

Ανάλυση Παλινδρόμησης και Διασποράς

Προβλήματα Επανάληψης – Stata Output

Πρόβλημα 1

. reg density distance

Source	SS	df	MS	Number of obs = 27		
Model	.21525974	1	.21525974	F(1, 25) = 22.35		
Residual	.240736238	25	.00962945	Prob > F = 0.0001		
				R-squared = 0.4721		
				Adj R-squared = 0.4509		
Total	.455995978	26	.017538307	Root MSE = .09813		

density	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
distance	.0037609	.0007954	4.73	0.000	.0021226	.0053991
_cons	1.211973	.0324376	37.36	0.000	1.145167	1.278779

. predict stdp, stdp

. predict stdf, stdf

. predict jackknife, rstu
(1 missing value generated)

. predict leverage, leverage

. predict cook, cooks
(1 missing value generated)

	reef	distance	density	stdp	stdf	jackknife	leverage	cook
1.	Middle Reef	3.5	1.337	.0302175	.1026769	1.209208	.0948235	.0751967
2.	Middle Reef	3.5	1.216	.0302175	.1026769	-.0958979	.0948235	.0005016
3.	Middle Reef	3.5	1.309	.0302175	.1026769	.8946808	.0948235	.0422639
4.	Alma Bay	14.3	1.053	.0241164	.1010497	-2.450328	.0603981	.1607893
5.	Alma Bay	14.3	1.082	.0241164	.1010497	-2.052124	.0603981	.1199429
6.	Alma Bay	14.3	1.079	.0241164	.1010497	-2.091677	.0603981	.1238913
7.	Orpheus Is.	15.4	1.236	.0235822	.1009236	-.3494871	.0577519	.0038793
8.	Orpheus Is.	15.4	1.19	.0235822	.1009236	-.8335732	.0577519	.0215572
9.	Orpheus Is.	15.4	1.299	.0235822	.1009236	.299987	.0577519	.0028621
10.	Pandora Reef	15.9	1.246	.0233462	.1008687	-.2653077	.0566017	.0021931
11.	Pandora Reef	15.9	1.298	.0233462	.1008687	.270042	.0566017	.0022718
12.	Pandora Reef	15.9	1.301	.0233462	.1008687	.3010392	.0566017	.0028213
13.	Great Palm Is.	27.8	1.375	.0193596	.1000212	.6000093	.0389217	.0074814
14.	Great Palm Is.	27.8	1.384	.0193596	.1000212	.6940854	.0389217	.0099615
15.	Great Palm Is.	27.8	1.307	.0193596	.1000212	-.0970307	.0389217	.0001985
16.	Morinda Shoals	29.6	1.436	.0190957	.0999705	1.180075	.0378677	.0269809
17.	Morinda Shoals	29.6	1.493	.0190957	.0999705	1.846059	.0378677	.0611729
18.	Morinda Shoals	29.6	1.469	.0190957	.0999705	1.556211	.0378677	.045094
19.	Little Broadhurst	49.5	1.387	.0229276	.1007726	-.1143861	.0545901	.0003933
20.	Little Broadhurst	49.5	1.437	.0229276	.1007726	.4004228	.0545901	.00479
21.	Little Broadhurst	49.5	1.433	.0229276	.1007726	.3589754	.0545901	.0038548
22.	Bowden Reef	67.9	1.406	.0334732	.1036818	-.6573345	.1163574	.0291098
23.	Bowden Reef	67.9	1.402	.0334732	.1036818	-.7010536	.1163574	.0330305
24.	Bowden Reef	67.9	1.428	.0334732	.1036818	-.4193456	.1163574	.0119726
25.	Grub Reef	74.5	1.437	.0379237	.1052029	-.6016126	.1493547	.0326064
26.	Grub Reef	74.5	1.589	.0379237	.1052029	1.073261	.1493547	.1005125
27.	Grub Reef	74.5	1.461	.0379237	.1052029	-.3381105	.1493547	.0104045
28.	New Observation	18	.	.0224049	.100655	.	.0521294	.

. swilk jackknife

Shapiro-Wilk W test for normal data

Variable	Obs	W	V	z	Prob>z
jackknife	27	0.95466	1.333	0.590	0.27752

Πρόβλημα 2

(1)

```
. reg undcount perc_min crimrate poverty diffeng hsgrad housing
```

Source	SS	df	MS	Number of obs =	66
Model	245.058702	6	40.843117	F(6, 59) =	15.88
Residual	151.721523	59	2.57155124	Prob > F =	0.0000
				R-squared =	0.6176
				Adj R-squared =	0.5787
Total	396.780225	65	6.10431116	Root MSE =	1.6036

undcount	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
perc_min	.0847264	.0231886	3.65	0.001	.0383261 .1311266
crimrate	.0214894	.0136917	1.57	0.122	-.0059077 .0488864
poverty	-.0210479	.0847285	-0.25	0.805	-.1905892 .1484933
diffeng	.1800533	.1019602	1.77	0.083	-.0239686 .3840753
hsgrad	-.0400227	.0416073	-0.96	0.340	-.1232788 .0432334
housing	-.0061987	.0256578	-0.24	0.810	-.0575399 .0451426
_cons	.2996406	1.334062	0.22	0.823	-2.369812 2.969093

(2)

```
. sw reg undcount perc_min crimrate poverty diffeng hsgrad housing, pr(0.05)
      begin with full model
p = 0.8099 >= 0.0500 removing housing
p = 0.7900 >= 0.0500 removing poverty
p = 0.1332 >= 0.0500 removing hsgrad
```

Source	SS	df	MS	Number of obs =	66
Model	238.952965	3	79.6509885	F(3, 62) =	31.29
Residual	157.82726	62	2.54560097	Prob > F =	0.0000
				R-squared =	0.6022
				Adj R-squared =	0.5830
Total	396.780225	65	6.10431116	Root MSE =	1.5955

undcount	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
perc_min	.0626828	.0150165	4.17	0.000	.0326653 .0927003
crimrate	.025983	.0112954	2.30	0.025	.0034038 .0485622
diffeng	.2208005	.0942678	2.34	0.022	.0323619 .4092391
_cons	-1.360976	.5671298	-2.40	0.019	-2.494652 -.2272995

(3)

```
. reg undcount perc_min crimrate poverty diffeng hsgrad housing
```

Source	SS	df	MS	Number of obs =	66
Model	245.058702	6	40.843117	F(6, 59) =	15.88
Residual	151.721523	59	2.57155124	Prob > F =	0.0000
				R-squared =	0.6176
				Adj R-squared =	0.5787
Total	396.780225	65	6.10431116	Root MSE =	1.6036

undcount	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
perc_min	.0847264	.0231886	3.65	0.001	.0383261	.1311266
crimrate	.0214894	.0136917	1.57	0.122	-.0059077	.0488864
poverty	-.0210479	.0847285	-0.25	0.805	-.1905892	.1484933
diffeng	.1800533	.1019602	1.77	0.083	-.0239686	.3840753
hsgrad	-.0400227	.0416073	-0.96	0.340	-.1232788	.0432334
housing	-.0061987	.0256578	-0.24	0.810	-.0575399	.0451426
_cons	.2996406	1.334062	0.22	0.823	-2.369812	2.969093

```
. test crimrate diffeng housing
```

```
( 1) crimrate = 0
( 2) diffeng = 0
( 3) housing = 0
```

```
F( 3, 59) = 2.47
Prob > F = 0.0706
```

```
. reg undcount perc_min poverty hsgrad
```

Source	SS	df	MS	Number of obs =	66
Model	225.995897	3	75.3319658	F(3, 62) =	27.35
Residual	170.784328	62	2.75458593	Prob > F =	0.0000
				R-squared =	0.5696
				Adj R-squared =	0.5487
Total	396.780225	65	6.10431116	Root MSE =	1.6597

undcount	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
perc_min	.1241979	.0174461	7.12	0.000	.0893238	.1590721
poverty	-.0037565	.0871813	-0.04	0.966	-.1780294	.1705164
hsgrad	-.0939819	.03672	-2.56	0.013	-.1673841	-.0205796
_cons	2.719902	.8983288	3.03	0.004	.924168	4.515635

(4)

```
. reg undcount housing
```

Source	SS	df	MS	Number of obs =	66
Model	40.754255	1	40.754255	F(1, 64) =	7.33
Residual	356.02597	64	5.56290579	Prob > F =	0.0087
				R-squared =	0.1027
				Adj R-squared =	0.0887
Total	396.780225	65	6.10431116	Root MSE =	2.3586

undcount	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
housing	.0805676	.0297663	2.71	0.009	.0211026	.1400326
_cons	.6589574	.5492868	1.20	0.235	-.438369	1.756284

(1)

. 11

	region	damage	elev
1.	North	24	1120
2.	North	58	1060
3.	North	42	1000
4.	North	35	950
5.	North	60	900
6.	North	22	850
7.	North	50	800
8.	North	31	750
9.	North	47	700

```
. li, nolab
```

	region	damage	elev
1.	1	24	1120
2.	1	58	1060
3.	1	42	1000
4.	1	35	950
5.	1	60	900
6.	1	22	850
7.	1	50	800

(North -> region=1)

```
. mean(elev)
```

Mean estimation Number of obs = 64

	Mean	Std. Err.	[95% Conf. Interval]	
elev	927.8281	23.01322	881.8399	973.8164

```
. gen elevc=elev-927.83
```

```
. gen elevcreg=elevc*region
```

. 11

	region	damage	elev	elevc	elevcreg
1.	North	24	1120	192.17	192.17
2.	North	58	1060	132.17	132.17
3.	North	42	1000	72.17	72.17
4.	North	35	950	22.17	22.17
5.	North	60	900	-27.83	-27.83
6.	North	22	850	-77.83	-77.83
7.	North	50	800	-127.83	-127.83
8.	North	31	750	-177.83	-177.83

```
. reg damage region elevc elevcreg
```

Source	SS	df	MS	Number of obs =	64
Model	10714.9348	3	3571.64495	F(3, 60) =	16.74
Residual	12801.0027	60	213.350044	Prob > F =	0.0000
				R-squared =	0.4556
				Adj R-squared =	0.4284
Total	23515.9375	63	373.268849	Root MSE =	14.607

damage	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
region	5.389256	6.619278	0.81	0.419	-7.85127	18.62978
elevc	-.0172129	.0192776	-0.89	0.375	-.0557739	.0213481
elevcreg	.1083913	.0233282	4.65	0.000	.061728	.1550546
_cons	37.8704	6.315045	6.00	0.000	25.23843	50.50237

Equivalent using anova

```
. anova damage region c.elevc region#c.elevc
```

Number of obs = 64 R-squared = 0.4556
 Root MSE = 14.6065 Adj R-squared = 0.4284

Source	Partial SS	df	MS	F	Prob > F
Model	10714.9348	3	3571.64495	16.74	0.0000
region	141.42598	1	141.42598	0.66	0.4188
elevc	2144.81495	1	2144.81495	10.05	0.0024
region#elevc	4605.95501	1	4605.95501	21.59	0.0000
Residual	12801.0027	60	213.350044		
Total	23515.9375	63	373.268849		

```
. reg
```

Source	SS	df	MS	Number of obs =	64
Model	10714.9348	3	3571.64495	F(3, 60) =	16.74
Residual	12801.0027	60	213.350044	Prob > F =	0.0000
				R-squared =	0.4556
				Adj R-squared =	0.4284
Total	23515.9375	63	373.268849	Root MSE =	14.607

damage	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
region						
North	5.389256	6.619278	0.81	0.419	-7.85127	18.62978
elevc	-.0172129	.0192776	-0.89	0.375	-.0557739	.0213481
region#c.elevc						
North	.1083913	.0233282	4.65	0.000	.061728	.1550546
_cons	37.8704	6.315045	6.00	0.000	25.23843	50.50237

```
.
```