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* IVEware Analysis Examples Replication for ASDA 3rd Edition
* Berglund Winter 2025
* Chapter 10 ;
```

```
libname d "P:\ASDA3\Data Sets for Analysis Examples and Stata R Code" ;
```

```
ods listing ;
ods graphics off ;
options nodate nonumber ls=125 ps=68 ;
```

```
*set options and location to call IVEware from SAS session ;
options set=srclib "E:\live 11feb24\sas" sasautos=('!srclib' sasautos) maautosource ;
```

```
data c10_ncsr ;
  set d.ncsr ;
* prepare variables for analysis ;
  if mde=1 then ageonsetmde=mde_ond ; else ageonsetmde=age ;
  intwage=age ;
  ncsrwtsh100=ncsrwtsh*100 ;
* reverse coding for correct omitted group ;
  r_ag4cat=5-ag4cat ;
  r_mar3cat=4-mar3cat ;
  r_sex=3-sex ;
  r_ald=2-ald ;
  r_mde=2-mde ;
  r_ed4cat=5-ed4cat ;
  r_racecat=5-racecat ;

* create series of dummy variables as alternative to reversed categorical variables ;
  if sex=1 then male=1 ; else male=0 ;
  if ed4cat=1 then ed011=1 ; else ed011=0 ;
  if ed4cat=2 then ed12=1 ; else ed12=0 ;
  if ed4cat=3 then ed1315=1 ; else ed1315=0 ;
  if ed4cat=4 then ed16=1 ; else ed16=0 ;
  if racecat=1 then other=1 ; else other=0 ;
  if racecat=2 then hispanic =1 ; else hispanic=0 ;
  if racecat=3 then black=1 ; else black=0 ;
  if racecat=4 then white=1 ; else white=0 ;
  currmar=(mar3cat=1) ;
  prevmar=(mar3cat=2) ;
  nevermar=(mar3cat=3) ;
run ;
```

```
ods rtf style=normalprinter bodytitle file="P:\ASDA3\Replication IVEware\Chapter 10\Analysis Example Replication ASDA3
IVE C10 Code and Results.rtf" ;
```

```
title "Distribution of Age of Onset of MDE or Censor" ;
proc freq data=c10_ncsr ;
  tables ageonsetmde ;
run ;
```

```
ods text="Section 10.3.3 KM Example: Not Available in IVEware" ;
```

```
* Cox Model Section 10.4.5 ;
Title ;
%regress (setup=new, name="Example 10.4.5", dir=P:\ASDA3\Replication IVEware\Chapter 10) ;
title Example 10.4.5 Table 10.2, Proportional Hazards Cox Model using NCSR data ;
datain c10_ncsr ;
stratum sestrat ; cluster seclustr ; weight ncsrwtsh ;
dependent ageonsetmde ;
  censor mde(0) ;
  predictor intwage male ed12 ed1315 ed16 hispanic black white prevmar nevermar ;
link phreg ;
```

```

run;

title "10.5.5 Fitting a Discrete Time Model to Complex Sample Survey Data" ;

data c10_expanded ;
  set c10_ncsr ;
  * prepare data for model, shape into "long" file ;
  do pyr= 1 to intwage ;
    output ;
  end ;
run ;

data c10_expanded1 ;
  set c10_expanded ;
  if pyr=mde_ond then mdetv=1 ; else mdetv=0 ;
  if pyr <=ageonsetmde ; * select person years up to and including age of onset/censor of MDE for discrete time model ;
  if mdetv=0 then mdetv_r=2 ; else mdetv_r=1 ;
run ;

title "Print out of CASEID=1" ;
proc print ;
  where caseid=1 ;
  var caseid intwage ncsrwtsh sestrat seclustr pyr mdetv ageonsetmde ;
run ;

title ;
%regress (setup=new, name="Example 10.5.5", dir=P:\ASDA3\Replication Iware\Chapter 10) ;
title Example 10.5.5 Table 10.5 Discrete Time Logistic Model using NCSR data ;
  datain c10_expanded1 ;
  stratum sestrat ; cluster seclustr ; weight ncsrwtsh ;
  class sex ;
  dependent mdetv_r ;
  predictor pyr intwage sex ed12 ed1315 ed16 hispanic black white prevmar nevermar ;
  link logistic ;
run;

ods text="Discrete Time Logistic Regression with Link=CLOGLOG not available in IVEware" ;

ods rtf close ;

```

Distribution of Age of Onset of MDE or Censor

The FREQ Procedure

ageonsetmde	Frequency	Percent	Cumulative Frequency	Cumulative Percent
4	20	0.22	20	0.22
5	18	0.19	38	0.41
6	19	0.20	57	0.61
7	19	0.20	76	0.82
8	23	0.25	99	1.07
9	16	0.17	115	1.24
10	34	0.37	149	1.61
11	28	0.30	177	1.91
12	76	0.82	253	2.73
13	70	0.75	323	3.48
14	54	0.58	377	4.06
15	66	0.71	443	4.77
16	88	0.95	531	5.72
17	64	0.69	595	6.41
18	214	2.31	809	8.72
19	212	2.28	1021	11.00
20	222	2.39	1243	13.39
21	200	2.15	1443	15.55
22	195	2.10	1638	17.65
23	184	1.98	1822	19.63
24	176	1.90	1998	21.53
25	203	2.19	2201	23.71
26	159	1.71	2360	25.43
27	194	2.09	2554	27.52
28	162	1.75	2716	29.26
29	152	1.64	2868	30.90
30	233	2.51	3101	33.41
31	148	1.59	3249	35.00
32	186	2.00	3435	37.01
33	159	1.71	3594	38.72
34	180	1.94	3774	40.66
35	194	2.09	3968	42.75
36	171	1.84	4139	44.59
37	182	1.96	4321	46.55
38	215	2.32	4536	48.87
39	153	1.65	4689	50.52
40	209	2.25	4898	52.77
41	158	1.70	5056	54.47
42	194	2.09	5250	56.56
43	193	2.08	5443	58.64
44	162	1.75	5605	60.39
45	151	1.63	5756	62.01
46	126	1.36	5882	63.37
47	160	1.72	6042	65.09
48	142	1.53	6184	66.62
49	160	1.72	6344	68.35
50	150	1.62	6494	69.96

ageonsetmde	Frequency	Percent	Cumulative Frequency	Cumulative Percent
51	124	1.34	6618	71.30
52	141	1.52	6759	72.82
53	122	1.31	6881	74.13
54	115	1.24	6996	75.37
55	94	1.01	7090	76.38
56	121	1.30	7211	77.69
57	100	1.08	7311	78.77
58	112	1.21	7423	79.97
59	96	1.03	7519	81.01
60	103	1.11	7622	82.12
61	76	0.82	7698	82.93
62	82	0.88	7780	83.82
63	74	0.80	7854	84.62
64	90	0.97	7944	85.59
65	79	0.85	8023	86.44
66	70	0.75	8093	87.19
67	71	0.76	8164	87.96
68	90	0.97	8254	88.92
69	70	0.75	8324	89.68
70	64	0.69	8388	90.37
71	75	0.81	8463	91.18
72	63	0.68	8526	91.86
73	65	0.70	8591	92.56
74	75	0.81	8666	93.36
75	59	0.64	8725	94.00
76	75	0.81	8800	94.81
77	57	0.61	8857	95.42
78	64	0.69	8921	96.11
79	45	0.48	8966	96.60
80	54	0.58	9020	97.18
81	54	0.58	9074	97.76
82	32	0.34	9106	98.10
83	30	0.32	9136	98.43
84	32	0.34	9168	98.77
85	17	0.18	9185	98.95
86	19	0.20	9204	99.16
87	19	0.20	9223	99.36
88	13	0.14	9236	99.50
89	10	0.11	9246	99.61
90	15	0.16	9261	99.77
91	6	0.06	9267	99.84
92	4	0.04	9271	99.88
93	5	0.05	9276	99.94
94	2	0.02	9278	99.96
95	1	0.01	9279	99.97
98	2	0.02	9281	99.99
99	1	0.01	9282	100.00

Section 10.3.3 KM Example: Not Available in IVEware

Example 10.4.5 Table 10.2, Proportional Hazards Cox Model using NCSR data ;

IVEware Setup Checker, Sun Mar 02 08:20:44 2025

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Setup listing:

```
title Example 10.4.5 Table 10.2, Proportional Hazards Cox Model using NCSR data ;
datain c10_ncsr ;
stratum sestrat ; cluster seclustr ; weight ncsrwts ;
dependent ageonsetmde ;
censor mde(0) ;
predictor intwage male ed12 ed1315 ed16 hispanic black white prevmar nevermar ;
link phreg ;
run;
```

Example 10.4.5 Table 10.2, Proportional Hazards Cox Model using NCSR data

Regression type: Proportional Hazard
 Dependent variable: ageonsetmde
 Censor variable: mde Major Depressive Episode 1=Yes 0=No
 Predictors: intwage
 male
 ed12
 ed1315
 ed16
 hispanic
 black
 white
 prevmar
 nevermar
 Cat. var. ref. codes: mde 0
 Stratum variable: sestrat SAMPLING ERROR STRATUM
 Cluster variable: seclustr SAMPLING ERROR CLUSTER
 Weight variable: ncsrwtsh NCSR sample part 1 weight

Valid cases 9282
 Sum weights 9282.000152
 Replicates 42
 Degr freedom 42

Variable	Estimate	Std Error	T Test	Prob > T
intwage	-0.0495047	0.0023862	-20.74621	0.00000
male	-0.4535806	0.0633135	-7.16405	0.00000
ed12	-0.0568829	0.0680258	-0.83620	0.40778
ed1315	0.0456645	0.0585454	0.77998	0.43977
ed16	-0.0901988	0.0637668	-1.41451	0.16458
hispanic	-0.2499506	0.1346186	-1.85673	0.07037
black	-0.4790310	0.1496245	-3.20155	0.00261
white	0.0777820	0.1170802	0.66435	0.51010
prevmar	0.5024989	0.0607864	8.26664	0.00000
nevermar	0.0806308	0.0890194	0.90577	0.37023

Variable	Risk	95% Confidence Interval	
	Ratio	Lower	Upper
intwage	0.9517007	0.9471287	0.9562947
male	0.6353491	0.5591418	0.7219430
ed12	0.9447047	0.8235226	1.0837188
ed1315	1.0467231	0.9300800	1.1779947
ed16	0.9137495	0.8034139	1.0392378
hispanic	0.7788393	0.5935574	1.0219578
black	0.6193833	0.4579547	0.8377153
white	1.0808870	0.8534272	1.3689706
prevmar	1.6528464	1.4620320	1.8685646
nevermar	1.0839706	0.9057269	1.2972920

Example 10.4.5 Table 10.2, Proportional Hazards Cox Model using NCSR data

Variable	Design Effect	SRS Estimate	% Diff SRS v Est
intwage	1.27205	-0.0492614	-0.49144
male	1.60270	-0.5059537	11.54657
ed12	0.75496	-0.0293528	-48.39780
ed1315	0.56074	0.0314787	-31.06522
ed16	0.61205	-0.0857356	-4.94819
hispanic	1.13973	-0.2080602	-16.75947
black	1.46128	-0.5176008	8.05164
white	1.30480	0.0286337	-63.18720
prevmar	1.08065	0.5271150	4.89874
nevermar	1.83239	0.1597778	98.15978

Print out of CASEID=1

Obs	caseid	intwage	ncsrwtsh	sestrat	seclustr	pyr	mdetv	ageonsetmde
1	1	41	2.02426	1	2	1	0	34
2	1	41	2.02426	1	2	2	0	34
3	1	41	2.02426	1	2	3	0	34
4	1	41	2.02426	1	2	4	0	34
5	1	41	2.02426	1	2	5	0	34
6	1	41	2.02426	1	2	6	0	34
7	1	41	2.02426	1	2	7	0	34
8	1	41	2.02426	1	2	8	0	34
9	1	41	2.02426	1	2	9	0	34
10	1	41	2.02426	1	2	10	0	34
11	1	41	2.02426	1	2	11	0	34
12	1	41	2.02426	1	2	12	0	34
13	1	41	2.02426	1	2	13	0	34
14	1	41	2.02426	1	2	14	0	34
15	1	41	2.02426	1	2	15	0	34
16	1	41	2.02426	1	2	16	0	34
17	1	41	2.02426	1	2	17	0	34
18	1	41	2.02426	1	2	18	0	34
19	1	41	2.02426	1	2	19	0	34
20	1	41	2.02426	1	2	20	0	34
21	1	41	2.02426	1	2	21	0	34
22	1	41	2.02426	1	2	22	0	34
23	1	41	2.02426	1	2	23	0	34
24	1	41	2.02426	1	2	24	0	34
25	1	41	2.02426	1	2	25	0	34
26	1	41	2.02426	1	2	26	0	34
27	1	41	2.02426	1	2	27	0	34
28	1	41	2.02426	1	2	28	0	34
29	1	41	2.02426	1	2	29	0	34
30	1	41	2.02426	1	2	30	0	34
31	1	41	2.02426	1	2	31	0	34
32	1	41	2.02426	1	2	32	0	34
33	1	41	2.02426	1	2	33	0	34
34	1	41	2.02426	1	2	34	1	34

Example 10.5.5 Table 10.5 Discrete Time Logistic Model using NCSR data

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Setup listing:

```
title Example 10.5.5 Table 10.5 Discrete Time Logistic Model using NCSR data ;
datain c10_expanded1 ;
stratum sestrat ; cluster seclustr ; weight ncsrwtsh ;
class sex ;
dependent mdetv_r ;
predictor pyr intwage sex ed12 ed1315 ed16 hispanic black white prevmar nevermar
;
link logistic ;
run;
```

Example 10.5.5 Table 10.5 Discrete Time Logistic Model using NCSR data

Regression type: Logistic
 Dependent variable: mdetv_r
 Predictors: pyr
 intwage
 sex Sex 1=Male 2=Female
 ed12
 ed1315
 ed16
 hispanic
 black
 white
 prevmar
 nevermar
 Cat. var. ref. codes: sex 2
 mdetv_r 2
 Stratum variable: sestrat SAMPLING ERROR STRATUM
 Cluster variable: seclustr SAMPLING ERROR CLUSTER
 Weight variable: ncsrwtsh NCSR sample part 1 weight

Valid cases 385696
 Sum weights 386866.0469
 Replicates 42

Degr freedom 42

-2 LogLike 21657.91151

Variable	Estimate	Std Error	T Test	Prob > T
Intercept	-3.435246	0.1630052	-21.07617	0.00000
pyr	0.0327978	0.0020831	15.74497	0.00000
intwage	-0.0583337	0.0024527	-23.78330	0.00000
sex	-0.4448692	0.0633800	-7.01908	0.00000
ed12	-0.0201363	0.0670542	-0.30030	0.76543
ed1315	0.0929188	0.0579647	1.60302	0.11642
ed16	-0.0194510	0.0634037	-0.30678	0.76053
hispanic	-0.2484217	0.1349829	-1.84039	0.07278
black	-0.4569678	0.1505834	-3.03465	0.00412
white	0.0739955	0.1178912	0.62766	0.53363
prevmar	0.4942501	0.0617942	7.99832	0.00000
nevermar	-0.0353462	0.0880183	-0.40158	0.69003

Variable	Odds Ratio	95% Confidence Interval	
		Lower	Upper
Intercept			
pyr	1.0333416	1.0290067	1.0376946
intwage	0.9433351	0.9386773	0.9480160
sex	0.6409081	0.5639583	0.7283574
ed12	0.9800651	0.8560240	1.1220803
ed1315	1.0973726	0.9762285	1.2335500
ed16	0.9807370	0.8629448	1.1146079
hispanic	0.7800309	0.5940286	1.0242743

Example 10.5.5 Table 10.5 Discrete Time Logistic Model using NCSR data

Variable	Odds	95% Confidence Interval	
	Ratio	Lower	Upper
black	0.6332007	0.4672659	0.8580621
white	1.0768020	0.8488115	1.3660306
prevmar	1.6392685	1.4470753	1.8569879
nevermar	0.9652712	0.8081771	1.1529014

Variable	Design Effect	SRS	% Diff
		Estimate	SRS v Est
Intercept	1.34068	-3.4209702	-0.42364
pyr	1.18835	0.0329478	0.45733
intwage	1.25033	-0.0577725	-0.96205
sex	1.59559	-0.4961003	11.51599
ed12	0.72923	0.0066541	-133.04516
ed1315	0.54601	0.0782755	-15.75920
ed16	0.60420	-0.0161028	-17.21346
hispanic	1.13643	-0.2190248	-11.83347
black	1.46987	-0.5001870	9.45782
white	1.31095	0.0150557	-79.65318
prevmar	1.09388	0.5206784	5.34715
nevermar	1.81968	0.0656526	-285.74163

Discrete Time Logistic Regression with Link=CLOGLOG not available in IVEware