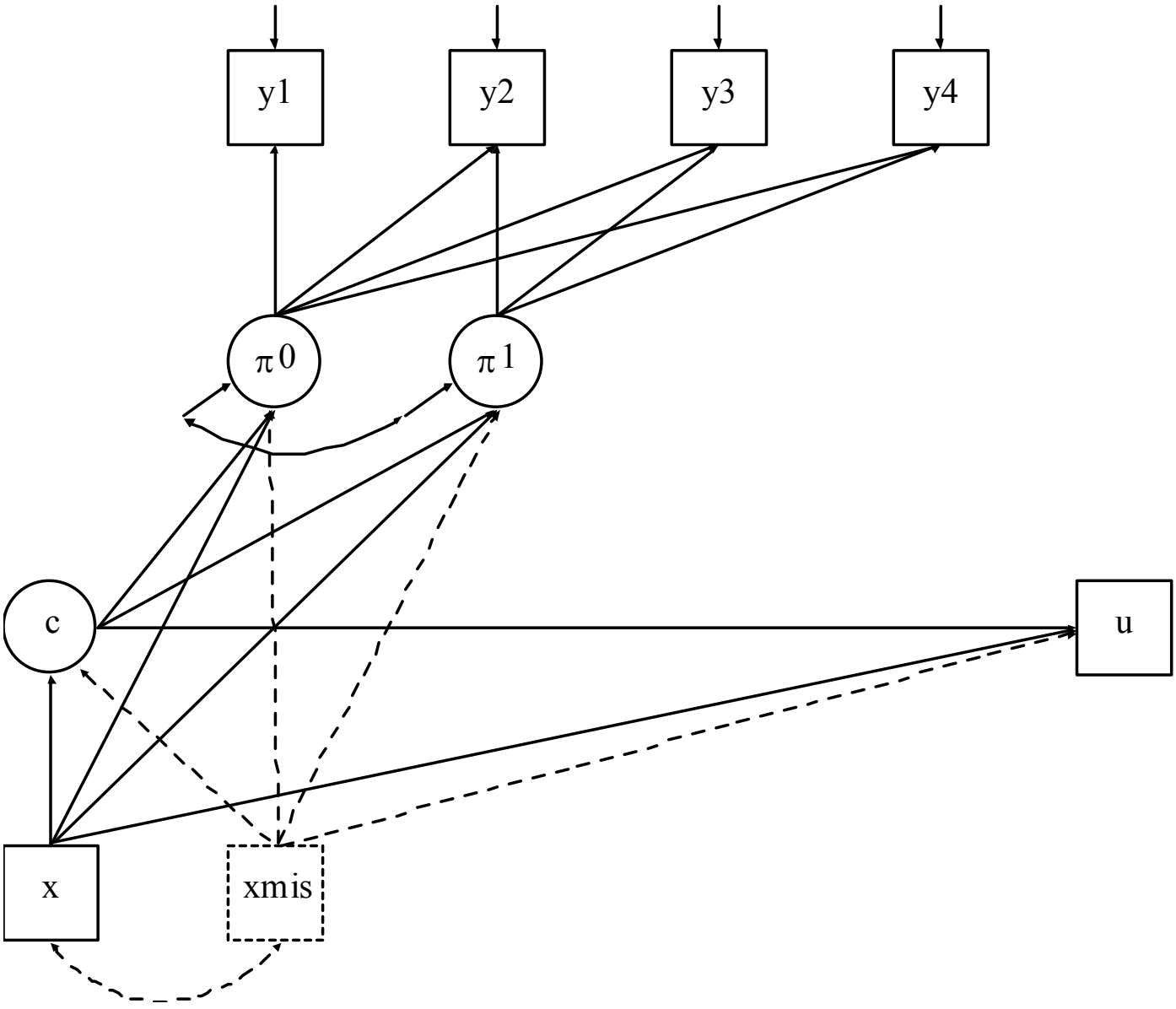
GGMM DIAGRAM

Muthen (2004)

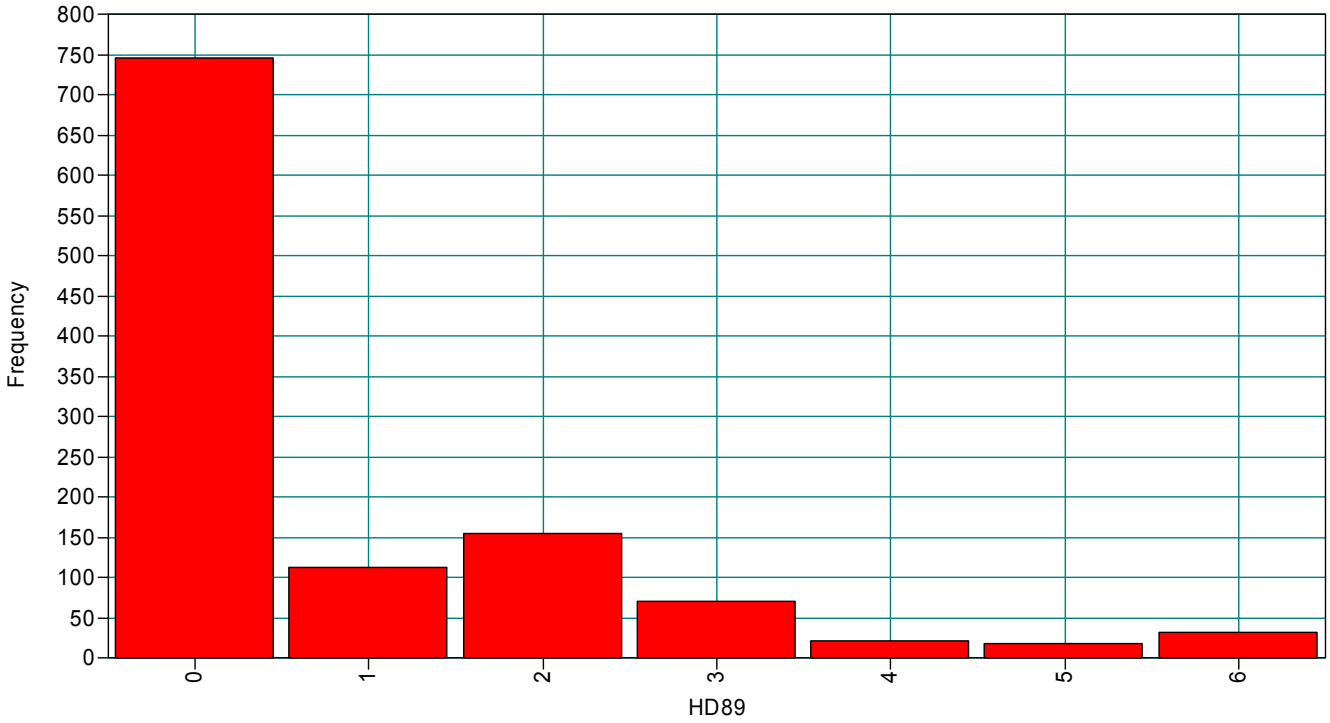


NLSY: Heavy Drinking
General Population Sample
Ages 18-30 (cohort 64)

"How often have you had 6 or more drinks on one occasion during the last 30 days"

0 – Never
1 – Once
2 – 2 or 3 times
3 – 4 or 5 times
4 – 6 or 7 times
5 – 8 or 9 times
6 – 10 or more times

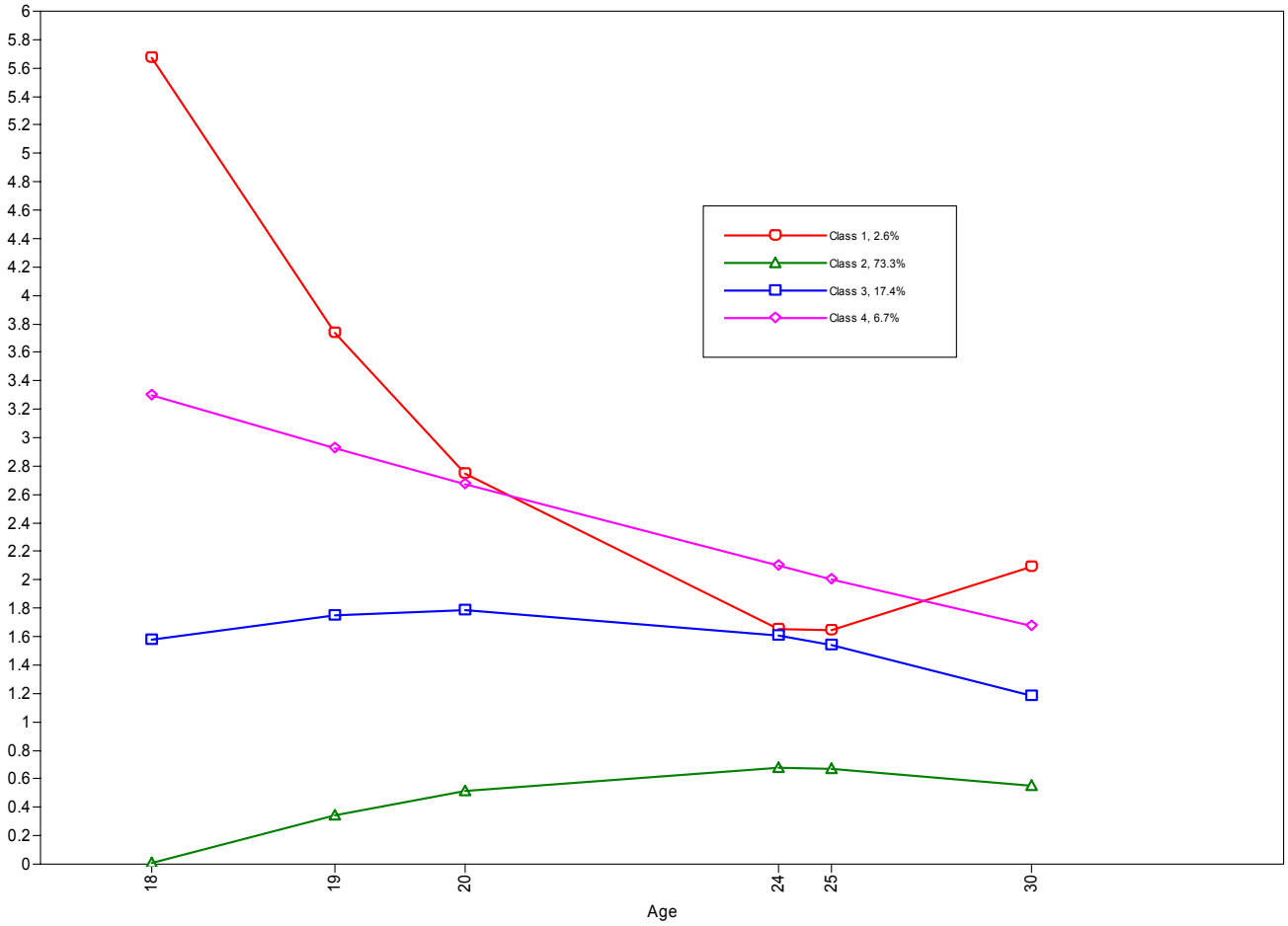
NLSY HD89: Heavy Drinking at Age 25



```
title: 4-class GMM Continuous Outcome Starts = 1000 1000

        nlsy36425xdep.inp

        cohort 64

        centering at 25

        hd82-hd94: ages 18-30


        3-class - dep

        regressed on the reduced set of x's


        log age scale: x_t = a*(ln(t-b) - ln(c-b)),
                where t is time, a and b are constants to fit the mean curve
                (chosen as a = 2 and b = 16),
                and c is the centering age, here set at 25.
data:
        file is big.dat;
        format is
  2f5,f2,t14,5f7,t50,f8,t60,6f1.0,t67,2f2.0,t71,8f1.0,t79,f2.0,t82,4f2.0;

variable:
        names are
                id houseid cohort
                weight82 weight83 weight84 weight88 weight89 weight94
                hd82 hd83 hd84 hd88 hd89 hd94
                dep89 dep94 male black hisp es fh1 fh23 fh123 hsdrp coll
                ed89 ed94 cd89 cd94;

        useobservations = cohort EQ 64 AND (coll GT 0 AND coll LT 20);

    usev are hd82-hd94;
        !male black hisp es fh123
        !       hsdrp coll;

!       categorical = hd82-hd94;

!       categorical = dep94;

    classes = c(4);

        missing are .;
```

```
define:

!       cut dep94(1.5);


        cut coll(12.1);


analysis:
        type = mixture missing;

   starts = 100 100; stiter = 20;


model:

        %overall%

        i s1 s2 | hd82@-3.008 hd83@-2.197 hd84@-1.621 hd88@-.235
        hd89@.000 hd94@.884;

        s2@0;


OUTPUT:

        sampstat residual tech1 tech8;

plot:
        type = plot3;
        series = hd82-hd94(s1);
```

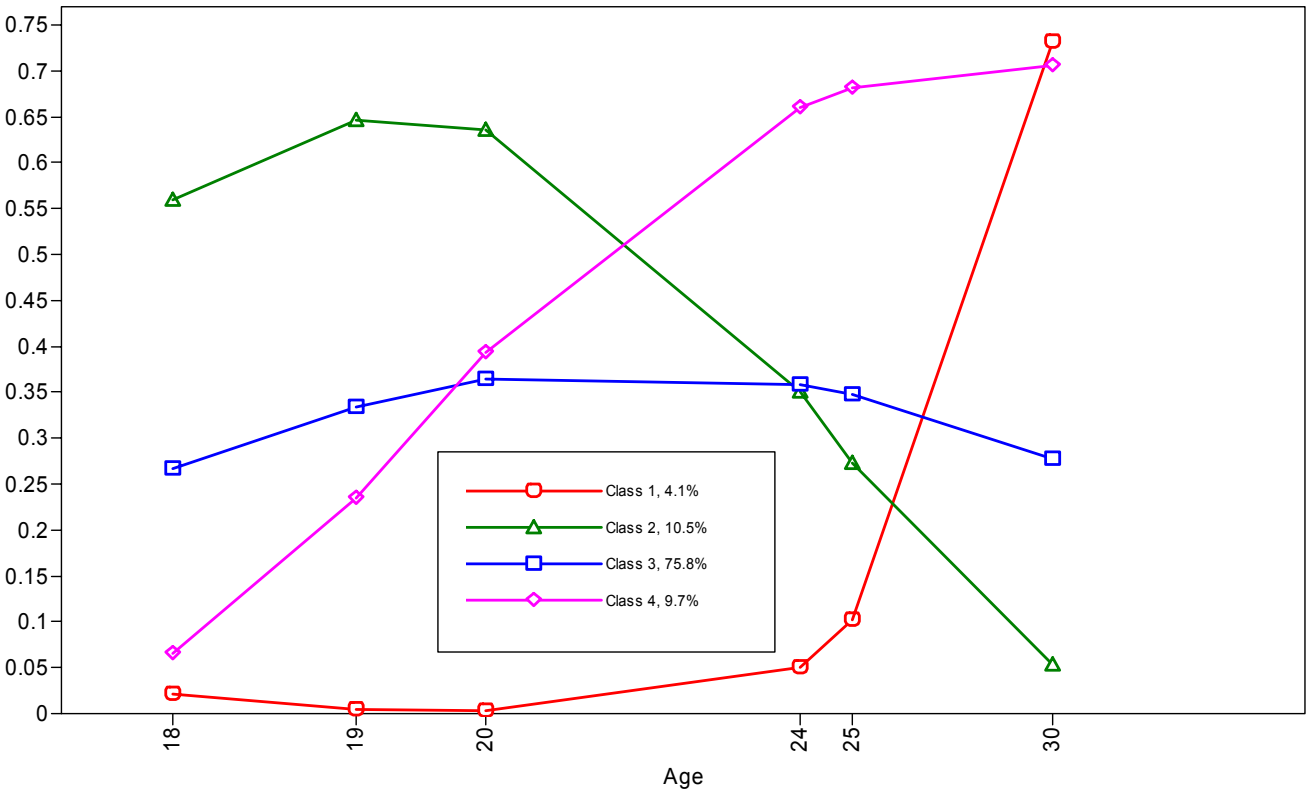
4-Class GMM with Continuous NLSY HD (Starts = 1000)



```
title: 4-class GMM Categorical Outcome Starts = 1000 1000

        nlsy36425xdep.inp

        cohort 64

        centering at 25

        hd82-hd94: ages 18-30


        3-class - dep

        regressed on the reduced set of x's


        log age scale: x_t = a*(ln(t-b) - ln(c-b)),
                where t is time, a and b are constants to fit the mean curve
                (chosen as a = 2 and b = 16),
                and c is the centering age, here set at 25.
data:
        file is big.dat;
        format is
  2f5,f2,t14,5f7,t50,f8,t60,6f1.0,t67,2f2.0,t71,8f1.0,t79,f2.0,t82,4f2.0;

variable:
        names are
                id houseid cohort
                weight82 weight83 weight84 weight88 weight89 weight94
                hd82 hd83 hd84 hd88 hd89 hd94
                dep89 dep94 male black hisp es fh1 fh23 fh123 hsdrp coll
                ed89 ed94 cd89 cd94;

        useobservations = cohort EQ 64 AND (coll GT 0 AND coll LT 20);

    usev are hd82-hd94;
        !male black hisp es fh123
        !       hsdrp coll;

        categorical = hd82-hd94;

!       categorical = dep94;

    classes = c(4);

        missing are .;
```

```
define:

!       cut dep94(1.5);


        cut coll(12.1);


analysis:
        type = mixture missing;

        algo = int;
   integration = 10;

   starts = 1000 1000; stiter = 20;

model:

        %overall%

        i s1 s2 | hd82@-3.008 hd83@-2.197 hd84@-1.621 hd88@-.235
        hd89@.000 hd94@.884;

        s1-s2@0;


OUTPUT:

        sampstat residual tech1 tech8;

plot:
        type = plot3;
        series = hd82-hd94(s1);
```

4-Class GMM with Categorical NLSY HD (Starts = 1000)



```
title: 4-class LCGA Categorical Outcome

        nlsy36425xdep.inp

        cohort 64

        centering at 25

        hd82-hd94: ages 18-30


        3-class - dep

        regressed on the reduced set of x's


        log age scale: x_t = a*(ln(t-b) - ln(c-b)),
                where t is time, a and b are constants to fit the mean curve
                (chosen as a = 2 and b = 16),
                and c is the centering age, here set at 25.
data:
        file is big.dat;
        format is
  2f5,f2,t14,5f7,t50,f8,t60,6f1.0,t67,2f2.0,t71,8f1.0,t79,f2.0,t82,4f2.0;

variable:
        names are
                id houseid cohort
                weight82 weight83 weight84 weight88 weight89 weight94
                hd82 hd83 hd84 hd88 hd89 hd94
                dep89 dep94 male black hisp es fh1 fh23 fh123 hsdrp coll
                ed89 ed94 cd89 cd94;

        useobservations = cohort EQ 64 AND (coll GT 0 AND coll LT 20);

    usev are hd82-hd94;
        !male black hisp es fh123
        !       hsdrp coll;

        categorical = hd82-hd94;

!       categorical = dep94;

    classes = c(4);

        missing are .;
```

```
define:

!       cut dep94(1.5);


        cut coll(12.1);


analysis:
        type = mixture missing;

   starts = 50 5; stiter = 20;

model:

        %overall%

        i s1 s2 | hd82@-3.008 hd83@-2.197 hd84@-1.621 hd88@-.235
        hd89@.000 hd94@.884;


OUTPUT:

        sampstat residual tech1 tech8;

plot:
        type = plot3;
        series = hd82-hd94(s1);
```

4-Class LCGA with Categorical NLSY HD