

The Norwegian Kidney Register / National Center of Nephropathology

Annual report 2006

The Norwegian Kidney Register/ National Centre of Nephropathology have continued the work in line with previous years. The reports from different hospitals are received fairly regularly although there are delays and some reports are lacking.

The Norwegian Kidney Register has a total database of close to 8500 patients and it is the biggest registry in the world. It has become an advance tool to explore relationship between kidney disease combined with other abnormalities such as cancer, preeclampsia, overall mortality etc. Norwegian nephrologists and pathologist have a unique possibility to perform research that can only be performed in Norway as other countries are lacking the needed data.

Norwegian nephrologists have started collaboration where HUNT data will be combined with data from the Norwegian Kidney Register. There is still room for more participants. Morphological research is still lacking in the registry and collaboration between renal pathologists is a "must" for the future.

In Norway a total of 498 renal biopsies have been performed in 2006. The Regions Vest and Sør still perform renal biopsies more frequently than rest of the country.

There is a discrepancy between clinical and morphological reports also in 2006. 11.4 % of the clinical reports are lacking while the corresponding numbers for morphology is 30 %. This is an improvement from 2005. We are happy with the task performed by the nephrologist as the clinical data has been most valuable in the research performed the last years. Hopefully this work will be continued in the future.

The number of renal biopsies with representative material is very high and overall the size and number of glomeruli in each biopsy is at a level where a correct diagnosis can be made. From the departments which we only receive sections, the number of morphological slides is a bit too limited.

Benign nephrosclerosis is still the most common type of disease in the registry and the last year more than 40 % of our patients had this disease as their main diagnosis or together with other types of renal disease. The high frequency of this diagnosis reflects probably the major interest of hypertension among nephrologists

Research

Bjørn Egil Vikse is still working on the relation between pregnancies and later renal disease and he has shown that low birth weight is of minor importance for development of renal disease than preeclampsia for the mother.

Rune Bjørneklett has found that membranous nephritis has 2.5 times higher frequency of cancer than the an age matched population and he has shown for the first time that the increased frequency of cancer is constant, persisting for at least 15 years

Knut AAsarød is working on a clinical project with SLE.

Kristin Sæle will start with a work on renal disease in elderly and she will combine data from the registry with the hip registry and the cardiac registry of West Norway.

The present report has been performed mainly by Else Kismul, the secretary of the Norwegian Kidney Register. We are grateful for her skilled collaboration.

Sincerely yours

.....
Leif Bostad
Associate professor, MD

.....
Bjarne M. Iversen
Professor MD.PhD

I Clinical

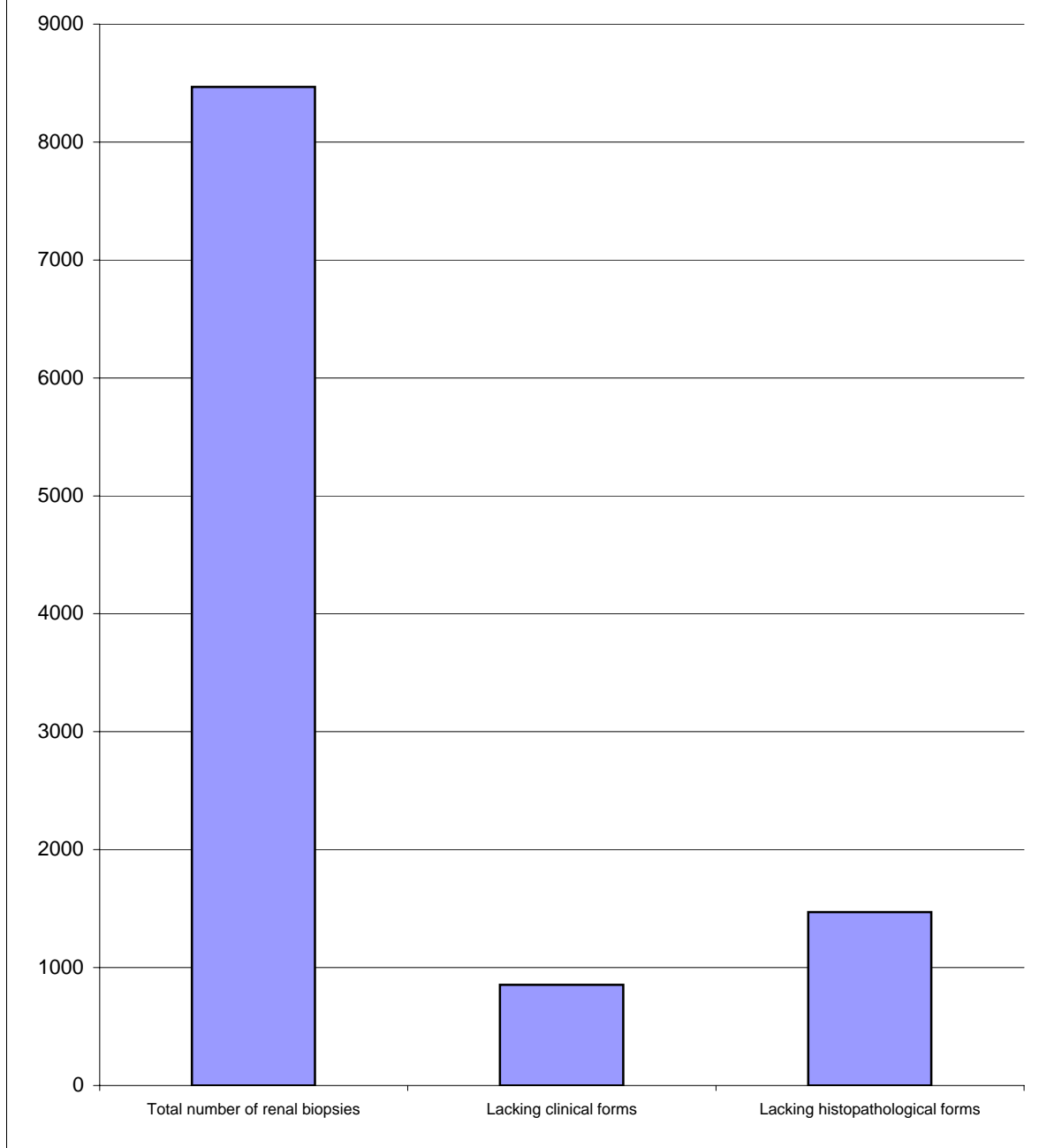
		Number	Number in %
	Total number of renal biopsies	498	
	Biopsies lacking clinical form	57	11.4
Diagnosis	Hematuria	217	49.2
	Hematuria with protenuria <3g/24h	34	7.7
	Nefrotic syndrom with proteinuria >3g/24h	27	6.1
	Chronical renal failure	105	23.8
	Hypertension BP >140/90	98	22.2
	SLE	18	4.1
	Creatinine > 200	133	30.2
	Creatinine < 200	296	67.1
Complications	Non complications	393	91.6
	Macroscopical hematuria	7	1.6
	Haematoma	26	6.1
	Blood transfusion	2	0.5
	Surgical intervention	1	0.2

II Morphology

	Total number of renal biopsies	498	
	Biopsies lacking histopathological form	154	30.9
Quality of biopsies	Register pathologist: sufficient material	124	92.5
	Register pathologist: not sufficient material	10	7.5
	Local pathologist: sufficient material	286	94.4
	Local pathologist: not sufficient material	17	5.6
Diagnosis	Minimal change	18	5.2
	Membranoproliferative GN	8	2.3
	Focal segmental sclerosis	24	7.0
	Benign nephrosclerosis	130	37.8
	Malign nephrosclerosis	2	0.6
	Membranous GN	27	7.8
	Mesangioproliferative GN	83	24.1
	Mesangioproliferative GN with IgA	45	13.1
	Mesangioproliferativ GN without IgA	32	9.3
	Mesangioproliferative GN with SLE	1	0.3
	Endocap proliferative GN	2	0.6
	Cresentic GN	16	4.7
	Diabetic nephropathy	12	3.5
	Amyloidosis	8	2.3
	Diffus prol.Lupusnephritis(IV)	2	0.6
	Congenital nephropathy	5	1.5
	Monoclonal Ig deposition disease	6	1.7
	Cryoglobulinemia with GN	0	0.0

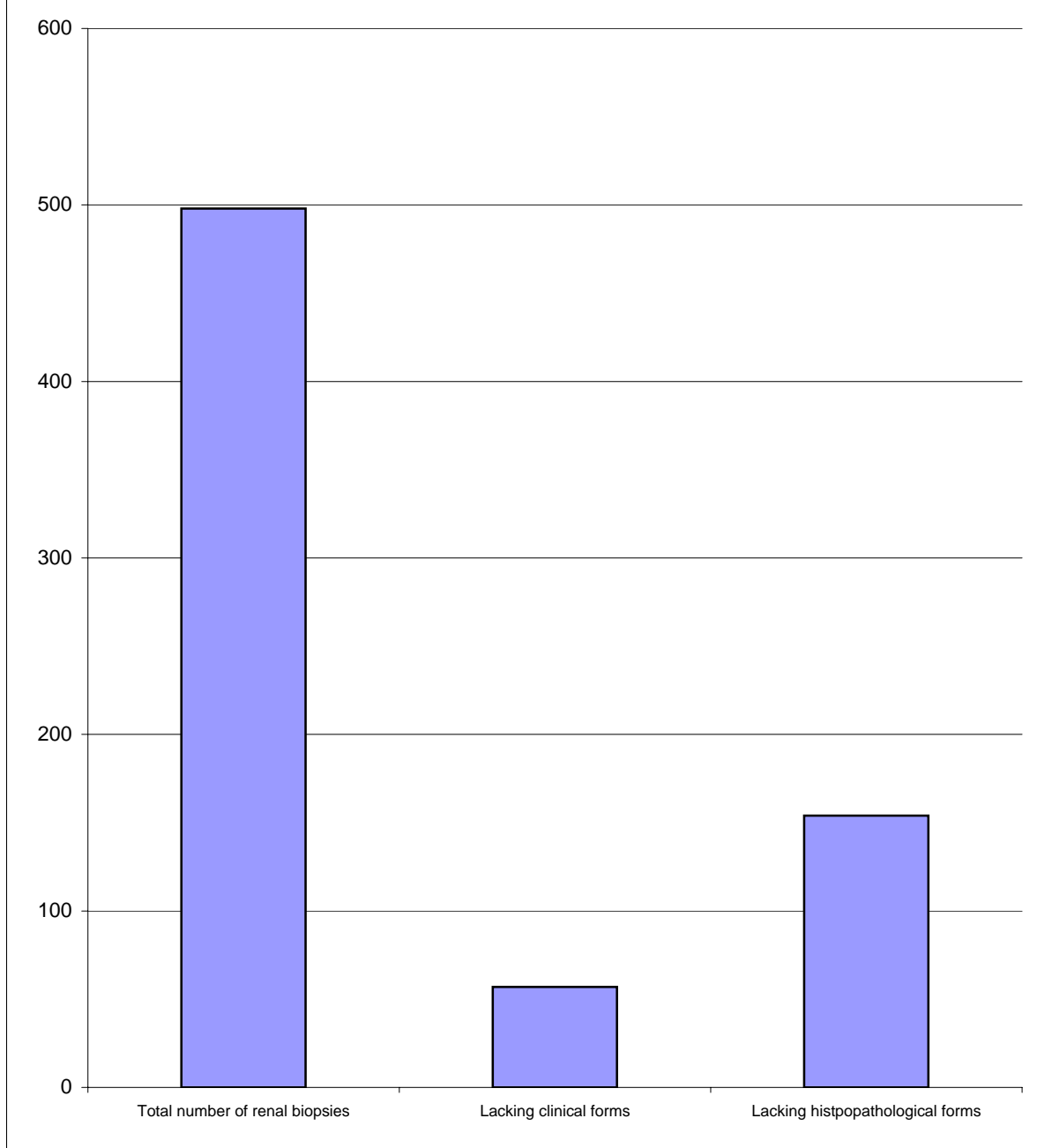
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Total number of biopsies in The Norwegian Kidney Register



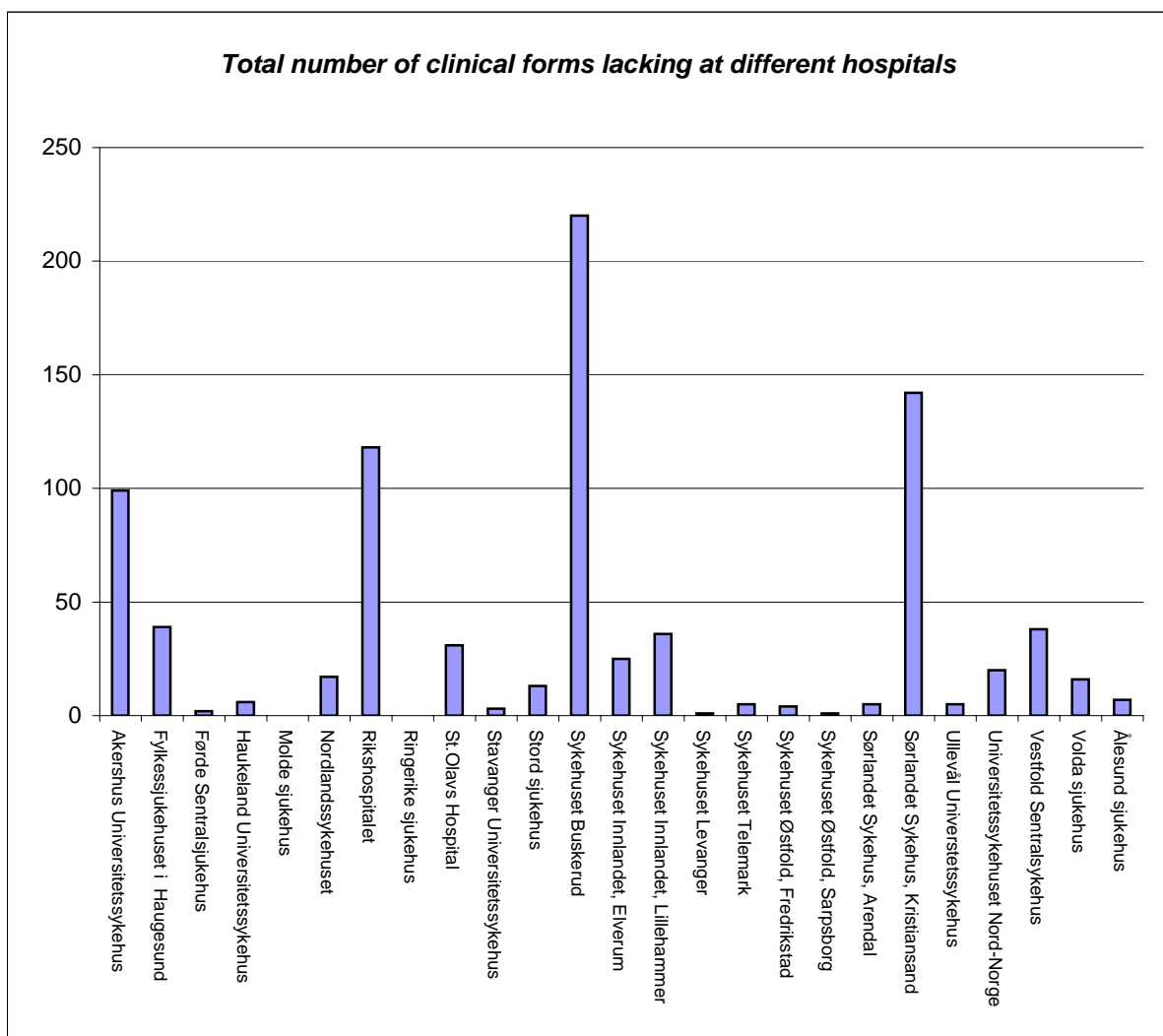
Total number of renal biopsies	8468
Lacking clinical forms	853
Lacking histopathological forms	1471

Number of renal biopsies 2006



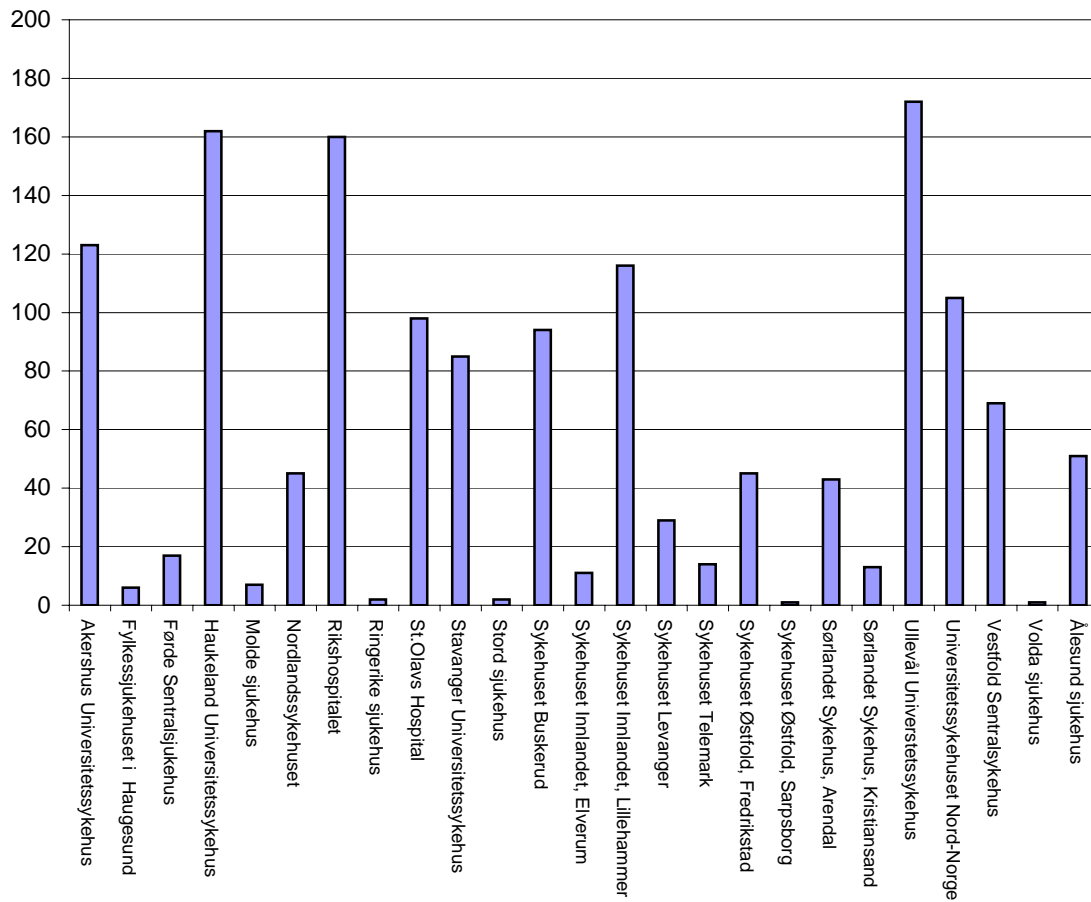
Total number of renal biopsies	498
Lacking clinical forms	57
Lacking histopathological forms	154

Total number of clinical forms lacking at different hospitals



Hospital	Number
Akershus Universitetssykehus	99
Fylkessjukehuset i Hagesund	39
Førde Sentralsjukehus	2
Haukeland Universitetssykehus	6
Molde sjukehus	0
Nordlandssykehuset	17
Rikshospitalet	118
Ringerike sjukehus	0
St.Olavs Hospital	31
Stavanger Universitetssykehus	3
Stord sjukehus	13
Sykehuset Buskerud	220
Sykehuset Innlandet, Elverum	25
Sykehuset Innlandet, Lillehammer	36
Sykehuset Levanger	1
Sykehuset Telemark	5
Sykehuset Østfold, Fredrikstad	4
Sykehuset Østfold, Sarpsborg	1
Sørlandet Sykehus, Arendal	5
Sørlandet Sykehus, Kristiansand	142
Ullevål Universtetssykehus	5
Universitetssykehuset Nord-Norge	20
Vestfold Sentralsykehus	38
Volda sjukehus	16
Ålesund sjukehus	7
Total	853

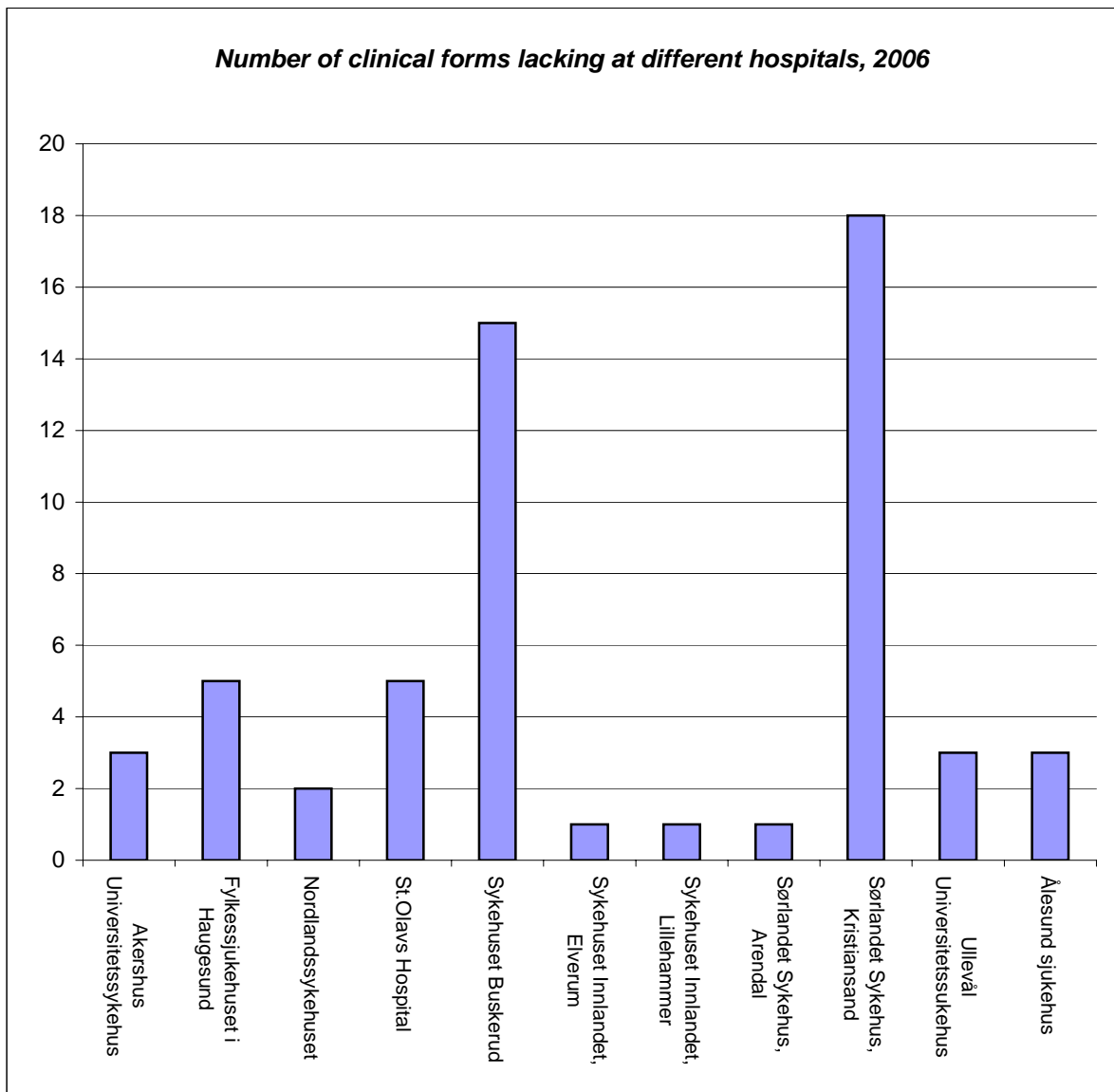
**Total number of histopathological forms
lacking at different hospitals**



Hospital	Number
Akershus Universitetssykehus	123
Fylkessjukehuset i Haugesund	6
Førde Sentralsjukehus	17
Haukeland Universitetssykehus	162
Molde sjukehus	7
Nordlandssykehuset	45
Rikshospitalet	160
Ringerike sjukehus	2
St.Olavs Hospital	98
Stavanger Universitetssykehus	85
Stord sjukehus	2
Sykehuset Buskerud	94
Sykehuset Innlandet, Elverum	11
Sykehuset Innlandet, Lillehammer	116
Sykehuset Levanger	29
Sykehuset Telemark	14
Sykehuset Østfold, Fredrikstad	45
Sykehuset Østfold, Sarpsborg	1
Sørlandet Sykehus, Arendal	43
Sørlandet Sykehus, Kristiansand	13
Ullevål Universitetssykehus	172
Universitetssykehuset Nord-Norge	105
Vestfold Sentralsykehus	69
Volda sjukehus	1
Ålesund sjukehus	51

Total 1471

Number of clinical forms lacking at different hospitals, 2006



Total

57

Hospital

Number

Akershus Universitetssykehus

3

Fylkessjukehuset i Haugesund

5

Nordlandssykehuset

2

St.Olavs Hospital

5

Sykehuset Buskerud

15

Sykehuset Innlandet, Elverum

1

Sykehuset Innlandet, Lillehammer

1

Sørlandet Sykehus, Arendal

1

Sørlandet Sykehus, Kristiansand

18

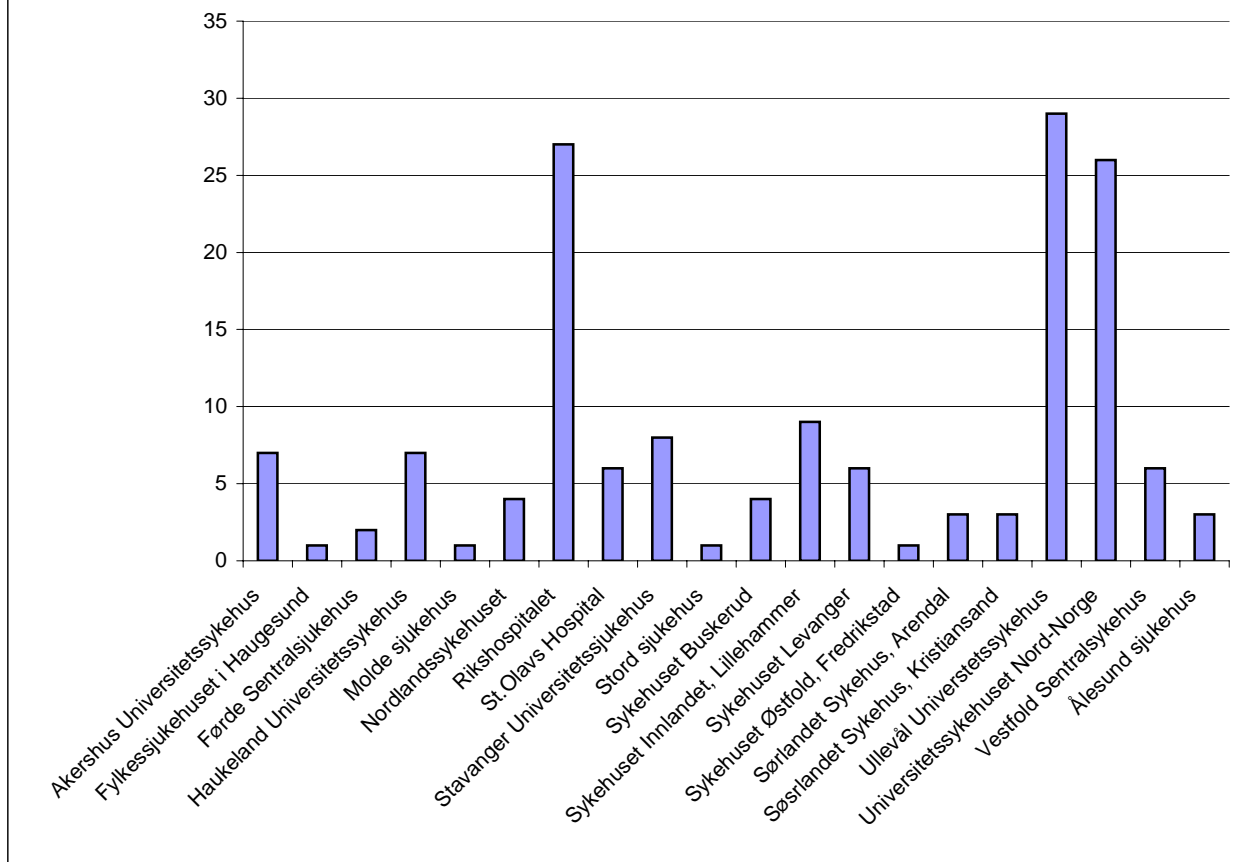
Ullevål Universitetssykehus

3

Ålesund sjukehus

3

Number of histopathological forms lacking at different hospitals, 2006

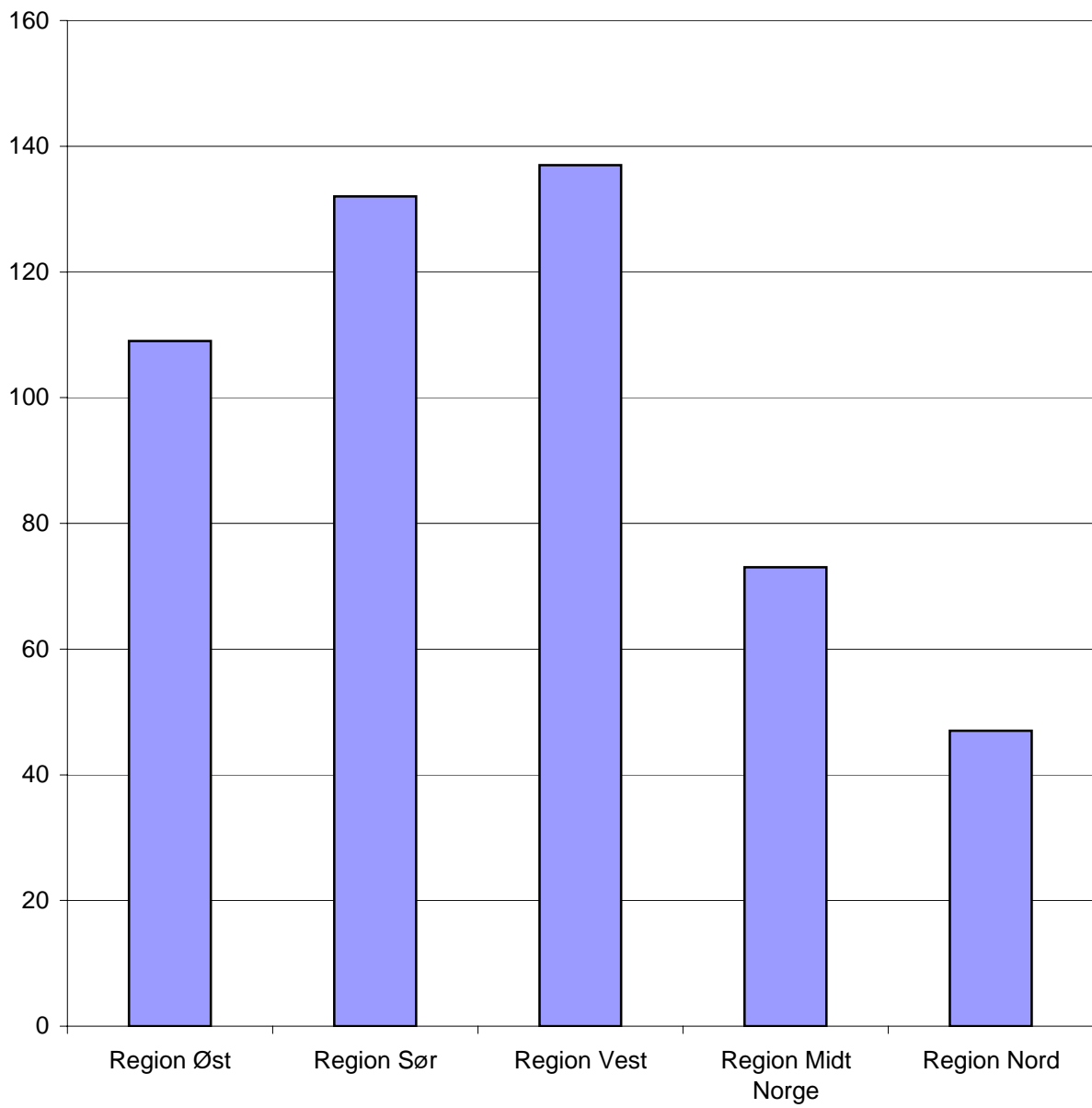


Total

154

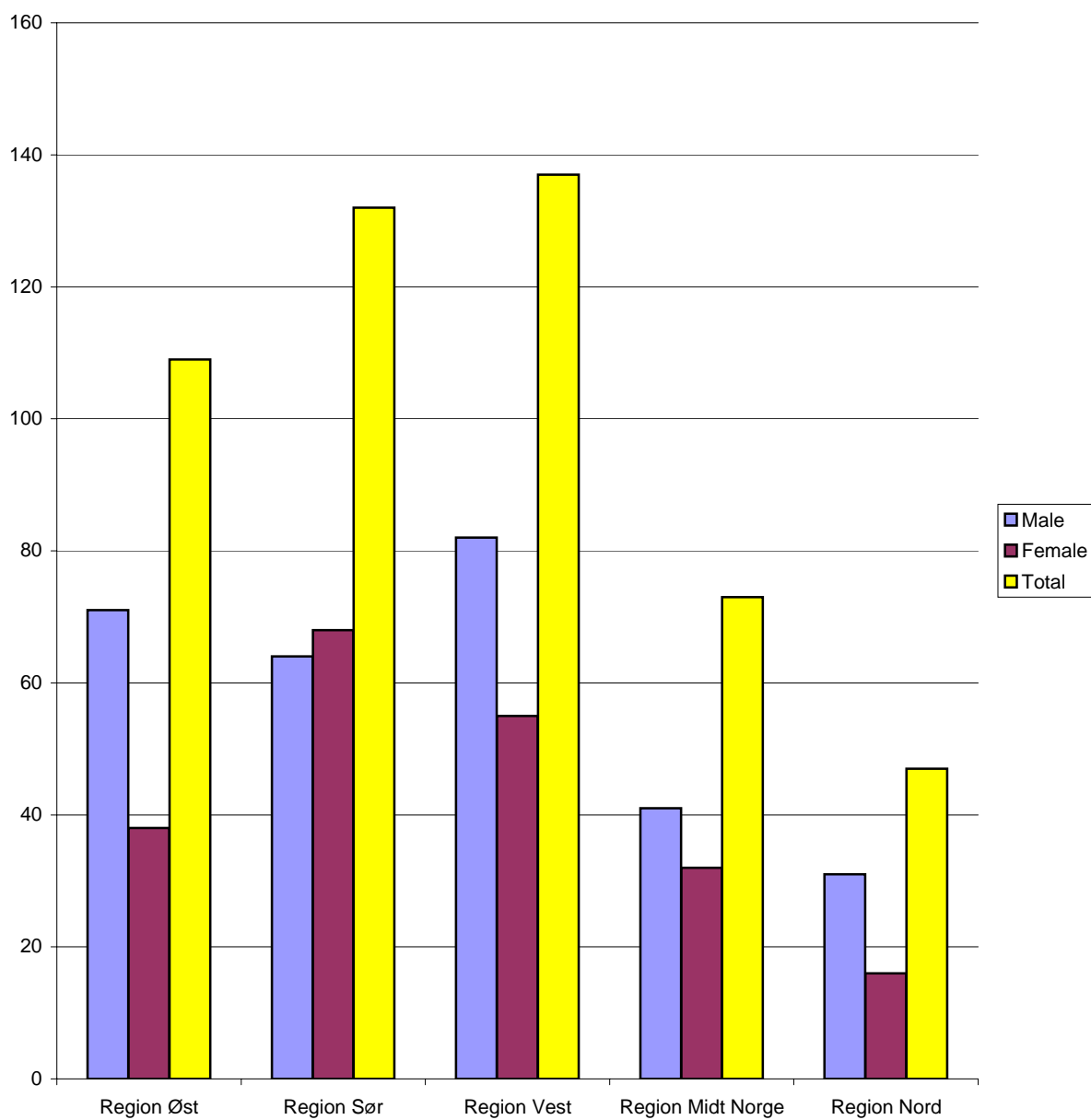
Hospital	Number
Akershus Universitetssykehus	7
Fylkessjukehuset i Haugesund	1
Førde Sentralsjukehus	2
Haukeland Universitetssykehus	7
Molde sjukehus	1
Nordlandssykehuset	4
Rikshospitalet	27
St.Olavs Hospital	6
Stavanger Universitetssjukehus	8
Stord sjukehus	1
Sykehuset Buskerud	4
Sykehuset Innlandet, Lillehammer	9
Sykehuset Levanger	6
Sykehuset Østfold, Fredrikstad	1
Sørlandet Sykehus, Arendal	3
Sørlandet Sykehus, Kristiansand	3
Ullevål Universtetssykehus	29
Universitetssykehuset Nord-Norge	26
Vestfold Sentralsykehus	6
Ålesund sjukehus	3

Renal biopsies in different regions, 2006



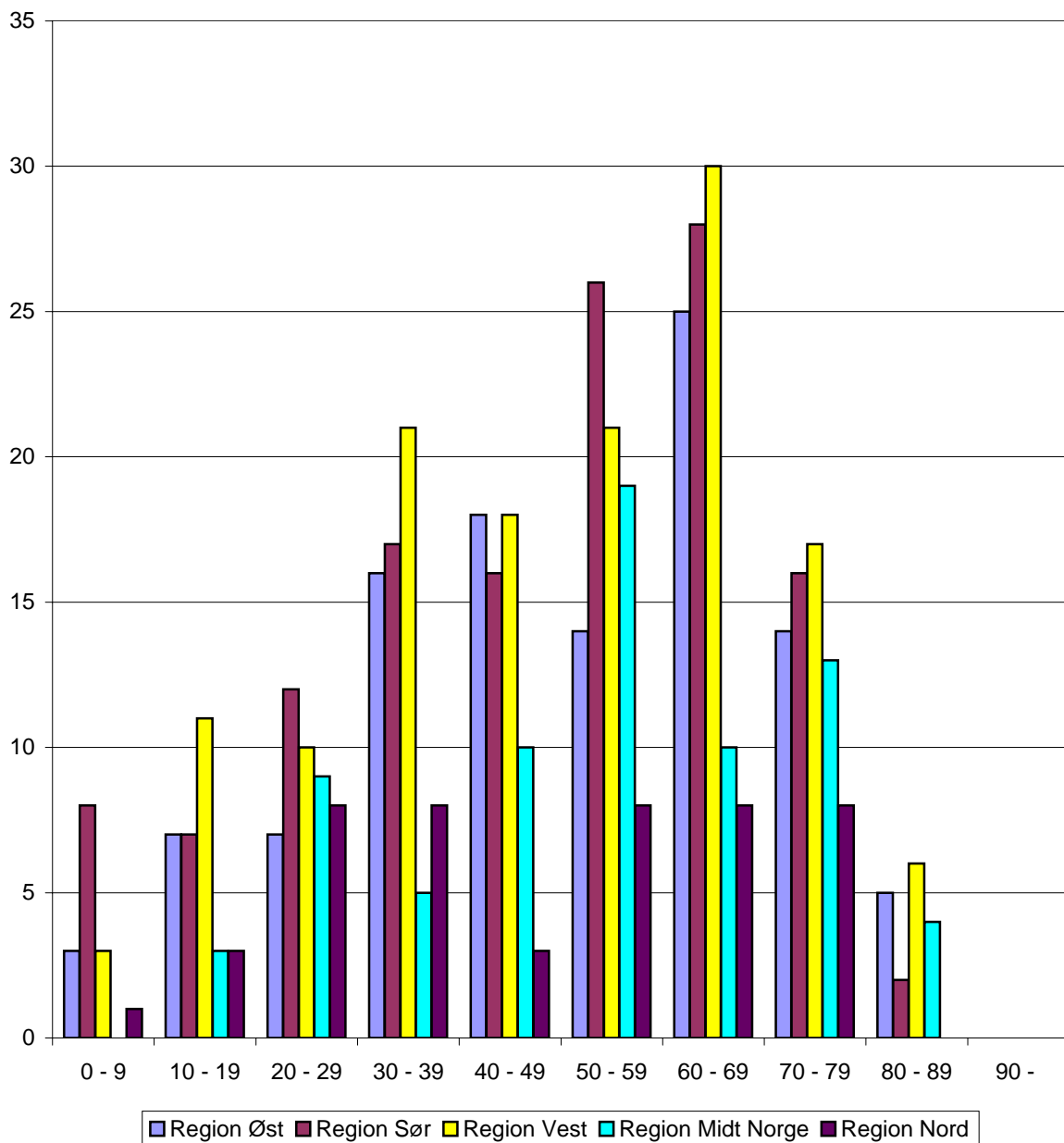
Region	Number
Region Øst	109
Region Sør	132
Region Vest	137
Region Midt Norge	73
Region Nord	47

Renal biopsies in different regions, male and female, 2006



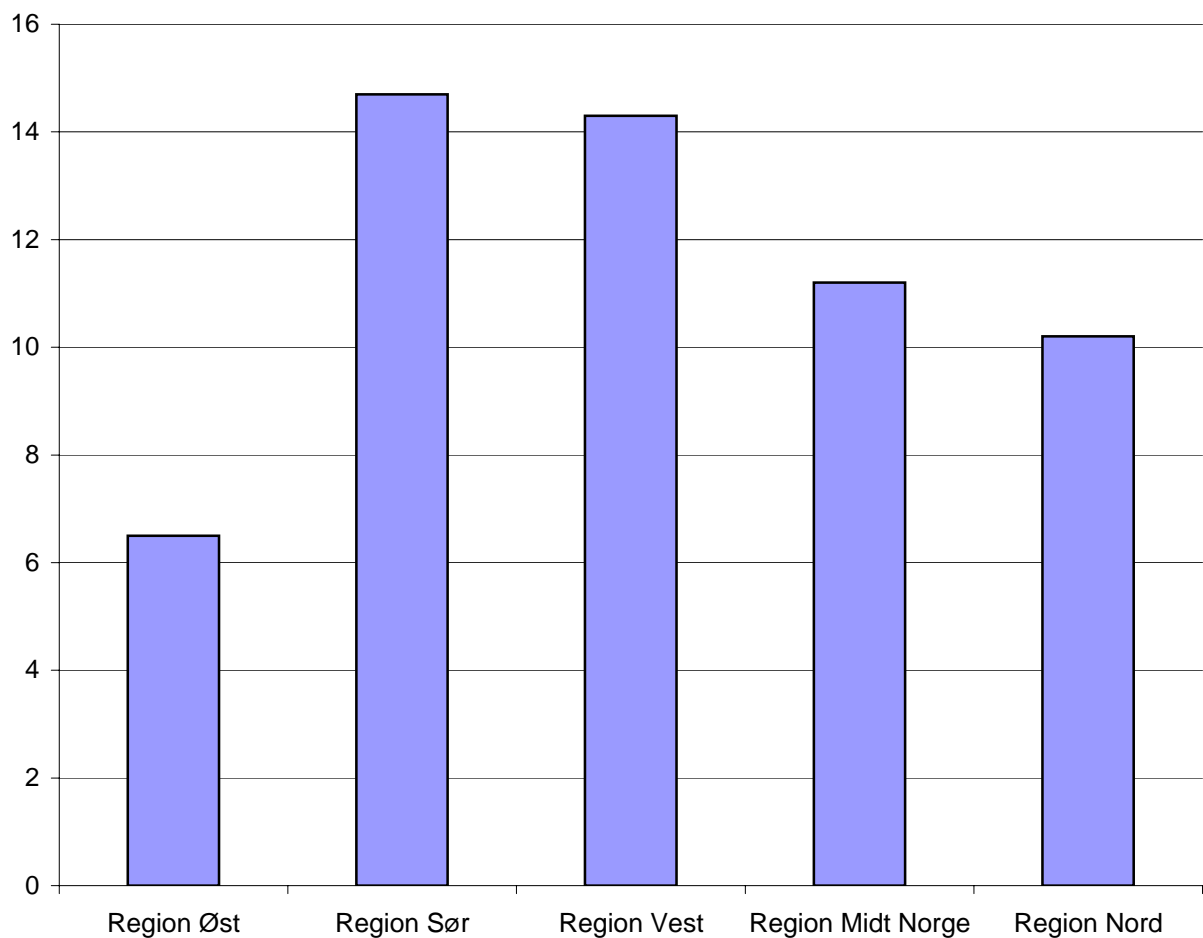
Region	Male	Female	Total
Region Øst	71	38	109
Region Sør	64	68	132
Region Vest	82	55	137
Region Midt Norge	41	32	73
Region Nord	31	16	47
Total	289	209	498

Patient age and regions, 2006



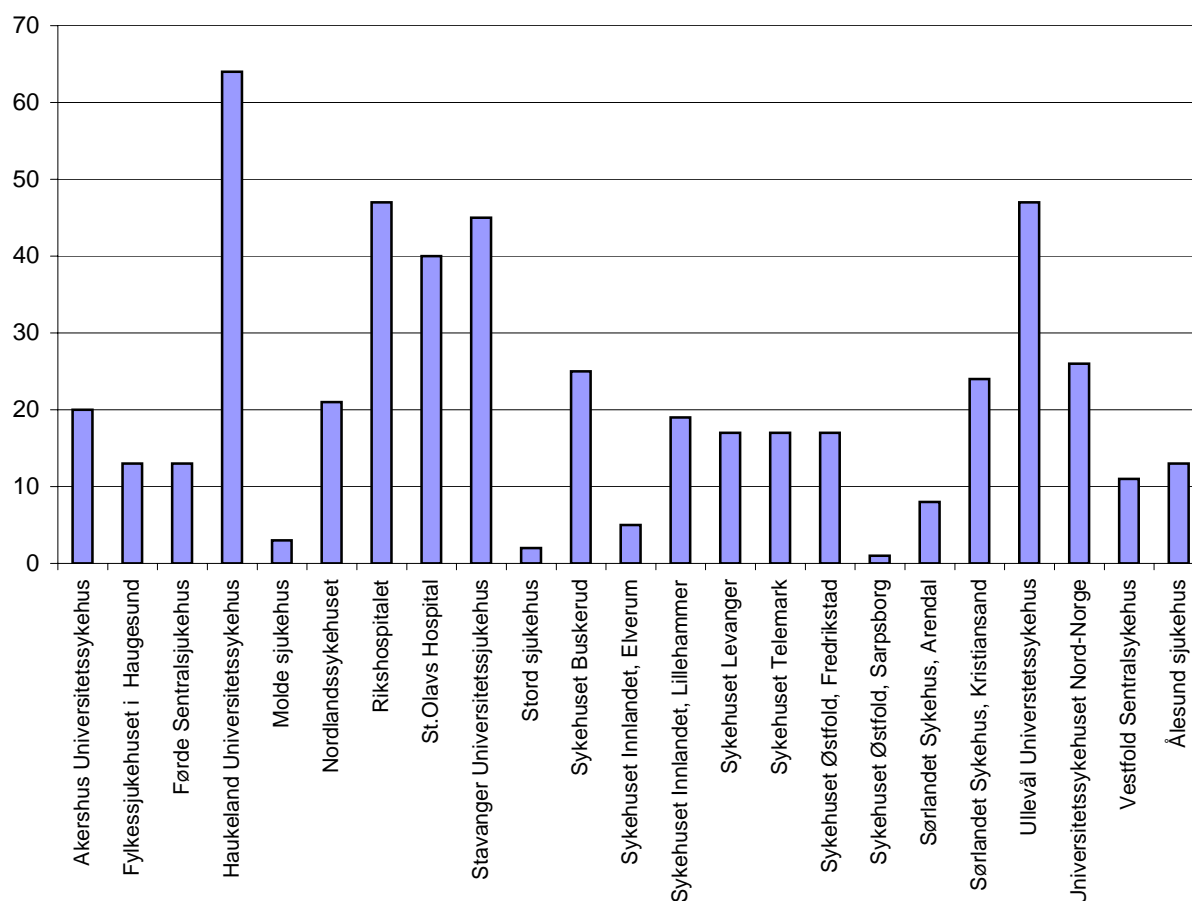
Age	Region Øst	Region Sør	Region Vest	Region Midt Norge	Region Nord
0 - 9	3	8	3	0	1
10 - 19	7	7	11	3	3
20 - 29	7	12	10	9	8
30 - 39	16	17	21	5	8
40 - 49	18	16	18	10	3
50 - 59	14	26	21	19	8
60 - 69	25	28	30	10	8
70 - 79	14	16	17	13	8
80 - 89	5	2	6	4	0
90 -	0	0	0	0	0

Number of renal biopsies /100000 inhabitants, 2006



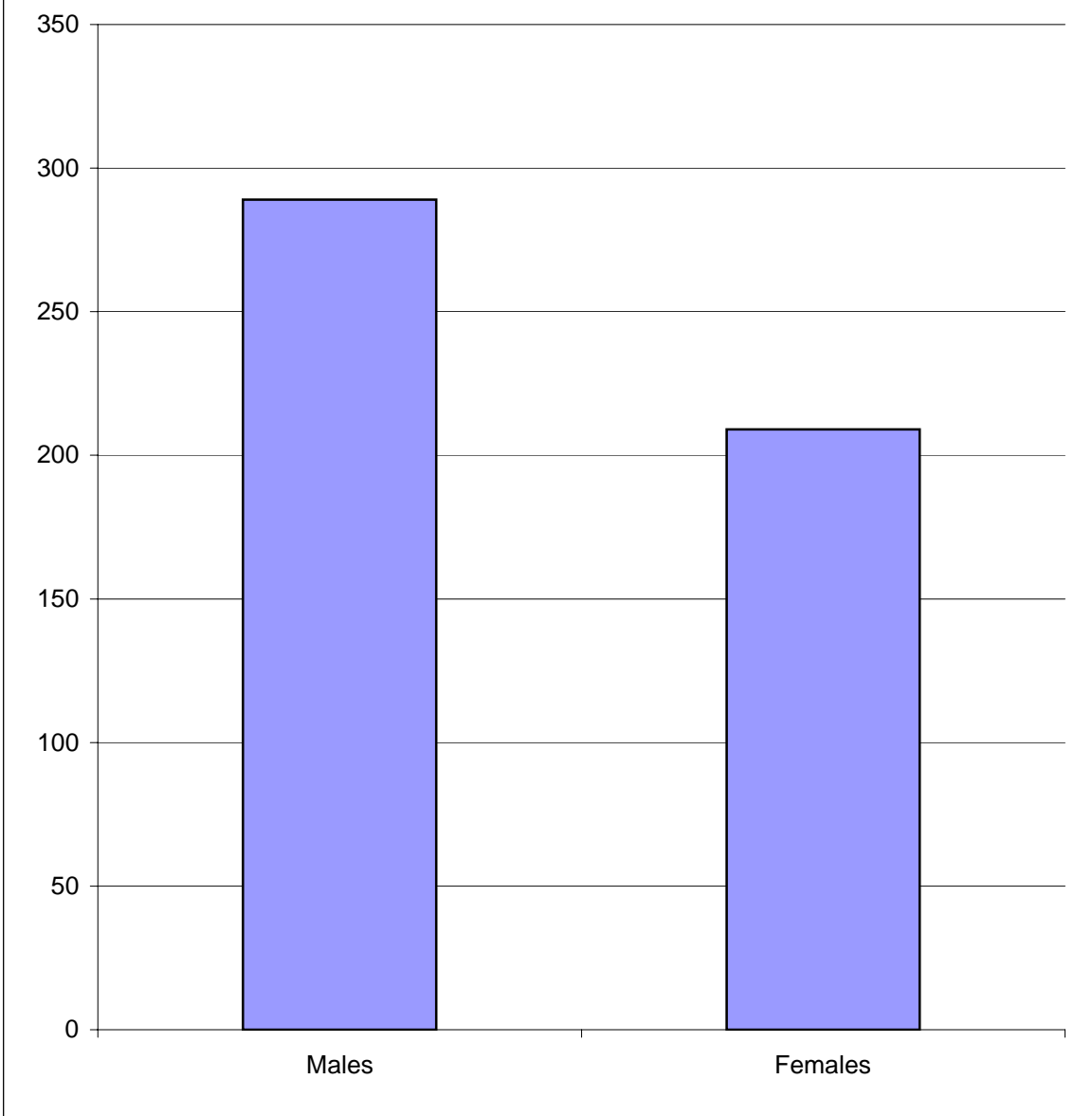
Region	Number
Region Øst	6.5
Region Sør	14.7
Region Vest	14.3
Region Midt Norge	11.2
Region Nord	10.2

Number of renal biopsies at different hospitals, 2006



Hospital	Number
Akershus Universitetssykehus	20
Fylkessjukehuset i Haugesund	13
Førde Sentralsjukehus	13
Haukeland Universitetssykehus	64
Molde sjukehus	3
Nordlandssykehuset	21
Rikshospitalet	47
St.Olavs Hospital	40
Stavanger Universitetssjukehus	45
Stord sjukehus	2
Sykehuset Buskerud	25
Sykehuset Innlandet, Elverum	5
Sykehuset Innlandet, Lillehammer	19
Sykehuset Levanger	17
Sykehuset Telemark	17
Sykehuset Østfold, Fredrikstad	17
Sykehuset Østfold, Sarpsborg	1
Sørlandet Sykehus, Arendal	8
Sørlandet Sykehus, Kristiansand	24
Ullevål Universtetssykehus	47
Universitetssykehuset Nord-Norge	26
Vestfold Sentralsykehus	11
Ålesund sjukehus	13
Total	498

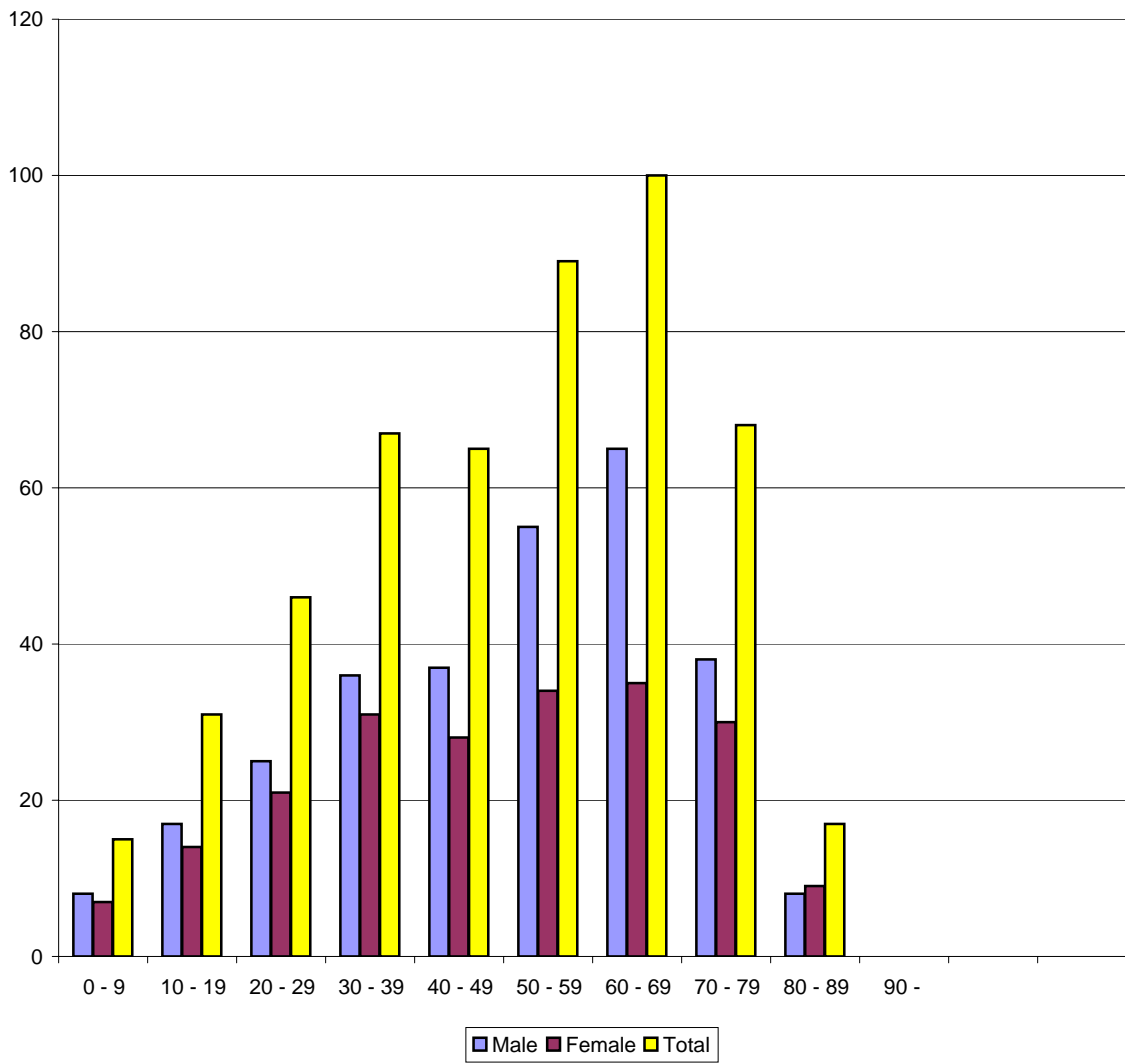
Total number of renal biopsies in males and females, 2006



n=498

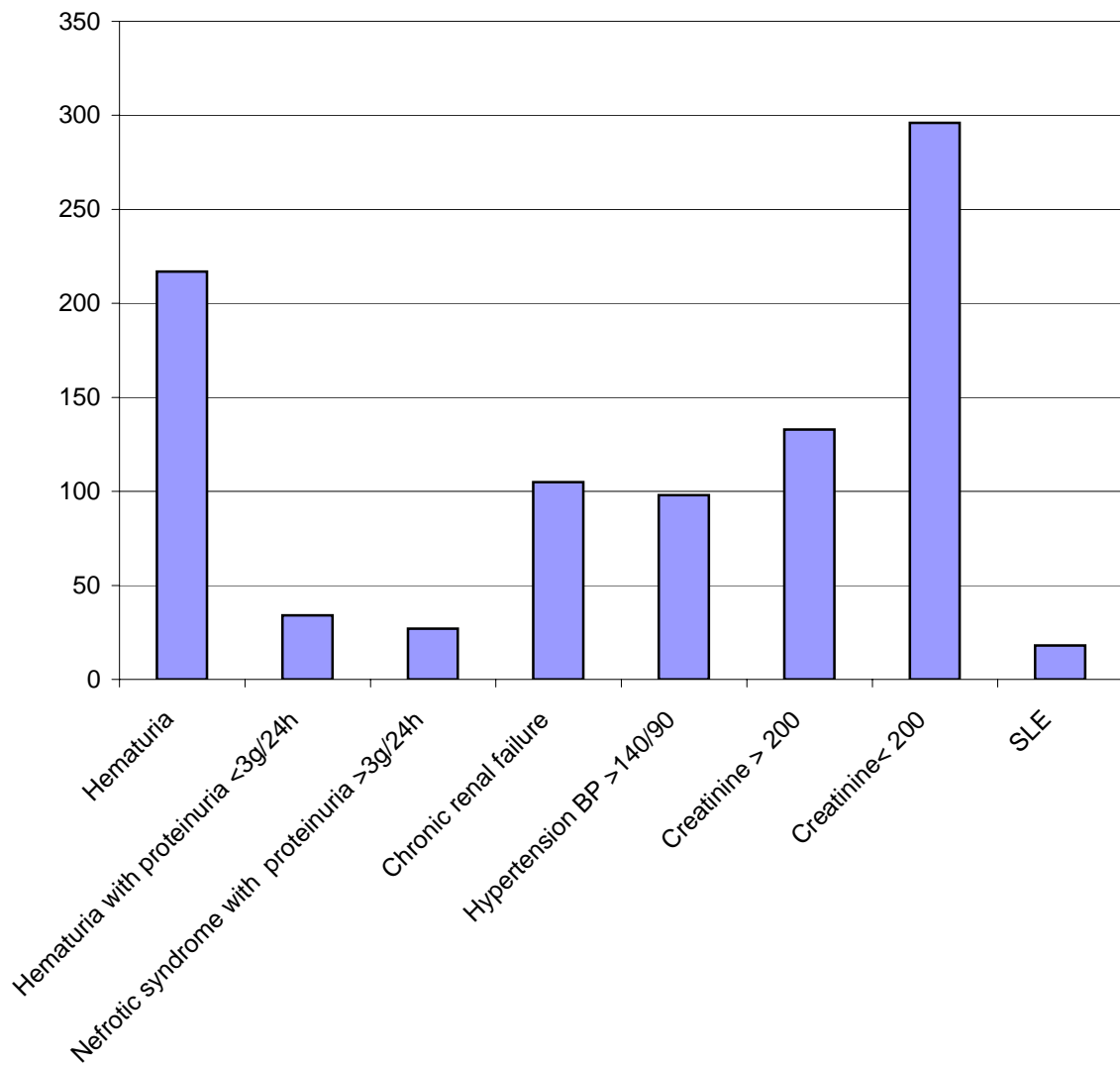
Males	289	(58%)
Females	209	(42%)

Age and gender, 2006



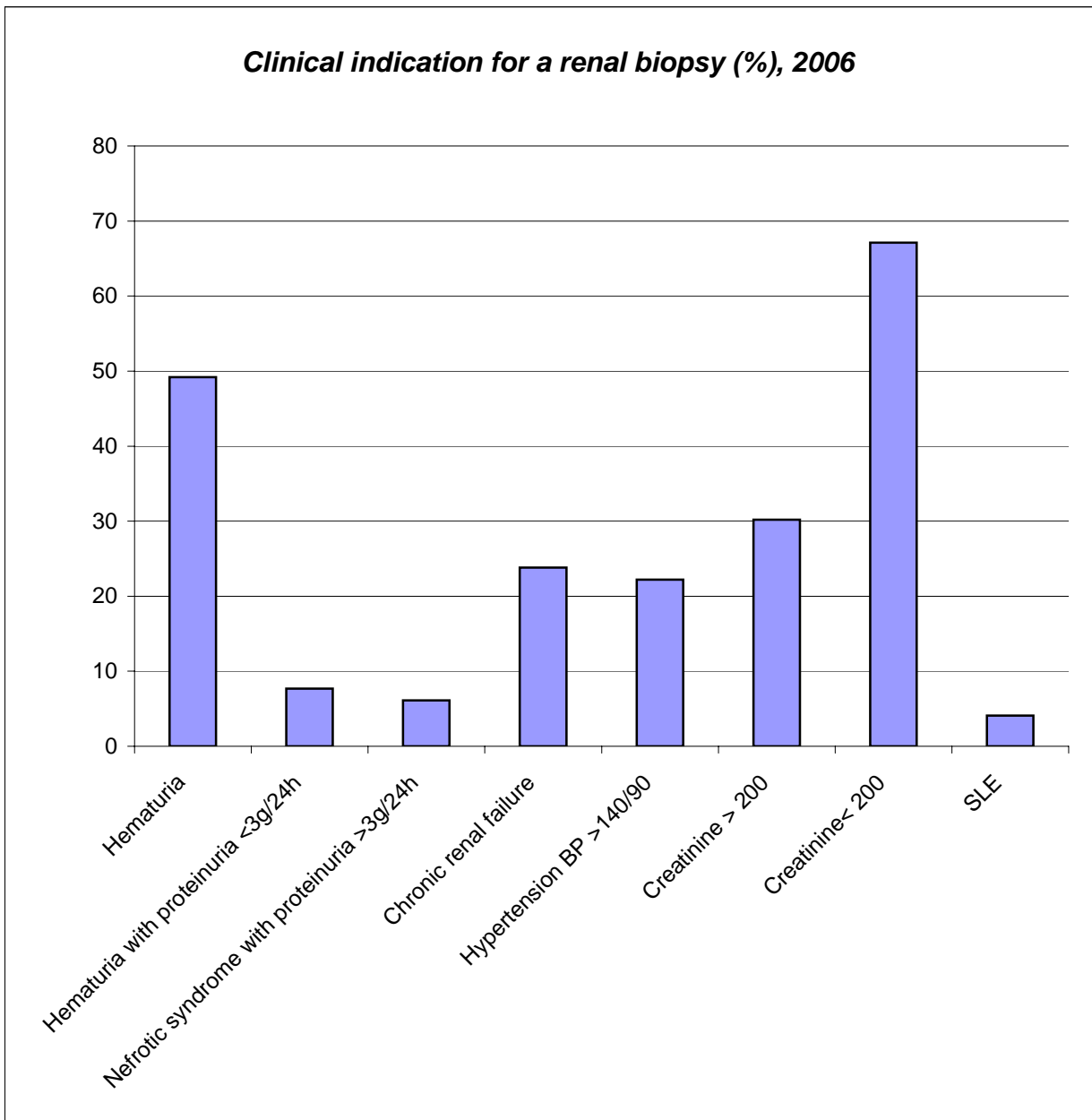
Age	Male	Female	Total
0 - 9	8	7	15
10 - 19	17	14	31
20 - 29	25	21	46
30 - 39	36	31	67
40 - 49	37	28	65
50 - 59	55	34	89
60 - 69	65	35	100
70 - 79	38	30	68
80 - 89	8	9	17
90 -	0	0	0

Cinical indications for a renal biopsy, 2006



Clinical indication	Number
Hematuria	217
Hematuria with proteinuria <3g/24h	34
Nefrotic syndrome with proteinuria >3g/24h	27
Chronic renal failure	105
Hypertension BP >140/90	98
Creatinine > 200	133
Creatinine < 200	296
SLE	18

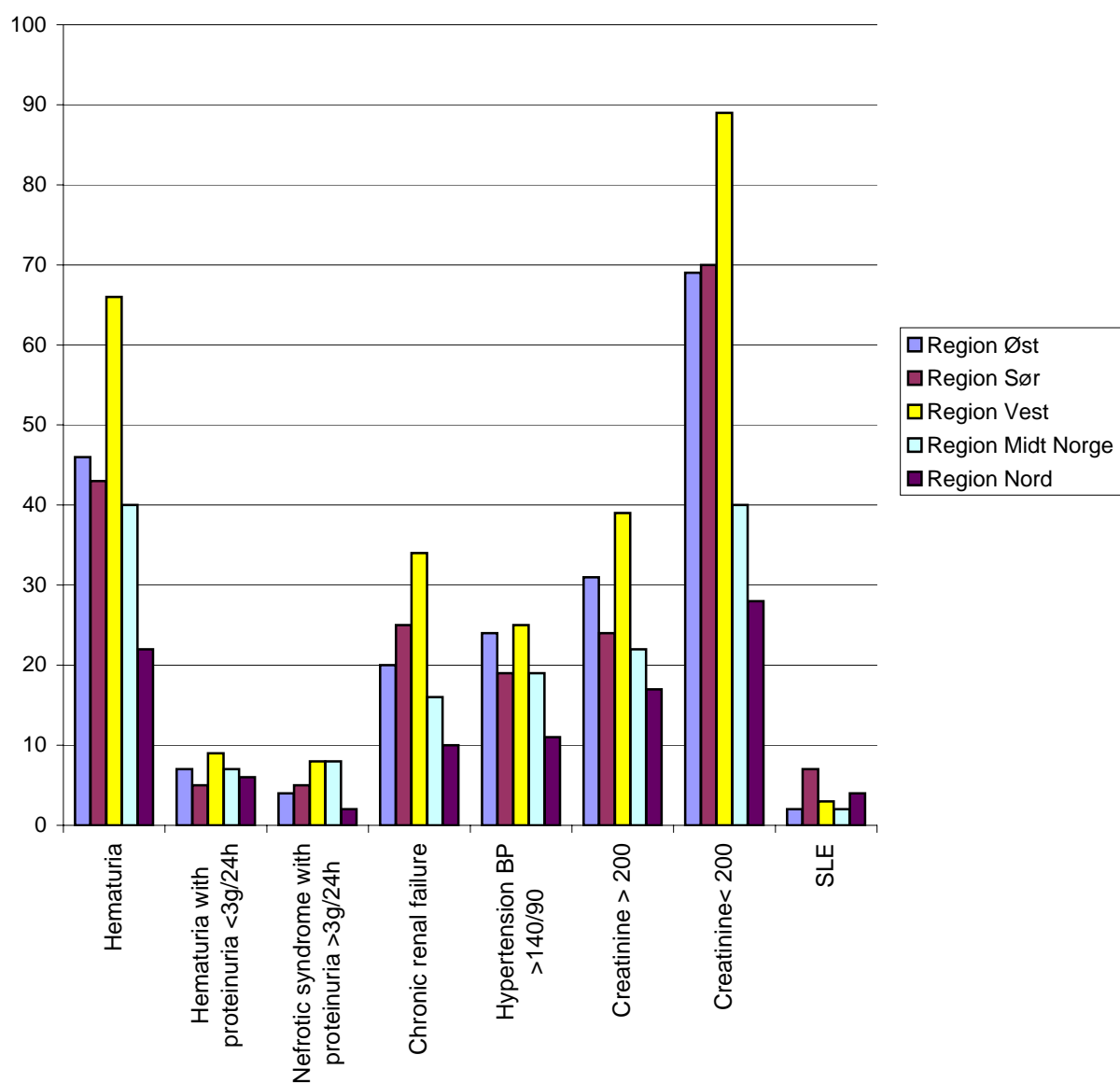
Clinical indication for a renal biopsy (%), 2006



n=441

Clinical indication	%
Hematuria	49.2
Hematuria with proteinuria <3g/24h	7.7
Nefrotic syndrome with proteinuria >3g/24h	6.1
Chronic renal failure	23.8
Hypertension BP >140/90	22.2
Creatinine > 200	30.2
Creatinine < 200	67.1
SLE	4.1

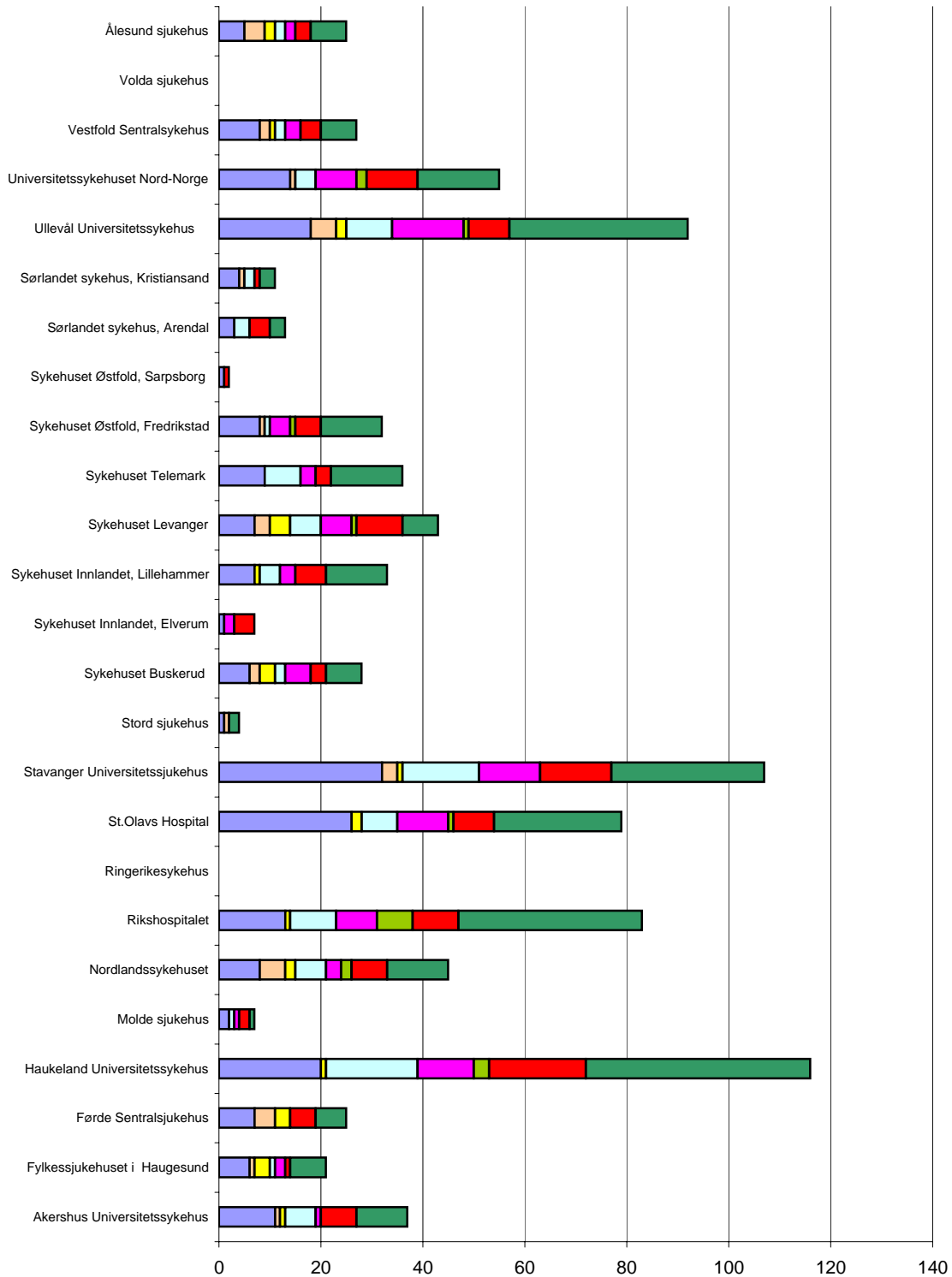
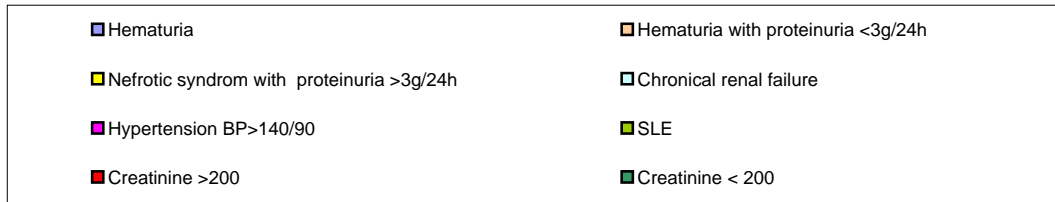
Clinical indication in different regions, 2006



Regions

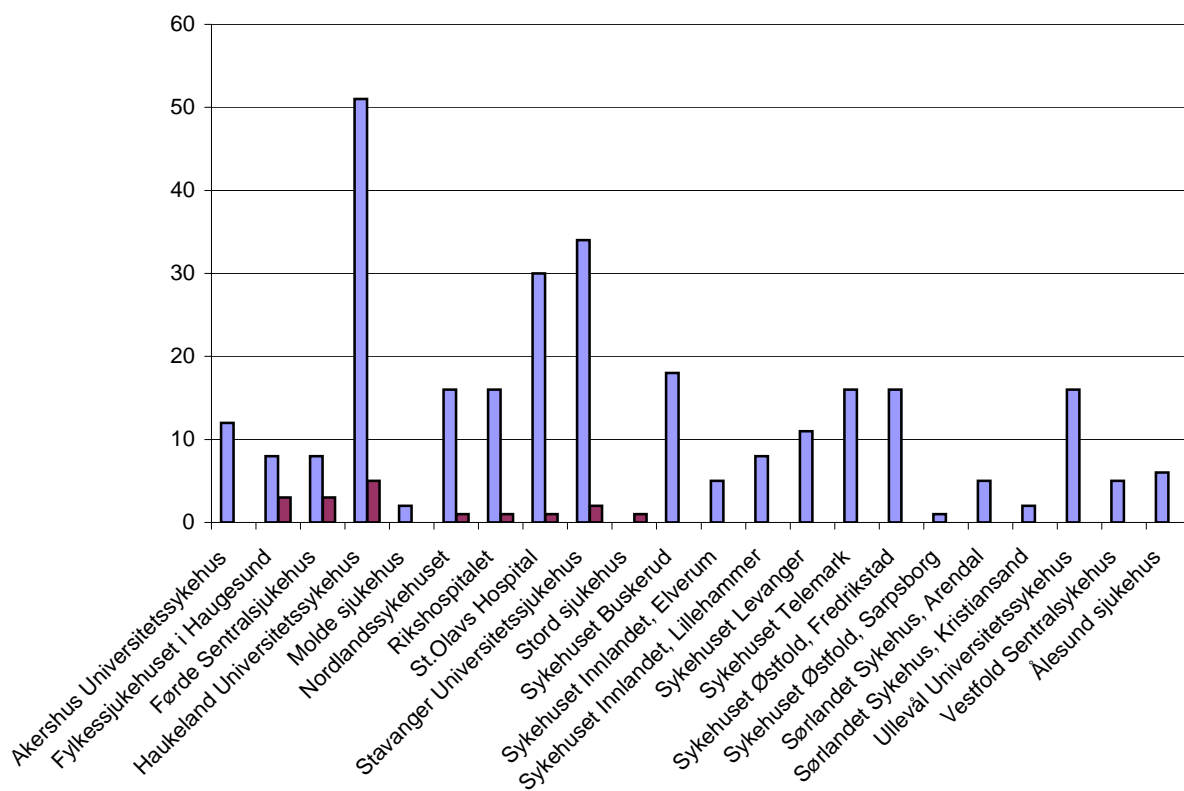
Clinical indication	Region Øst	Region Sør	Region Vest	Region Midt Norge	Region Nord
Hematuria	46	43	66	40	22
Hematuria with proteinuria <3g/24h	7	5	9	7	6
Nefrotic syndrome with proteinuria >3g/24h	4	5	8	8	2
Chronic renal failure	20	25	34	16	10
Hypertension BP >140/90	24	19	25	19	11
Creatinine > 200	31	24	39	22	17
Creatinine < 200	69	70	89	40	28
SLE	2	7	3	2	4

Clinical indications at different hospitals, 2006



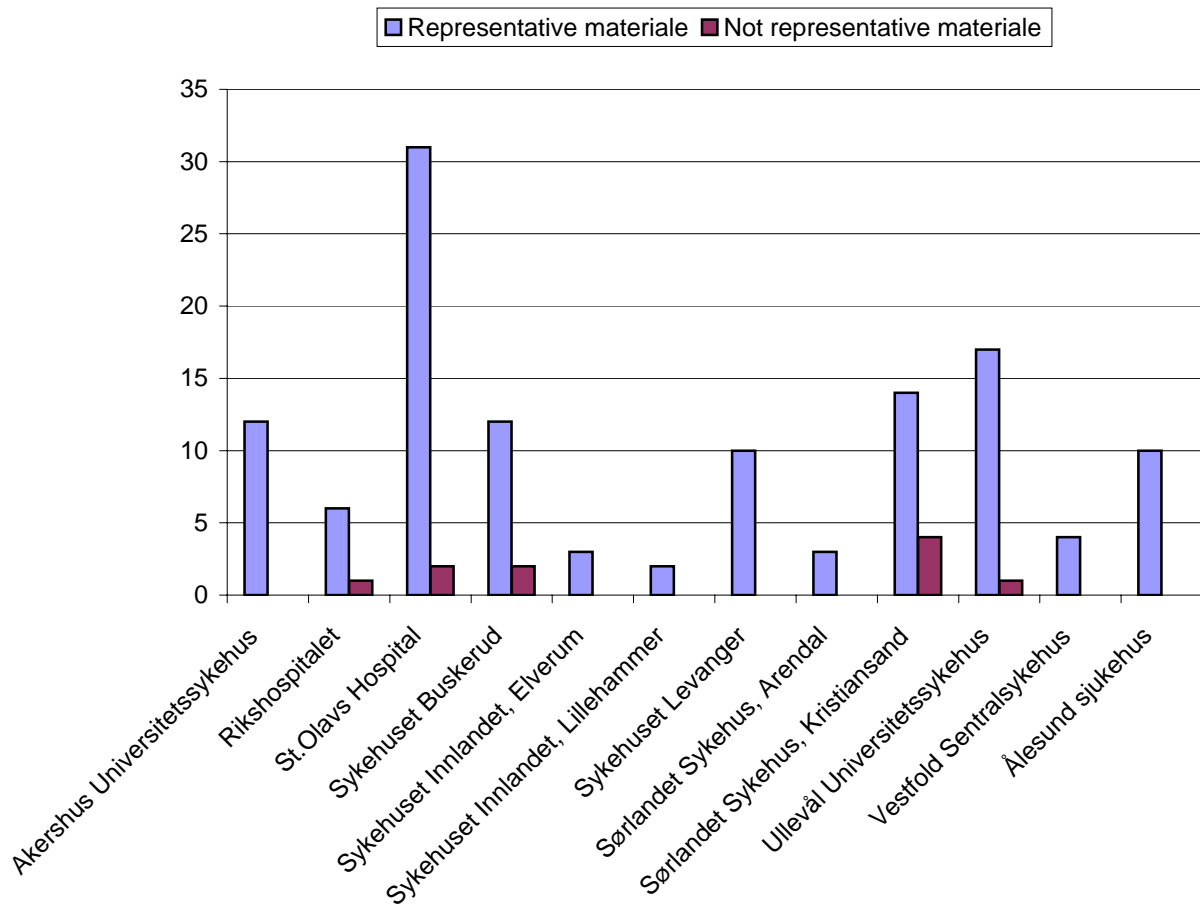
Renal morphology, local pathologist, 2006

■ Representative material ■ Not representative material



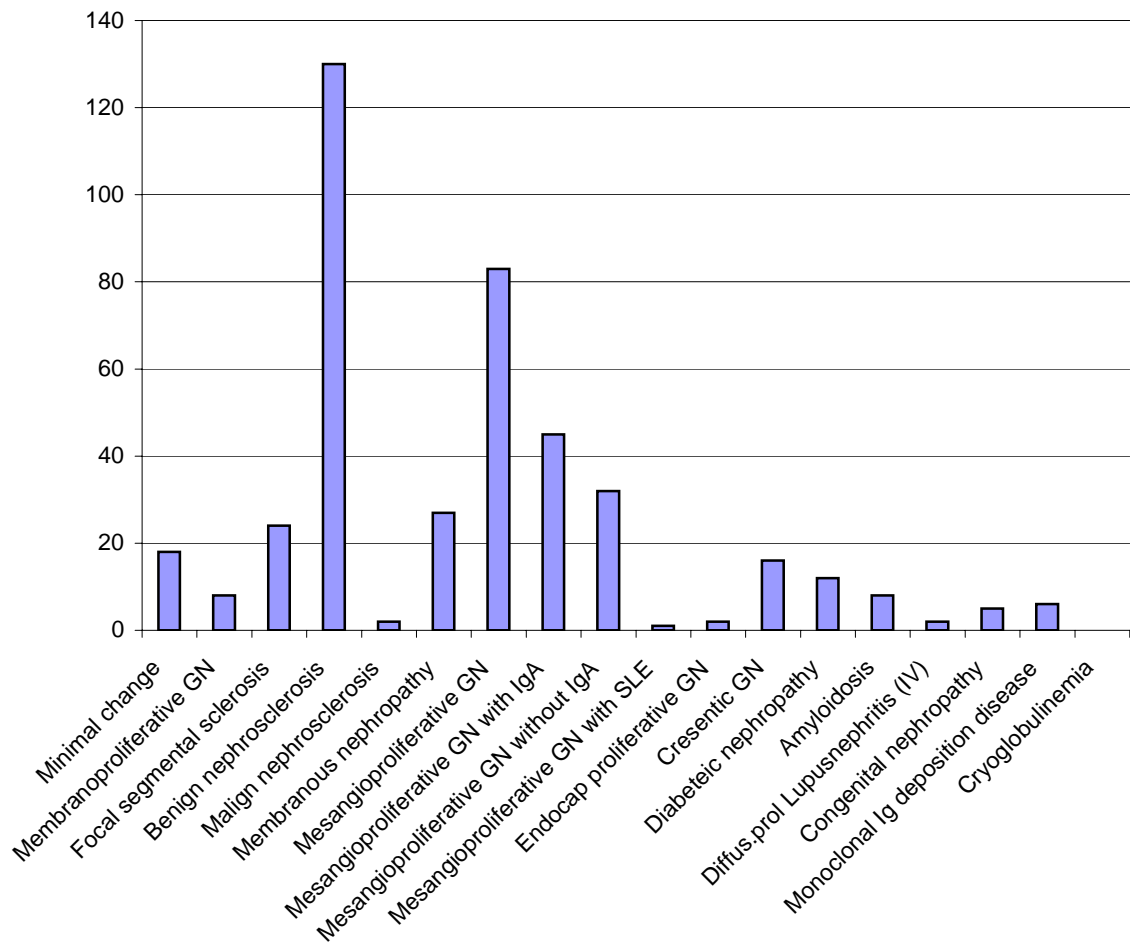
Hospital	Representative material	Not representative material
Akershus Universitetssykehus	12	0
Fylkessjukehuset i Haugesund	8	3
Førde Sentralsykehus	8	3
Haukeland Universitetssykehus	51	5
Molde sjukehus	2	0
Nordlandssykehuset	16	1
Rikshospitalet	16	1
St.Olavs Hospital	30	1
Stavanger Universitetssjukehus	34	2
Stord sjukehus	0	1
Sykehuset Buskerud	18	0
Sykehuset Innlandet, Elverum	5	0
Sykehuset Innlandet, Lillehammer	8	0
Sykehuset Levanger	11	0
Sykehuset Telemark	16	0
Sykehuset Østfold, Fredrikstad	16	0
Sykehuset Østfold, Sarpsborg	1	0
Sørlandet Sykehus, Arendal	5	0
Sørlandet Sykehus, Kristiansand	2	0
Ullevål Universitetssykehus	16	0
Vestfold Sentralsykehus	5	0
Ålesund sjukehus	6	0
Total	286	17

Renal morphology, register patologist, 2006



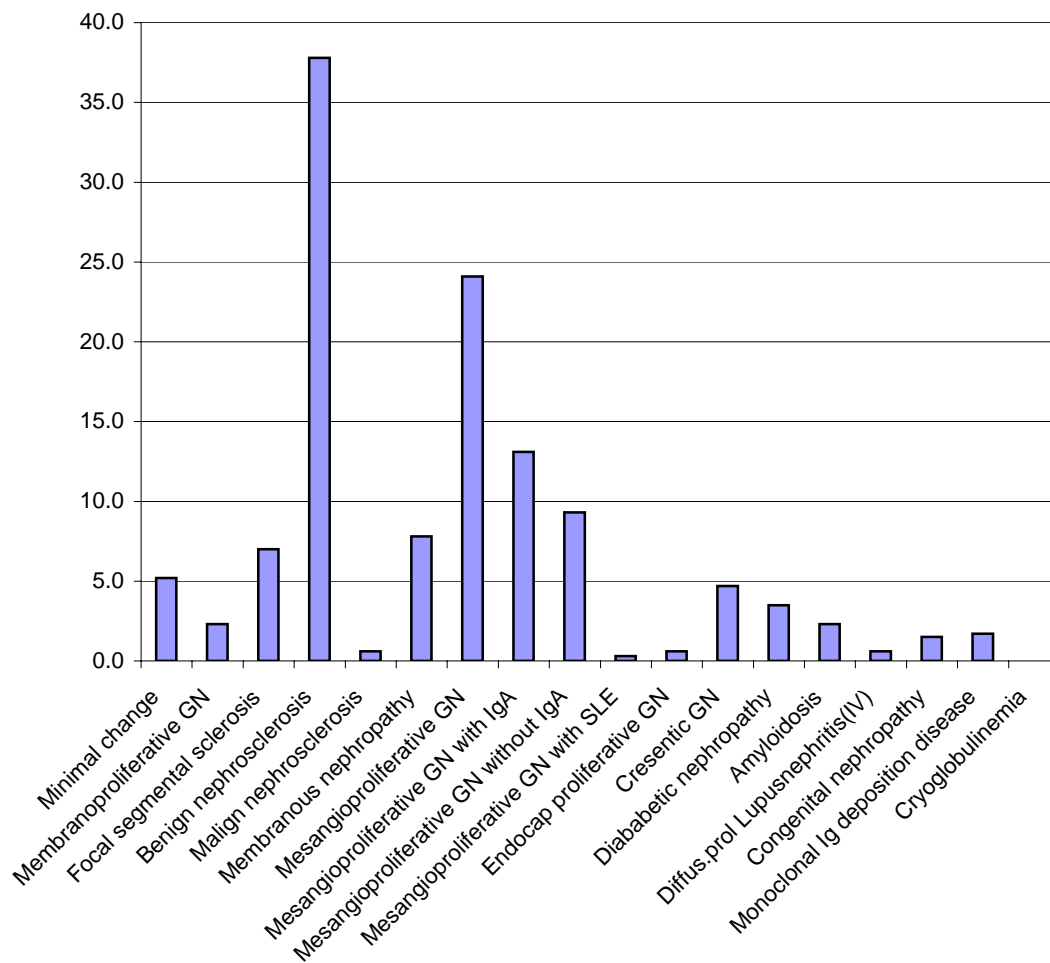
Hospital	Representative materiale	Not representative materiale
Akershus Universitetssykehus	12	0
Rikshospitalet	6	1
St.Olavs Hospital	31	2
Sykehuset Buskerud	12	2
Sykehuset Innlandet, Elverum	3	0
Sykehuset Innlandet, Lillehammer	2	0
Sykehuset Levanger	10	0
Sørlandet Sykehus, Arendal	3	0
Sørlandet Sykehus, Kristiansand	14	4
Ullevål Universitetssykehus	17	1
Vestfold Sentralsykehus	4	0
Ålesund sjukehus	10	0
Total	124	10

Histopathology diagnosis, 2006



Diagnosis	Number
Minimal change	18
Membranoproliferative GN	8
Focal segmental sclerosis	24
Benign nephrosclerosis	130
Malign nephrosclerosis	2
Membranous nephropathy	27
Mesangioproliferative GN	83
Mesangioproliferative GN with IgA	45
Mesangioproliferative GN without IgA	32
Mesangioproliferative GN with SLE	1
Endocap proliferative GN	2
Crescentic GN	16
Diabetic nephropathy	12
Amyloidosis	8
Diffus.prol Lupusnephritis (IV)	2
Congenital nephropathy	5
Monoclonal Ig deposition disease	6
Cryoglobulinemia	0

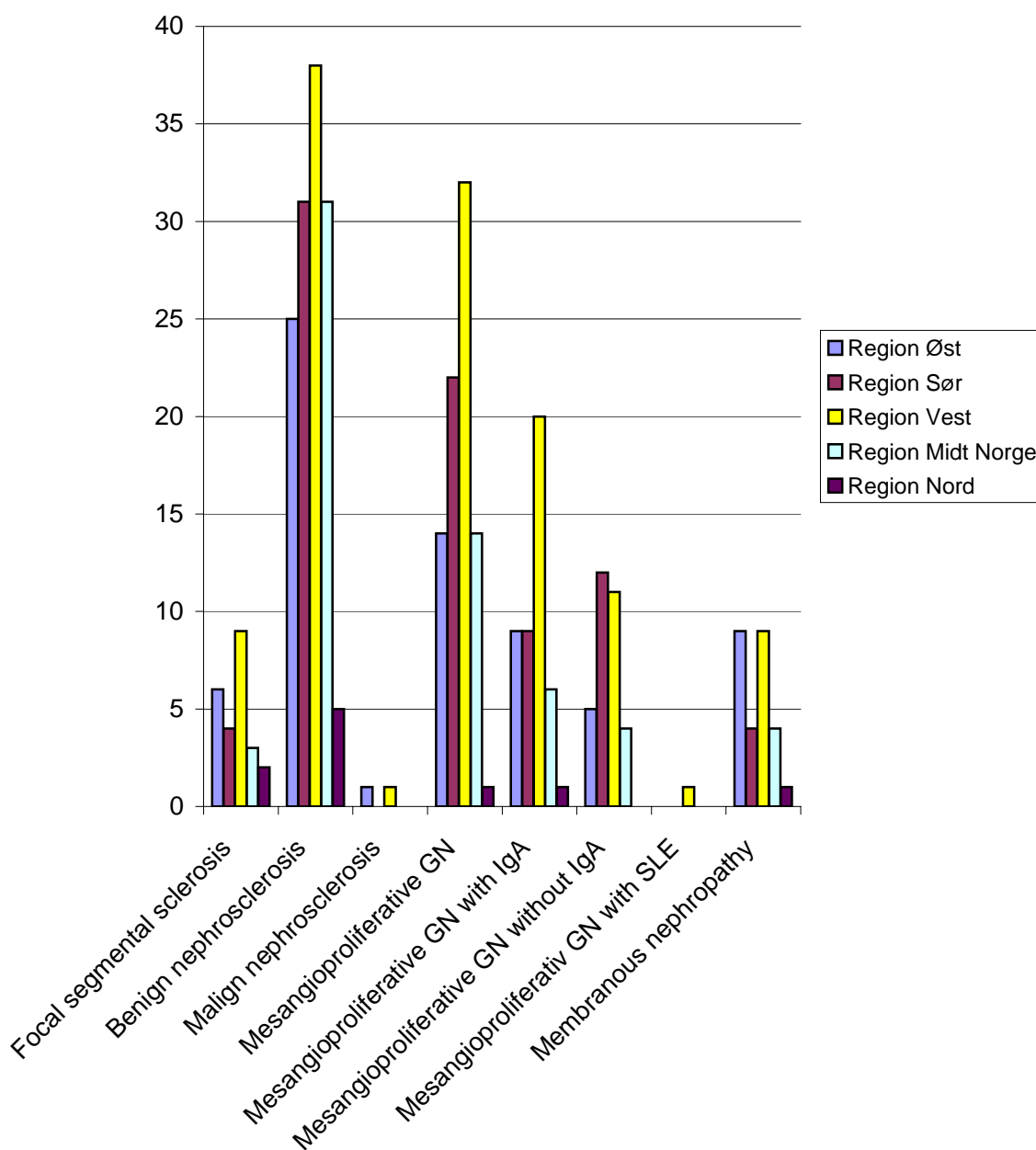
Histopathology diagnosis % of all, 2006



n=344

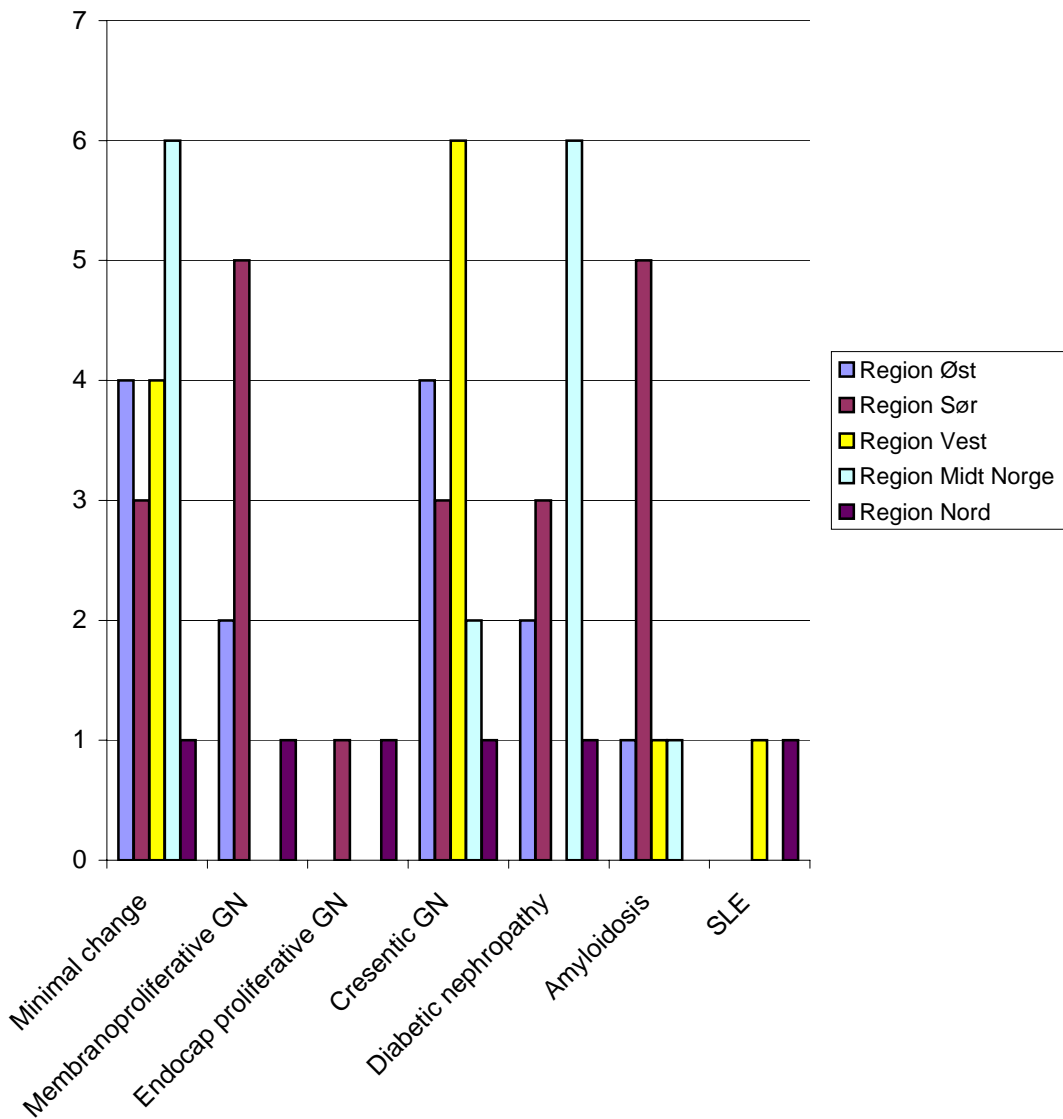
Diagnosis	%
Minimal change	5.2
Membranoproliferative GN	2.3
Focal segmental sclerosis	7.0
Benign nephrosclerosis	37.8
Malign nephrosclerosis	0.6
Membranous nephropathy	7.8
Mesangioproliferative GN	24.1
Mesangioproliferative GN with IgA	13.1
Mesangioproliferative GN without IgA	9.3
Mesangioproliferative GN with SLE	0.3
Endocap proliferative GN	0.6
Crescentic GN	4.7
Diabetic nephropathy	3.5
Amyloidosis	2.3
Diffus.prol Lupusnephritis(IV)	0.6
Congenital nephropathy	1.5
Monoclonal Ig deposition disease	1.7
Cryoglobulinemia	0.0

Renal pathology in different regions, 2006



Diagnosis	Region Øst	Region Sør	Region Vest	Region Midt Norge	Region Nord
Focal segmental sclerosis	6	4	9	3	2
Benign nephrosclerosis	25	31	38	31	5
Malign nephrosclerosis	1	0	1	0	0
Mesangioproliferative GN	14	22	32	14	1
Mesangioproliferative GN with IgA	9	9	20	6	1
Mesangioproliferative GN without IgA	5	12	11	4	0
Mesangioproliferativ GN with SLE	0	0	1	0	0
Membranous nephropathy	9	4	9	4	1

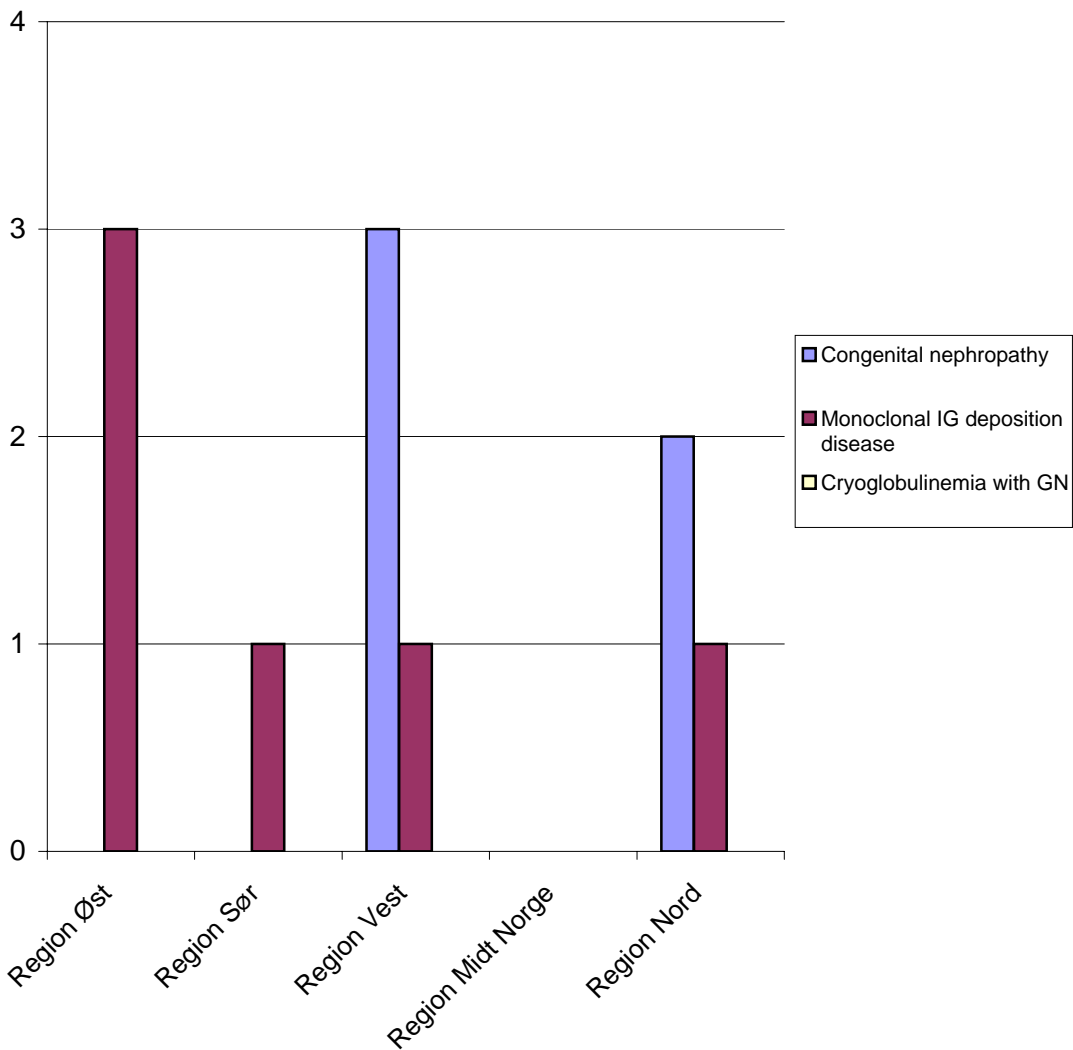
Renal pathology in different regions, 2006



Regions

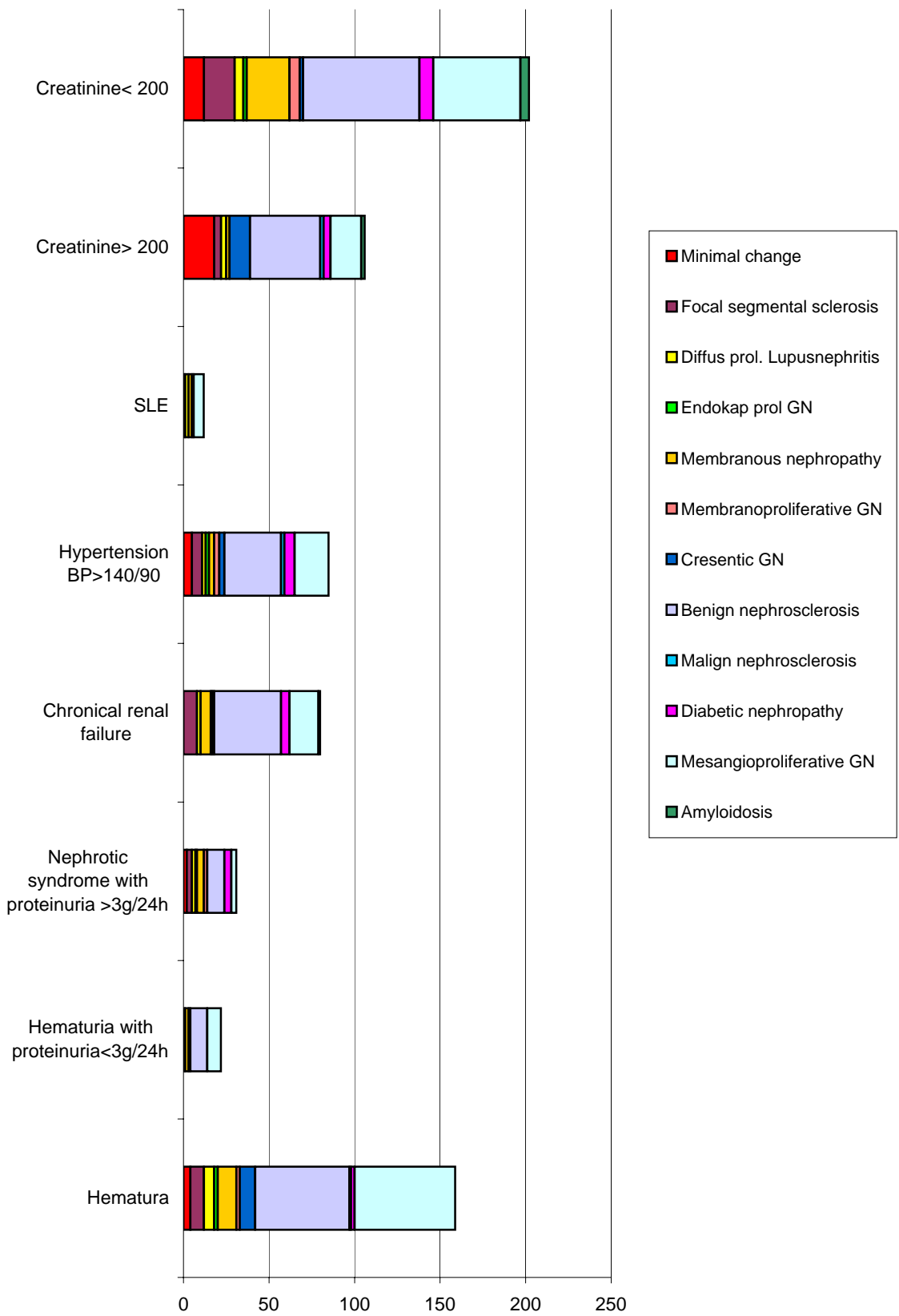
Diagnosis	Region Øst	Region Sør	Region Vest	Region Midt Norge	Region Nord
Minimal change	4	3	4	6	1
Membranoproliferative GN	2	5	0	0	1
Endocap proliferative GN	0	1	0	0	1
Cresentic GN	4	3	6	2	1
Diabetic nephropathy	2	3	0	6	1
Amyloidosis	1	5	1	1	0
SLE	0	0	1	0	1

Renal pathology in different regions, 2006

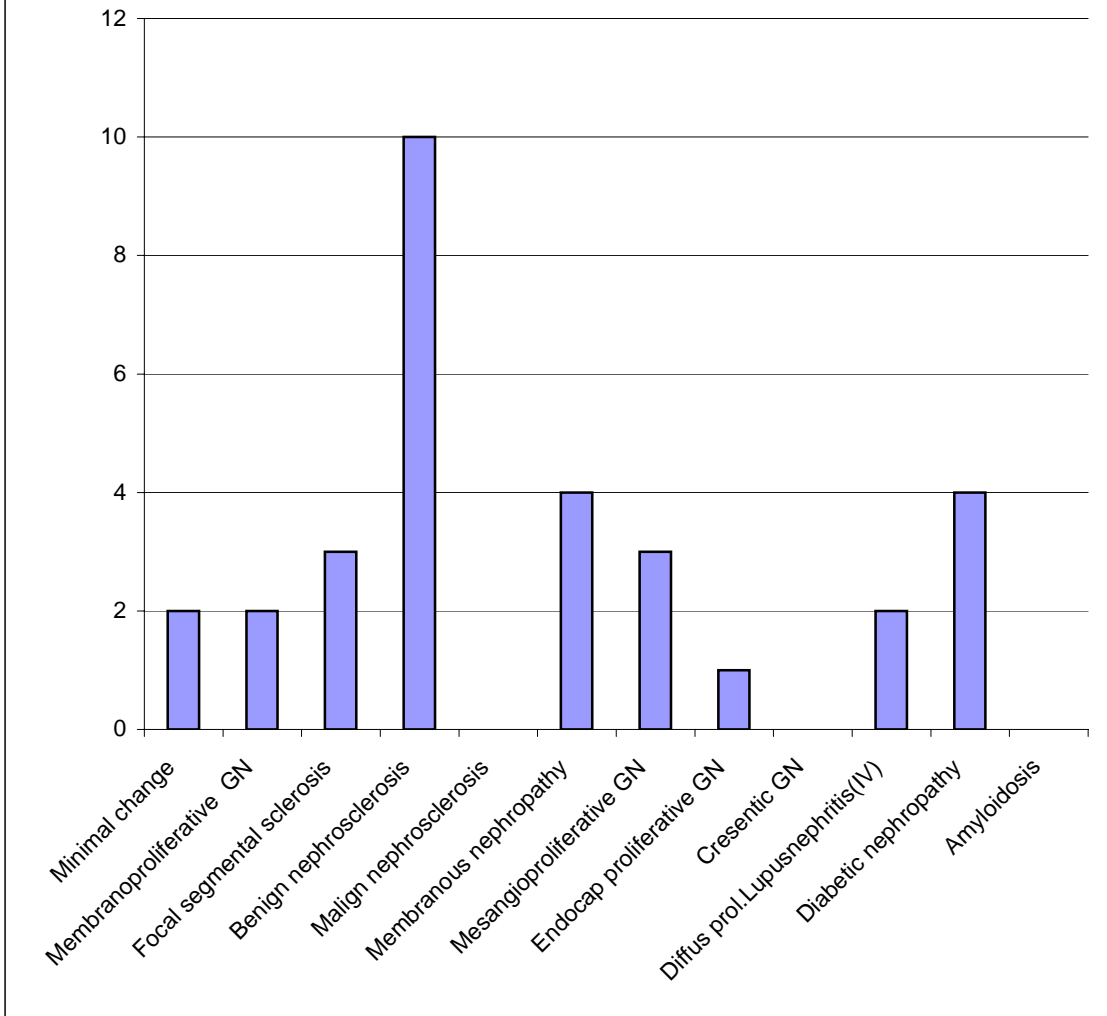


Diagnosis	Region Øst	Region Sør	Region Vest	Region Midt Norge	Region Nord
Congenital nephropathy	0	0	3	0	2
Monoclonal IG deposition disease	3	1	1	0	1
Cryoglobulinemia with GN	0	0	0	0	0

Clinical indication with morphology, 2006

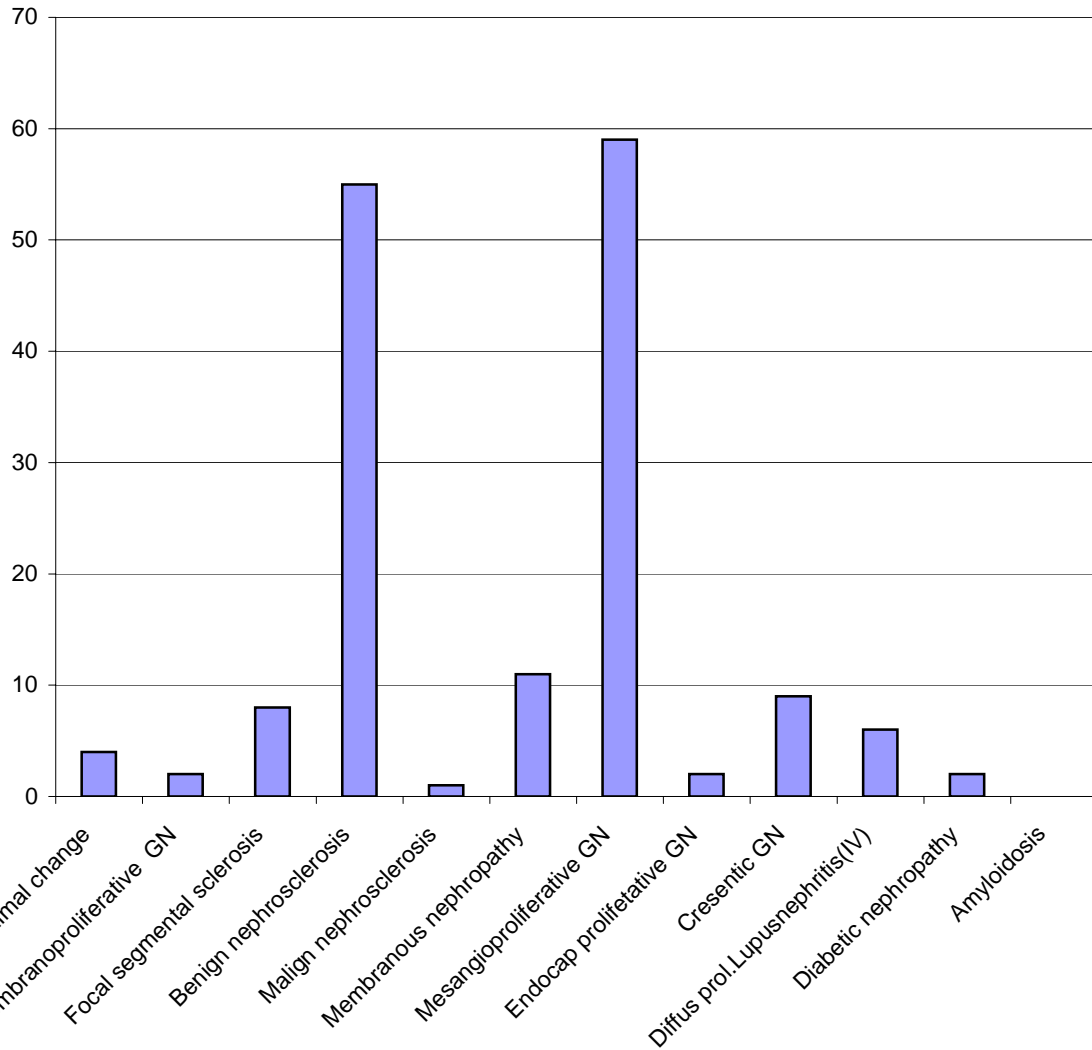


Morphology in patients with nephrotic syndrom and proteinuria>3g/24h, 2006



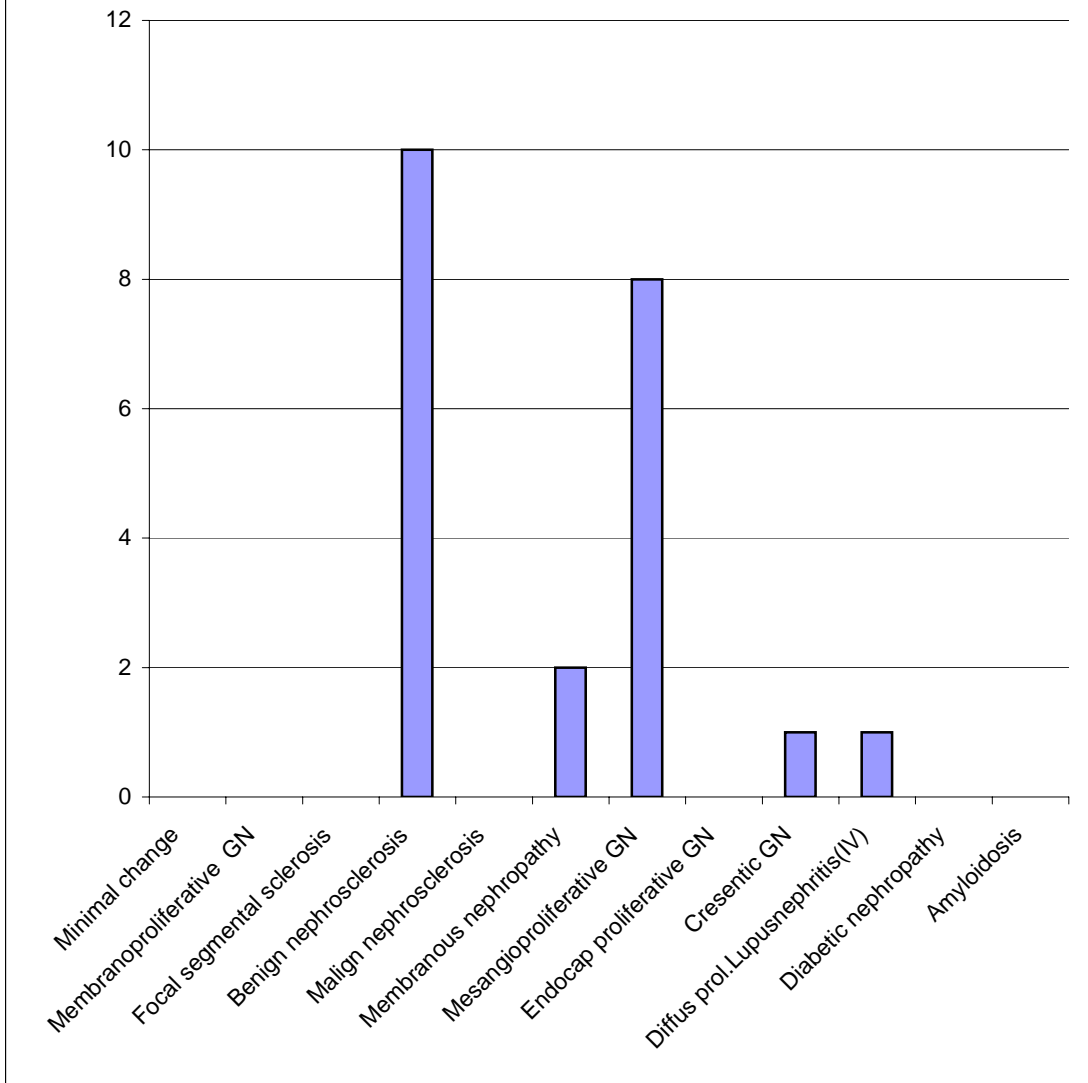
Morphology	Number
Minimal change	2
Membranoproliferative GN	2
Focal segmental sclerosis	3
Benign nephrosclerosis	10
Malign nephrosclerosis	0
Membranous nephropathy	4
Mesangioproliferative GN	3
Endocap proliferative GN	1
Cresentic GN	0
Diffus prol.Lupusnephritis(IV)	2
Diabetic nephropathy	4
Amyloidosis	0

Morphology in patients with Hematuria,2006



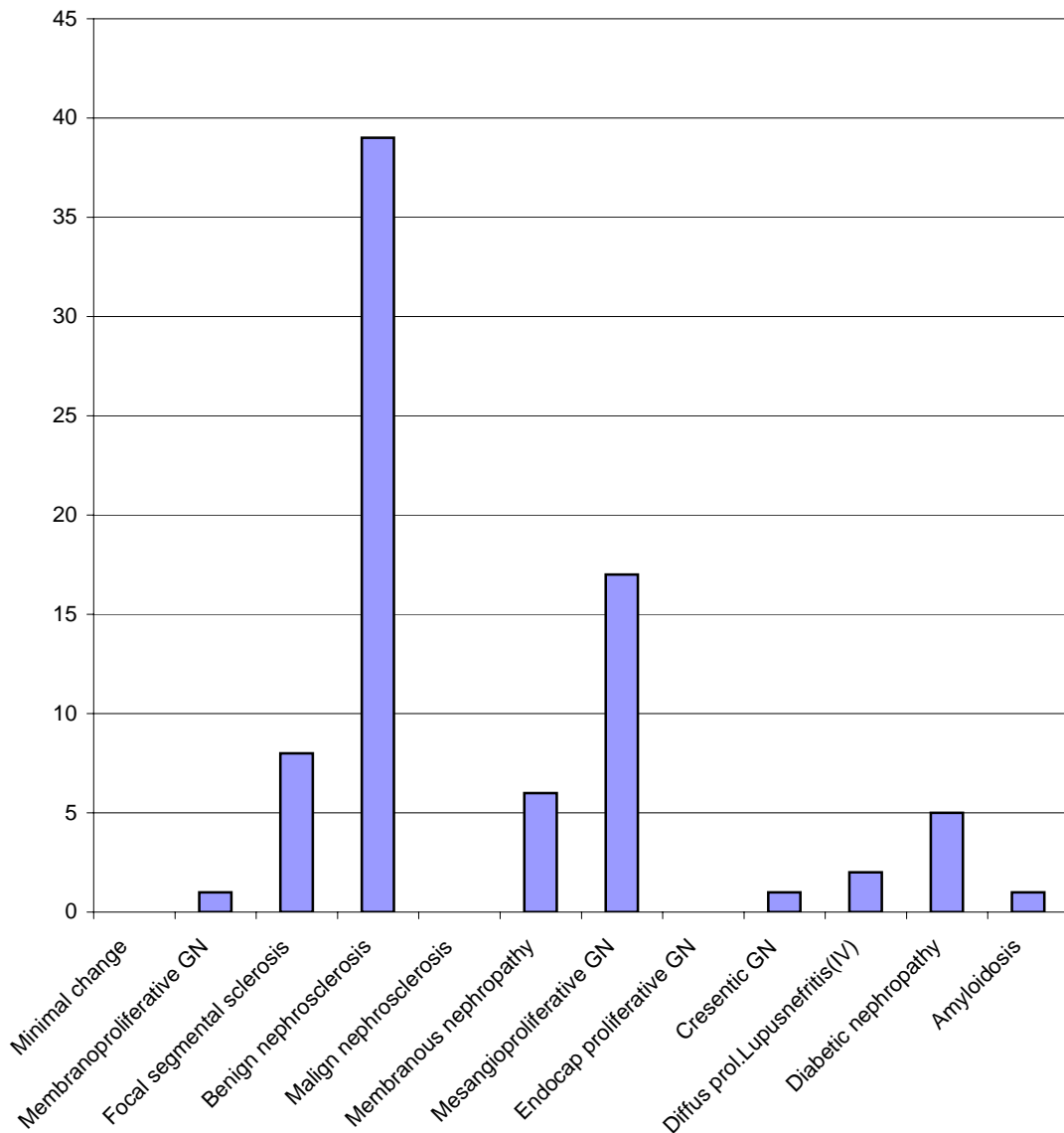
Morphology	Number
Minimal change	4
Membranoproliferative GN	2
Focal segmental sclerosis	8
Benign nephrosclerosis	55
Malign nephrosclerosis	1
Membranous nephropathy	11
Mesangioproliferative GN	59
Endocap proliferative GN	2
Cresentic GN	9
Diffus prol.Lupusnephritis(IV)	6
Diabetic nephropathy	2
Amyloidosis	0

**Morphology in patients with hematuria
and proteinuria <3g/24h, 2006**



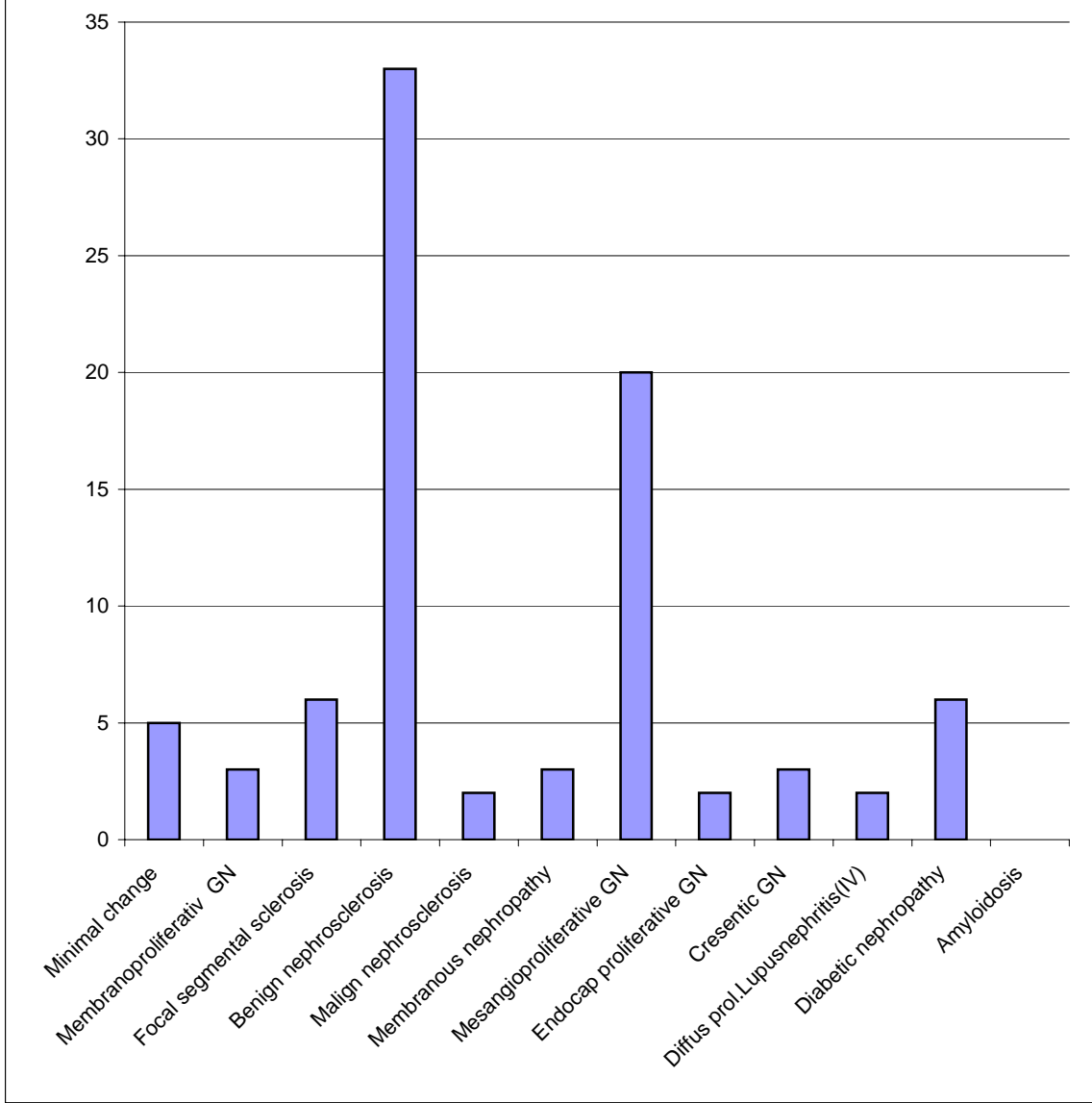
Morphology	Number
Minimal change	0
Membranoproliferative GN	0
Focal segmental sclerosis	0
Benign nephrosclerosis	10
Malign nephrosclerosis	0
Membranous nephropathy	2
Mesangioproliferative GN	8
Endocap proliferative GN	0
Cresentic GN	1
Diffus prol.Lupusnephritis(IV)	1
Diabetic nephropathy	0
Amyloidosis	0

Morphology in patients with chronic renal failure, 2006



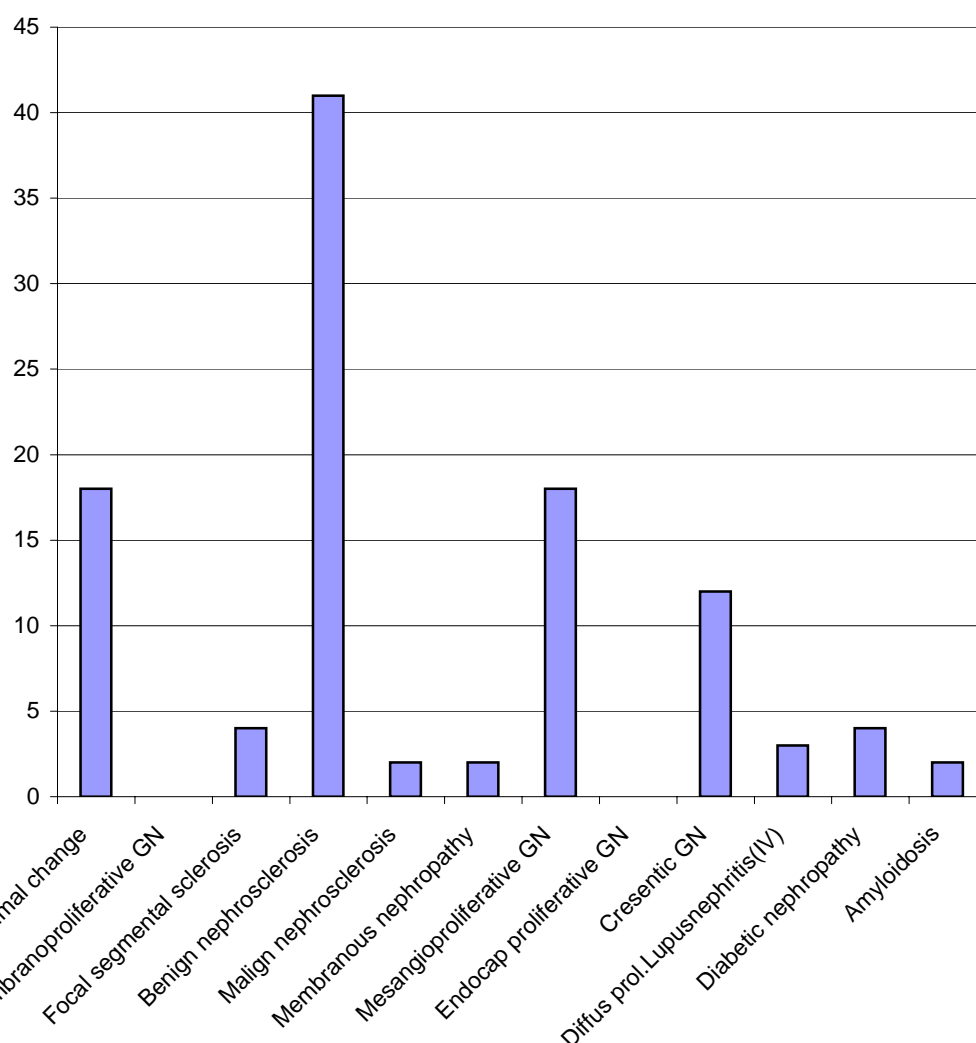
Morphology	Number
Minimal change	0
Membranoproliferative GN	1
Focal segmental sclerosis	8
Benign nephrosclerosis	39
Malign nephrosclerosis	0
Membranous nephropathy	6
Mesangioproliferative GN	17
Endocap proliferative GN	0
Crescentic GN	1
Diffus prol.Lupusnephritis(IV)	2
Diabetic nephropathy	5
Amyloidosis	1

Morphology in patients with hypertension BP >140/90, 2006



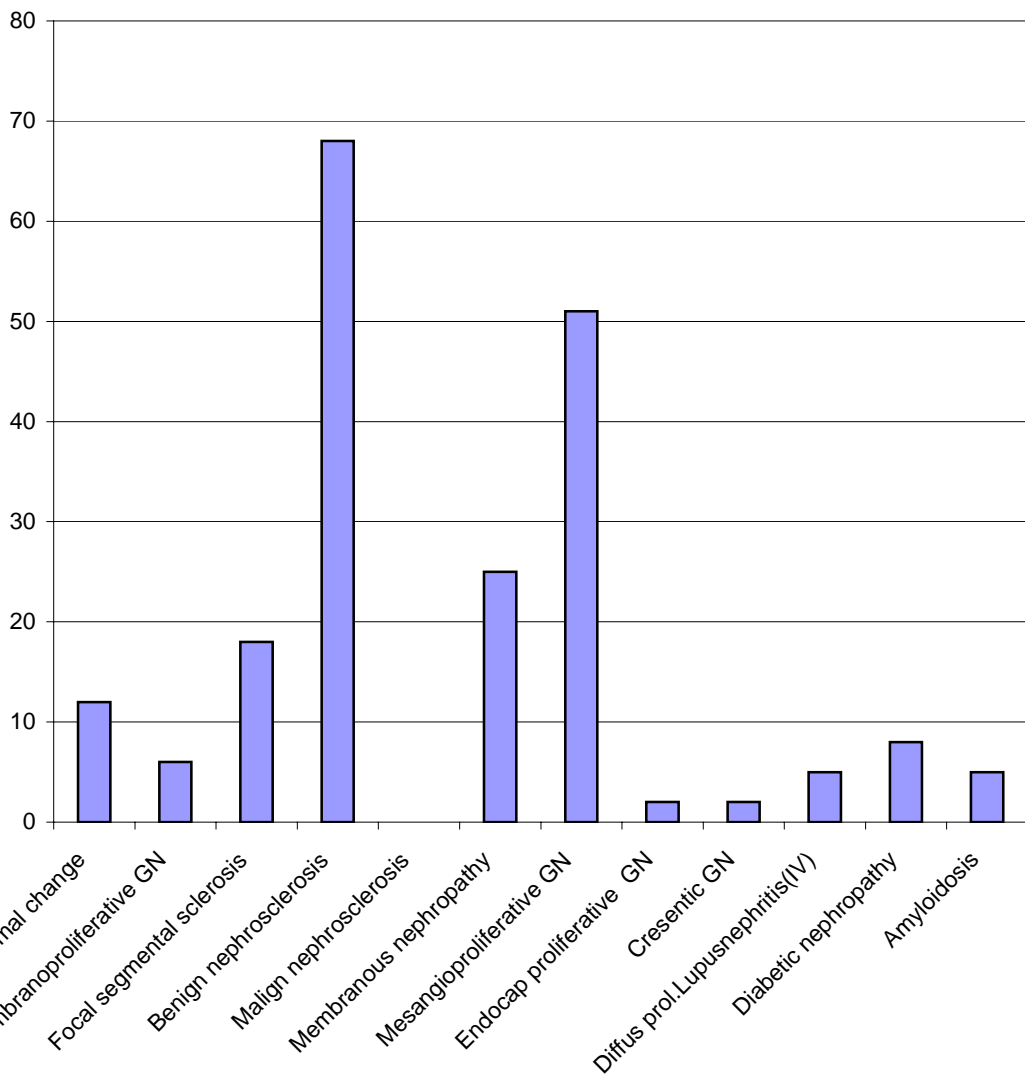
Morphology	Number
Minimal change	5
Membranoproliferativ GN	3
Focal segmental sclerosis	6
Benign nephrosclerosis	33
Malign nephrosclerosis	2
Membranous nephropathy	3
Mesangioproliferative GN	20
Endocap proliferative GN	2
Cresentic GN	3
Diffus prol.Lupusnephritis(IV)	2
Diabetic nephropathy	6
Amyloidosis	0

Morphology in patients with creatinine >200, 2006



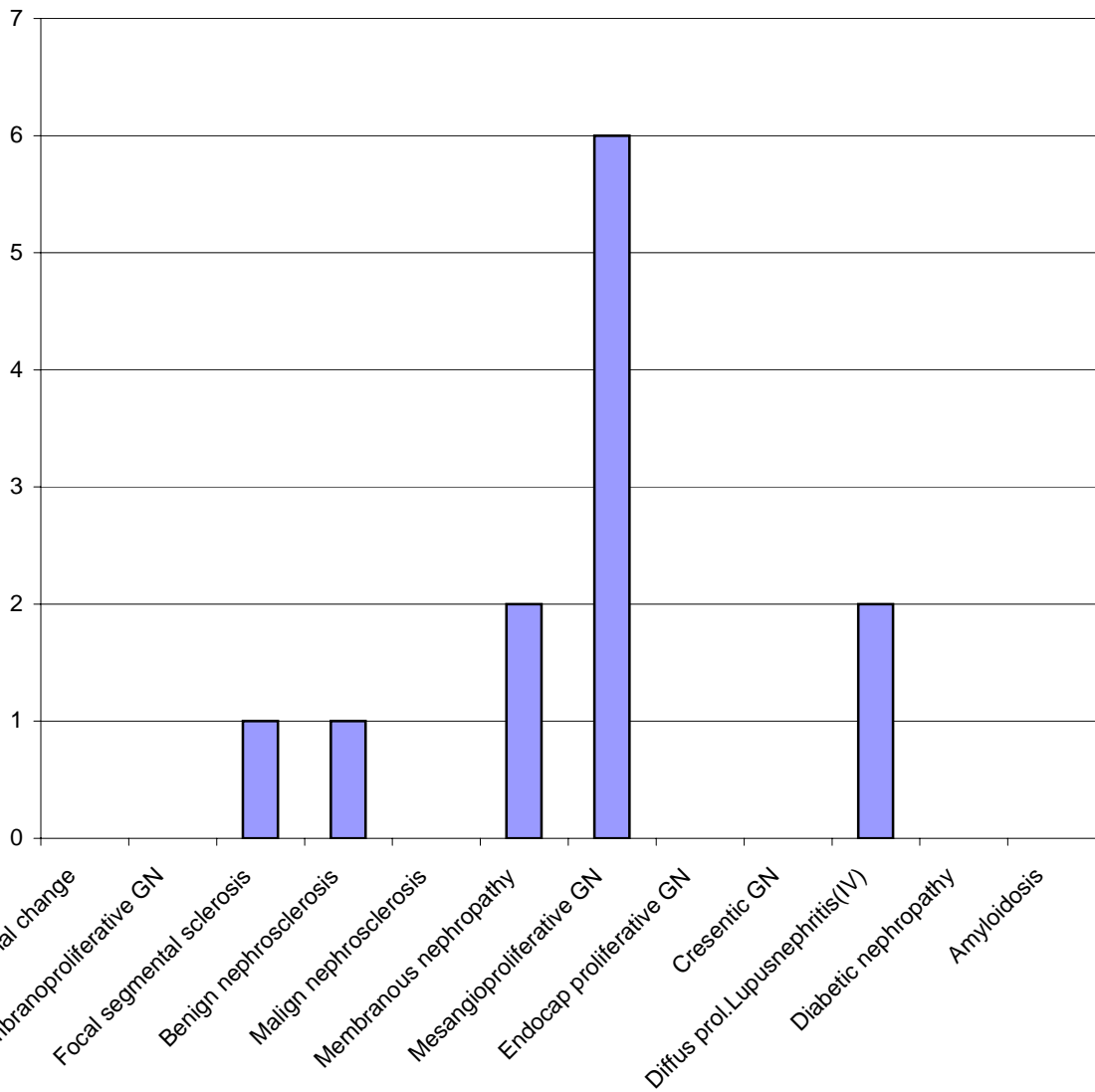
Morphology	Number
Minimal change	18
Membranoproliferative GN	0
Focal segmental sclerosis	4
Benign nephrosclerosis	41
Malign nephrosclerosis	2
Membranous nephropathy	2
Mesangioproliferative GN	18
Endocap proliferative GN	0
Cresentic GN	12
Diffus prol.Lupusnephritis(IV)	3
Diabetic nephropathy	4
Amyloidosis	2

Morphology in patients with creatinine <200, 2006



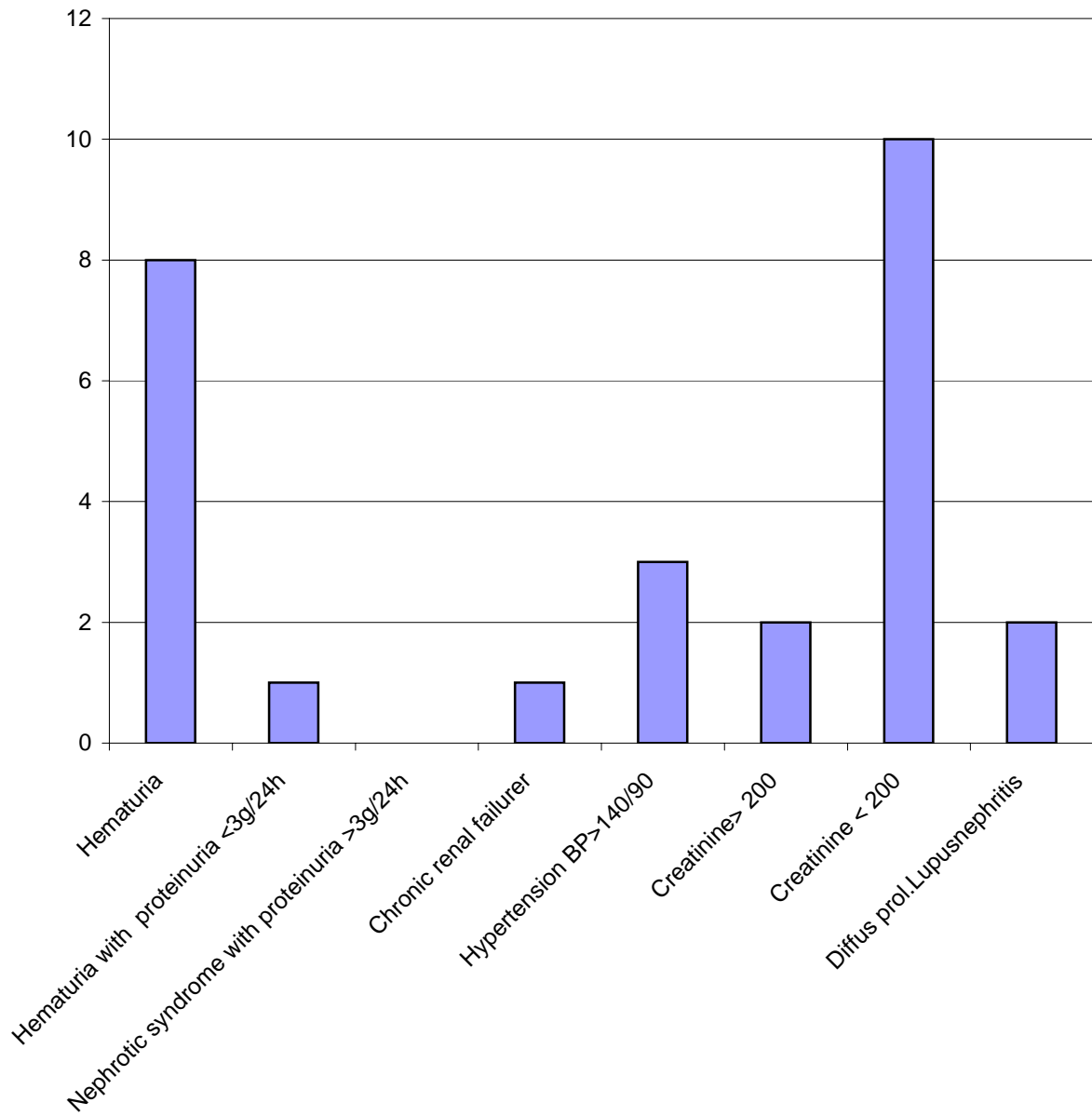
Morphology	Number
Minimal change	12
Membranoproliferative GN	6
Focal segmental sclerosis	18
Benign nephrosclerosis	68
Malign nephrosclerosis	0
Membranous nephropathy	25
Mesangioproliferative GN	51
Endocap proliferative GN	2
Crescentic GN	2
Diffus prol.Lupusnephritis(IV)	5
Diabetic nephropathy	8
Amyloidosis	5

Morphology in patients with SLE, 2006



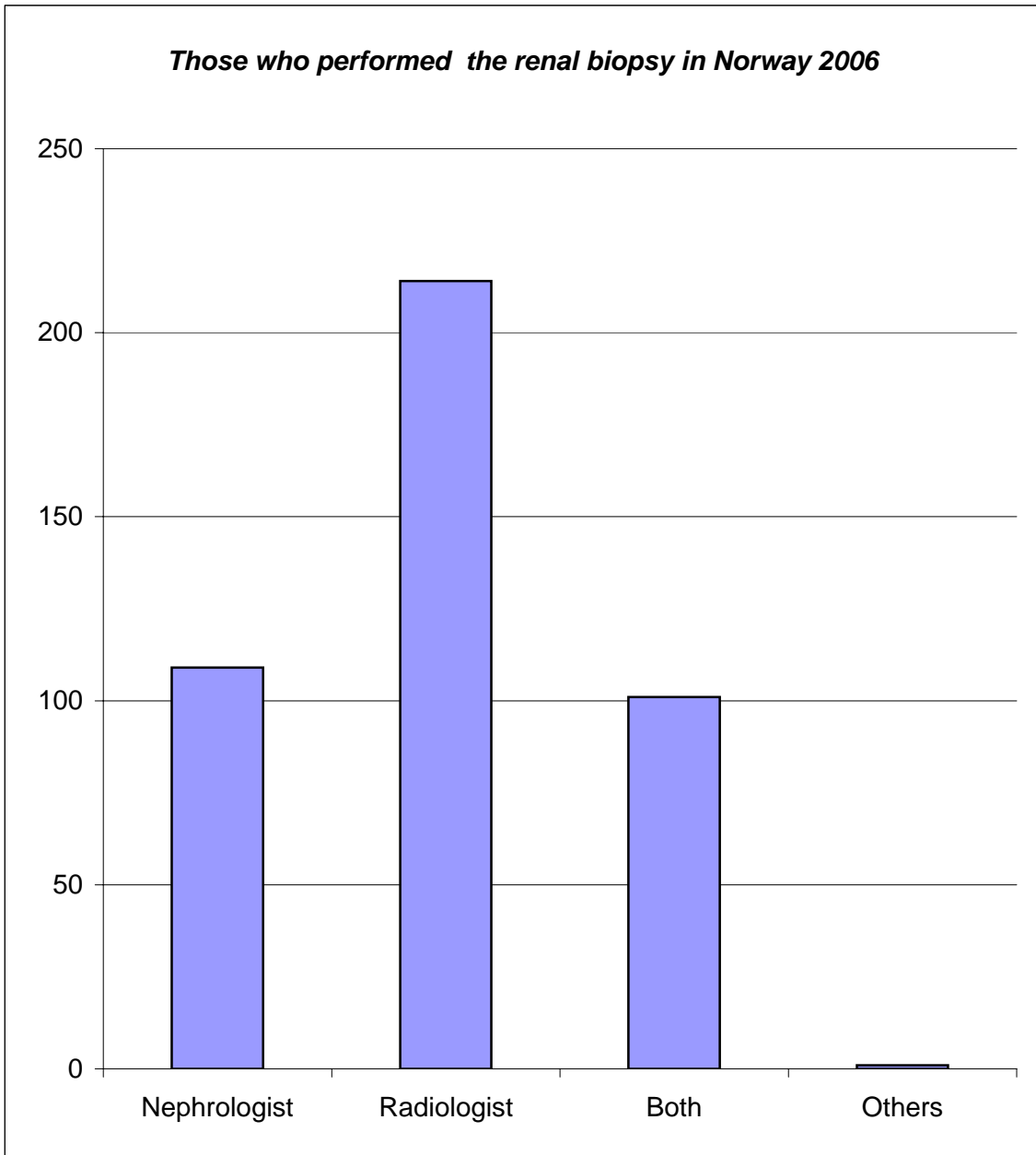
Morphology	Number
Minimal change	0
Membranoproliferative GN	0
Focal segmental sclerosis	1
Benign nephrosclerosis	1
Malign nephrosclerosis	0
Membranous nephropathy	2
Mesangioproliferative GN	6
Endocap proliferative GN	0
Cresentic GN	0
Diffus prol.Lupusnephritis(IV)	2
Diabetic nephropathy	0
Amyloidosis	0

SLE based on clinical form information and on Diffus prol. Lupus nephritis, 2006



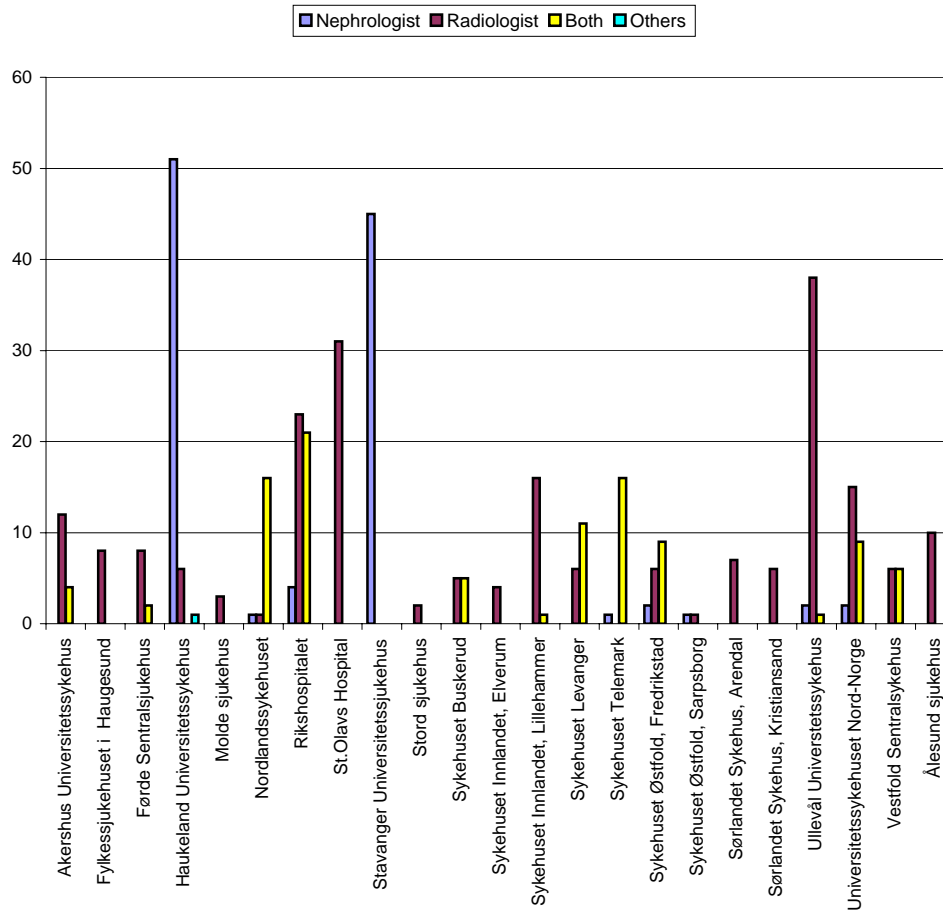
Clinical indication	Number
Hematuria	8
Hematuria with proteinuria <3g/24h	1
Nephrotic syndrome with proteinuria >3g/24h	0
Chronic renal failurer	1
Hypertension BP>140/90	3
Creatinine> 200	2
Creatinine < 200	10
Diffus prol.Lupusnephritis	2

Those who performed the renal biopsy in Norway 2006



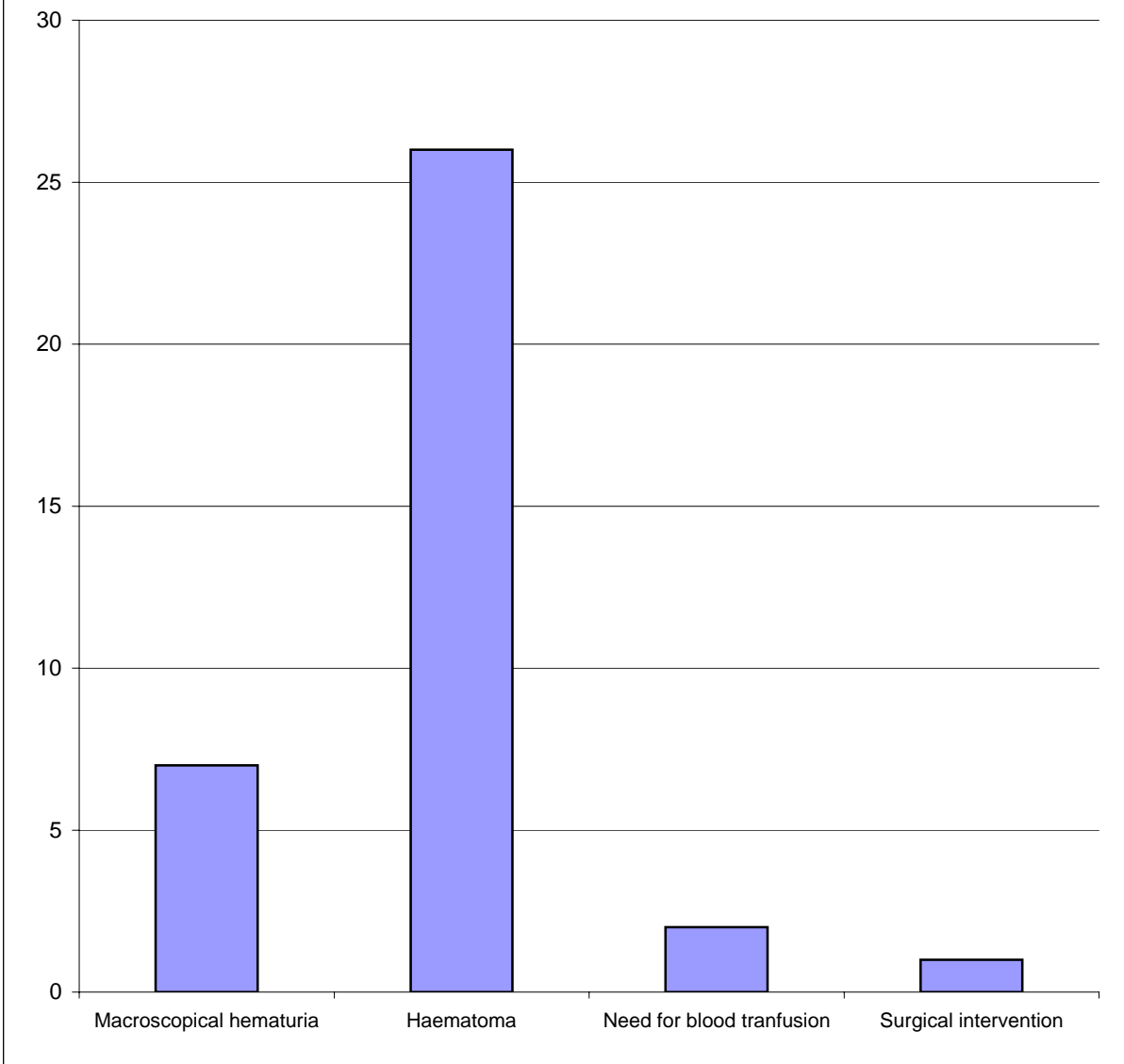
Performed the biopsy	Number
Nephrologist	109
Radiologist	214
Both	101
Others	1

Those who performed the renal biopsy at different hospitals, 2006



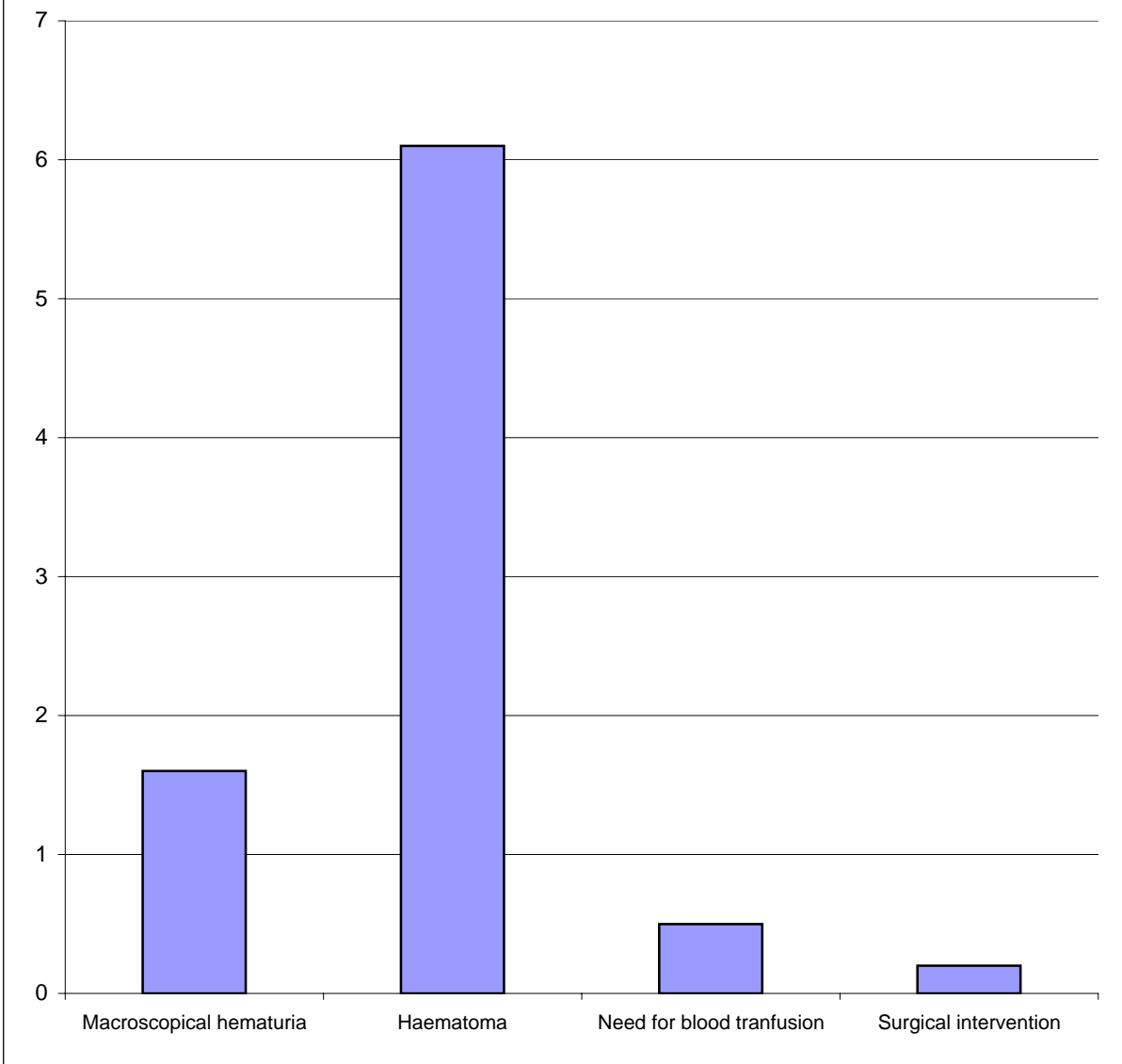
Hospital	Nephrologist	Radiologist	Both	Others
Akershus Universitetssykehus	0	12	4	0
Fylkessjukehuset i Haugesund	0	8	0	0
Førde Sentralsjukehus	0	8	2	0
Haukeland Universitetssykehus	51	6	0	1
Molde sjukehus	0	3	0	0
Nordlandssykehuset	1	1	16	0
Rikshospitalet	4	23	21	0
St.Olavs Hospital	0	31	0	0
Stavanger Universitetssjukehus	45	0	0	0
Stord sjukehus	0	2	0	0
Sykehuset Buskerud	0	5	5	0
Sykehuset Innlandet, Elverum	0	4	0	0
Sykehuset Innlandet, Lillehammer	0	16	1	0
Sykehuset Levanger	0	6	11	0
Sykehuset Telemark	1	0	16	0
Sykehuset Østfold, Fredrikstad	2	6	9	0
Sykehuset Østfold, Sarpsborg	1	1	0	0
Sørlandet Sykehus, Arendal	0	7	0	0
Sørlandet Sykehus, Kristiansand	0	6	0	0
Ullevål Universtetssykehus	2	38	1	0
Universitetssykehuset Nord-Norge	2	15	9	0
Vestfold Sentralsykehus	0	6	6	0
Ålesund sjukehus	0	10	0	0
Toaltal	109	214	101	1

Complications to renal biopsies, 2006



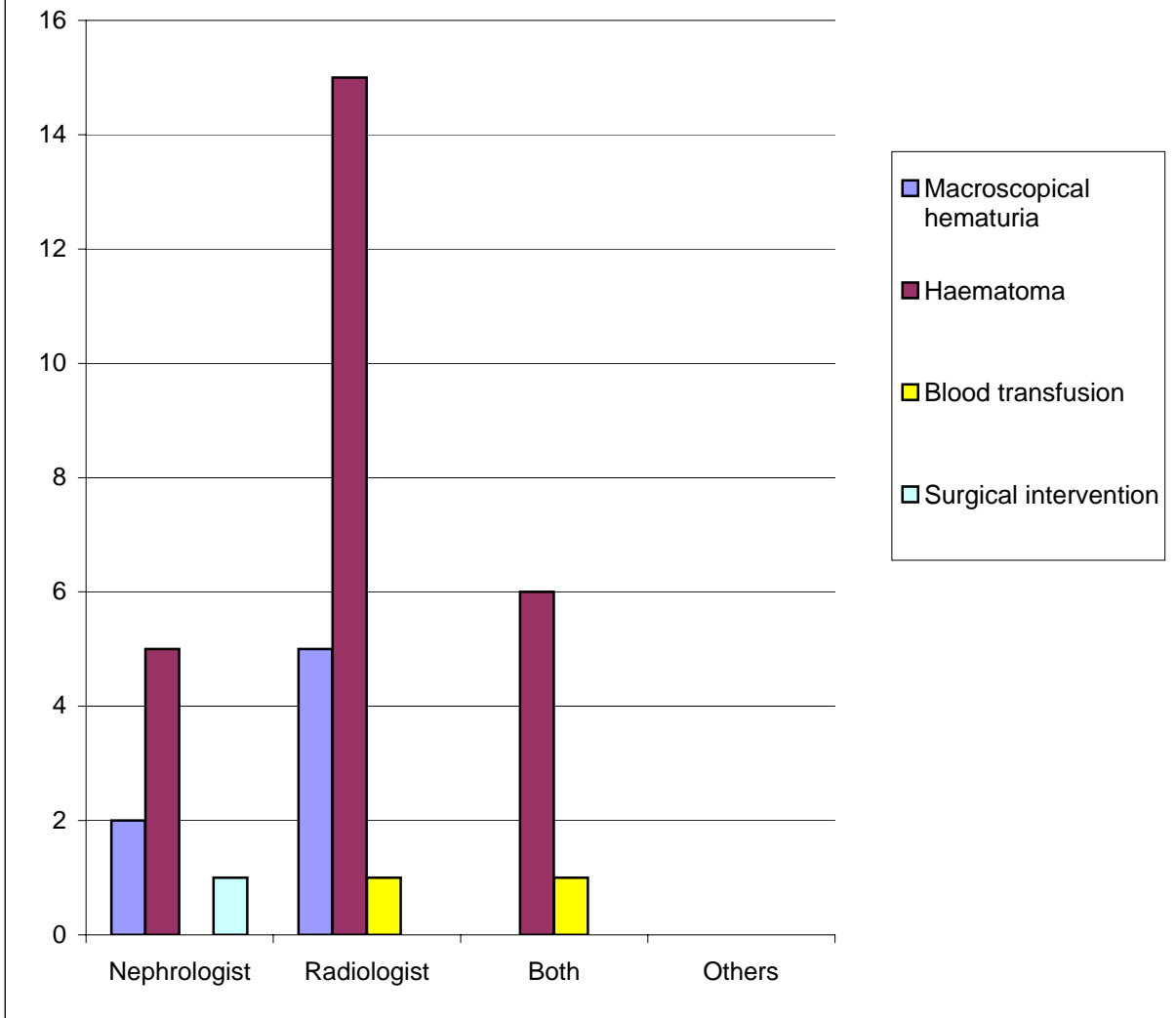
Macroscopical hematuria	7
Haematoma	26
Need for blood tranfusion	2
Surgical intervention	1

Complication to renal biopsies (%), 2006



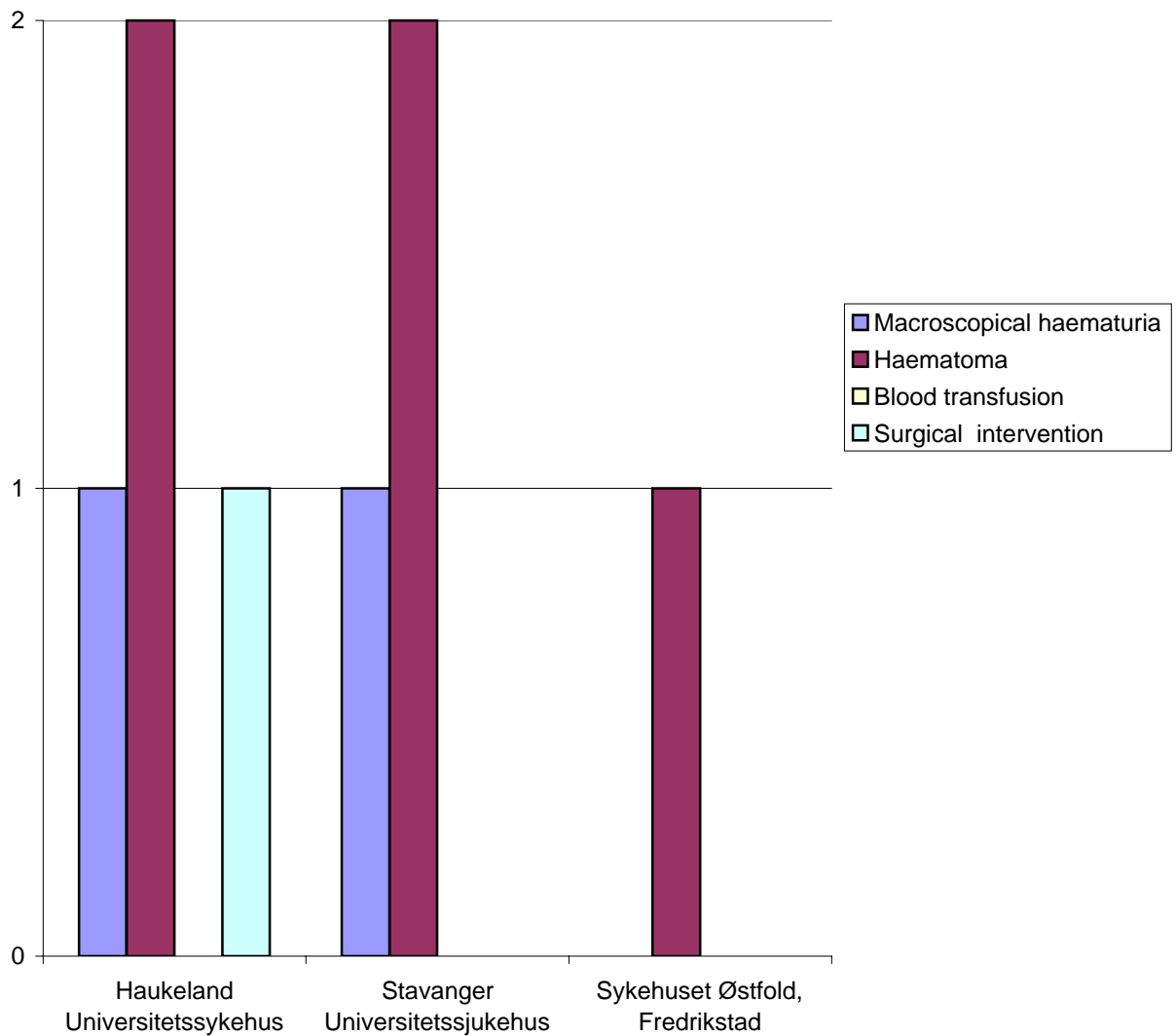
Macroscopical hematuria	1.6
Haematoma	6.1
Need for blood tranfusion	0.5
Surgical intervention	0.2

Complications to renal biopsies and who performed it, 2006



Complications	Nephrologist	Radiologist	Both	Others
Macroscopical hematuria	2	5	0	0
Haematoma	5	15	6	0
Blood transfusion	0	1	1	0
Surgical intervention	1	0	0	0

Complications to renal biopsy performed by nephrologist, 2006



Hospital	Macroscopical haematuria	Haematoma	Blood transfusion	Surgical intervention
Haukeland Universitetssykehus	1	2	0	1
Stavanger Universitetssjukehus	1	2	0	0
Sykehuset Østfold, Fredrikstad	0	1	0	0
Total	2	5	0	1