

Exercise 2  
Advanced Maximum Likelihood  
ICPSR Summer Program  
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The file ~~pactobit.dta~~ contains contributions of the AFLCIO Political Action Committee to incumbent members of the U.S. House of Representatives in 1992. The variable contrib is the total contribution given by the PAC. A great many of these values are censored at 0. ~~I have nefariously censored a few more at \$5,000 just for fun, though the actual data are not upper censored (they would be with a larger sample of PACs.)~~

The descriptive statistics for the data are:

```
. use "D:\Txt\SP\SP99\MLE2\Data\pactobit.dta"
```

```
. desc
```

```
Contains data from D:\Txt\SP\SP99\MLE2\Data\pactobit.dta
```

```
  obs:          347
 vars:           28                21 Jul 1999 08:46
 size:         70,788 (92.9% of memory free)
```

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1. v15	double %10.0g	Cmte: Agriculture
2. v16	double %10.0g	Cmte: Appropriations
3. v17	double %10.0g	Cmte: Armed Services
4. v18	double %10.0g	Cmte: Banking
5. v19	double %10.0g	Cmte: Budget
6. v20	double %10.0g	Cmte: DC
7. v21	double %10.0g	Cmte: Ed & Labor
8. v22	double %10.0g	Cmte: Energy & Commerce
9. v23	double %10.0g	Cmte: Foreign Affairs
10. v24	double %10.0g	Cmte: Government Operations
11. v25	double %10.0g	Cmte: House Administration
12. v26	double %10.0g	Cmte: Interior
13. v27	double %10.0g	Cmte: Judiciary
14. v28	double %10.0g	Cmte: Merchant Marine
15. v29	double %10.0g	Cmte: Post Office
16. v30	double %10.0g	Cmte: Public Works
17. v31	double %10.0g	Cmte: Rules
18. v32	double %10.0g	Cmte: Science etc
19. v33	double %10.0g	Cmte: Small Business
20. v34	double %10.0g	Cmte: Veterans Affairs
21. v35	double %10.0g	Cmte: Ways & Means
22. party	double %10.0g	Party, 1=Rep, 0=Dem
23. senior	float %9.0g	Years in Congress
24. vote90	float %9.0g	Incumbent vote 1990

```

25. fresh      float %9.0g      Freshman Dummy
26. distance   float %9.0g      Ideological Distance, Pac-Cand
27. contrib    float %9.0g      Total Contribution to Cand
28. give       float %9.0g      Dummy,1=contrib>0,0=else

```

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Sorted by: party

```
. summ
```

Variable	Obs	Mean	Std. Dev.	Min	Max
v15	347	.1095101	.3127291	0	1
v16	347	.1210375	.3266418	0	1
v17	347	.1268012	.3332306	0	1
v18	347	.1181556	.3232584	0	1
v19	347	.0893372	.2856417	0	1
v20	347	.0201729	.1407945	0	1
v21	347	.0951009	.2937778	0	1
v22	347	.1066282	.3090857	0	1
v23	347	.0835735	.2771467	0	1
v24	347	.1008646	.3015842	0	1
v25	347	.0461095	.2100251	0	1
v26	347	.0951009	.2937778	0	1
v27	347	.0806916	.2727543	0	1
v28	347	.092219	.2897527	0	1
v29	347	.0461095	.2100251	0	1
v30	347	.1354467	.3426942	0	1
v31	347	.037464	.1901701	0	1
v32	347	.1210375	.3266418	0	1
v33	347	.1037464	.3053716	0	1
v34	347	.074928	.2636552	0	1
v35	347	.0691643	.2540997	0	1
party	347	.3861671	.4875727	0	1
senior	347	11.02305	7.941953	1	51
vote90	347	68.92795	14.51123	39	99
fresh	347	.1354467	.3426942	0	1
distance	347	1.164956	1.006697	.0036	4.231249
contrib	347	753.6599	1385.412	0	5000
give	347	.3919308	.4888863	0	1

Your mission, should you choose to accept it, is to construct a model of PAC contributions. Use whatever variables you choose. (Do NOT get carried away making interaction terms, but feel free to make one or two if you just absolutely have to. You need NOT make any unless you want to.)

Estimate your model using regression on the censored cases, regression on the truncated cases and tobit. Compare the results and discuss the implications for your model. Create

graphs of predicted values to illustrate the differences between the models.

Since the probit model of the censor/not censor variable also estimates the same parameters (though rescaled by  $\sigma$ ), estimate your final model using `give` as the dependent variable, rather than `contrib`. Compare the coefficients (i.e. rescale the tobit coefficients to see what the probit's should be and compare to the actual) and compare the substantive conclusions that would be reached from the dichotomous outcome rather than the continuous but censored tobit outcome.