

HW 3

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Question 1

Fitted a guide classification forest to the CE data. Used ceiclass.dsc as the data description file and cedata.txt as the data file. Input file is cein.txt, output file is ceout.txt, and predicted class and probability file is cepred.txt

Question 2

The estimation of the population mean INTRDVX is 5010.44 by IPW by GUIDE classification forest

```
z = read.table("cedata.txt", header = T)
w <- z$FINLWT21
zclass <- read.table("cepred.txt", header=TRUE)
probmissing <- zclass[,2]
p <- 1-probmissing
group <- !is.na(z$INTRDVX)
ipw <- sum(w[group]*z$INTRDVX[group]/p[group])/sum(w[group]/p[group])

ipw

## [1] 5010.44
```

Question 3

Fitted a guide regression forest to the CE data. Used cereg.dsc as the data description file and cedata.txt as the data file. Input file is regin.txt, output file is regout.txt, and predicted class and probability file is regpred.txt

Question 4

The estimation of the population mean INTRDVX is 4704.046 by weighted mean by GUIDE regression forest

```

zreg <- read.table("regpred",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])

imputed
## [1] 4704.046

```

Question 5

Copy and pasted the input and output files below

Question 1 Input File: cein.txt

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)

"ceout.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)

"cepred.txt" (file name for predicted class and probability estimates)

1 (rank of top variable to split root node)

Question 1 Output File: ceout.txt

```
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 10, 2021)

Compiled with Visual Fortran 64 18.0.1.156 on Windows 10

Copyright (c) 1997-2020 Wei-Yin Loh. All rights reserved.

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 03/10/21 at 10:40

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 ROTHFRFLP is constant

Warning: S variable ROTHFRFLC 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

		#Codes/ Levels/			
Column	Name	Minimum	Maximum	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	EDUCOREF	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	
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	FDHOMEQCQ	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	MRPINSQP	s	0.000	0.2110E+05	

165	MRPINSQ	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	ELTRCPQ	s	0.000	4473.
179	ELTRCCQ	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.
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
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
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.
340	TFOODHOP	s	0.000	3300.
341	TFOODHOC	s	0.000	1050.
342	TALCBEP	s	0.000	2252.
343	TALCBEC	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
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	ETRAPNTP	s	0.000	0.8868E+05
429	ETRAPNTPC	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	FGOVRET	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	CREFFINX	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: 140.2

Classification matrix for training sample:

Predicted True class

class	C	D	T
C	1282	64	7
D	489	2774	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: 1036

OOB estimate of mean misclassification cost: .2208

Mean number of trees per OOB observation: 183.71

Predicted class probabilities are stored in cepred.txt

Elapsed time in seconds: 1315.2

Question 3 Input File: **regin.txt**

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)

"regout.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)

"regpred" (file name for predicted values)

1 (rank of top variable to split root node)

Question 3 Output File: regout.txt

```
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 10, 2021)

Compiled with Visual Fortran 64 18.0.1.156 on Windows 10

Copyright (c) 1997-2020 Wei-Yin Loh. All rights reserved.

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 03/10/21 at 11:26

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

#Codes/

Levels/

Column Name	Minimum	Maximum	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	EDUCOREF	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	FDHOMECPQ	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	ALCBEPQ	s	0.000	3152.
153	ALCBECQ	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	ELTRCPQ	s	0.000	4473.
179	ELTRCCQ	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
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.
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.
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	TALCBEP	s	0.000	2252.
343	TALCBEC	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	FGOVRET	m	0.000	0.2509E+05	
474	FGOV_ETM	m		0	
475	FPRIPEN	m	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	CREFFINX	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	FMLPYRX	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	OTHA	STB	s	3.000	6.000	2909
563	OTHA	STB_	m		3	
564	OTHA	STX	s	2.000	0.6000E+06	2889
565	OTHA	STX_	m		2	
566	OTH	FINX	s	0.000	900.0	2889
567	OTH	FINX_	m		2	
568	OTHL	ONBX	s	250.0	250.0	2921
569	OTHL	_NBX	m		2	
570	OTHL	YRBX	s	750.0	0.2250E+05	2920
571	OTHL	_RBX	m		2	
572	OTHL	NYRB	s	2.000	5.000	2920
573	OTHL	_YRB	m		2	
574	OTHL	NYRX	s	0.000	0.5500E+05	2880
575	OTHL	_YRX	m		2	
576	OTH	LOAN	s	1.000	2.000	2150
577	OTH	LOAN_	m		1	
578	OTHL	ONB	s	1.000	1.000	2921
579	OTHL	ONB_	m		2	
580	OTHL	ONX	s	1.000	0.3106E+06	2877
581	OTHL	ONX_	m		2	
582	OTH	REGBX	s	488.0	0.5000E+05	2913
583	OTH	_GBX	m		2	
584	OTH	REGB	s	1.000	12.00	2913
585	OTH	REGB_	m		2	
586	OTH	REGX	s	100.0	0.6367E+05	2725
587	OTH	REGX_	m		2	
588	OTHS	YRBX	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 w/ #missing

#cases	miss.	D	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: 152.8

Resubstitution estimate of mean squared error: 121794358.4173

based on number of training cases: 2922

Proportion of variance (R-squared) explained by ensemble model: 0.5696

Number of OOB cases: 2922

OOB estimate of mean squared error: 173639779.3134

Mean number of trees per OOB observation: 183.87

Number of test cases with 0 weight and nonmissing responses = 0

Observed and fitted values are stored in regpred

Elapsed time in seconds: 1124.6