Program 11.4 Estimation of Expected Outcomes for each Transition Path

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*;

\* STEP 4: Estimate longitudinal treatment expected outcomes in \*;

\* groups of interest (AAA and BBB). This code runs a simple model \*;

\* with only the treatment and propensity score bins at each time- \*;

\* point included as covariates and the outcome measure as the \*;

\* dependent variable. This macro can be used to assess sensitivity\*;

\* via comparisons with other models. After the macro call, the \*;

\* parameter estimates are output to a data set to allow for \*;

\* calculation of the expected outcome for all possible transition \*;

\* paths (all treatment and propensity bin options over time). \*; \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*;

**DATA** V7;

SET V7;

TRT\_V5\_ = TRT\_V5;

TRT\_V6\_ = TRT\_V6;

TRT\_V7\_ = TRT\_V7;

**DATA** OUTCV7;

SET RANKPS;

IF VIS = **7**;

KEEP PATSC BAVAR AVAR CAVAR;

**PROC** **SORT** DATA = V7; BY PATSC; **RUN**;

**PROC** **SORT** DATA = OUTCV7; BY PATSC; **RUN**;

**DATA** ADAT7;

MERGE V7 (IN=A) OUTCV7 (IN=B);

BY PATSC;

IF A AND B;

\* Summary statistics on analysis data set \*;

**PROC** **MEANS** DATA = ADAT7;

CLASS TRT\_V5\_ TRT\_V6\_ TRT\_V7\_;

VAR CAVAR;

TITLE2 'SUMMARY STATS FROM ADAT7'; **run**;

**PROC** **TABULATE** DATA = ADAT7;

CLASS TRT\_V5\_ TRT\_V6\_ TRT\_V7\_;

VAR BAVAR CAVAR;

TABLES (TRT\_V5\_\*TRT\_V6\_\*TRT\_V7\_)\*(N MEAN STD),(BAVAR CAVAR);

TITLE2 'SUMMARY STATS FROM ADAT7'; **run**;

/\* Input for macro includes the analysis data set for a specific visit (DATA\_2), name for the output data set containing the parameter estimates (DATA\_1), list of variables for the CLASS statement (CLASSVAR2), and list of variables in the MODEL statement (MODELVAR2). \*/

**%MACRO G\_ESTS**(DATA\_2, DATA\_1, CLASSVAR2, MODELVAR2);

ODS OUTPUT ParameterEstimates= &data\_1 ;

PROC GENMOD DATA = &DATA\_2;

CLASS &CLASSVAR2;

MODEL CAVAR = &MODELVAR2 / DIST = NOR LINK = ID;

run;

**%MEND G\_ESTS**;

%***g\_ests***(ADAT7, vis7\_OUTCESTS, TRT\_V5\_ TRT\_V6\_ TRT\_V7\_ BIN\_PS\_V5

BIN\_PS\_V6 BIN\_PS\_V7, TRT\_V5\_ TRT\_V6\_ TRT\_V7\_ BIN\_PS\_V5 BIN\_PS\_V6

BIN\_PS\_V7);

**run**;

\* get parameter estimates from model to allow computation \*;

\* of expected values for all transition paths \*;

**DATA** VIS7\_OUTCESTS;

SET VIS7\_OUTCESTS;

KEEP PARAMETER LEVEL1 ESTIMATE;

**PROC** **TRANSPOSE** DATA = VIS7\_OUTCESTS OUT=TR\_OUTCESTS;

**RUN**;

**DATA** TR\_OUTCESTS;

SET TR\_OUTCESTS;

INTERCEPT = COL1;

X1 = COL2; \* TRT AT V5 \*;

X2 = COL3;

Y1 = COL4; \* TRT AT V6 \*;

Y2 = COL5;

Z1 = COL6; \* TRT AT V7 \*;

Z2 = COL7;

B1=COL8; B2=COL9; B3=COL10; B4=COL11; B5=COL12; \* BIN AT V5 \*;

C1=COL13; C2=COL14; C3=COL15; C4=COL16; C5=COL17; \* BIN AT V6 \*;

L1=COL18; L2=COL19; L3=COL20; L4=COL21; L5=COL22; \* BIN AT V7 \*;

**run**;

**DATA** OUTC;

SET TR\_OUTCESTS;

ARRAY X[**2**] X1 - X2;

ARRAY Y[**2**] Y1 - Y2;

ARRAY Z[**2**] Z1 - Z2;

ARRAY B[**5**] B1 - B5;

ARRAY C[**5**] C1 - C5;

ARRAY L[**5**] L1 - L5;

ARRAY PRE[**2**, **5**, **5**, **5** ];

DO A = **1** TO **2**;

DO J = **1** TO **5**;

DO K = **1** TO **5**;

DO I = **1** TO **5**;

PRE[A, J, K, I ]= COL1 + X[A] + Y[A] + Z[A] + B[J] + C[K] + L[i];

EOUT = PRE[A, J, K, I ];

OUTPUT;

END;

END;

END;

END;

**run**;

**DATA** OUTC;

SET OUTC;

KEEP A J K I EOUT;

**run**;

**PROC** **SORT** DATA = TRPR\_V7; BY A J K I; **RUN**;

**PROC** **SORT** DATA = OUTC; BY A J K I; **RUN**;

**PROC** **SORT** DATA = TRPR\_V6; BY A J K; **RUN**;

**DATA** ALL1;

MERGE TRPR\_V7 OUTC;

BY A J K I;

**DATA** ALL;

MERGE ALL1 TRPR\_V6;

BY A J K;

SUM\_EO = EOUT\*(**.2**)\*TRPR6\*TRPR7;

IF A = **1** THEN TRTPTTRN = 'AAA';

IF A = **2** THEN TRTPTTRN = 'BBB';

**PROC** **PRINT** DATA = ALL;

VAR TRTPTTRN J K I TRPR6 TRPR7 EOUT;

TITLE 'LISTING OF DATASET ALL (TRANSITION PROBS AND EXPECTED OUTCOMES)'; **RUN**;