```
1          OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
72
73         %macro commute(numdays=,times=,last=,probs=);
74
75         data &times;
76
77         countearly=0;
78         countot=0;
79         countlate=0;
80
81         do i = 1 to &numdays;
82         t = rand("Integer",0,20);
83
84         array set1 [*] A B C D E (.5 .2 .2 .09 .01);
85         array set2 [*] A B C D E (.35 .4 .1 .14 .01);
86         array set3 [*] A B C D E (.25 .35 .25 .14 .01);
87
88         if t>=0 and t<10 then j=rand('Table',of set1[*]);
89         if t>=10 and t<15 then j=rand('Table',of set2[*]);
90         if t>=15 and t<=20 then j=rand('Table',of set3[*]);
91
92         if j=1 then route=45;
93         if j=2 then route=50;
94         if j=3 then route=50;
95         if j=4 then route=55;
96         if j=5 then route=70;
97
98         endtime=t+route;
99
100        if endtime<=60 then countearly=countearly+1;
101        if endtime>60 and endtime<=75 then countot=countot+1;
102        if endtime>75 then countlate=countlate+1;
103
104        output;
105        drop A B C D E;
106        end;
107        run;
108
109        data &last;
110            if 0 then set &times nobs=nobs end=eof;
111            set &times point=nobs;
112            output;
113            stop;
114        run;
115
116        data &probs;
117        set &last;
118
119        probearly=countearly/&numdays;
120        probot=countot/&numdays;
121        problate=countlate/&numdays;
122
123        keep probearly probot problate;
124        run;
125
126        proc print;
127         var probearly probot problate;
128        run;
129
130        %mend commute;
131
132        %commute(numdays=5,times=times1,last=last1,probs=probs1);
```

```
NOTE: The data set WORK.TIMES1 has 5 observations and 8 variables.
NOTE: DATA statement used (Total process time):
      real time           0.00 seconds
      cpu time            0.00 seconds


NOTE: There were 1 observations read from the data set WORK.TIMES1.
NOTE: The data set WORK.LAST1 has 1 observations and 8 variables.
NOTE: DATA statement used (Total process time):
      real time           0.00 seconds
      cpu time            0.00 seconds


NOTE: There were 1 observations read from the data set WORK.LAST1.
NOTE: The data set WORK.PROBS1 has 1 observations and 3 variables.
NOTE: DATA statement used (Total process time):
      real time           0.00 seconds
      cpu time            0.00 seconds


NOTE: There were 1 observations read from the data set WORK.PROBS1.
NOTE: PROCEDURE PRINT used (Total process time):
      real time           0.02 seconds
      cpu time            0.02 seconds


133         %commute(numdays=20,times=times2,last=last2,probs=probs2);

NOTE: The data set WORK.TIMES2 has 20 observations and 8 variables.
NOTE: DATA statement used (Total process time):
      real time           0.00 seconds
      cpu time            0.00 seconds


NOTE: There were 1 observations read from the data set WORK.TIMES2.
NOTE: The data set WORK.LAST2 has 1 observations and 8 variables.
NOTE: DATA statement used (Total process time):
      real time           0.00 seconds
      cpu time            0.01 seconds


NOTE: There were 1 observations read from the data set WORK.LAST2.
NOTE: The data set WORK.PROBS2 has 1 observations and 3 variables.
NOTE: DATA statement used (Total process time):
      real time           0.00 seconds
      cpu time            0.00 seconds


NOTE: There were 1 observations read from the data set WORK.PROBS2.
NOTE: PROCEDURE PRINT used (Total process time):
      real time           0.01 seconds
      cpu time            0.01 seconds


134         %commute(numdays=230,times=times3,last=last3,probs=probs3);

NOTE: The data set WORK.TIMES3 has 230 observations and 8 variables.
NOTE: DATA statement used (Total process time):
      real time           0.00 seconds
      cpu time            0.00 seconds
```

```
NOTE: There were 1 observations read from the data set WORK.TIMES3.
NOTE: The data set WORK.LAST3 has 1 observations and 8 variables.
NOTE: DATA statement used (Total process time):
      real time           0.00 seconds
      cpu time            0.02 seconds


NOTE: There were 1 observations read from the data set WORK.LAST3.
NOTE: The data set WORK.PROBS3 has 1 observations and 3 variables.
NOTE: DATA statement used (Total process time):
      real time           0.00 seconds
      cpu time            0.00 seconds


NOTE: There were 1 observations read from the data set WORK.PROBS3.
NOTE: PROCEDURE PRINT used (Total process time):
      real time           0.01 seconds
      cpu time            0.01 seconds


135
136
137
138
139
140
141
142         %macro incident(numdays=,times=,last=,probs=);
143
144         data &times;
145
146         countearly=0;
147         countot=0;
148         countlate=0;
149
150         do i = 1 to &numdays;
151
152         m = rand("Integer",0,20);
153
154         array set4 [*] A B C D E (.5 .2 .2 .09 .01);
155         array set5 [*] A B C D E (.35 .4 .1 .14 .01);
156         array set6 [*] A B C D E (.25 .35 .25 .14 .01);
157
158         if m>=0 and m<10 then h=rand('Table',of set4[*]);
159         if m>=10 and m<15 then h=rand('Table',of set5[*]);
160         if m>=15 and m<=20 then h=rand('Table',of set6[*]);
161
162         if h=1 then route=45;
163         if h=2 then route=50;
164         if h=3 then route=50;
165         if h=4 then route=55;
166         if h=5 then route=70;
167
168         endtime1=m+route;
169
170         array weather [*] Y N (.3 .7);
171         array accident [*] Y N (.05 .95);
172         array traffic [*] Y N (.15 .85);
173
174         wea=rand('Table',of weather[*]);
175         acc=rand('Table',of accident[*]);
176         tr=rand('Table',of traffic[*]);
```

```
177
178         if wea=1 then endtime2=endtime1+15;
179         if acc=1 then endtime2=endtime1+20;
180         if tr=1 then endtime2=endtime1+10;
181         else endtime2=endtime1;
182
183         if endtime2<=60 then countearly=countearly+1;
184         if endtime2>60 and endtime2<=75 then countot=countot+1;
185         if endtime2>75 then countlate=countlate+1;
186
187         output;
188
189         drop A B C D E Y N;
190
191         end;
192
193         run;
194
195         data &last;
196             if 0 then set &times nobs=nobs end=eof;
197             set &times point=nobs;
198             output;
199             stop;
200         run;
201
202         data &probs;
203         set &last;
204
205         probearly=countearly/&numdays;
206         probot=countot/&numdays;
207         problate=countlate/&numdays;
208
209         keep probearly probot problate;
210         run;
211
212         proc print;
213          var probearly probot problate;
214         run;
215
216         %mend incident;
217
218         %incident(numdays=5,times=times4,last=last4,probs=probs4);

NOTE: The data set WORK.TIMES4 has 5 observations and 12 variables.
NOTE: DATA statement used (Total process time):
      real time           0.00 seconds
      cpu time            0.01 seconds


NOTE: There were 1 observations read from the data set WORK.TIMES4.
NOTE: The data set WORK.LAST4 has 1 observations and 12 variables.
NOTE: DATA statement used (Total process time):
      real time           0.00 seconds
      cpu time            0.00 seconds


NOTE: There were 1 observations read from the data set WORK.LAST4.
NOTE: The data set WORK.PROBS4 has 1 observations and 3 variables.
NOTE: DATA statement used (Total process time):
      real time           0.00 seconds
      cpu time            0.00 seconds
```

```
NOTE: There were 1 observations read from the data set WORK.PROBS4.
NOTE: PROCEDURE PRINT used (Total process time):
      real time           0.03 seconds
      cpu time            0.02 seconds


219        %incident(numdays=20,times=times5,last=last5,probs=probs5);

NOTE: The data set WORK.TIMES5 has 20 observations and 12 variables.
NOTE: DATA statement used (Total process time):
      real time           0.00 seconds
      cpu time            0.02 seconds



NOTE: There were 1 observations read from the data set WORK.TIMES5.
NOTE: The data set WORK.LAST5 has 1 observations and 12 variables.
NOTE: DATA statement used (Total process time):
      real time           0.01 seconds
      cpu time            0.00 seconds



NOTE: There were 1 observations read from the data set WORK.LAST5.
NOTE: The data set WORK.PROBS5 has 1 observations and 3 variables.
NOTE: DATA statement used (Total process time):
      real time           0.00 seconds
      cpu time            0.01 seconds


NOTE: There were 1 observations read from the data set WORK.PROBS5.
NOTE: PROCEDURE PRINT used (Total process time):
      real time           0.01 seconds
      cpu time            0.01 seconds


220        %incident(numdays=230,times=times6,last=last6,probs=probs6);

NOTE: The data set WORK.TIMES6 has 230 observations and 12 variables.
NOTE: DATA statement used (Total process time):
      real time           0.00 seconds
      cpu time            0.00 seconds



NOTE: There were 1 observations read from the data set WORK.TIMES6.
NOTE: The data set WORK.LAST6 has 1 observations and 12 variables.
NOTE: DATA statement used (Total process time):
      real time           0.00 seconds
      cpu time            0.00 seconds



NOTE: There were 1 observations read from the data set WORK.LAST6.
NOTE: The data set WORK.PROBS6 has 1 observations and 3 variables.
NOTE: DATA statement used (Total process time):
      real time           0.00 seconds
      cpu time            0.01 seconds


NOTE: There were 1 observations read from the data set WORK.PROBS6.
NOTE: PROCEDURE PRINT used (Total process time):
      real time           0.00 seconds
      cpu time            0.01 seconds
```

```
221
222         quit;
223
224         OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
237
```