Homework 3
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Stat 443

In this report, the main purpose is to estimate the population mean interest and dividend (INTRDVX). There are 25822 consumer units in total, and about 21000 consumer units have valid nonresponse on INTRDVX. Top 3% of INTRDVX are "topcoded", and for the remaining 4609 consumer units, there are 1771 missing INTRDVX and 2838 non-missing INTRDVX. To deal with the missing data, there are two approaches. One is to fit a GUIDE classification forest and use inverse probability weighted estimate (IPW) to get the estimate of 5009.928. The other way is to fit a GUIDE regression forest and use imputation to get the estimated mean of 4696.624. Compared with the estimate by using the classification tree and the regression tree, the estimate produced by the classification forest and the regression forest results in a higher estimate.

```r
z <- read.table("cedata.txt",header=TRUE)
w <- z$FINLWT21 ### sampling weights
zclass <- read.table("gfpro.txt",header=TRUE)
probmissing <- zclass[,2] ### estimated P(INTRDVX_ = C)
p <- 1-probmissing ### estimated P(INTRDVX is nonmissing)
group <- !is.na(z$INTRDVX) ### group of nonmissing INTRDVX obs
ipw <- sum(w[group]*z$INTRDVX[group]/p[group])/sum(w[group]/p[group])
ipw

## [1] 5009.928

zreg <- read.table("in.fit.txt",header=TRUE)
yhat <- zreg$predicted
imputed <- (sum(w[group]*z$INTRDVX[group]) +sum(w[!group]*yhat[!group]))/sum(
w)
simple <- sum(w[group]*z$INTRDVX[group])/sum(w[group])
simple

## [1] 4696.624

cat("IPW by GUIDE classification forest", ipw)

## IPW by GUIDE classification forest 5009.928

cat("Weighted mean by GUIDE regression forest", simple)

## Weighted mean by GUIDE regression forest 4696.624
```

```
GUIDE         (do not edit this file unless you know what you are doing)
  36.2        (version of GUIDE that generated this file)
 1            (1=model fitting, 2=importance or DIF scoring, 3=data
conversion)
"out.txt"  (name of output file)
 2            (1=one tree, 2=ensemble)
 2            (1=bagging, 2=rforest)
 2            (1=random splits of missing values, 2=nonrandom)
 2            (1=classification, 2=regression)
 2            (1=interaction tests, 2=skip them)
"cereg.dsc"  (name of data description file)
 1            (1=accept default number of trees, 2=change)
 1            (1=accept default number of variables for splitting,
2=change it)
 1            (1=split point from quantiles, 2=use exhaustive search)
 1            (1=accept default splitting fraction, 2=change it)
 1            (1=default max. number of split levels, 2=specify no. in
next line)
 1            (1=default min. node size, 2=specify min. value in next
line)
"in.fit" (file name for predicted values)
 1            (rank of top variable to split root node)
```

```
         GGG   U   U  I  DDDD   EEEE
        G  G  U   U  I  D   D  E
        G     U   U  I  D   D  E
        G GG  U   U  I  D   D  EEE
        G  G  U   U  I  D   D  E
        G  G  U   U  I  D   D  E
         GGG    UUU   I  DDDD   EEEE
```

 GUIDE Classification and Regression Trees and Forests
 Version 36.2 (Build date: January 8, 2021)
 Compiled with NAG Fortran 6.2.0 on macOS Catalina 10.15.7
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 This software is based upon work supported by the U.S. Army Research
Office,
 the National Science Foundation and the National Institutes of
Health.

 This job was started on 02/28/21 at 15:30

 Random forest of GUIDE least-squares regression trees
 No pruning
 Data description file: cereg.dsc
 Training sample file: cedata.txt
 Missing value code: NA
 Records in data file start on line 2
 Number of M variables associated with C variables: 33
 409 N variables changed to S
 D variable is INTRDVX
 Piecewise constant model
 Number of records in data file: 4693
 Length of longest entry in data file: 11
 Missing values found in D variable
 Missing values found among categorical variables
 Separate categories will be created for missing categorical variables
 Missing values found among non-categorical variables
 Warning: S variable OTHRINCB is constant
 Warning: S variable NETRENTB is constant
 Warning: S variable NETRNTBX is constant
 Warning: S variable OTHLONBX is constant
 Warning: S variable OTHLONB is constant
 Smallest and largest positive weights are 1.3507E+03 and 7.0269E+04

 Summary information for training sample of size 2922 (excluding
observations with
 non-positive weight or missing values in d, e, t, r or z variables)
 d=dependent, b=split and fit cat variable using indicator variables,
 c=split-only categorical, i=fit-only categorical (via indicators),
 s=split-only numerical, n=split and fit numerical, f=fit-only
numerical,
 m=missing-value flag variable, p=periodic variable, w=weight

Levels of M variables are for missing values in associated variables

Column	Name		Minimum	Maximum	#Codes/ Levels/ Periods	#Missing
1	DIRACC	c			2	116
2	DIRACC_	m			1	
3	AGE_REF	s	18.00	87.00		
4	AGE_REF_	m			0	
5	AGE2	s	22.00	87.00		1225
6	AGE2_	m			1	
7	AS_COMP1	s	0.000	4.000		
8	AS_C_MP1	m			0	
9	AS_COMP2	s	0.000	4.000		
10	AS_C_MP2	m			0	
11	AS_COMP3	s	0.000	4.000		
12	AS_C_MP3	m			0	
13	AS_COMP4	s	0.000	3.000		
14	AS_C_MP4	m			0	
15	AS_COMP5	s	0.000	2.000		
16	AS_C_MP5	m			0	
17	BATHRMQ	s	1.000	8.000		10
18	BATHRMQ_	m			2	
19	BEDROOMQ	s	0.000	9.000		10
20	BEDR_OMQ	m			2	
21	BLS_URBN	s	1.000	2.000		
22	BUILDING	c			11	
23	BUIL_ING	m			0	
24	CUTENURE	c			6	
25	CUTE_URE	m			0	
26	EARNCOMP	c			9	
27	EARN_OMP	m			0	
28	EDUC_REF	s	10.00	16.00		
29	EDUC0REF	m			0	
30	EDUCA2	s	10.00	16.00		1225
31	EDUCA2_	m			1	
32	FAM_SIZE	s	1.000	9.000		
33	FAM__IZE	m			0	
34	FAM_TYPE	c			10	
35	FAM__YPE	m			0	
36	FAMTFEDX	s	0.000	0.9928E+05		
37	FAMT_EDX	m			0	
38	FEDRFNDX	s	4.000	0.1428E+05		1415
39	FEDR_NDX	m			2	
40	FEDTAXX	s	2.000	0.8223E+05		2282
41	FEDTAXX_	m			2	
42	FGOVRETX	s	0.000	0.2469E+05		
43	FGOV_ETX	m			0	
44	FINCATAX	s	−0.3380E+06	0.1410E+07		
45	FINCAT_X	m			0	
46	FINCBTAX	s	−0.3430E+06	0.1410E+07		

47	FINCBT_X	m			0	
48	FINDRETX	s	0.000	0.1272E+06		
49	FIND_ETX	m			0	
50	FINLWT21	w	1351.	0.7027E+05		
51	FJSSDEDX	s	0.000	0.3042E+05		
52	FJSS_EDX	m			0	
53	FPRIPENX	s	0.000	0.4589E+05		
54	FPRI_ENX	m			0	
55	FRRDEDX	s	0.000	9980.		
56	FRRDEDX_	m			0	
57	FRRETIRX	s	0.000	0.5241E+05		
58	FRRE_IRX	m			0	
59	FSALARYX	s	0.000	0.5301E+06		
60	FSAL_RYX	m			0	
61	FSLTAXX	s	0.000	0.3010E+05		
62	FSLTAXX_	m			0	
63	FSSIX	s	0.000	0.3048E+05		
64	FSSIX_	m			0	
65	HLFBATHQ	s	0.000	3.000		12
66	HLFB_THQ	m			2	
67	INC_HRS1	s	1.000	93.00		1016
68	INC__RS1	m			1	
69	INC_HRS2	s	1.000	84.00		1773
70	INC__RS2	m			1	
71	INC_RANK	s	0.1000E-03	1.000		64
72	INC__ANK	m			1	
73	INCNONW1	c			6	1906
74	INCN_NW1	m			1	
75	INCNONW2	c			6	2374
76	INCN_NW2	m			1	
77	INCOMEY1	c			6	1016
78	INCO_EY1	m			1	
79	INCOMEY2	c			6	1773
80	INCO_EY2	m			1	
81	INCWEEK1	s	0.000	52.00		
82	INCW_EK1	m			0	
83	INCWEEK2	s	0.000	52.00		1225
84	INCW_EK2	m			1	
85	MISCTAXX	s	5.000	0.2524E+05		2855
86	MISC_AXX	m			1	
87	LUMPSUMX	s	4.000	0.5492E+06		2735
88	LUMP_UMX	m			2	
89	MARITAL1	c			6	
90	MARI_AL1	m			0	
91	NO_EARNR	s	0.000	6.000		
92	NO_E_RNR	m			0	
93	NONINCMX	s	0.000	0.5492E+06		
94	NONI_CMX	m			0	
95	NUM_AUTO	s	0.000	7.000		
96	NUM__UTO	m			0	

97	OCCUCOD1	c			15	1016
98	OCCU_OD1	m			1	
99	OCCUCOD2	c			15	1773
100	OCCU_OD2	m			1	
101	OTHRINCX	s	2.000	0.5788E+05		2822
102	OTHR_NCX	m			2	
103	PERSLT18	s	0.000	7.000		
104	PERS_T18	m			0	
105	PERSOT64	s	0.000	3.000		
106	PERS_T64	m			0	
107	POPSIZE	s	1.000	5.000		27
108	PRINEARN	c			8	
109	PRIN_ARN	m			0	
110	QINTRVMO	c			12	
111	QINTRVYR	c			2	
112	RACE2	c			6	1225
113	RACE2_	m			1	
114	REF_RACE	c			7	
115	REF__ACE	m			0	
116	REGION	c			4	27
117	RENTEQVX	s	1.000	4694.		451
118	RENT_QVX	m			1	
119	RESPSTAT	c			3	
120	RESP_TAT	m			0	
121	ROOMSQ	s	1.000	19.00		12
122	ROOMSQ_	m			2	
123	SEX_REF	c			3	
124	SEX_REF_	m			0	
125	SEX2	c			2	1225
126	SEX2_	m			1	
127	SLOCTAXX	s	1.000	0.2657E+05		2441
128	SLOC_AXX	m			2	
129	SLRFUNDX	s	1.000	4169.		1859
130	SLRF_NDX	m			2	
131	SMSASTAT	c			2	
132	ST_HOUS	c			3	
133	ST_HOUS_	m			0	
134	TOTTXPDX	s	−0.1845E+05	0.1467E+06		
135	TOTT_PDX	m			0	
136	VEHQ	s	0.000	17.00		
137	VEHQ_	m			0	
138	WELFAREX	s	300.0	4344.		2909
139	WELF_REX	m			2	
140	TOTEXPPQ	s	233.2	0.2782E+06		
141	TOTEXPCQ	s	0.000	0.8056E+05		
142	FOODPQ	s	0.000	0.2358E+05		
143	FOODCQ	s	0.000	7363.		
144	FDHOMEPQ	s	0.000	8450.		
145	FDHOMECQ	s	0.000	6067.		
146	FDAWAYPQ	s	0.000	0.2098E+05		

147	FDAWAYCQ	s	0.000	5660.
148	FDXMAPPQ	s	0.000	0.2098E+05
149	FDXMAPCQ	s	0.000	5660.
150	FDMAPPQ	s	0.000	780.0
151	FDMAPCQ	s	0.000	666.7
152	ALCBEVPQ	s	0.000	3152.
153	ALCBEVCQ	s	0.000	2550.
154	HOUSPQ	s	0.000	0.1811E+06
155	HOUSCQ	s	0.000	0.2794E+05
156	SHELTPQ	s	0.000	0.4074E+05
157	SHELTCQ	s	0.000	0.2547E+05
158	OWNDWEPQ	s	0.000	0.3070E+05
159	OWNDWECQ	s	0.000	0.2507E+05
160	MRTINTPQ	s	0.000	0.2531E+05
161	MRTINTCQ	s	0.000	9450.
162	PROPTXPQ	s	0.000	4870.
163	PROPTXCQ	s	0.000	4247.
164	MRPINSPQ	s	0.000	0.2110E+05
165	MRPINSCQ	s	0.000	0.2373E+05
166	RENDWEPQ	s	0.000	8546.
167	RENDWECQ	s	0.000	6742.
168	RNTXRPPQ	s	0.000	8546.
169	RNTXRPCQ	s	0.000	6742.
170	RNTAPYPQ	s	0.000	2922.
171	RNTAPYCQ	s	0.000	1433.
172	OTHLODPQ	s	0.000	0.3342E+05
173	OTHLODCQ	s	0.000	0.1367E+05
174	UTILPQ	s	0.000	7581.
175	UTILCQ	s	0.000	3921.
176	NTLGASPQ	s	0.000	2306.
177	NTLGASCQ	s	0.000	885.0
178	ELCTRCPQ	s	0.000	4473.
179	ELCTRCCQ	s	0.000	2200.
180	ALLFULPQ	s	0.000	2752.
181	ALLFULCQ	s	0.000	3081.
182	FULOILPQ	s	0.000	2752.
183	FULOILCQ	s	0.000	3081.
184	OTHFLSPQ	s	0.000	1813.
185	OTHFLSCQ	s	0.000	2269.
186	TELEPHPQ	s	0.000	1638.
187	TELEPHCQ	s	0.000	1497.
188	WATRPSPQ	s	0.000	1880.
189	WATRPSCQ	s	0.000	1035.
190	HOUSOPPQ	s	0.000	0.2493E+05
191	HOUSOPCQ	s	0.000	8380.
192	DOMSRVPQ	s	0.000	0.1620E+05
193	DOMSRVCQ	s	0.000	8192.
194	DMSXCCPQ	s	0.000	0.1062E+05
195	DMSXCCCQ	s	0.000	7150.
196	BBYDAYPQ	s	0.000	0.1500E+05

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197  BBYDAYCQ    s    0.000        7600.
198  OTHHEXPQ    s    0.000    0.2493E+05
199  OTHHEXCQ    s    0.000        5349.
200  HOUSEQPQ    s    0.000    0.1544E+06
201  HOUSEQCQ    s    0.000    0.2268E+05
202  TEXTILPQ    s    0.000        4000.
203  TEXTILCQ    s    0.000        2946.
204  FURNTRPQ    s    0.000    0.7500E+05
205  FURNTRCQ    s    0.000    0.1811E+05
206  FLRCVRPQ    s    0.000    0.1000E+05
207  FLRCVRCQ    s    0.000        2500.
208  MAJAPPPQ    s    0.000        4657.
209  MAJAPPCQ    s    0.000        5500.
210  SMLAPPPQ    s    0.000        1000.
211  SMLAPPCQ    s    0.000        944.0
212  MISCEQPQ    s    0.000    0.6510E+05
213  MISCEQCQ    s    0.000        7155.
214  APPARPQ     s    0.000    0.2118E+05
215  APPARCQ     s    0.000        4604.
216  MENBOYPQ    s    0.000        4200.
217  MENBOYCQ    s    0.000        1754.
218  MENSIXPQ    s    0.000        4200.
219  MENSIXCQ    s    0.000        1754.
220  BOYFIFPQ    s    0.000        460.0
221  BOYFIFCQ    s    0.000        322.0
222  WOMGRLPQ    s    0.000        3181.
223  WOMGRLCQ    s    0.000        1174.
224  WOMSIXPQ    s    0.000        3181.
225  WOMSIXCQ    s    0.000        1174.
226  GRLFIFPQ    s    0.000        1056.
227  GRLFIFCQ    s    0.000        856.0
228  CHLDRNPQ    s    0.000        717.0
229  CHLDRNCQ    s    0.000        961.0
230  FOOTWRPQ    s    0.000        1903.
231  FOOTWRCQ    s    0.000        900.0
232  OTHAPLPQ    s    0.000    0.2048E+05
233  OTHAPLCQ    s    0.000        4076.
234  TRANSPQ     s    0.000    0.8778E+05
235  TRANSCQ     s    0.000    0.5436E+05
236  CARTKNPQ    s    0.000    0.8700E+05
237  CARTKNCQ    s    0.000    0.5400E+05
238  CARTKUPQ    s    0.000    0.3770E+05
239  CARTKUCQ    s    0.000    0.3300E+05
240  OTHVEHPQ    s    0.000    0.1417E+05
241  OTHVEHCQ    s    0.000        2700.
242  GASMOPQ     s    0.000        4832.
243  GASMOCQ     s    0.000        3770.
244  VEHFINPQ    s    0.000        1044.
245  VEHFINCQ    s    0.000        716.0
246  MAINRPPQ    s    0.000        4984.
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247  MAINRPCQ    s    0.000        8060.
248  VEHINSPQ    s    0.000        3944.
249  VEHINSCQ    s    0.000        3167.
250  VRNTLOPQ    s    0.000     0.1301E+05
251  VRNTLOCQ    s    0.000        6512.
252  PUBTRAPQ    s    0.000     0.2074E+05
253  PUBTRACQ    s    0.000     0.1047E+05
254  TRNTRPPQ    s    0.000     0.2067E+05
255  TRNTRPCQ    s    0.000     0.1042E+05
256  TRNOTHPQ    s    0.000        1448.
257  TRNOTHCQ    s    0.000        1140.
258  HEALTHPQ    s   -100.0     0.1538E+05
259  HEALTHCQ    s   -941.7        7982.
260  HLTHINPQ    s    0.000     0.1221E+05
261  HLTHINCQ    s    0.000        6175.
262  MEDSRVPQ    s   -475.0     0.1198E+05
263  MEDSRVCQ    s   -1180.        7982.
264  PREDRGPQ    s   -100.0        2000.
265  PREDRGCQ    s   -260.0        2200.
266  MEDSUPPQ    s   -300.0        7000.
267  MEDSUPCQ    s   -449.0        5310.
268  ENTERTPQ    s    0.000     0.6318E+05
269  ENTERTCQ    s    0.000        8790.
270  FEEADMPQ    s    0.000        8844.
271  FEEADMCQ    s    0.000        8354.
272  TVRDIOPQ    s    0.000        7007.
273  TVRDIOCQ    s    0.000        5143.
274  OTHEQPPQ    s    0.000     0.6300E+05
275  OTHEQPCQ    s    0.000        7154.
276  PETTOYPQ    s    0.000        4425.
277  PETTOYCQ    s    0.000        5657.
278  OTHENTPQ    s    0.000     0.6300E+05
279  OTHENTCQ    s    0.000        7154.
280  PERSCAPQ    s    0.000        1018.
281  PERSCACQ    s    0.000        800.0
282  READPQ      s    0.000        3304.
283  READCQ      s    0.000        606.0
284  EDUCAPQ     s    0.000     0.3500E+05
285  EDUCACQ     s    0.000     0.3500E+05
286  TOBACCPQ    s    0.000        2253.
287  TOBACCCQ    s    0.000        2600.
288  MISCPQ      s    0.000     0.2000E+05
289  MISCCQ      s    0.000     0.1703E+05
290  MISC1PQ     s    0.000     0.2000E+05
291  MISC1CQ     s    0.000     0.1703E+05
294  CASHCOPQ    s    0.000     0.8109E+05
295  CASHCOCQ    s    0.000     0.1600E+05
296  PERINSPQ    s    0.000     0.2589E+05
297  PERINSCQ    s    0.000     0.2298E+05
298  LIFINSPQ    s    0.000        7085.
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299	LIFINSCQ	s	0.000	5842.		
300	RETPENPQ	s	0.000	0.2584E+05		
301	RETPENCQ	s	0.000	0.2298E+05		
302	HH_CU_Q	s	1.000	5.000		
303	HH_CU_Q_	m			0	
304	HHID	c			46	2855
305	HHID_	m			1	
306	POV_CY	c			2	73
307	POV_CY_	m			1	
308	POV_PY	c			2	73
309	POV_PY_	m			1	
310	SWIMPOOL	c			1	2546
311	SWIM_OOL	m			2	
312	APTMENT	c			1	2874
313	APTMENT_	m			2	
314	OFSTPARK	c			1	782
315	OFST_ARK	m			2	
316	WINDOWAC	c			1	2546
317	WIND_WAC	m			2	
318	CNTRALAC	c			1	934
319	CNTR_LAC	m			2	
320	CHILDAGE	s	0.000	7.000		
321	CHIL_AGE	m			0	
322	INCLASS	s	1.000	9.000		
323	STATE	c			39	322
324	ERANKH	s	0.6848E-02	1.000		64
325	ERANKH_	m			1	
326	TOTEX4PQ	s	233.2	0.2782E+06		
327	TOTEX4CQ	s	0.000	0.8056E+05		
328	MISCX4PQ	s	0.000	0.2000E+05		
329	MISCX4CQ	s	0.000	0.1703E+05		
330	VEHQL	s	0.000	4.000		
331	VEHQL_	m			0	
332	NUM_TVAN	s	0.000	9.000		
333	NUM__VAN	m			0	
334	TTOTALP	s	0.000	0.3821E+05		
335	TTOTALC	s	0.000	0.2303E+05		
336	TFOODTOP	s	0.000	5500.		
337	TFOODTOC	s	0.000	4305.		
338	TFOODAWP	s	0.000	5500.		
339	TFOODAWC	s	0.000	4180.		
340	TFOODHOP	s	0.000	3300.		
341	TFOODHOC	s	0.000	1050.		
342	TALCBEVP	s	0.000	2252.		
343	TALCBEVC	s	0.000	1220.		
344	TOTHRLOP	s	0.000	0.1013E+05		
345	TOTHRLOC	s	0.000	7498.		
346	TTRANPRP	s	0.000	0.2101E+05		
347	TTRANPRC	s	0.000	0.1086E+05		
348	TGASMOTP	s	0.000	1750.		

349	TGASMOTC	s	0.000	1540.
350	TVRENTLP	s	0.000	445.0
351	TVRENTLC	s	0.000	514.0
356	TOTHTREP	s	0.000	445.0
357	TOTHTREC	s	0.000	514.0
358	TTRNTRIP	s	0.000	0.2067E+05
359	TTRNTRIC	s	0.000	0.1042E+05
360	TFAREP	s	0.000	0.2046E+05
361	TFAREC	s	0.000	0.1030E+05
362	TAIRFARP	s	0.000	0.2000E+05
363	TAIRFARC	s	0.000	0.1000E+05
364	TOTHFARP	s	0.000	9800.
365	TOTHFARC	s	0.000	3521.
366	TLOCALTP	s	0.000	728.0
367	TLOCALTC	s	0.000	1000.
368	TENTRMNP	s	0.000	7400.
369	TENTRMNC	s	0.000	3000.
370	TFEESADP	s	0.000	7400.
371	TFEESADC	s	0.000	3000.
372	TOTHENTP	s	0.000	1400.
373	TOTHENTC	s	0.000	2400.
374	OWNVACP	s	0.000	0.2329E+05
375	OWNVACC	s	0.000	0.1367E+05
376	VOTHRLOP	s	0.000	0.2329E+05
377	VOTHRLOC	s	0.000	0.1367E+05
380	UTILOWNP	s	0.000	2077.
381	UTILOWNC	s	0.000	943.0
382	VFUELOIP	s	0.000	682.0
383	VFUELOIC	s	0.000	625.0
384	VOTHRFLP	s	0.000	547.0
385	VOTHRFLC	s	0.000	907.0
386	VELECTRP	s	0.000	1360.
387	VELECTRC	s	0.000	489.0
388	VNATLGAP	s	0.000	2077.
389	VNATLGAC	s	0.000	177.0
390	VWATERPP	s	0.000	429.0
391	VWATERPC	s	0.000	571.0
392	MRTPRNOP	s	0.000	0.2643E+05
393	MRTPRNOC	s	0.000	0.1322E+05
394	UTILRNTP	s	0.000	1157.
395	UTILRNTC	s	0.000	628.0
396	RFUELOIP	s	0.000	565.0
397	RFUELOIC	s	0.000	553.0
400	RELECTRP	s	0.000	558.0
401	RELECTRC	s	0.000	209.0
402	RNATLGAP	s	0.000	254.0
403	RNATLGAC	s	0.000	59.00
404	RWATERPP	s	0.000	552.0
405	RWATERPC	s	0.000	242.0
406	POVLEVCY	s	0.1145E+05	0.5087E+05

407	POVL_VCY	m			0	
408	POVLEVPY	s	0.1122E+05	0.4982E+05		
409	POVL_VPY	m			0	
410	PORCH	c			1	624
411	PORCH_	m			2	
412	ETOTALP	s	233.2	0.2782E+06		
413	ETOTALC	s	0.000	0.6995E+05		
414	ETOTAPX4	s	233.2	0.2782E+06		
415	ETOTACX4	s	0.000	0.6995E+05		
416	EHOUSNGP	s	0.000	0.1811E+06		
417	EHOUSNGC	s	0.000	0.3303E+05		
418	ESHELTRP	s	0.000	0.4456E+05		
419	ESHELTRC	s	0.000	0.2724E+05		
420	EOWNDWLP	s	0.000	0.4456E+05		
421	EOWNDWLC	s	0.000	0.2613E+05		
422	EOTHLODP	s	0.000	0.3342E+05		
423	EOTHLODC	s	0.000	0.1433E+05		
424	EMRTPNOP	s	0.000	0.3516E+05		
425	EMRTPNOC	s	0.000	0.2247E+05		
426	EMRTPNVP	s	0.000	0.2643E+05		
427	EMRTPNVC	s	0.000	0.1322E+05		
428	ETRANPTP	s	0.000	0.8868E+05		
429	ETRANPTC	s	0.000	0.5436E+05		
430	EVEHPURP	s	0.000	0.8790E+05		
431	EVEHPURC	s	0.000	0.5400E+05		
432	ECARTKNP	s	0.000	0.8790E+05		
433	ECARTKNC	s	0.000	0.5400E+05		
434	ECARTKUP	s	0.000	0.2643E+05		
435	ECARTKUC	s	0.000	0.2662E+05		
436	EOTHVEHP	s	0.000	0.1166E+05		
437	EOTHVEHC	s	0.000	2700.		
438	EENTRMTP	s	0.000	0.6318E+05		
439	EENTRMTC	s	0.000	8790.		
440	EOTHENTP	s	0.000	0.6300E+05		
441	EOTHENTC	s	0.000	7154.		
442	ENOMOTRP	s	0.000	7700.		
443	ENOMOTRC	s	0.000	696.0		
444	EMOTRVHP	s	0.000	0.6300E+05		
445	EMOTRVHC	s	0.000	6971.		
446	EENTMSCP	s	0.000	3750.		
447	EENTMSCC	s	0.000	5000.		
448	EMISCELP	s	0.000	0.2000E+05		
449	EMISCELC	s	0.000	0.1703E+05		
450	EMISCMTP	s	0.000	1048.		
451	EMISCMTC	s	0.000	2113.		
452	UNISTRQ	s	1.000	10.00		
453	UNISTRQ_	m			0	
455	WELF_EBX	c			2	
457	LUMP_UMB	c			3	
459	LMPS_MBX	c			3	

460	OTHRINCB	s	5.000	5.000		2921
461	OTHR_NCB	m			1	
464	INCLASS2	s	1.000	7.000		
465	INCL_SS2	m			0	
467	HORREF1	c			6	2800
468	HORREF1_	m			1	
469	HORREF2	c			5	2840
470	HORREF2_	m			1	
471	ERANKHM	s	0.7504E−02	1.000		
472	ERANKHM_	m			0	
473	FGOVRETM	s	0.000	0.2509E+05		
474	FGOV_ETM	m			0	
475	FPRIPENM	s	0.000	0.4551E+05		
476	FPRI_ENM	m			0	
477	FRRDEDM	s	0.000	0.1043E+05		
478	FRRDEDM_	m			0	
479	PSU	c			21	1659
480	HISP_REF	c			2	
481	HISP2	c			2	1225
482	HIGH_EDU	s	10.00	16.00		
483	BUILT	s	1915.	2012.		363
484	BUILT_	m			2	
485	CREDFINX	s	0.000	6629.		2665
486	CRED_INX	m			2	
487	CREDITB	s	1.000	5.000		2914
488	CREDITB_	m			2	
489	CREDITBX	s	250.0	0.2250E+05		2914
490	CRED_TBX	m			2	
491	CREDITX	s	1.000	0.5132E+05		2628
492	CREDITX_	m			2	
493	CREDTYRX	s	0.000	0.5092E+05		2639
494	CRED_YRX	m			2	
495	CREDYRB	s	1.000	6.000		2904
496	CREDYRB_	m			2	
497	CREDYRBX	s	250.0	0.3500E+05		2904
498	CRED_RBX	m			2	
499	DEFBENRP	c			2	2169
500	DEFB_NRP	m			2	
501	EITC	c			2	598
502	EITC_	m			2	
503	FMLPYYRX	s	4.000	4000.		2844
504	FMLP_YRX	m			2	
505	FS_MTHI	s	1.000	12.00		2893
506	FS_MTHI_	m			1	
507	FSMPFRMX	s	−0.4000E+06	0.1090E+07		
508	FSMP_RMX	m			0	
513	INTRDVX	d	1.000	0.9834E+05		
522	IRAB	s	1.000	6.000		2826
523	IRAB_	m			2	
524	IRABX	s	1000.	0.7250E+06		2826

525	IRABX_	m			2	
526	IRAX	s	0.000	0.2635E+07		2309
527	IRAX_	m			2	
528	IRAYRB	s	1.000	6.000		2804
529	IRAYRB_	m			2	
530	IRAYRBX	s	1000.	0.7250E+06		2804
531	IRAYRBX_	m			2	
532	IRAYRX	s	0.000	0.2129E+07		2344
533	IRAYRX_	m			2	
534	JFS_AMT	s	0.000	4800.		
535	JFS_AMT_	m			0	
536	LIQDYRBX	s	250.0	0.3500E+05		2839
537	LIQD_RBX	m			2	
538	LIQUIDBX	s	250.0	0.3500E+05		2861
539	LIQU_DBX	m			2	
540	LIQUDYRB	s	1.000	6.000		2839
541	LIQU_YRB	m			2	
542	LIQUDYRX	s	0.000	0.5155E+06		2320
543	LIQU_YRX	m			2	
544	LIQUIDB	s	1.000	6.000		2861
545	LIQUIDB_	m			2	
546	LIQUIDX	s	0.000	0.4910E+06		2289
547	LIQUIDX_	m			2	
548	MEALSPAY	s	1.000	2.000		2
549	MEAL_PAY	m			1	
550	MLPAYWKX	s	2.000	120.0		2844
551	MLPA_WKX	m			2	
552	MLPYQWKS	s	1.000	52.00		2841
553	MLPY_WKS	m			1	
554	NETRENTB	s	0.000	0.000		2920
555	NETR_NTB	m			2	
556	NETRENTX	s	−0.5499E+05	0.1148E+06		2650
557	NETR_NTX	m			2	
558	NETRNTBX	s	−2400.	−2400.		2920
559	NETR_TBX	m			2	
560	OTHASTBX	s	0.3000E+05	0.7250E+06		2909
561	OTHA_TBX	m			2	
562	OTHASTB	s	3.000	6.000		2909
563	OTHASTB_	m			3	
564	OTHASTX	s	2.000	0.6000E+06		2889
565	OTHASTX_	m			2	
566	OTHFINX	s	0.000	900.0		2889
567	OTHFINX_	m			2	
568	OTHLONBX	s	250.0	250.0		2921
569	OTHL_NBX	m			2	
570	OTHLYRBX	s	750.0	0.2250E+05		2920
571	OTHL_RBX	m			2	
572	OTHLNYRB	s	2.000	5.000		2920
573	OTHL_YRB	m			2	
574	OTHLNYRX	s	0.000	0.5500E+05		2880

575	OTHL_YRX	m			2	
576	OTHLOAN	s	1.000	2.000		2150
577	OTHLOAN_	m			1	
578	OTHLONB	s	1.000	1.000		2921
579	OTHLONB_	m			2	
580	OTHLONX	s	1.000	0.3106E+06		2877
581	OTHLONX_	m			2	
582	OTHREGBX	s	488.0	0.5000E+05		2913
583	OTHR_GBX	m			2	
584	OTHREGB	s	1.000	12.00		2913
585	OTHREGB_	m			2	
586	OTHREGX	s	100.0	0.6367E+05		2725
587	OTHREGX_	m			2	
588	OTHSYRBX	s	6000.	0.7250E+06		2908
589	OTHS_RBX	m			2	
590	OTHSTYRB	s	2.000	6.000		2908
591	OTHS_YRB	m			2	
592	OTHSTYRX	s	0.000	0.1533E+07		2894
593	OTHS_YRX	m			2	
594	RETSURVX	s	30.00	0.1269E+06		2127
595	RETS_RVX	m			2	
596	RETSRVBX	s	480.0	0.6200E+05		2913
597	RETS_VBX	m			2	
598	RETSURV	c			3	
599	RETSURV_	m			0	
600	RETSURVB	s	1.000	12.00		2913
601	RETS_RVB	m			2	
604	ROYESTBX	s	1300.	6000.		2916
605	ROYE_TBX	m			2	
606	ROYESTB	s	2.000	6.000		2916
607	ROYESTB_	m			2	
608	ROYESTX	s	1.000	0.1592E+06		2730
609	ROYESTX_	m			2	
610	STCKYRBX	s	1000.	0.7250E+06		2874
611	STCK_RBX	m			2	
612	STDNTYRB	s	4.000	6.000		2913
613	STDN_YRB	m			2	
614	STDNTYRX	s	0.000	0.4100E+06		2821
615	STDN_YRX	m			2	
616	STDTYRBX	s	6250.	0.3500E+05		2913
617	STDT_RBX	m			2	
618	STOCKYRB	s	1.000	6.000		2874
619	STOC_YRB	m			2	
620	STOCKYRX	s	0.000	0.5784E+07		2703
621	STOC_YRX	m			2	
622	STOCKB	s	1.000	6.000		2887
623	STOCKB_	m			3	
624	STOCKBX	s	1000.	0.7250E+06		2887
625	STOCKBX_	m			2	
626	STOCKX	s	25.00	0.6587E+07		2683

627	STOCKX_	m			2	
628	STUDFINX	s	0.000	9000.		2847
629	STUD_INX	m			2	
630	STUDNTBX	s	6250.	0.3500E+05		2917
631	STUD_TBX	m			2	
632	STUDNTB	s	4.000	6.000		2917
633	STUDNTB_	m			2	
634	STUDNTX	s	250.0	0.4200E+06		2815
635	STUDNTX_	m			2	
636	WHLFYRBX	s	250.0	0.3500E+05		2895
637	WHLF_RBX	m			2	
638	WHLFYRB	s	1.000	6.000		2895
639	WHLFYRB_	m			2	
640	WHLFYRX	s	0.000	0.7674E+06		2786
641	WHLFYRX_	m			3	
642	WHOLIFBX	s	250.0	0.3500E+05		2895
643	WHOL_FBX	m			2	
644	WHOLIFB	s	1.000	6.000		2895
645	WHOLIFB_	m			2	
646	WHOLIFX	s	1.000	0.7892E+06		2780
647	WHOLIFX_	m			3	
648	TOTXEST	s	-8990.	0.2938E+06		
649	FFTAXOWE	s	-8943.	0.2485E+06		
650	FFTA_OWE	m			0	
651	FSTAXOWE	s	-2505.	0.5991E+05		
652	FSTA_OWE	m			0	
653	ETOTA	s	1199.	0.2782E+06		

Total #cases	#cases w/ miss. D	#missing ord. vals	#X-var	#N-var	#F-var	#S-var
4693	1771	4693	30	0	0	409

#P-var	#M-var	#B-var	#C-var	#I-var
0	168	0	44	0

Weight variable FINLWT21 in column: 50
Number of cases used for training: 2922
Number of split variables: 453
Number of cases excluded due to 0 weight or missing D: 1771

Number of trees in ensemble: 500
Number of variables used for splitting: 152
No nodewise interaction tests
Fraction of cases used for splitting each node: .0342
Maximum number of split levels: 17
Minimum node sample size: 14
Mean number of terminal nodes: 152.5
Resubstitution estimate of mean squared error: 121372696.4018
based on number of training cases: 2922
Proportion of variance (R-squared) explained by ensemble model:
0.5711

```
Number of OOB cases: 2922
OOB estimate of mean squared error: 173140359.1619
Mean number of trees per OOB observation: 184.09

Number of test cases with 0 weight and nonmissing responses = 0
Observed and fitted values are stored in in.fit
Elapsed time in seconds: 1324.2
```

```
GUIDE          (do not edit this file unless you know what you are doing)
  36.2         (version of GUIDE that generated this file)
 1             (1=model fitting, 2=importance or DIF scoring, 3=data
conversion)
"gfout.txt"  (name of output file)
 2             (1=one tree, 2=ensemble)
 2             (1=bagging, 2=rforest)
 2             (1=random splits of missing values, 2=nonrandom)
 1             (1=classification, 2=regression)
 2             (1=interaction tests, 2=skip them)
"ceclass.dsc"  (name of data description file)
 1             (1=accept default number of trees, 2=change)
 1             (1=accept default number of variables for splitting,
2=change it)
 1             (1=estimated priors, 2=equal priors, 3=other priors)
 1             (1=unit misclassification costs, 2=other)
 1             (1=split point from quantiles, 2=use exhaustive search)
 1             (1=accept default splitting fraction, 2=change it)
 1             (1=default max. number of split levels, 2=specify no. in
next line)
 1             (1=default min. node size, 2=specify min. value in next
line)
"gfpro.txt" (file name for predicted class and probability estimates)
 1             (rank of top variable to split root node)
```

```
          GGG   U   U  I  DDDD   EEEE
         G   G U   U  I  D   D  E
         G     U   U  I  D   D  E
         G  GG U   U  I  D   D  EEE
         G   G U   U  I  D   D  E
         G   G U   U  I  D   D  E
          GGG    UUU   I  DDDD   EEEE
```

 GUIDE Classification and Regression Trees and Forests
 Version 36.2 (Build date: January 8, 2021)
 Compiled with NAG Fortran 6.2.0 on macOS Catalina 10.15.7
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 This software is based upon work supported by the U.S. Army Research Office,
 the National Science Foundation and the National Institutes of Health.

 This job was started on 02/22/21 at 16:40

 Random forest of classification trees
 No pruning
 Data description file: ceclass.dsc
 Training sample file: cedata.txt
 Missing value code: NA
 Records in data file start on line 2
 Number of M variables associated with C variables: 33
 422 N variables changed to S
 D variable is INTRDVX_
 Number of records in data file: 4693
 Length of longest entry in data file: 11
 Missing values found among categorical variables
 Separate categories will be created for missing categorical variables
 Missing values found among non-categorical variables
 Number of classes: 3
 Warning: S variable MISC2PQ is constant
 Warning: S variable MISC2CQ is constant
 Warning: S variable TCARTRKP is constant
 Warning: S variable TCARTRKC is constant
 Warning: S variable TOTHVHRP is constant
 Warning: S variable TOTHVHRC is constant
 Warning: S variable VMISCHEP is constant
 Warning: S variable VMISCHEC is constant
 Warning: S variable ROTHRFLP is constant
 Warning: S variable ROTHRFLC is constant
 Smallest and largest positive weights are 1.3507E+03 and 7.0269E+04
 Training sample class proportions of D variable INTRDVX_:
 Class #Cases   Proportion
 C   1771   0.37737055
 D   2838   0.60473045
 T   84   0.01789900
```

```
 Summary information for training sample of size 4693
 d=dependent, b=split and fit cat variable using indicator variables,
 c=split-only categorical, i=fit-only categorical (via indicators),
 s=split-only numerical, n=split and fit numerical, f=fit-only
numerical,
 m=missing-value flag variable, p=periodic variable, w=weight
 Levels of M variables are for missing values in associated variables
```

Column	Name		Minimum	Maximum	#Codes/ Levels/ Periods	#Missing
1	DIRACC	c			2	155
2	DIRACC_	m			1	
3	AGE_REF	s	18.00	87.00		
4	AGE_REF_	m			0	
5	AGE2	s	22.00	87.00		1903
6	AGE2_	m			1	
7	AS_COMP1	s	0.000	4.000		
8	AS_C_MP1	m			0	
9	AS_COMP2	s	0.000	4.000		
10	AS_C_MP2	m			0	
11	AS_COMP3	s	0.000	4.000		
12	AS_C_MP3	m			0	
13	AS_COMP4	s	0.000	4.000		
14	AS_C_MP4	m			0	
15	AS_COMP5	s	0.000	2.000		
16	AS_C_MP5	m			0	
17	BATHRMQ	s	1.000	8.000		21
18	BATHRMQ_	m			2	
19	BEDROOMQ	s	0.000	9.000		25
20	BEDR_OMQ	m			2	
21	BLS_URBN	s	1.000	2.000		
22	BUILDING	c			11	
23	BUIL_ING	m			0	
24	CUTENURE	c			6	
25	CUTE_URE	m			0	
26	EARNCOMP	c			9	
27	EARN_OMP	m			0	
28	EDUC_REF	s	10.00	16.00		
29	EDUC0REF	m			0	
30	EDUCA2	s	10.00	16.00		1903
31	EDUCA2_	m			1	
32	FAM_SIZE	s	1.000	9.000		
33	FAM__IZE	m			0	
34	FAM_TYPE	c			10	
35	FAM__YPE	m			0	
36	FAMTFEDX	s	0.000	0.9928E+05		
37	FAMT_EDX	m			0	
38	FEDRFNDX	s	4.000	0.1428E+05		2597
39	FEDR_NDX	m			2	

40	FEDTAXX	s	2.000	0.8223E+05		3793
41	FEDTAXX_	m			2	
42	FGOVRETX	s	0.000	0.2469E+05		
43	FGOV_ETX	m			0	
44	FINCATAX	s	−0.3380E+06	0.1410E+07		
45	FINCAT_X	m			0	
46	FINCBTAX	s	−0.3430E+06	0.1410E+07		
47	FINCBT_X	m			0	
48	FINDRETX	s	0.000	0.1272E+06		
49	FIND_ETX	m			0	
50	FINLWT21	w	1351.	0.7027E+05		
51	FJSSDEDX	s	0.000	0.3042E+05		
52	FJSS_EDX	m			0	
53	FPRIPENX	s	0.000	0.5902E+05		
54	FPRI_ENX	m			0	
55	FRRDEDX	s	0.000	9980.		
56	FRRDEDX_	m			0	
57	FRRETIRX	s	0.000	0.5807E+05		
58	FRRE_IRX	m			0	
59	FSALARYX	s	0.000	0.5301E+06		
60	FSAL_RYX	m			0	
61	FSLTAXX	s	0.000	0.3010E+05		
62	FSLTAXX_	m			0	
63	FSSIX	s	0.000	0.3048E+05		
64	FSSIX_	m			0	
65	HLFBATHQ	s	0.000	4.000		23
66	HLFB_THQ	m			2	
67	INC_HRS1	s	1.000	93.00		1744
68	INC__RS1	m			1	
69	INC_HRS2	s	1.000	99.00		2886
70	INC__RS2	m			1	
71	INC_RANK	s	0.1000E−03	1.000		367
72	INC__ANK	m			1	
73	INCNONW1	c			6	2949
74	INCN_NW1	m			1	
75	INCNONW2	c			6	3710
76	INCN_NW2	m			1	
77	INCOMEY1	c			6	1744
78	INCO_EY1	m			1	
79	INCOMEY2	c			6	2886
80	INCO_EY2	m			1	
81	INCWEEK1	s	0.000	52.00		
82	INCW_EK1	m			0	
83	INCWEEK2	s	0.000	52.00		1903
84	INCW_EK2	m			1	
85	MISCTAXX	s	5.000	0.2524E+05		4601
86	MISC_AXX	m			3	
87	LUMPSUMX	s	4.000	0.5492E+06		4454
88	LUMP_UMX	m			2	
89	MARITAL1	c			6	

90	MARI_AL1	m			0	
91	NO_EARNR	s	0.000	6.000		
92	NO_E_RNR	m			0	
93	NONINCMX	s	0.000	0.5492E+06		
94	NONI_CMX	m			0	
95	NUM_AUTO	s	0.000	7.000		
96	NUM__UTO	m			0	
97	OCCUCOD1	c			15	1744
98	OCCU_OD1	m			1	
99	OCCUCOD2	c			15	2886
100	OCCU_OD2	m			1	
101	OTHRINCX	s	2.000	0.5788E+05		4566
102	OTHR_NCX	m			2	
103	PERSLT18	s	0.000	7.000		
104	PERS_T18	m			0	
105	PERSOT64	s	0.000	4.000		
106	PERS_T64	m			0	
107	POPSIZE	s	1.000	5.000		38
108	PRINEARN	c			8	
109	PRIN_ARN	m			0	
110	QINTRVMO	c			12	
111	QINTRVYR	c			2	
112	RACE2	c			6	1903
113	RACE2_	m			1	
114	REF_RACE	c			7	
115	REF__ACE	m			0	
116	REGION	c			4	38
117	RENTEQVX	s	1.000	4694.		667
118	RENT_QVX	m			1	
119	RESPSTAT	c			3	
120	RESP_TAT	m			0	
121	ROOMSQ	s	1.000	19.00		30
122	ROOMSQ_	m			2	
123	SEX_REF	c			3	
124	SEX_REF_	m			0	
125	SEX2	c			2	1903
126	SEX2_	m			1	
127	SLOCTAXX	s	1.000	0.2657E+05		4053
128	SLOC_AXX	m			2	
129	SLRFUNDX	s	1.000	4169.		3242
130	SLRF_NDX	m			2	
131	SMSASTAT	c			2	
132	ST_HOUS	c			3	
133	ST_HOUS_	m			0	
134	TOTTXPDX	s	−0.1845E+05	0.1467E+06		
135	TOTT_PDX	m			0	
136	VEHQ	s	0.000	17.00		
137	VEHQ_	m			0	
138	WELFAREX	s	300.0	4344.		4680
139	WELF_REX	m			2	

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140   TOTEXPPQ   s    233.2      0.2782E+06
141   TOTEXPCQ   s   −3759.      0.9669E+05
142   FOODPQ     s    0.000      0.2358E+05
143   FOODCQ     s    0.000       7363.
144   FDHOMEPQ   s    0.000       8450.
145   FDHOMECQ   s    0.000       6067.
146   FDAWAYPQ   s    0.000      0.2098E+05
147   FDAWAYCQ   s    0.000       5660.
148   FDXMAPPQ   s    0.000      0.2098E+05
149   FDXMAPCQ   s    0.000       5660.
150   FDMAPPQ    s    0.000       900.0
151   FDMAPCQ    s    0.000       666.7
152   ALCBEVPQ   s    0.000       3152.
153   ALCBEVCQ   s    0.000       2550.
154   HOUSPQ     s    0.000      0.1811E+06
155   HOUSCQ     s   −2196.      0.3466E+05
156   SHELTPQ    s    0.000      0.4074E+05
157   SHELTCQ    s    0.000      0.3354E+05
158   OWNDWEPQ   s    0.000      0.3070E+05
159   OWNDWECQ   s    0.000      0.3321E+05
160   MRTINTPQ   s    0.000      0.2531E+05
161   MRTINTCQ   s    0.000      0.1112E+05
162   PROPTXPQ   s    0.000       5870.
163   PROPTXCQ   s    0.000       4247.
164   MRPINSPQ   s    0.000      0.2110E+05
165   MRPINSCQ   s    0.000      0.2373E+05
166   RENDWEPQ   s    0.000       8546.
167   RENDWECQ   s    0.000       6742.
168   RNTXRPPQ   s    0.000       8546.
169   RNTXRPCQ   s    0.000       6742.
170   RNTAPYPQ   s    0.000       2922.
171   RNTAPYCQ   s    0.000       3000.
172   OTHLODPQ   s    0.000      0.3342E+05
173   OTHLODCQ   s    0.000      0.1367E+05
174   UTILPQ     s    0.000       7581.
175   UTILCQ     s    0.000       3921.
176   NTLGASPQ   s    0.000       2306.
177   NTLGASCQ   s    0.000       885.0
178   ELCTRCPQ   s    0.000       4473.
179   ELCTRCCQ   s    0.000       3261.
180   ALLFULPQ   s    0.000       2752.
181   ALLFULCQ   s    0.000       3081.
182   FULOILPQ   s    0.000       2752.
183   FULOILCQ   s    0.000       3081.
184   OTHFLSPQ   s    0.000       1981.
185   OTHFLSCQ   s    0.000       2269.
186   TELEPHPQ   s    0.000       1638.
187   TELEPHCQ   s    0.000       1907.
188   WATRPSPQ   s    0.000       1880.
189   WATRPSCQ   s    0.000       1035.
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190   HOUSOPPQ    s   -37.00      0.2493E+05
191   HOUSOPCQ    s   -4868.      0.1815E+05
192   DOMSRVPQ    s   -37.00      0.2003E+05
193   DOMSRVCQ    s   -4960.      0.1805E+05
194   DMSXCCPQ    s   -37.00      0.2003E+05
195   DMSXCCCQ    s   -4960.      0.1000E+05
196   BBYDAYPQ    s    0.000      0.1500E+05
197   BBYDAYCQ    s    0.000      0.1740E+05
198   OTHHEXPQ    s    0.000      0.2493E+05
199   OTHHEXCQ    s    0.000       5653.
200   HOUSEQPQ    s    0.000      0.1544E+06
201   HOUSEQCQ    s    0.000      0.2268E+05
202   TEXTILPQ    s    0.000       4000.
203   TEXTILCQ    s    0.000       2946.
204   FURNTRPQ    s    0.000      0.7500E+05
205   FURNTRCQ    s    0.000      0.1811E+05
206   FLRCVRPQ    s    0.000      0.1000E+05
207   FLRCVRCQ    s    0.000       5500.
208   MAJAPPPQ    s    0.000      0.1802E+05
209   MAJAPPCQ    s    0.000      0.1200E+05
210   SMLAPPPQ    s    0.000       3000.
211   SMLAPPCQ    s    0.000       944.0
212   MISCEQPQ    s    0.000      0.6510E+05
213   MISCEQCQ    s    0.000       7155.
214   APPARPQ     s    0.000      0.2440E+05
215   APPARCQ     s    0.000       4604.
216   MENBOYPQ    s    0.000       4200.
217   MENBOYCQ    s    0.000       1797.
218   MENSIXPQ    s    0.000       4200.
219   MENSIXCQ    s    0.000       1797.
220   BOYFIFPQ    s    0.000       2150.
221   BOYFIFCQ    s    0.000       448.0
222   WOMGRLPQ    s    0.000       4540.
223   WOMGRLCQ    s    0.000       2958.
224   WOMSIXPQ    s    0.000       4474.
225   WOMSIXCQ    s    0.000       2958.
226   GRLFIFPQ    s    0.000       1799.
227   GRLFIFCQ    s    0.000       1624.
228   CHLDRNPQ    s    0.000       717.0
229   CHLDRNCQ    s    0.000       961.0
230   FOOTWRPQ    s    0.000       2162.
231   FOOTWRCQ    s    0.000       1148.
232   OTHAPLPQ    s    0.000      0.2048E+05
233   OTHAPLCQ    s    0.000       4076.
234   TRANSPQ     s    0.000      0.8778E+05
235   TRANSCQ     s    0.000      0.6490E+05
236   CARTKNPQ    s    0.000      0.8700E+05
237   CARTKNCQ    s    0.000      0.6480E+05
238   CARTKUPQ    s    0.000      0.4200E+05
239   CARTKUCQ    s    0.000      0.4163E+05
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240   OTHVEHPQ   s    0.000      0.1417E+05
241   OTHVEHCQ   s    0.000      0.1800E+05
242   GASMOPQ    s    0.000       4832.
243   GASMOCQ    s    0.000       6400.
244   VEHFINPQ   s    0.000       1201.
245   VEHFINCQ   s    0.000       716.0
246   MAINRPPQ   s    0.000      0.1400E+05
247   MAINRPCQ   s    0.000       8060.
248   VEHINSPQ   s    0.000       4236.
249   VEHINSCQ   s    0.000       3800.
250   VRNTLOPQ   s    0.000      0.2200E+05
251   VRNTLOCQ   s    0.000      0.2223E+05
252   PUBTRAPQ   s    0.000      0.2287E+05
253   PUBTRACQ   s    0.000      0.1198E+05
254   TRNTRPPQ   s    0.000      0.2287E+05
255   TRNTRPCQ   s    0.000      0.1198E+05
256   TRNOTHPQ   s    0.000       1448.
257   TRNOTHCQ   s    0.000       1386.
258   HEALTHPQ   s   −2402.      0.1665E+05
259   HEALTHCQ   s   −0.1281E+05  0.2189E+05
260   HLTHINPQ   s    0.000      0.1426E+05
261   HLTHINCQ   s    0.000       8789.
262   MEDSRVPQ   s   −3290.      0.1543E+05
263   MEDSRVCQ   s   −0.1330E+05  0.1368E+05
264   PREDRGPQ   s   −940.0       6844.
265   PREDRGCQ   s   −260.0       2800.
266   MEDSUPPQ   s   −3600.       7000.
267   MEDSUPCQ   s   −449.0       7530.
268   ENTERTPQ   s    0.000      0.6318E+05
269   ENTERTCQ   s    0.000      0.4249E+05
270   FEEADMPQ   s    0.000      0.1958E+05
271   FEEADMCQ   s    0.000      0.1577E+05
272   TVRDIOPQ   s    0.000       7007.
273   TVRDIOCQ   s    0.000       5143.
274   OTHEQPPQ   s    0.000      0.6300E+05
275   OTHEQPCQ   s    0.000      0.4204E+05
276   PETTOYPQ   s    0.000      0.1165E+05
277   PETTOYCQ   s    0.000       5657.
278   OTHENTPQ   s    0.000      0.6300E+05
279   OTHENTCQ   s    0.000      0.4204E+05
280   PERSCAPQ   s    0.000       1550.
281   PERSCACQ   s    0.000       973.3
282   READPQ     s    0.000       3304.
283   READCQ     s    0.000       1100.
284   EDUCAPQ    s    0.000      0.3850E+05
285   EDUCACQ    s    0.000      0.3500E+05
286   TOBACCPQ   s    0.000       2253.
287   TOBACCCQ   s    0.000       2600.
288   MISCPQ     s    0.000      0.2305E+05
289   MISCCQ     s    0.000      0.1703E+05
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290	MISC1PQ	s	0.000	0.2305E+05		
291	MISC1CQ	s	0.000	0.1703E+05		
292	MISC2PQ	s	0.000	0.000		
293	MISC2CQ	s	0.000	0.000		
294	CASHCOPQ	s	0.000	0.8109E+05		
295	CASHCOCQ	s	0.000	0.2150E+05		
296	PERINSPQ	s	0.000	0.7000E+05		
297	PERINSCQ	s	0.000	0.3337E+05		
298	LIFINSPQ	s	0.000	0.7000E+05		
299	LIFINSCQ	s	0.000	0.3100E+05		
300	RETPENPQ	s	0.000	0.2584E+05		
301	RETPENCQ	s	0.000	0.2298E+05		
302	HH_CU_Q	s	1.000	5.000		
303	HH_CU_Q_	m			0	
304	HHID	c			46	4614
305	HHID_	m			1	
306	POV_CY	c			2	378
307	POV_CY_	m			1	
308	POV_PY	c			2	378
309	POV_PY_	m			1	
310	SWIMPOOL	c			1	4115
311	SWIM_OOL	m			2	
312	APTMENT	c			1	4616
313	APTMENT_	m			2	
314	OFSTPARK	c			1	1181
315	OFST_ARK	m			2	
316	WINDOWAC	c			1	4049
317	WIND_WAC	m			2	
318	CNTRALAC	c			1	1491
319	CNTR_LAC	m			2	
320	CHILDAGE	s	0.000	7.000		
321	CHIL_AGE	m			0	
322	INCLASS	s	1.000	9.000		
323	STATE	c			39	492
324	ERANKH	s	0.4735E-02	1.000		367
325	ERANKH_	m			1	
326	TOTEX4PQ	s	233.2	0.2782E+06		
327	TOTEX4CQ	s	-3759.	0.9669E+05		
328	MISCX4PQ	s	0.000	0.2305E+05		
329	MISCX4CQ	s	0.000	0.1703E+05		
330	VEHQL	s	0.000	4.000		
331	VEHQL_	m			0	
332	NUM_TVAN	s	0.000	9.000		
333	NUM__VAN	m			0	
334	TTOTALP	s	0.000	0.3821E+05		
335	TTOTALC	s	0.000	0.2303E+05		
336	TFOODTOP	s	0.000	5600.		
337	TFOODTOC	s	0.000	4305.		
338	TFOODAWP	s	0.000	5500.		
339	TFOODAWC	s	0.000	4180.		

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340   TFOODHOP   s    0.000        3300.
341   TFOODHOC   s    0.000        1050.
342   TALCBEVP   s    0.000        2252.
343   TALCBEVC   s    0.000        1220.
344   TOTHRLOP   s    0.000        0.1013E+05
345   TOTHRLOC   s    0.000        7498.
346   TTRANPRP   s    0.000        0.2296E+05
347   TTRANPRC   s    0.000        0.1198E+05
348   TGASMOTP   s    0.000        1750.
349   TGASMOTC   s    0.000        2200.
350   TVRENTLP   s    0.000        445.0
351   TVRENTLC   s    0.000        514.0
352   TCARTRKP   s    0.000        0.000
353   TCARTRKC   s    0.000        0.000
354   TOTHVHRP   s    0.000        0.000
355   TOTHVHRC   s    0.000        0.000
356   TOTHTREP   s    0.000        445.0
357   TOTHTREC   s    0.000        514.0
358   TTRNTRIP   s    0.000        0.2287E+05
359   TTRNTRIC   s    0.000        0.1198E+05
360   TFAREP     s    0.000        0.2202E+05
361   TFAREC     s    0.000        0.1126E+05
362   TAIRFARP   s    0.000        0.2086E+05
363   TAIRFARC   s    0.000        0.1000E+05
364   TOTHFARP   s    0.000        9800.
365   TOTHFARC   s    0.000        6238.
366   TLOCALTP   s    0.000        853.0
367   TLOCALTC   s    0.000        1000.
368   TENTRMNP   s    0.000        7400.
369   TENTRMNC   s    0.000        4131.
370   TFEESADP   s    0.000        7400.
371   TFEESADC   s    0.000        4131.
372   TOTHENTP   s    0.000        1400.
373   TOTHENTC   s    0.000        2400.
374   OWNVACP    s    0.000        0.2329E+05
375   OWNVACC    s    0.000        0.1367E+05
376   VOTHRLOP   s    0.000        0.2329E+05
377   VOTHRLOC   s    0.000        0.1367E+05
378   VMISCHEP   s    0.000        0.000
379   VMISCHEC   s    0.000        0.000
380   UTILOWNP   s    0.000        2077.
381   UTILOWNC   s    0.000        1523.
382   VFUELOIP   s    0.000        682.0
383   VFUELOIC   s    0.000        625.0
384   VOTHRFLP   s    0.000        547.0
385   VOTHRFLC   s    0.000        907.0
386   VELECTRP   s    0.000        1360.
387   VELECTRC   s    0.000        988.0
388   VNATLGAP   s    0.000        2077.
389   VNATLGAC   s    0.000        201.0
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390	VWATERPP	s	0.000	475.0		
391	VWATERPC	s	0.000	571.0		
392	MRTPRNOP	s	0.000	0.2643E+05		
393	MRTPRNOC	s	0.000	0.1322E+05		
394	UTILRNTP	s	0.000	1157.		
395	UTILRNTC	s	0.000	628.0		
396	RFUELOIP	s	0.000	565.0		
397	RFUELOIC	s	0.000	553.0		
398	ROTHRFLP	s	0.000	0.000		
399	ROTHRFLC	s	0.000	0.000		
400	RELECTRP	s	0.000	558.0		
401	RELECTRC	s	0.000	209.0		
402	RNATLGAP	s	0.000	254.0		
403	RNATLGAC	s	0.000	89.00		
404	RWATERPP	s	0.000	552.0		
405	RWATERPC	s	0.000	242.0		
406	POVLEVCY	s	0.1145E+05	0.5184E+05		
407	POVL_VCY	m			0	
408	POVLEVPY	s	0.1122E+05	0.5078E+05		
409	POVL_VPY	m			0	
410	PORCH	c			1	1006
411	PORCH_	m			2	
412	ETOTALP	s	233.2	0.2782E+06		
413	ETOTALC	s	−2683.	0.7288E+05		
414	ETOTAPX4	s	233.2	0.2782E+06		
415	ETOTACX4	s	−2683.	0.7288E+05		
416	EHOUSNGP	s	0.000	0.1811E+06		
417	EHOUSNGC	s	−2196.	0.3897E+05		
418	ESHELTRP	s	0.000	0.4456E+05		
419	ESHELTRC	s	0.000	0.3786E+05		
420	EOWNDWLP	s	0.000	0.4456E+05		
421	EOWNDWLC	s	0.000	0.3752E+05		
422	EOTHLODP	s	0.000	0.3342E+05		
423	EOTHLODC	s	0.000	0.1433E+05		
424	EMRTPNOP	s	0.000	0.3516E+05		
425	EMRTPNOC	s	0.000	0.2247E+05		
426	EMRTPNVP	s	0.000	0.2643E+05		
427	EMRTPNVC	s	0.000	0.1322E+05		
428	ETRANPTP	s	0.000	0.8868E+05		
429	ETRANPTC	s	0.000	0.5436E+05		
430	EVEHPURP	s	0.000	0.8790E+05		
431	EVEHPURC	s	0.000	0.5400E+05		
432	ECARTKNP	s	0.000	0.8790E+05		
433	ECARTKNC	s	0.000	0.5400E+05		
434	ECARTKUP	s	0.000	0.2643E+05		
435	ECARTKUC	s	0.000	0.2662E+05		
436	EOTHVEHP	s	0.000	0.1166E+05		
437	EOTHVEHC	s	0.000	6542.		
438	EENTRMTP	s	0.000	0.6318E+05		
439	EENTRMTC	s	0.000	0.1605E+05		

440	EOTHENTP	s	0.000	0.6300E+05		
441	EOTHENTC	s	0.000	7502.		
442	ENOMOTRP	s	0.000	7700.		
443	ENOMOTRC	s	0.000	1500.		
444	EMOTRVHP	s	0.000	0.6300E+05		
445	EMOTRVHC	s	0.000	6971.		
446	EENTMSCP	s	0.000	6000.		
447	EENTMSCC	s	0.000	5000.		
448	EMISCELP	s	0.000	0.2305E+05		
449	EMISCELC	s	0.000	0.1703E+05		
450	EMISCMTP	s	0.000	1096.		
451	EMISCMTC	s	0.000	2113.		
452	UNISTRQ	s	1.000	10.00		
453	UNISTRQ_	m			0	
455	WELF_EBX	c			2	
456	LUMPSUMB	s	2.000	12.00		4684
457	LUMP_UMB	m			2	
458	LMPSUMBX	s	1200.	0.8000E+05		4684
459	LMPS_MBX	m			2	
460	OTHRINCB	s	5.000	12.00		4687
461	OTHR_NCB	m			2	
462	OTRINCBX	s				4693
463	OTRI_CBX	m			1	
464	INCLASS2	s	1.000	7.000		
465	INCL_SS2	m			0	
467	HORREF1	c			6	4532
468	HORREF1_	m			1	
469	HORREF2	c			5	4577
470	HORREF2_	m			1	
471	ERANKHM	s	0.6205E-02	1.000		
472	ERANKHM_	m			0	
473	FGOVRETM	s	0.000	0.2509E+05		
474	FGOV_ETM	m			0	
475	FPRIPENM	s	0.000	0.5826E+05		
476	FPRI_ENM	m			0	
477	FRRDEDM	s	0.000	0.1043E+05		
478	FRRDEDM_	m			0	
479	PSU	c			21	2616
480	HISP_REF	c			2	
481	HISP2	c			2	1903
482	HIGH_EDU	s	10.00	16.00		
483	BUILT	s	1915.	2013.		592
484	BUILT_	m			2	
485	CREDFINX	s	0.000	6629.		4360
486	CRED_INX	m			2	
487	CREDITB	s	1.000	5.000		4667
488	CREDITB_	m			2	
489	CREDITBX	s	250.0	0.2250E+05		4667
490	CRED_TBX	m			2	
491	CREDITX	s	1.000	0.5132E+05		4311

492	CREDITX_	m			2	
493	CREDTYRX	s	0.000	0.5092E+05		4327
494	CRED_YRX	m			2	
495	CREDYRB	s	1.000	6.000		4656
496	CREDYRB_	m			2	
497	CREDYRBX	s	250.0	0.3500E+05		4656
498	CRED_RBX	m			2	
499	DEFBENRP	c			2	3551
500	DEFB_NRP	m			2	
501	EITC	c			2	1042
502	EITC_	m			2	
503	FMLPYYRX	s	4.000	4000.		4598
504	FMLP_YRX	m			2	
505	FS_MTHI	s	1.000	12.00		4644
506	FS_MTHI_	m			1	
507	FSMPFRMX	s	-0.4000E+06	0.1090E+07		
508	FSMP_RMX	m			0	
514	INTRDVX_	d			3	
522	IRAB	s	1.000	6.000		4514
523	IRAB_	m			2	
524	IRABX	s	1000.	0.7250E+06		4514
525	IRABX_	m			2	
526	IRAX	s	0.000	0.2635E+07		3917
527	IRAX_	m			2	
528	IRAYRB	s	1.000	6.000		4489
529	IRAYRB_	m			2	
530	IRAYRBX	s	1000.	0.7250E+06		4489
531	IRAYRBX_	m			2	
532	IRAYRX	s	0.000	0.2129E+07		3964
533	IRAYRX_	m			2	
534	JFS_AMT	s	0.000	4800.		
535	JFS_AMT_	m			0	
536	LIQDYRBX	s	250.0	0.3500E+05		4531
537	LIQD_RBX	m			2	
538	LIQUIDBX	s	250.0	0.3500E+05		4563
539	LIQU_DBX	m			2	
540	LIQUDYRB	s	1.000	6.000		4531
541	LIQU_YRB	m			2	
542	LIQUDYRX	s	0.000	0.5155E+06		3942
543	LIQU_YRX	m			2	
544	LIQUIDB	s	1.000	6.000		4563
545	LIQUIDB_	m			2	
546	LIQUIDX	s	0.000	0.4910E+06		3892
547	LIQUIDX_	m			2	
548	MEALSPAY	s	1.000	2.000		9
549	MEAL_PAY	m			2	
550	MLPAYWKX	s	2.000	300.0		4598
551	MLPA_WKX	m			2	
552	MLPYQWKS	s	1.000	52.00		4592
553	MLPY_WKS	m			2	

554	NETRENTB	s	0.000	12.00			4666
555	NETR_NTB	m				3	
556	NETRENTX	s	−0.5499E+05	0.1148E+06			4338
557	NETR_NTX	m				2	
558	NETRNTBX	s	−2400.	0.7130E+05			4666
559	NETR_TBX	m				2	
560	OTHASTBX	s	0.3000E+05	0.7250E+06			4673
561	OTHA_TBX	m				2	
562	OTHASTB	s	3.000	6.000			4673
563	OTHASTB_	m				3	
564	OTHASTX	s	2.000	0.2767E+07			4648
565	OTHASTX_	m				2	
566	OTHFINX	s	0.000	900.0			4654
567	OTHFINX_	m				2	
568	OTHLONBX	s	250.0	0.2250E+05			4690
569	OTHL_NBX	m				2	
570	OTHLYRBX	s	750.0	0.2250E+05			4689
571	OTHL_RBX	m				2	
572	OTHLNYRB	s	2.000	5.000			4689
573	OTHL_YRB	m				2	
574	OTHLNYRX	s	0.000	0.5500E+05			4642
575	OTHL_YRX	m				2	
576	OTHLOAN	s	1.000	2.000			3485
577	OTHLOAN_	m				1	
578	OTHLONB	s	1.000	5.000			4690
579	OTHLONB_	m				2	
580	OTHLONX	s	1.000	0.3106E+06			4638
581	OTHLONX_	m				2	
582	OTHREGBX	s	488.0	0.5000E+05			4678
583	OTHR_GBX	m				2	
584	OTHREGB	s	1.000	12.00			4678
585	OTHREGB_	m				2	
586	OTHREGX	s	36.00	0.6367E+05			4422
587	OTHREGX_	m				2	
588	OTHSYRBX	s	6000.	0.7250E+06			4669
589	OTHS_RBX	m				2	
590	OTHSTYRB	s	2.000	6.000			4669
591	OTHS_YRB	m				2	
592	OTHSTYRX	s	0.000	0.1533E+07			4656
593	OTHS_YRX	m				2	
594	RETSURVX	s	30.00	0.1269E+06			3571
595	RETS_RVX	m				2	
596	RETSRVBX	s	480.0	0.6200E+05			4626
597	RETS_VBX	m				2	
598	RETSURV	c				3	
599	RETSURV_	m				0	
600	RETSURVB	s	1.000	12.00			4626
601	RETS_RVB	m				2	
604	ROYESTBX	s	200.0	0.6000E+05			4654
605	ROYE_TBX	m				2	

606	ROYESTB	s	1.000	12.00		4654
607	ROYESTB_	m			2	
608	ROYESTX	s	1.000	0.1592E+06		4441
609	ROYESTX_	m			2	
610	STCKYRBX	s	1000.	0.7250E+06		4613
611	STCK_RBX	m			2	
612	STDNTYRB	s	3.000	6.000		4675
613	STDN_YRB	m			2	
614	STDNTYRX	s	0.000	0.4100E+06		4566
615	STDN_YRX	m			2	
616	STDTYRBX	s	1750.	0.3500E+05		4675
617	STDT_RBX	m			2	
618	STOCKYRB	s	1.000	6.000		4613
619	STOC_YRB	m			2	
620	STOCKYRX	s	0.000	0.5784E+07		4420
621	STOC_YRX	m			2	
622	STOCKB	s	1.000	6.000		4632
623	STOCKB_	m			3	
624	STOCKBX	s	1000.	0.7250E+06		4632
625	STOCKBX_	m			2	
626	STOCKX	s	25.00	0.6587E+07		4390
627	STOCKX_	m			2	
628	STUDFINX	s	0.000	9000.		4595
629	STUD_INX	m			2	
630	STUDNTBX	s	6250.	0.3500E+05		4682
631	STUD_TBX	m			2	
632	STUDNTB	s	4.000	6.000		4682
633	STUDNTB_	m			2	
634	STUDNTX	s	250.0	0.4200E+06		4556
635	STUDNTX_	m			2	
636	WHLFYRBX	s	250.0	0.3500E+05		4648
637	WHLF_RBX	m			2	
638	WHLFYRB	s	1.000	6.000		4648
639	WHLFYRB_	m			2	
640	WHLFYRX	s	0.000	0.7674E+06		4524
641	WHLFYRX_	m			3	
642	WHOLIFBX	s	250.0	0.3500E+05		4654
643	WHOL_FBX	m			2	
644	WHOLIFB	s	1.000	6.000		4654
645	WHOLIFB_	m			3	
646	WHOLIFX	s	1.000	0.7892E+06		4508
647	WHOLIFX_	m			3	
648	TOTXEST	s	−8990.	0.2938E+06		
649	FFTAXOWE	s	−8943.	0.2485E+06		
650	FFTA_OWE	m			0	
651	FSTAXOWE	s	−2505.	0.5991E+05		
652	FSTA_OWE	m			0	
653	ETOTA	s	1199.	0.2782E+06		

Total #cases w/   #missing

```
      #cases    miss. D  ord. vals   #X-var    #N-var    #F-var    #S-var
       4693         0       4693        16         0         0        422
      #P-var    #M-var    #B-var    #C-var    #I-var
          0       171         0        42         0
Number of cases used for training: 4693
Number of split variables: 464
Number of cases excluded due to 0 weight or missing D: 0

Number of trees in ensemble: 500
Number of variables used for splitting: 155
Warning: No linear splits; number of S variables must be < 225
Simple node models
Estimated priors
Unit misclassification costs
Warning: All positive weights treated as 1
Univariate split highest priority
No interaction splits
No linear splits
Fraction of cases used for splitting each node: .0213
Maximum number of split levels: 19
Minimum node sample size: 23
Mean number of terminal nodes:     139.9

Classification matrix for training sample:
Predicted        True class
class            C          D          T
C              1286         68          7
D               485       2770         77
T                 0          0          0
Total          1771       2838         84

Number of cases used for tree construction: 4693
Number misclassified: 637
Resubstitution estimate of mean misclassification cost: .1357

Number of OOB cases: 4693
Number OOB misclassified: 1041
OOB estimate of mean misclassification cost: .2218
Mean number of trees per OOB observation: 183.88

Predicted class probabilities are stored in gfpro.txt
Elapsed time in seconds: 1629.1
```