

Anexo B – Econometría

Regresión de Poisson - Morbilidad causada por infección respiratoria aguda

```
xtgee mbres pml0aveg pml0square popshare wage wage2 ozono fla f2a ,
family(poisson) robust tol(100)
```

Iteration 1: tolerance = 2.929417

```
GEE population-averaged model
Group variable:          id
Link:                   log
Family:                 Poisson
Correlation:           exchangeable

Number of obs          =      2856
Number of groups       =        34
Obs per group: min    =         84
                   avg    =       84.0
                   max    =         84
Wald chi2(8)          =       293.40
Prob > chi2           =         0.0000
Scale parameter:      1
                       (standard errors adjusted for clustering on id)
```

mbres	Semi-robust		z	P> z	[95% Conf. Interval]	
	Coef.	Std. Err.				
pml0aveg	.0058767	.0098074	0.60	0.549	-.0133455	.0250988
pml0square	-.0000501	.0000403	-1.24	0.214	-.0001291	.0000289
popshare	4.95e-06	1.60e-06	3.10	0.002	1.82e-06	8.08e-06
wage	-.0366751	.0207632	-1.77	0.077	-.0773703	.0040201
wage2	.0000881	.0000666	1.32	0.186	-.0000424	.0002187
ozono	12.38051	17.24528	0.72	0.473	-21.41962	46.18064
fla	.1698635	.1127761	1.51	0.132	-.0511736	.3909007
f2a	-.2190466	.0385469	-5.68	0.000	-.2945972	-.1434961
_cons	4.39888	1.477281	2.98	0.003	1.503462	7.294297

```
. test pml0aveg pml0square
```

```
( 1) pml0aveg = 0
( 2) pml0square = 0
```

```
      chi2( 2) =    18.97
      Prob > chi2 =    0.0001
```

```
. test wage wage2
```

```
( 1) wage = 0
( 2) wage2 = 0
```

```
      chi2( 2) =    12.36
      Prob > chi2 =    0.0021
```

Regresión de Poisson – Morbilidad causada por neumonía

```
xtgee mbneum pml0aveg pml0square popshare wage wage2 ozono fla f2a , family
(poisson) robust tol(100)
```

Iteration 1: tolerance = .41396724

```
GEE population-averaged model          Number of obs      =      2856
Group variable:                        id                 Number of groups   =       34
Link:                                   log                Obs per group: min =       84
Family:                                Poisson            avg                =      84.0
Correlation:                           exchangeable       max                =       84
                                           Wald chi2(8)       =     152.75
Scale parameter:                       1                 Prob > chi2        =     0.0000
                                           (standard errors adjusted for clustering on id)
```

mbneum	Semi-robust		z	P> z	[95% Conf. Interval]	
	Coef.	Std. Err.				
pml0aveg	.0289793	.0074117	3.91	0.000	.0144526	.043506
pml0square	-.0001876	.0000477	-3.93	0.000	-.0002811	-.0000941
popshare	8.93e-06	1.52e-06	5.88	0.000	5.95e-06	.0000119
wage	-.0006374	.031002	-0.02	0.984	-.0614002	.0601253
wage2	.0000202	.000098	0.21	0.837	-.0001718	.0002123
ozono	-13.44603	8.258689	-1.63	0.104	-29.63277	2.740699
fla	-.2227727	.0359671	-6.19	0.000	-.293267	-.1522784
f2a	-.2437693	.05273	-4.62	0.000	-.3471183	-.1404203
_cons	-5.294675	2.169501	-2.44	0.015	-9.546819	-1.042531

```
. test wage wage2
```

```
( 1) wage = 0
( 2) wage2 = 0
```

```
      chi2( 2) =      4.44
Prob > chi2 =      0.1087
```

Regresión de Poisson – Mortalidad causada por neumonía

```
xtgee mtneum pm10aveg pm10square popshare wage wage2 ozono fla f2a f3a,
family(poisson) robust tol(100)
```

Iteration 1: tolerance = .84597607

```
GEE population-averaged model          Number of obs      =      2856
Group variable:                        id                 Number of groups   =       34
Link:                                  log                 Obs per group: min =       84
Family:                                Poisson              avg =              84.0
Correlation:                           exchangeable         max =              84
                                          Wald chi2(9)         =     1260.03
Scale parameter:                        1                   Prob > chi2         =       0.0000
                                          (standard errors adjusted for clustering on id)
```

mtneum	Coef.	Semi-robust Std. Err.	z	P> z	[95% Conf. Interval]	
pm10aveg	.0116182	.0020913	5.56	0.000	.0075193	.0157171
pm10square	-.0000467	.0000119	-3.91	0.000	-.0000701	-.0000233
popshare	9.30e-06	1.24e-06	7.52	0.000	6.87e-06	.0000117
wage	.0678044	.0181071	3.74	0.000	.0323151	.1032936
wage2	-.0001641	.0000472	-3.48	0.001	-.0002567	-.0000716
ozono	6.932591	2.314277	3.00	0.003	2.396691	11.46849
fla	-.042891	.0098156	-4.37	0.000	-.0621293	-.0236528
f2a	-.2639088	.0263066	-10.03	0.000	-.3154689	-.2123488
f3a	-.0415162	.0155973	-2.66	0.008	-.0720864	-.0109459
_cons	-5.878545	1.676457	-3.51	0.000	-9.164339	-2.592751

Regresión de Poisson – Mortalidad causada infección respiratoria aguda

```
xtgee mtres pml0aveg pml0square popshare wage wage2 ozono fl1a f2a f3a,
family(poisson) robust tol(100)
```

Iteration 1: tolerance = .71706036

```
GEE population-averaged model          Number of obs      =      2856
Group variable:                        id                  Number of groups   =       34
Link:                                  log                 Obs per group: min =       84
Family:                                Poisson              avg                  =      84.0
Correlation:                           exchangeable         max                  =       84
Scale parameter:                        1                   Wald chi2(9)       =     1620.03
                                           Prob > chi2         =       0.0000
```

(standard errors adjusted for clustering on id)

mtres	Coef.	Semi-robust Std. Err.	z	P> z	[95% Conf. Interval]
pml0aveg	.0025415	.0030388	0.84	0.403	- .0034144 .0084974
pml0square	-8.65e-06	.0000214	-0.41	0.685	- .0000505 .0000332
popshare	6.87e-06	7.39e-07	9.29	0.000	5.42e-06 8.32e-06
wage	-.0150931	.0102237	-1.48	0.140	- .0351312 .0049449
wage2	.0000345	.0000305	1.13	0.258	- .0000253 .0000944
ozono	-.1604193	3.399047	-0.05	0.962	-6.822429 6.50159
fl1a	-.0438809	.021864	-2.01	0.045	- .0867335 -.0010283
f2a	-.4000923	.0227759	-17.57	0.000	- .4447323 -.3554523
f3a	.1597994	.0276918	5.77	0.000	.1055245 .2140744
_cons	.6855272	.8293379	0.83	0.408	- .9399452 2.311

```
. test pml0aveg pml0square
```

```
( 1) pml0aveg = 0
( 2) pml0square = 0

      chi2( 2) =      1.63
      Prob > chi2 =      0.4436
```

```
. test wage wage2
```

```
( 1) wage = 0
( 2) wage2 = 0

      chi2( 2) =      7.14
      Prob > chi2 =      0.0282
```

```
.
end of do-file
```

Matriz de correlación de las variables meteorológicas

```
-----
. corr tmpaverage tmpmax tmpmin hraverage hrmax hrmin wdaverage wdrmax wdrmin wspaverage wspmax wspmin
(obs=2856)
```

	tmpave~e	tmpmax	tmpmin	hraver~e	hrmax	hrmin	wdrave~e	wdrmax	wdrmin	wspave~e	wspmax	wspmin
tmpaverage	1.0000											
tmpmax	0.8428	1.0000										
tmpmin	0.7766	0.5378	1.0000									
hraverage	0.0282	-0.0706	0.2095	1.0000								
hrmax	-0.0003	-0.0405	0.0731	0.8737	1.0000							
hrmin	0.0577	-0.1008	0.2572	0.8531	0.6203	1.0000						
wdaverage	-0.0874	-0.0223	-0.0957	0.0690	0.0987	0.0256	1.0000					
wdrmax	-0.0747	-0.0280	-0.0728	0.1792	0.1983	0.1129	0.7209	1.0000				
wdrmin	-0.0917	-0.0673	-0.0984	-0.0514	0.0034	-0.0390	0.7754	0.4144	1.0000			
wspaverage	0.0795	0.1658	0.0036	0.1773	0.1917	0.1288	0.2378	0.2335	0.0877	1.0000		
wspmax	-0.0107	0.0687	-0.0878	0.1671	0.1952	0.1019	0.1616	0.1799	0.0250	0.8991	1.0000	
wspmin	0.1091	0.1834	0.0353	0.0789	0.0908	0.0747	0.2055	0.1646	0.1069	0.8874	0.7128	1.0000

Matriz de correlación de todas las variables

```
. corr mtneum mtres mbrestasa mbneumtasa pml0aveg pml0square ozono wage wage2 popshare fla f2a f3a density schooldays
(obs=2856)
```

	mtneum	mtres	mbrest~a	mbneum~a	pml0aveg	pml0sq~e	ozono	wage	wage2	popshare	fla	f2a	f3a	density	school~s	
mtneum	1.0000															
mtres	0.4305	1.0000														
mbres	0.0291	0.0121	1.0000													
mbneum	0.1313	0.0438	0.1618	1.0000												
pml0aveg	0.2204	0.1532	-0.0239	-0.0446	1.0000											
pml0square	0.1947	0.1362	-0.0275	-0.0606	0.9604	1.0000										
ozono	-0.0499	-0.1010	0.0235	-0.0865	0.2342	0.2016	1.0000									
wage	0.1665	-0.0771	0.0488	0.2429	-0.0727	-0.0762	0.1467	1.0000								
wage2	0.1493	-0.0741	0.0519	0.2616	-0.0647	-0.0669	0.1245	0.9848	1.0000							
popshare	0.6627	0.4517	-0.0250	0.0612	0.0997	0.0984	-0.1040	-0.0198	-0.0328	1.0000						
fla	0.1127	-0.0248	0.0740	-0.0338	0.0518	0.0406	0.0804	0.2195	0.1836	0.0949	1.0000					
f2a	-0.2675	-0.2615	-0.0843	-0.1652	-0.0228	0.0098	0.3248	-0.0896	-0.0802	-0.0264	0.0070	1.0000				
f3a	-0.0142	0.1483	0.0286	0.0662	0.4109	0.3477	0.2516	-0.1231	-0.1186	-0.0043	-0.0041	-0.0052	1.0000			
density	0.5456	0.2506	0.1305	0.2194	0.0823	0.0815	-0.1159	0.2782	0.2708	0.6337	0.1975	-0.0618	-0.0636	1.0000		
schooldays	0.0647	-0.0470	0.1327	0.3825	-0.2041	-0.1935	-0.0540	0.7757	0.7936	0.0291	0.1510	-0.1089	-0.0373	0.3803	1.0000	

Análisis de componentes principales – Variables meteorológicas

. factor tmpaverage- wspmin
(obs=2856)

(principal factors; 8 factors retained)

Factor	Eigenvalue	Difference	Proportion	Cumulative
1	3.15718	0.77430	0.3288	0.3288
2	2.38288	0.19481	0.2482	0.5769
3	2.18807	0.57741	0.2279	0.8048
4	1.61066	1.30350	0.1677	0.9725
5	0.30716	0.13032	0.0320	1.0045
6	0.17684	0.07998	0.0184	1.0229
7	0.09686	0.05581	0.0101	1.0330
8	0.04105	0.09416	0.0043	1.0373
9	-0.05310	0.00602	-0.0055	1.0318
10	-0.05912	0.04163	-0.0062	1.0256
11	-0.10075	0.04443	-0.0105	1.0151
12	-0.14519	.	-0.0151	1.0000

Variable	Factor Loadings					
	1	2	3	4	5	6
tmpaverage	0.14306	0.81185	0.37007	0.31882	-0.02446	0.00600
tmpmax	0.14866	0.64346	0.47730	0.25991	-0.21767	0.04127
tmpmin	0.14848	0.73840	0.10526	0.28180	0.21559	-0.05913
hraverage	0.62329	0.26182	-0.71439	-0.00406	-0.02397	0.01003
hrmax	0.58506	0.16114	-0.61049	-0.00269	-0.29064	0.14349
hrmin	0.51369	0.27053	-0.62702	0.00070	0.27220	-0.05832
wdraverage	0.43915	-0.49044	0.10959	0.66211	0.00501	-0.02247
wdrmax	0.43158	-0.34743	-0.00520	0.46375	-0.12022	-0.27533
wdrmin	0.23918	-0.44284	0.10601	0.59651	0.12600	0.24285
wspaverage	0.81664	-0.10585	0.42793	-0.33420	0.02621	-0.01017
wspmax	0.71651	-0.14980	0.33876	-0.40401	-0.06511	-0.06052
wspmin	0.69376	-0.07619	0.46353	-0.27898	0.13522	0.09200

Variable	Factor Loadings		Uniqueness
	7	8	
tmpaverage	0.02973	0.00056	0.08031
tmpmax	-0.03634	0.10363	0.20734
tmpmin	0.04342	-0.11736	0.27659
hraverage	-0.00551	0.00649	0.03184
hrmax	-0.01639	-0.06744	0.14916
hrmin	0.00287	0.10514	0.18123
wdraverage	0.00655	0.00418	0.11563
wdrmax	-0.06850	-0.01616	0.38273
wdrmin	0.07586	0.00982	0.29891
wspaverage	0.00131	-0.00840	0.02622
wspmax	0.20882	0.00882	0.13461
wspmin	-0.19588	-0.01921	0.15472

.
end of do-file

Regresión de Poisson – Incluyendo la variable dependiente rezagada sin factores meteorológicos.

	-1	-2	-3	-4
	mbneum	mtneum	mbres	mtres
pm10aveg	0.02542473 (4.68)**	0.01158393 (7.12)*	0.00470457 -0.8	0.01700023 (4.98)*
pm10square	-0.0001508 (4.73)**	-0.0000533 (5.33)*	-0.0000242 -0.92	-0.0000751 (3.19)*
popshare	0.0000053 (2.42)*	0.0000045 (4.31)*	0.0000063 (4.66)*	0.0000043 (6.42)*
Ingresos	-0.0190768 -1.1	0.04813087 (5.16)*	-0.05058221 (2.83)*	-0.00737341 -0.87
wage2	0.0000838 -1.57	-0.0001129 (4.67)*	0.0001276 (2.36)**	0.0000153 -0.65
ozono	-25.8954000 (5.44)**	-10.4338000 (8.46)*	-9.0264800 -1.43	-21.5280000 (6.82)*
mbneum_1	2.4748900 (3.07)**			
mtneum_1		0.03408548 (10.62)*		
mbres_1			0.0075796 (5.44)*	
mtres_1				0.11091215 (8.44)*
Constant	-2.9941800 (2.55)*	-3.3039500 (3.86)*	6.3210600 (5.04)*	0.3244548 -0.42
Observations	2822	2822	2822	2822
Number of id	34	34	34	34
z statistics in parentheses				
* significant at 5%; ** significant at 1%				

Regresión de Poisson – Incluyendo la variable dependiente rezagada con factores meteorológicos.

	-1	-2	-3	-4
	mbneum	mtneum	mbres	mtres
pm10aveg	0.011991362 (2.43)*	0.00927192 (5.69)*	-0.00216526 -0.7	0.00231938 -0.72
pm10square	-0.0000885 (3.17)**	-0.0000419 (4.32)*	0.0000024 -0.17	-0.0000100 -0.44
popshare	0.00000673 (3.75)**	0.00000535 (5.68)*	0.00000619 (4.10)*	0.00000574 (6.45)*
Ingresos	-0.00441026 -0.22	0.04435857 (4.39)*	-0.04320399 (2.40)**	-0.01159595 -1.25
wage2	4.92786E-05 -0.84	-0.00010582 (4.10)*	0.00011733 (2.17)**	2.6476E-05 -0.98
ozono	-19.59630000 (2.76)**	3.42217000 (1.86)***	-5.19973000 -0.95	-3.72615000 -1.24
f1	-0.15414985 (4.59)**	-0.05036749 (6.83)*	-0.22282214 (3.60)*	-0.07454647 (2.91)*
f2	-0.15479112 (3.58)**	-0.20513991 (8.62)*	-0.0432463 (1.73)***	-0.34899665 (14.03)*
f3	0.193839479 (4.36)**	-0.04961421 (4.37)*	0.14632284 (3.47)*	0.14606576 (5.24)*
mbneum_1	2.2103200 (2.78)**			
mtneum_1		0.02633717 (7.48)*		
mbres_1			0.00867872 (5.61)*	
mtres_1				0.05415326 (3.56)*
Constant	-4.2231200 (3.16)**	-3.3554300 (3.70)*	5.7100600 (4.30)*	0.5485745 -0.72
Observations	2822	2822	2822	2822
Number of id	34	34	34	34
z statistics in parentheses				
* significant at 5%; ** significant at 1%				