

# The Danish Political- Ecological Data Archive

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Presentation at Statistics Denmark, 20 March 2014

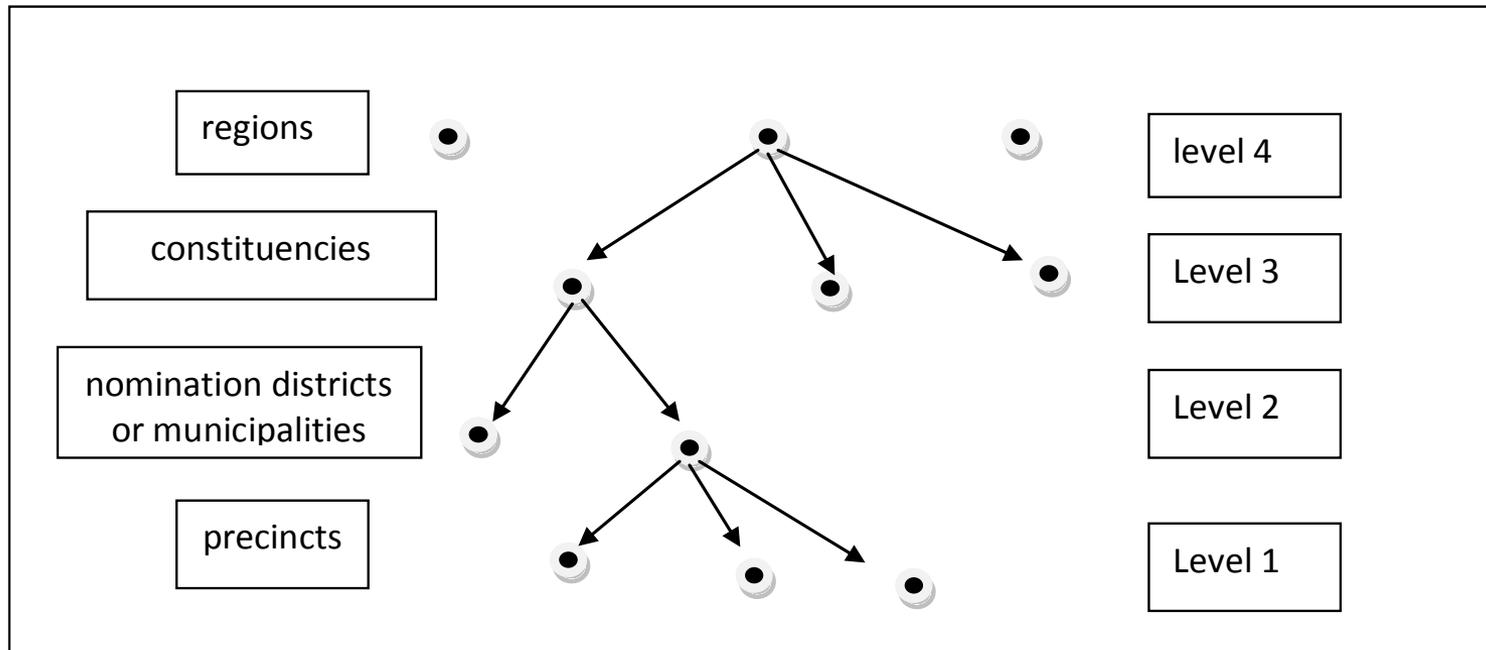
# Content

- The database
  - Algorithm for construction of constant units
- The program
  - Downloading data
- Applications
  - Maps
  - Graphs
  - Statistical analysis

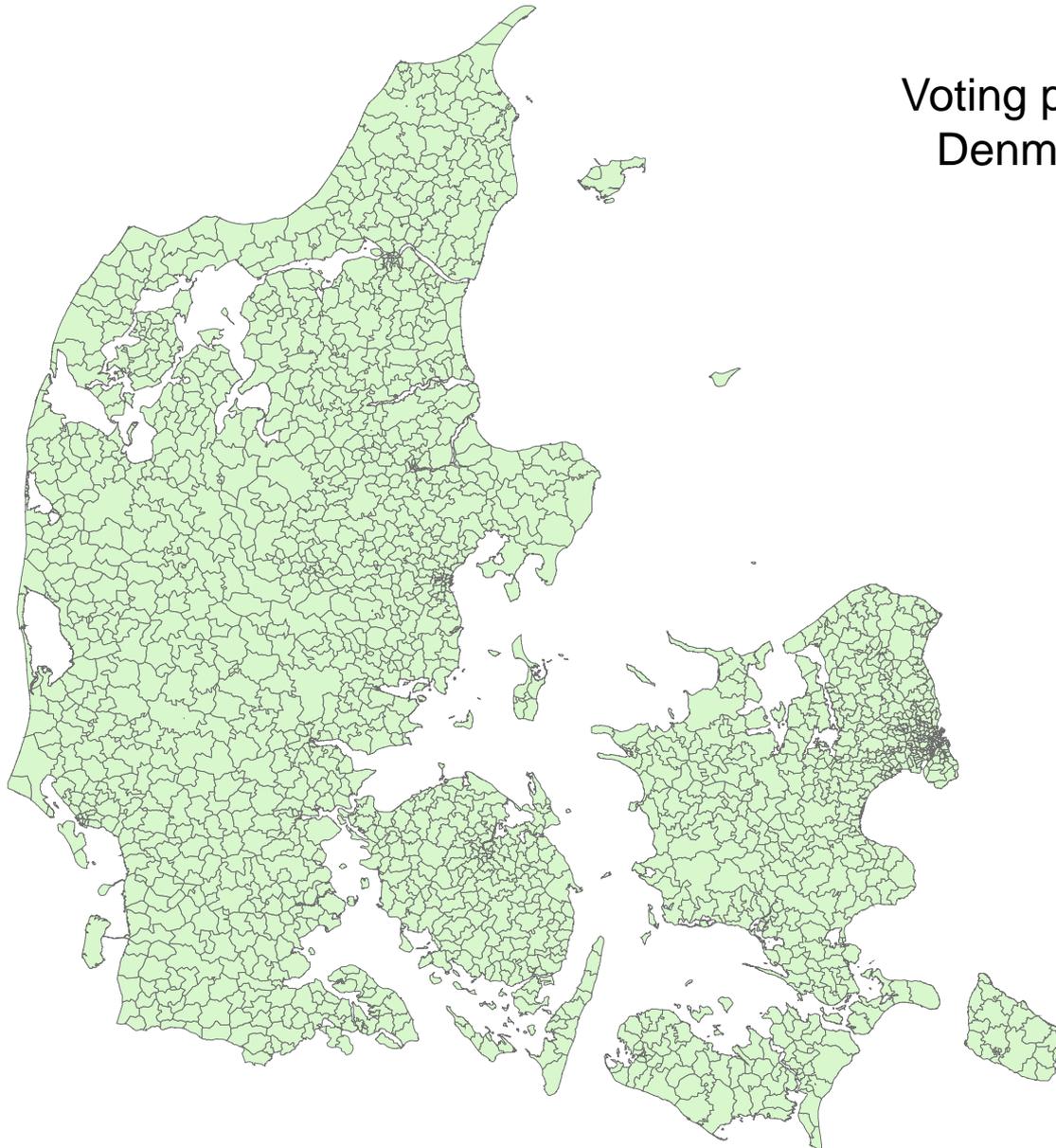
# The database - content

- Data from about 1,800 voting precincts
  - 1979: 1,945 units, 2011: 1,450 units
- All kinds of elections 1979-2013
  - Turnout, party votes
  - Candidates and personal votes from 2001
  - Local election only on municipalities bef. 2001
- Social statistics every 5th year since 1980
  - genderxage, industryoccup., education, income, immigrants, housing, cars.

## The database – hierarchical structure



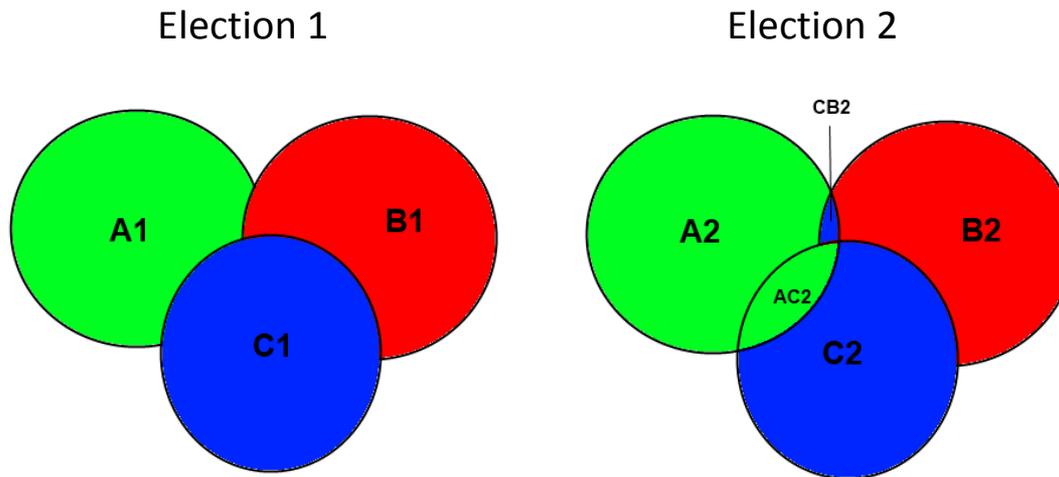
Voting precincts in  
Denmark 1994



# Purpose of database

- Main purpose: Dynamic analysis
- Main problem: Change of area-boundaries
- Solution: Construction of constant units over time
- Method: Define precincts by groups of road-segments (about 240,000 segments)
- Assumption: Each precinct is homogenous across road-segments (Wrong assumption – but!)
- Algorithm: Construct statistics for the same units at election 1 as valid at election 2 (Election 2 is "reference election")
  - Maximum divergence = 0: Exact same units over time by aggregation of reference units (homogeneity assumption not necessary)
  - Maximum divergence = 1: Construction of same units at election 1 as at election 2 (without aggregation of reference units)
  - Maximum divergence =  $t$  ( $0 < t < 1$ ). Tolerate  $t$  divergence from exact same units

## Over-time comparison of election areas based on road segments

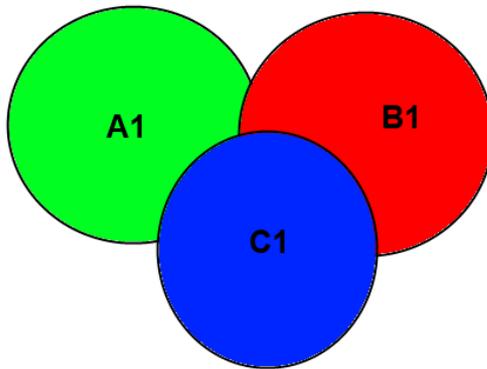


Between election 1 and election 2 the following has happened:

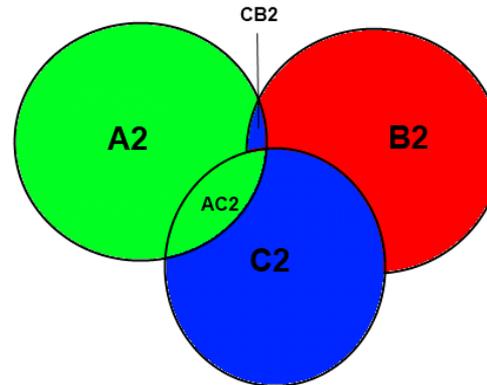
- Green= $A1 + AC2$
- Red= $B1 - CB2$
- Blue= $C1 - AC2 + CB2$

Number of voters in road segments within sub-areas

Election 1



Election 2

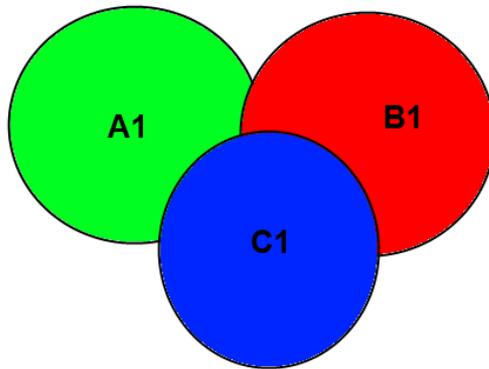


Number of voters in road segments within sub-areas

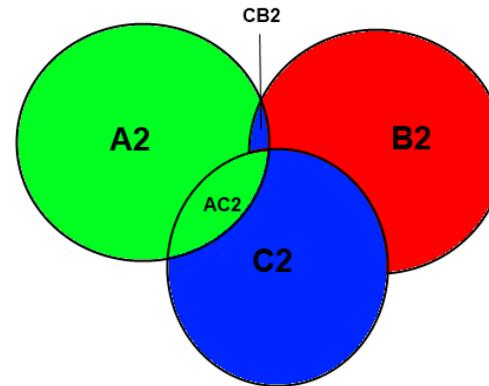
Sub-area	Eligible voters in road segments
A2	200
B2	140
C2	150
AC2	30
CB2	10

## Transformation quotients

Election 1



Election 2



- $q_{AC2} = AC2/C1 = 30/180 = 1/6$
- $q_{CB2} = CB2/B1 = 10/150 = 1/15$
- $q_{A2} = A2/A1 = 200/200 = 1$
- $q_{B2} = B2/B1 = 140/150 = 14/15$
- $q_{C2} = C2/C1 = 150/180 = 5/6$

Transformation of results at election 1 to election 2 units

Results at election 1

Area	Eligible voters	Party "X"	Party "Y"	Party "Z"
Green	200	100	60	40
Red	150	80	20	50
Blue	180	90	40	50

Results at election 2

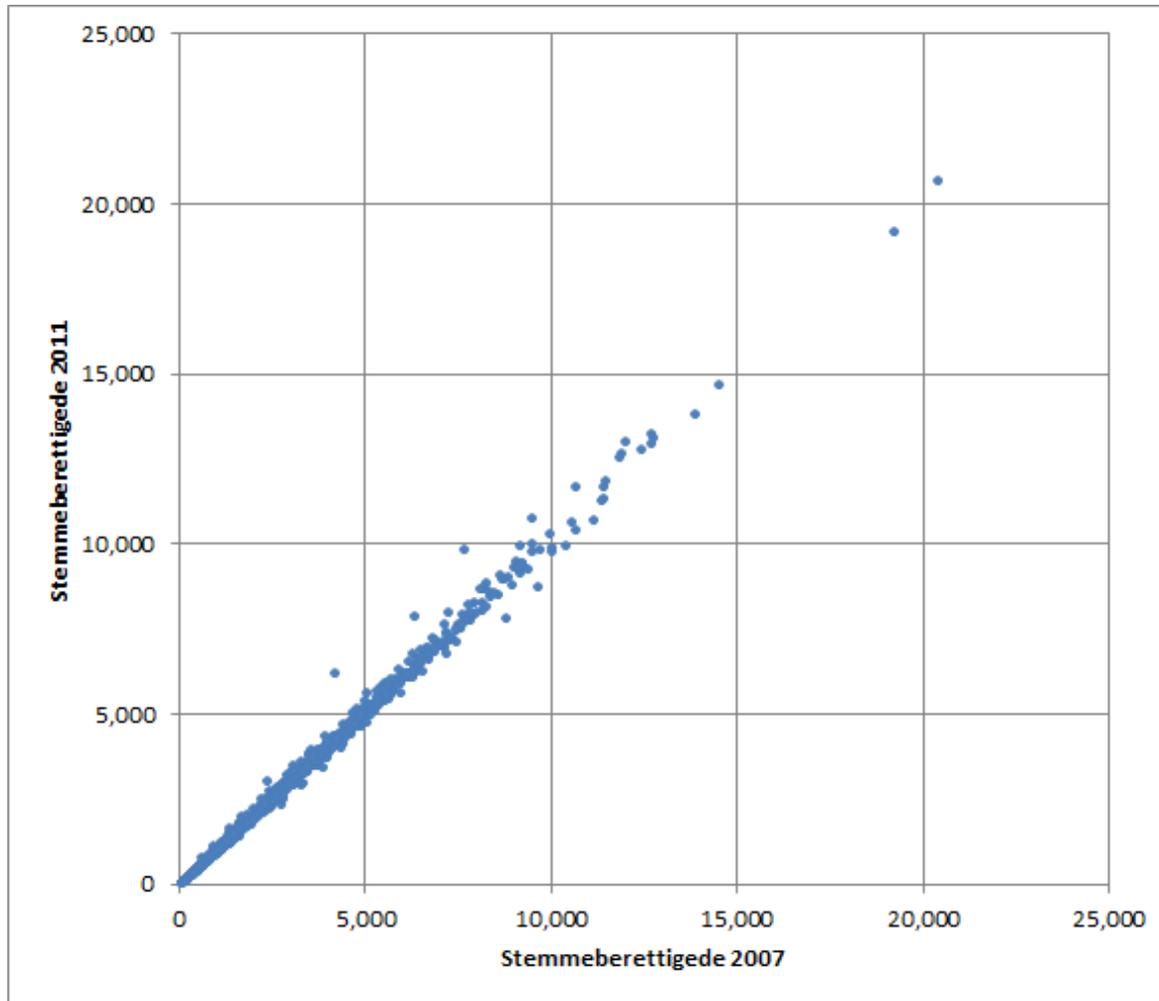
Area	Eligible voters	Party "X"	Party "Y"	Party "Z"
Green	230	110	80	40
Red	140	80	20	40
Blue	160	90	30	40

Results at election 1 transformed to election 2 units

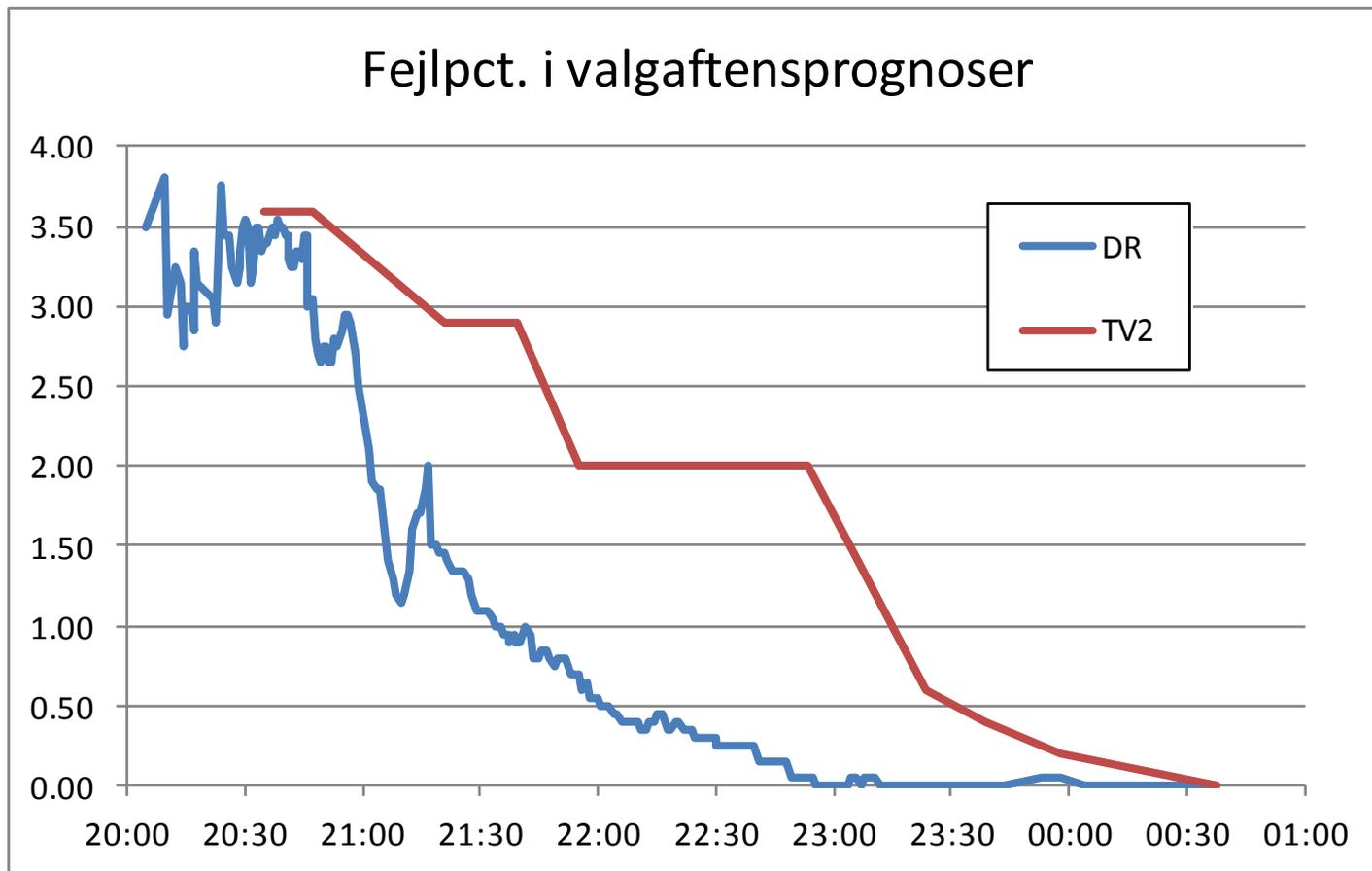
Area	Eligible voters	Party "X"	Party "Y"	Party "Z"
Green	230	115	66,67	48,33
Red	140	74,67	18,67	46,67
Blue	160	80,33	34,67	45

- Green =  $qA2 \cdot A1 + qAC2 \cdot C1 = A1 + C1/6$
- Red =  $qB2 \cdot B1 = B1 \cdot 14/15$
- Blue =  $qCB2 \cdot B1 + qC2 \cdot C1 = B1/15 + C1 \cdot 5/6$

Maximum Divergence = 1 (Reference: 2011)



Figur 19. Fejlprocenter ved valgaftensprognoser i 2011 i forhold til det endelige valgresultat



Den mere vellykkede DR-prognose brugte fremskrivning fra 2007 til 2011 på valgsteder

Browser address bar: <http://ps.au.dk/en/research/rese:> Electiondata

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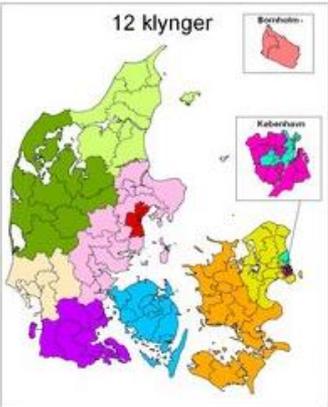
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## POLITICAL-ECOLOGICAL DATA ARCHIVE (UNDER CONSTRUCTION)

**Links**

[Online election database](#)

12 klynger



PEDA Presentation

The Political-Ecological Data Archive (PEDA) is a database with Danish election results and population data on voting precinct level (about 1,800 geographical

Browser address bar: <http://ps.au.dk/forskning/forsker> Valgdata

AARHUS UNIVERSITET Forskning Talentudvikling Videnukveksling Uddannelse Om AU FOR MEDARBEJDERE & STUDERENDE

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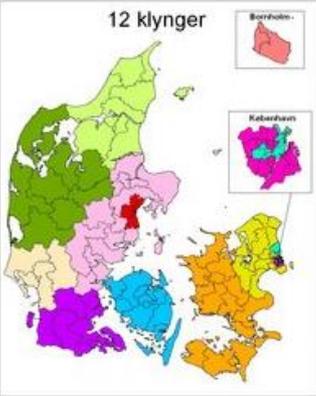
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## POLITISK-ØKOLOGISK DATAARKIV (UNDER OPBYGNING)

Links

[Online valgdatabase](#)

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PEDA Præsentation

Det politisk-økologiske data arkiv (PEDA) er en database med danske valgresultater og data om vælgerbefolkningen opgjort på afstemningsområder (ca. 1.800 geografiske enheder) som man kan arbejde on-line med i en web-browser. Databasen er udviklet på Institut for Statskundskab, Aarhus Universitet. Adgangen til valodata er fri. Der er kun fri adgang til befolkningsdata til

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## ONLINE VALGDATABASE

**OBS! - VÆR OPMÆRKSOM PÅ AT DATABASEN PÅ DE FØLGENDE LINKS FUNGERER LANGSOMT**

Det skyldes at databasen konstruerer valgsteder, der er sammenlignelige over tid, med mange beregninger på små vejstrømper, som er identiske over tid.

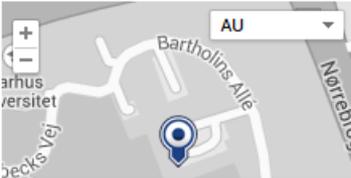
[Adgang til online database med valg](#)

[Adgang til online database med valg og befolkningsdata \(kræver kodeord\)](#)

HENVENDELSE OM DENNE SIDES INDHOLD: [SØREN RISBJERG THOMSEN](#)  
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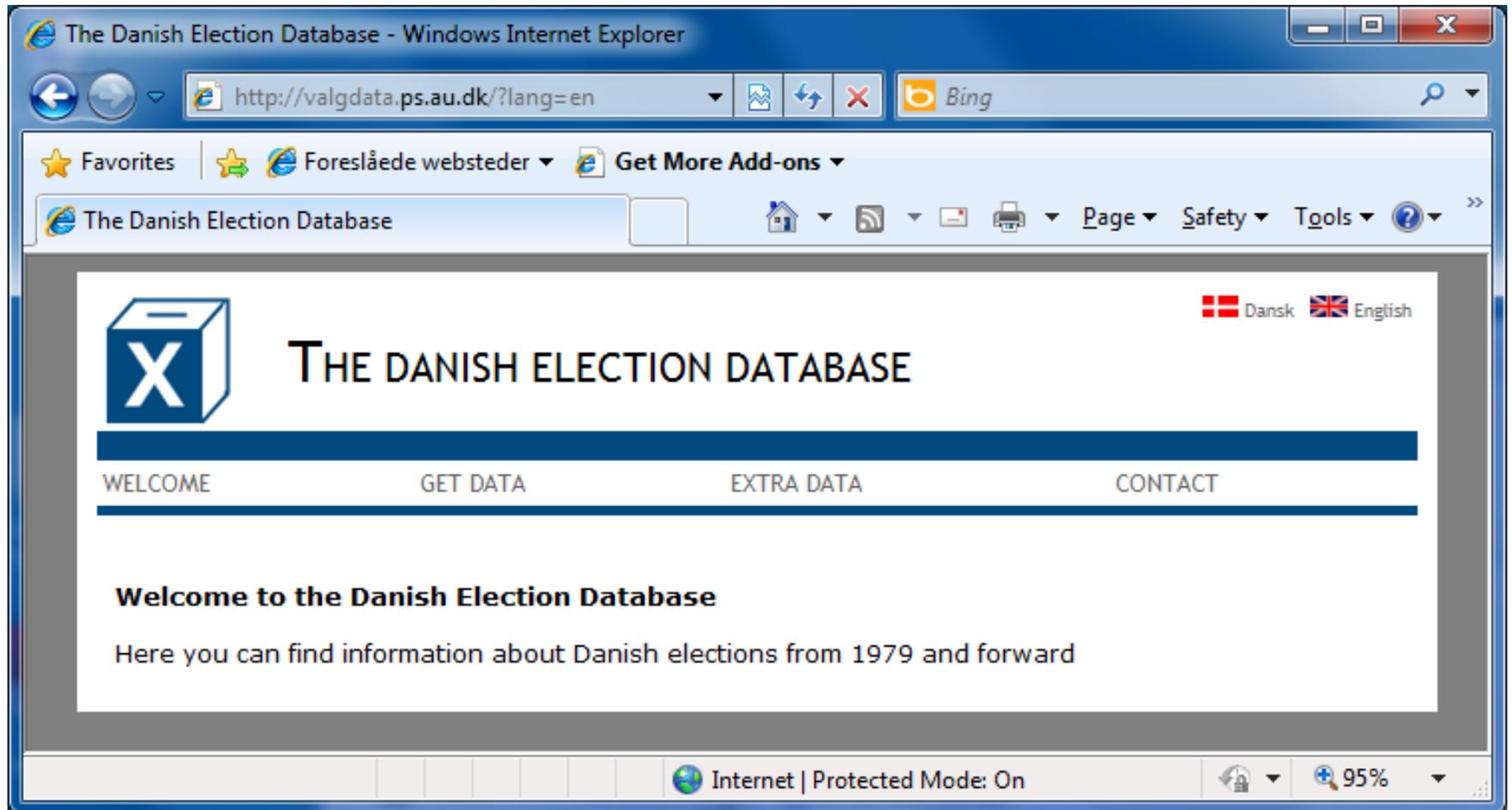
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Bartholins Allé 7  
8000 Aarhus C

E-mail: [statskundskab@au.dk](mailto:statskundskab@au.dk)  
Tlf.: 871 50000  
Fax: 8613 9839

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http://valgdata.ps.au.dk/Guide\_1.aspx

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The Danish Election Database



# THE DANISH ELECTION DATABASE

WELCOME      GET DATA      EXTRA DATA      CONTACT

**Select downloadable data type**

- Single election
- Multiple elections (comparative over time)

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# THE DANISH ELECTION DATABASE

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### Choose more elections

Election Type:  
National Election

Reference election:  
FV, 20071113

Election:

- FV, 20071113
- FV, 20050208
- FV, 20011120
- FV, 19980311
- FV, 19940921
- FV, 19901212
- FV, 19880510
- FV, 19870908
- FV, 19840110

Maximal divergence  
1

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WELCOME      GET DATA      EXTRA DATA      CONTACT

## Select variables

Parties:

Eligible voters

Total votes

Blank votes

Other invalid votes

Valid votes

A. Socialdemokratiet

B. Det Radikale Venstre

C. Det Konservative Folkeparti

D. Centrum-Demokraterne

F. SF - Socialistisk Folkeparti

K. Kristendemokraterne

O. Dansk Folkeparti

M. Minoritetspartiet

V. Venstre, Danmarks Liberale Pa

Y. Ny Alliance

Ø. Enhedslisten - De Rød-Grønne

1. Uden for partierne

2. Uden for partierne

3. Uden for partierne

4. Uden for partierne

5. Uden for partierne

>

>>

Group>

<

<<

Use short variable names

Get personal votes

Get mandates

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## Select variables

Parties:

1. Uden for partierne  
 2. Uden for partierne  
 3. Uden for partierne  
 4. Uden for partierne  
 5. Uden for partierne

>  
>>  
Group>  
<  
<<

Eligible voters  
 Total votes  
 Blank votes  
 Other invalid votes  
 Valid votes  
 A. Socialdemokratiet  
 B. Det Radikale Venstre  
 C. Det Konservative Folkeparti  
 F. SF - Socialistisk Folkeparti  
 D. Centrum-Demokraterne  
 K. Kristendemokraterne  
 O. Dansk Folkeparti  
 V. Venstre, Danmarks Liberale Pa  
 M. Minoritetspartiet  
 Y. Ny Alliance  
 Ø. Enhedslisten - De Rød-Grønne

Use short variable names  
 Get personal votes  
 Get mandates

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# THE DANISH ELECTION DATABASE

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## Select geographic level

Geographic level:

- Nominating Districts
- Voting Stations
- Nominating Districts**
- Constituencies
- Municipalities

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# THE DANISH ELECTION DATABASE

[WELCOME](#)

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## Summary

**Data Type:** Multiple elections (comparative over time)

**Select data:** *Election:*  
FV, 20071113  
FV, 20050208

*Reference election:*  
FV, 20071113

*Maximal divergence:*  
1

**Units:** *Variables:*  
Eligible voters  
Total votes  
Blank votes  
Other invalid votes  
Valid votes  
A. Socialdemokratiet  
B. Det Radikale Venstre  
C. Det Konservative Folkeparti  
F. SF - Socialistisk Folkeparti  
D. Centrum-Demokraterne  
K. Kristendemokraterne  
O. Dansk Folkeparti  
M. Minoritetspartiet  
V. Venstre, Danmarks Liberale Parti  
Y. Ny Alliance  
Ø. Enhedslisten - De Rød-Grønne  
1,2,3,4,5

*Get personal votes:*  
Yes

**Geographic level:** Nominating Districts

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## Get data

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-  [Election data - personal votes](#)
-  [Election Master Data](#)
-  [Party Master Data](#)
-  [Candidates Master Data](#)
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# Election data – National Election 2007

Election\_data[1].csv - Microsoft Excel

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	A	B	C	D	E	F	G	H	I	J	K	L	M
1	ElectionId	Group	Nominati	Constitut	Region Nu	Eligible vc	Total vote	Blank vote	Other inv	Valid vote	A. Social	B. Det Rac	C. Det
94	198	101005	1	1	1	50809	44214	154	98	43962	10408	4645	5
95	198	101009	2	1	1	38343	31657	132	95	31430	7889	2721	2
96	198	101013	3	1	1	37037	30981	99	60	30822	5912	3620	3
97	198	101016	4	1	1	36279	30234	115	105	30014	7859	2350	2
98	198	101022	5	1	1	50012	41886	192	198	41496	9420	4570	2
99	198	101029	6	1	1	33772	26936	116	82	26738	7207	2020	2
100	198	101036	7	1	1	53338	45362	179	118	45065	12213	3188	3
101	198	101042	8	1	1	33149	27562	147	108	27307	7437	1945	2
102	198	101052	9	1	1	37252	31531	124	103	31304	7350	3232	2
103	198	147001	10	1	1	35733	31790	121	67	31602	6471	3452	5
104	198	147006	11	1	1	35025	30324	119	101	30104	6635	2691	4
105	198	153006	18	2	1	45752	39173	179	174	38820	12135	1434	3
106	198	155002	12	1	1	39168	34373	141	89	34143	9102	1424	3
107	198	157002	13	2	1	48563	43671	123	90	43458	5938	3477	12
108	198	159001	15	2	1	44784	39149	173	67	38909	10780	2622	4
109	198	161005	20	2	1	49372	43374	203	114	43057	14933	1659	4
110	198	167007	17	2	1	35591	30590	133	55	30402	9371	1282	2
111	198	169003	19	2	1	50651	43548	237	123	43188	12838	1883	4
112	198	173001	14	2	1	37573	33595	124	92	33379	6782	2976	6
113	198	175005	16	2	1	45860	39559	189	68	39302	13044	1742	3

Election\_data(1)

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# Data – National Election (NE) 2005 by 2007 nomination districts

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	A	B	C	D	E	F	G	H	I	J	K	L	M
1	ElectionId	Group	Nominati	Constitue	Region Nu	Eligible vc	Total vote	Blank vote	Other inv	Valid vote	A. Social	B. Det Rac	C. Det
2	197	101005	1	1	1	54614.09	45140.07	212.04	135.43	44792.6	9191.14	9086.44	4762
3	197	101009	2	1	1	34285.55	26804	155.98	98.99	26549.03	7498.47	3815.73	1687
4	197	101013	3	1	1	36912.93	29914.48	131.84	74.83	29707.82	5474.79	6634.89	3188
5	197	101016	4	1	1	36802	29213	187	84	28942	7770	4204	1
6	197	101022	5	1	1	49743.87	40323.8	220.15	156.76	39946.89	8499.44	9134.78	2684
7	197	101029	6	1	1	33804.08	25784.37	151.83	90.46	25542.08	6938.07	3869.07	181
8	197	101036	7	1	1	54032.37	44421.91	274.72	143.13	44004.06	11493.09	6109.35	3608
9	197	101042	8	1	1	34465.47	27597.83	186.43	78.4	27333	7436.54	3990.12	2235
10	197	101052	9	1	1	37202.64	30044.54	177.01	89.01	29778.52	7084.47	6642.63	1895
11	197	147001	10	1	1	33998	28944	158	102	28684	5729	5180	5
12	197	147006	11	1	1	37638	32036	167	97	31772	6237	6200	5
13	197	153006	18	2	1	46433	38748	186	121	38441	11802	2782	3
14	197	155002	12	1	1	39182	33463	172	67	33224	8979	2328	3
15	197	157002	13	2	1	49573	43434	145	86	43203	5106	5639	11
16	197	159001	15	2	1	44908	38317	235	86	37996	10079	4335	3
17	197	161005	20	2	1	49584	42786	220	110	42456	13951	2897	3
18	197	167007	17	2	1	36166	30180	172	73	29935	9138	2419	2
19	197	169003	19	2	1	50679	42696	194	118	42384	12270	3388	3
20	197	173001	14	2	1	38194	33398	146	96	33156	6130	4538	6
21	197	175005	16	2	1	46504	38998	196	102	38700	12877	3100	3

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# Personal votes NE 2007 by party

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A1 Valgd

	A	B	C	D	E	F	G	H	I	J	K	L	
1	Valgd	Gruppe	KredsNr	StorKreds	Landsdels	Personlige	A - person	B - person	C - person	D - person	F - person	K - person	M
94	198	101005	1	1	1	21805	7886	1780	2575	-	3249	125	-
95	198	101009	2	1	1	14376	5122	1005	1233	-	2419	78	-
96	198	101013	3	1	1	15197	4286	1384	2104	-	2567	70	-
97	198	101016	4	1	1	13641	5060	850	1075	-	2351	100	-
98	198	101022	5	1	1	18931	6068	1595	1255	-	4012	86	-
99	198	101029	6	1	1	12215	4599	658	931	-	2059	102	-
100	198	101036	7	1	1	21741	7917	1328	1909	-	3289	148	-
101	198	101042	8	1	1	12496	4622	743	1131	-	2227	63	-
102	198	101052	9	1	1	14360	4836	1180	944	-	3072	67	-
103	198	147001	10	1	1	16650	4568	1509	3354	-	2327	77	-
104	198	147005	11	1	1	15362	4452	1102	3043	-	2116	105	-
105	198	155001	12	1	1	16880	6370	567	1991	-	1658	79	-
106	198	157001	13	2	1	20182	3088	1079	8524	-	1054	37	-
107	198	173001	14	2	1	15995	3717	945	4361	-	1300	48	-
108	198	159001	15	2	1	15745	5494	871	2614	-	1728	52	-
109	198	163001	16	2	1	16084	7564	546	2141	-	1727	148	-
110	198	167001	17	2	1	12193	4618	468	1366	-	1373	40	-
111	198	187001	18	2	1	17015	6370	554	2428	-	2141	51	-
112	198	165001	19	2	1	17689	6519	853	2655	-	2255	68	-
113	198	151002	20	2	1	20112	10040	503	2522	-	1596	70	-

Valgdata\_-\_personlige\_stemmer

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# Personal votes NE 2007 by candidate

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Workbook Views Window Macros

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	L	M	N	O	P	Q	R	S	T	U	V	W	X
1	K - total p	M - total p	O - total p	V - total p	Y - total p	Ø - total p	UP - total	A-01	A-02	A-03	A-04	A-05	A-06
94	125	-	1390	2027	1114	1639	20	80	267	9	65	21	
95	78	-	1394	1249	717	1146	13	76	421	608	52	16	
96	70	-	741	1471	973	1590	11	57	553	36	31	8	
97	100	-	1371	1244	637	930	23	88	397	302	65	22	
98	86	-	1112	934	844	3004	21	182	321	27	148	217	
99	102	-	1432	793	458	1174	9	93	212	29	469	23	
100	148	-	2885	1781	915	1560	9	535	587	42	125	30	
101	63	-	1319	944	539	897	11	75	224	20	43	11	
102	67	-	933	793	681	1850	4	87	220	20	57	20	
103	77	-	1185	1599	975	1042	14	68	350	14	31	12	
104	105	-	1430	1439	837	830	8	91	332	17	33	13	
105	51	-	1828	2918	273	440	12	2026	202	48	2898	31	1
106	79	-	2783	2430	627	363	12	35	266	141	33	6	
107	37	-	922	4371	584	523	0	95	73	12	1772	21	
108	52	-	1474	2433	351	726	2	348	127	23	3083	1049	
109	70	-	2255	2431	249	441	5	140	99	25	9165	13	
110	40	-	1810	1706	255	551	6	177	118	1366	2222	26	
111	68	-	1777	2652	281	623	6	259	174	34	3388	17	2
112	48	-	972	3809	379	458	6	152	68	10	1994	12	
113	148	-	1491	1777	200	488	2	156	4228	30	2555	17	

Election\_data\_-\_personal\_votes( 100%

# NE 2007 candidate information

Candidates\_Master\_Data[1].csv - Microsoft Excel

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Workbook Views Window Macros

E1059 Mette Frederiksen

	A	B	C	D	E	F	G	H	I	J
1	ElectionId	Constitutue	Party	Order	Candidate Name	Zip	City	Occupation	Birthday	
949	198	1 A		1	Yildiz Akdogan	2200	København	cand.scient.pol.	19730429	
950	198	1 A		2	Christine Antorini	1254	København	cand.comm.	19650523	
951	198	1 A		3	Jette Bergenholtz Bautrup	2300	København	socialrådgiver	19470415	
952	198	1 A		4	Jacob Bjerregaard	2400	København	forbundsformand DSU	19770614	
953	198	1 A		5	Lars Gaardhøj	2100	København	projektleder, konsuler	19740501	
954	198	1 A		6	Susan Hedlund	2450	København	afdelingsleder	19620707	
955	198	1 A		7	Karen Hækkerup	2791	Dragør	bach.scient.pol.	19740612	
956	198	1 A		8	Mette Reissmann	2100	København	cand.merc.jur.	19631004	
957	198	1 A		9	Bo Sandberg	2100	København	økonom, cand.polit.	19690616	
958	198	1 A		10	Helle Thorning-Schmidt	2100	København	cand.scient.pol.	19661214	
959	198	1 A		11	Michael Vindfeldt	2000	Frederikst	studerende	19811222	
960	198	1 A		12	Lars Weiss	2300	København	konsulent	19710530	
961	198	1 B		1	Christian Holm Donatzky	3000	Helsingør	selvstændig	19730520	
962	198	1 B		2	Lone Dybkjær	2000	Frederikst	fhv. minister	19400523	
963	198	1 B		3	Charlotte Fischer	2100	København	kommunikationschef	19630703	
964	198	1 B		4	Laura Friberg	1430	København	politisk konsulent	19750302	
965	198	1 B		5	Per Svejstrup Hansen	2200	København	lektor	19700804	
966	198	1 B		6	Rune Heiberg Hansen	2770	Kastrup	specialkonsulent	19760525	
967	198	1 B		7	Dorthe Kjerulf-Thomasen	2720	Vanløse	områdechef	19701111	
968	198	1 B		8	Johannes Lebech	7500	Holstebro	fhv. minister	19480912	

Candidates\_Master\_Data(1)

Ready 100%

# Codes and names of geographical units

Geographic\_Master\_Data[1].csv - Microsoft Excel

Clipboard | Font | Alignment | Number | Styles | Cells | Editing

A1 Voting Station Id

	A	B	C	D	E	F	G	H	I	J	K	L
1	Voting Sta	Kommune	Nominati	Constitue	Region Nu	Voting Statio	Municipal	Nominati	Constitue	Region Na	Voting Sta	Voting Statio
2	101001	101	1	1	1	Østerbro	København	1. Østerbr	København	Hovedstac	20070101	99991231
3	101002	101	1	1	1	Østerbro Nor	København	1. Østerbr	København	Hovedstac	20070101	99991231
4	101003	101	1	1	1	Østerbro Syd	København	1. Østerbr	København	Hovedstac	20070101	99991231
5	101004	101	1	1	1	Østerbro Øst	København	1. Østerbr	København	Hovedstac	20070101	99991231
6	101005	101	1	1	1	Østerbro Ves	København	1. Østerbr	København	Hovedstac	20070101	99991231
7	101006	101	1	1	1	Østerbro Nor	København	1. Østerbr	København	Hovedstac	20070101	99991231
8	101007	101	2	1	1	Sundbyveste	København	2. Sundby	København	Hovedstac	20070101	99991231
9	101008	101	2	1	1	Sundbyveste	København	2. Sundby	København	Hovedstac	20070101	99991231
10	101009	101	2	1	1	Sundbyveste	København	2. Sundby	København	Hovedstac	20070101	99991231
11	101010	101	2	1	1	Sundbyveste	København	2. Sundby	København	Hovedstac	20070101	99991231
12	101011	101	3	1	1	Indre By	København	3. Indre By	København	Hovedstac	20070101	99991231
13	101012	101	3	1	1	Indre By Nor	København	3. Indre By	København	Hovedstac	20070101	99991231
14	101013	101	3	1	1	Indre By Syd	København	3. Indre By	København	Hovedstac	20070101	99991231
15	101014	101	3	1	1	Indre By Øst	København	3. Indre By	København	Hovedstac	20070101	99991231
16	101015	101	3	1	1	Indre By Ves	København	3. Indre By	København	Hovedstac	20070101	99991231
17	101016	101	4	1	1	Sundbyøster	København	4. Sundby	København	Hovedstac	20070101	99991231
18	101017	101	4	1	1	Sundbyøster	København	4. Sundby	København	Hovedstac	20070101	99991231
19	101018	101	4	1	1	Sundbyøster	København	4. Sundby	København	Hovedstac	20070101	99991231
20	101019	101	4	1	1	Sundbyøster	København	4. Sundby	København	Hovedstac	20070101	99991231
21	101020	101	5	1	1	Nørrebro	København	5. Nørrebr	København	Hovedstac	20070101	99991231

Ready | 100%

# Seats NE 2007, by constituency

Mandates[1].csv - Microsoft Excel

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Clipboard Font Alignment Number Styles Cells Editing

A1 ElectionId

	A	B	C	D	E	F	G	H	I	J	K	L	M	
1	ElectionId	Constitu	A. Social	A. Social	A. Social	B. Det Rac	B. Det Rac	B. Det Rac	C. Det Kor	C. Det Kor	C. Det Kor	F. SF - Soc	F. SF - Soc	F. S
2	198	Københav	4	0	4	1	0	1	1	1	2	4	0	
3	198	Københav	4	0	4	0	1	1	1	1	2	2	0	
4	198	Nordsjæll	2	1	3	1	0	1	1	1	2	1	1	
5	198	Bornholm	1	0	1	0	0	0	0	0	0	0	0	
6	198	Sjællands	6	1	7	0	1	1	2	0	2	3	0	
7	198	Fyns Stork	4	0	4	0	1	1	1	1	2	2	0	
8	198	Syddjyllanc	5	0	5	0	1	1	1	1	2	2	1	
9	198	Østjylland	6	1	7	1	0	1	1	1	2	2	1	
10	198	Vestjyllan	4	0	4	0	1	1	1	0	1	1	1	
11	198	Nordjyllar	5	1	6	0	1	1	2	1	3	2	0	
12	198	Total	41	4	45	3	6	9	11	7	18	19	4	
13														
14														
15														
16														
17														

Mandates(1) Ready 100%

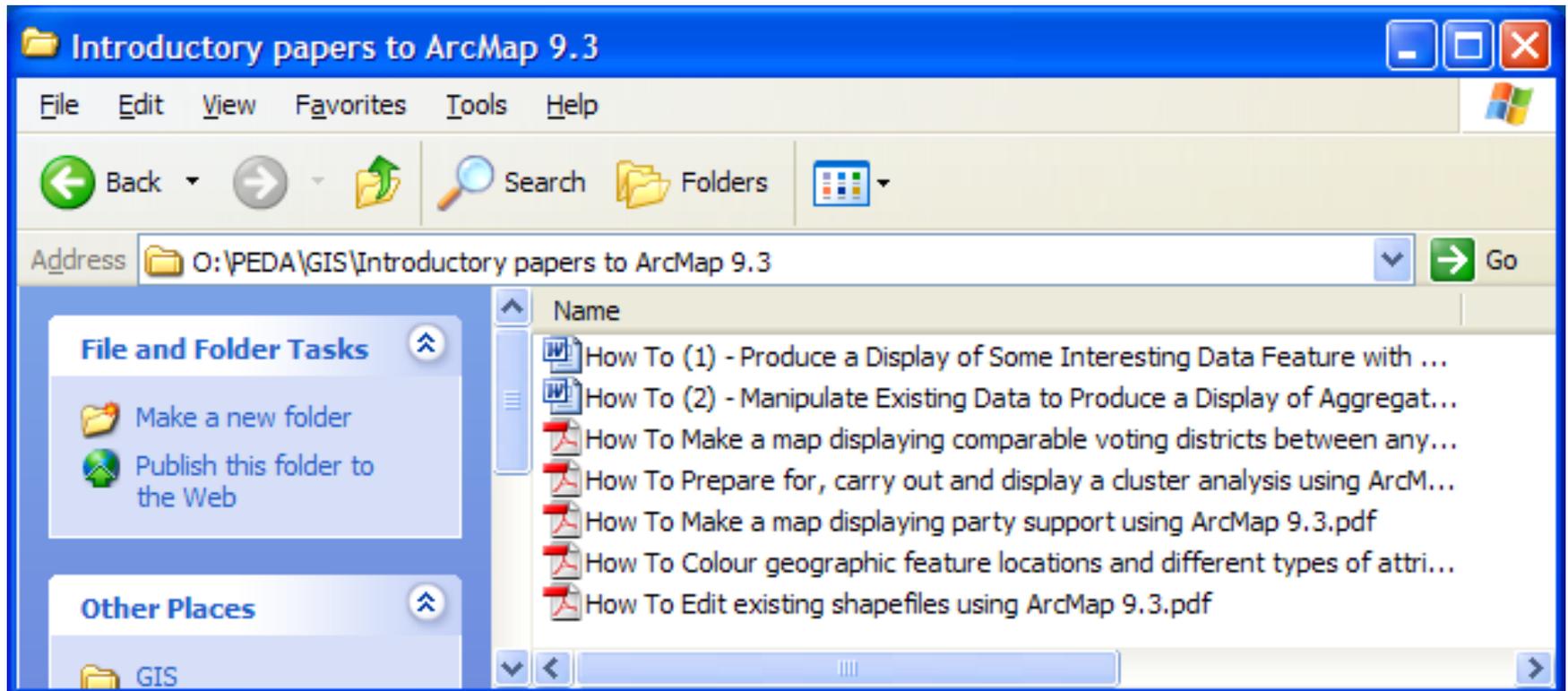


# Applications

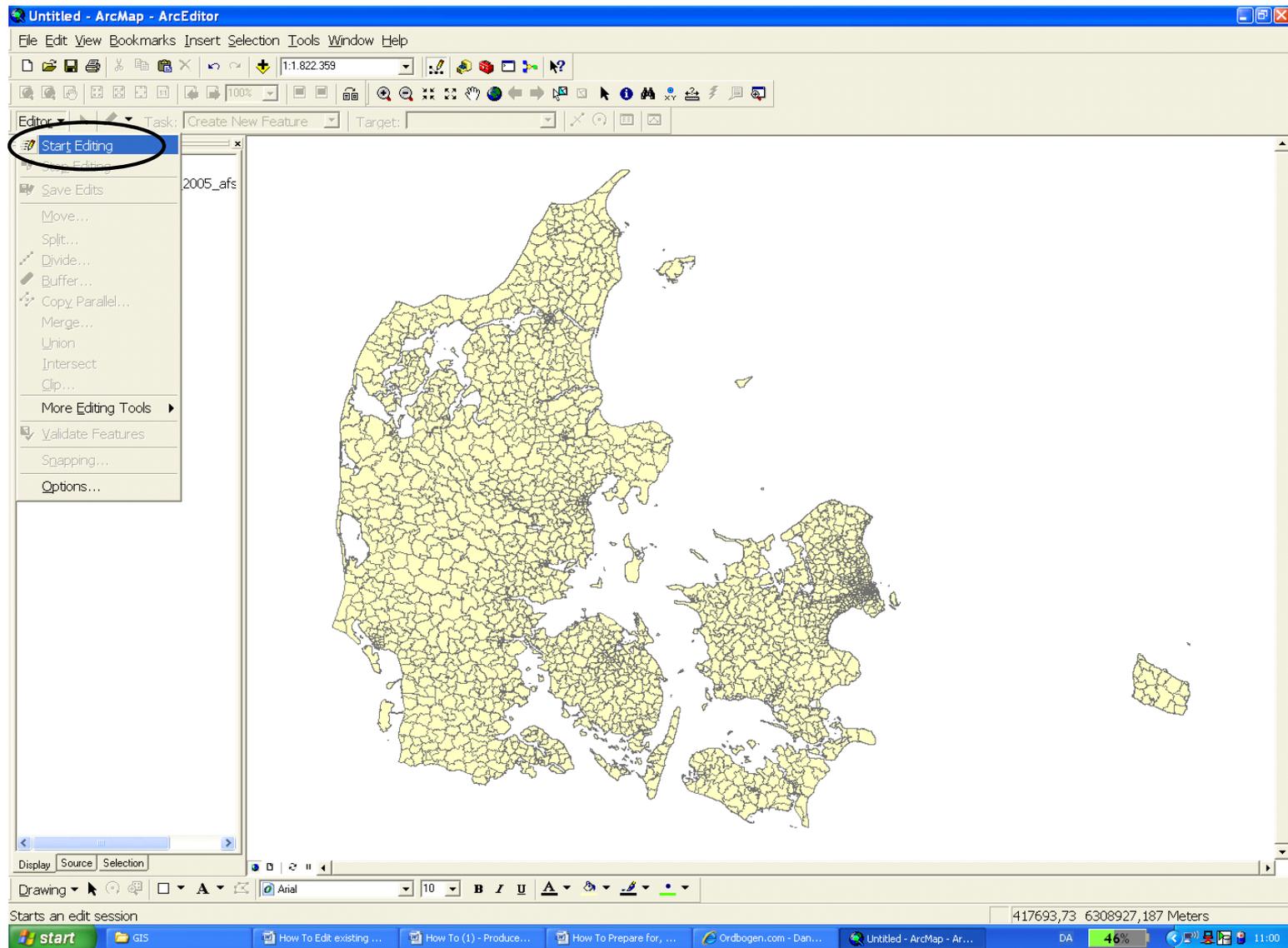
- Map visualization
- Analysis with graphs
- Statistical analysis
- Ecological inference

# Tools for maps

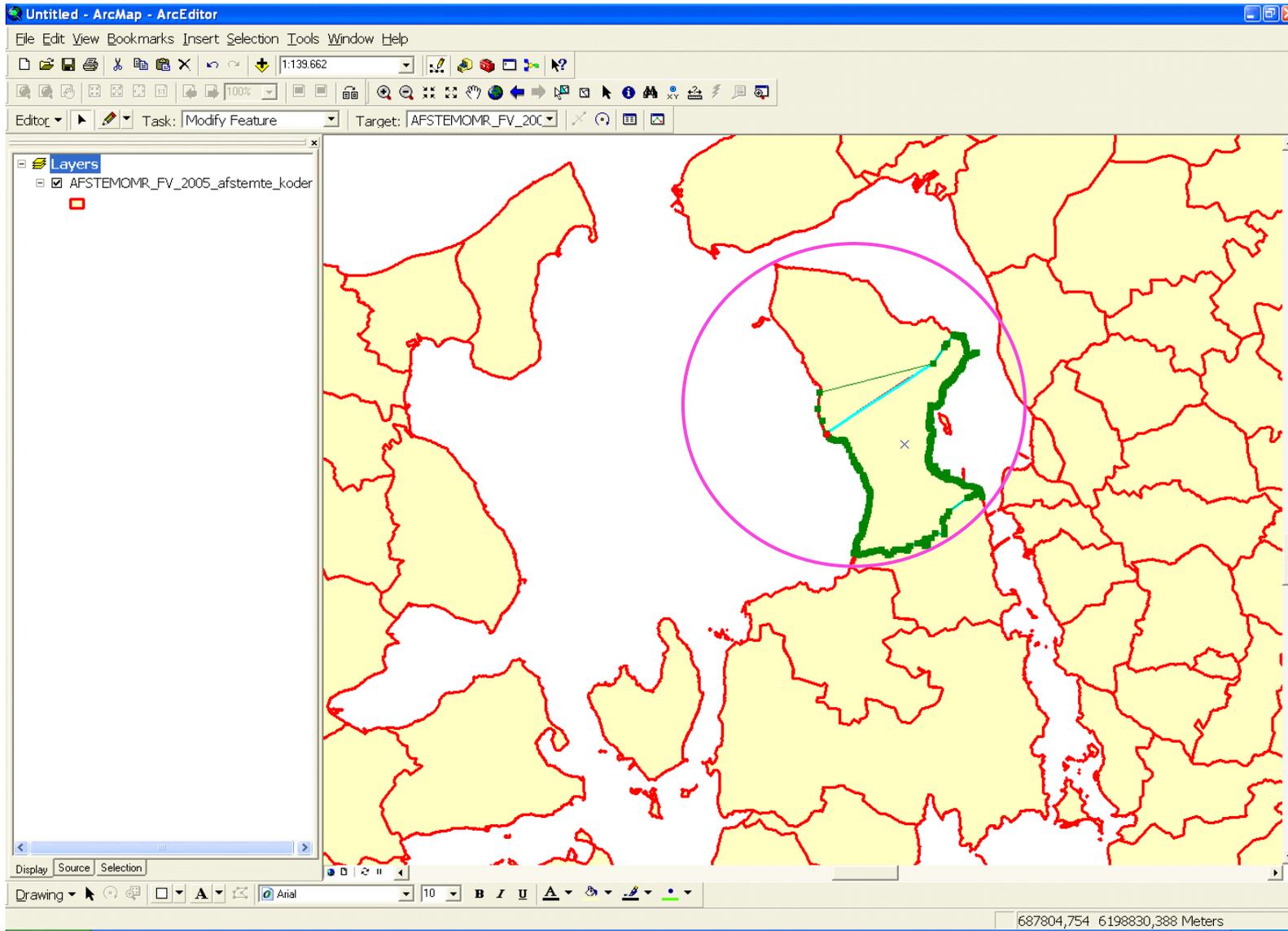
# GIS-tools



**Figure 2: The “Start editing”-option within the “Editor”-toolbar’s drop bar**



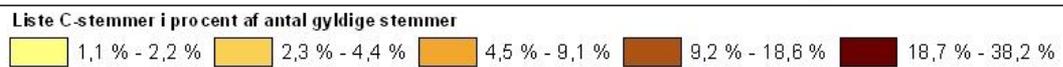
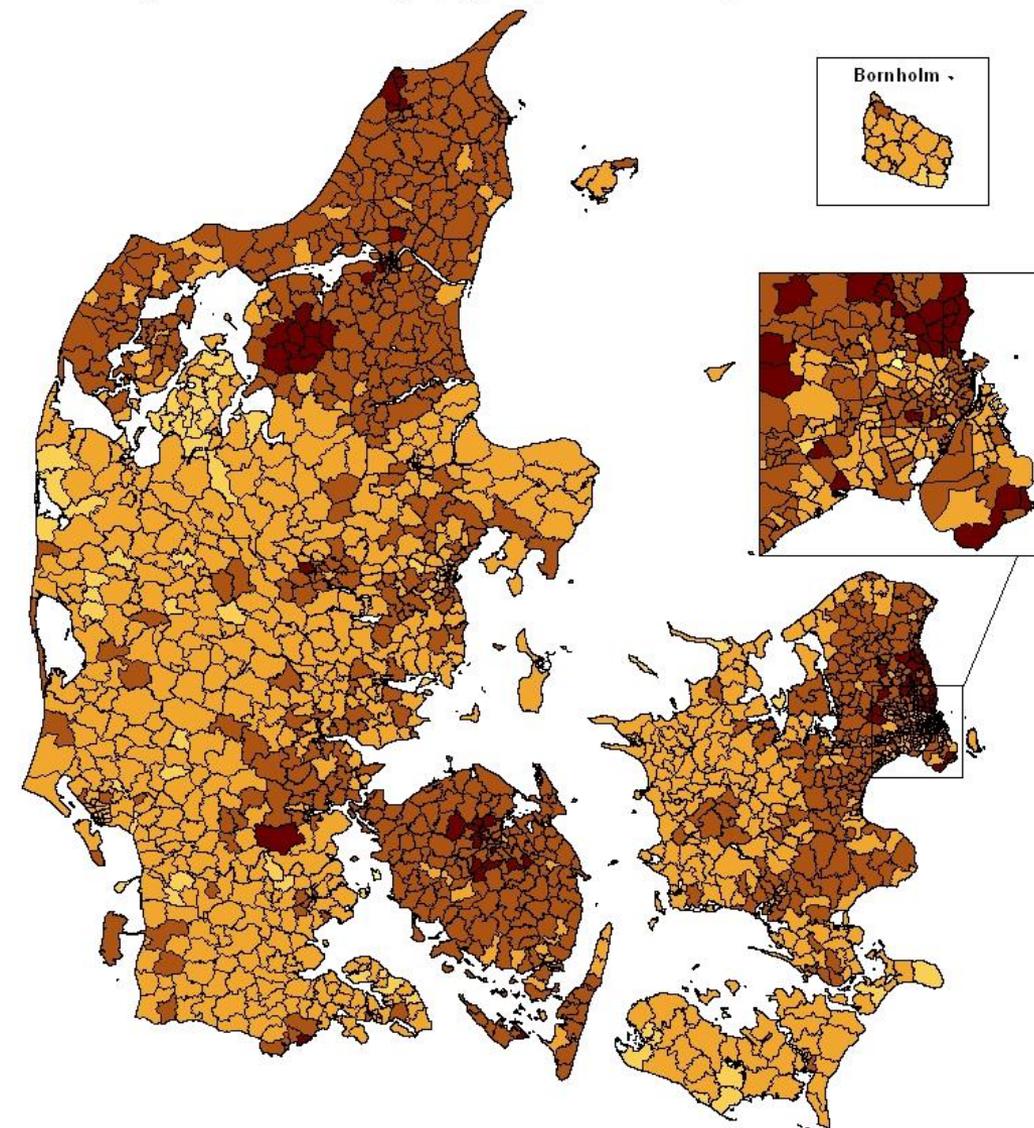
**Figure 7: Dragging with the “Edit”-tool the eight vertices that originally separates the 2005 polling districts Jægerspris and Skoven to the border of Skoven**



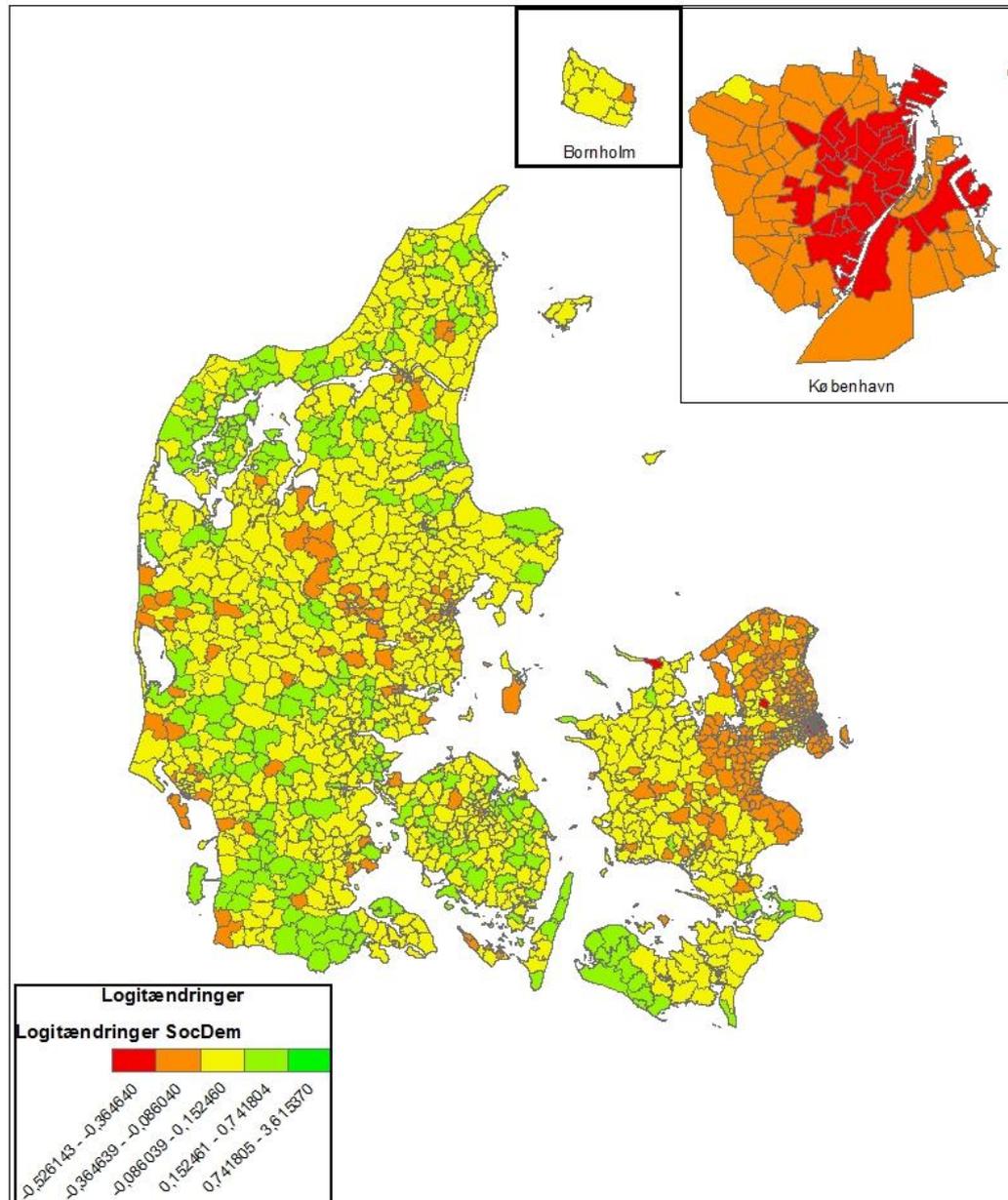
# Party strength

Det Konservative Folkepartis andel af gyldige stemmer  
- logittransformeret og opgjort på afstemningsområder FV2007

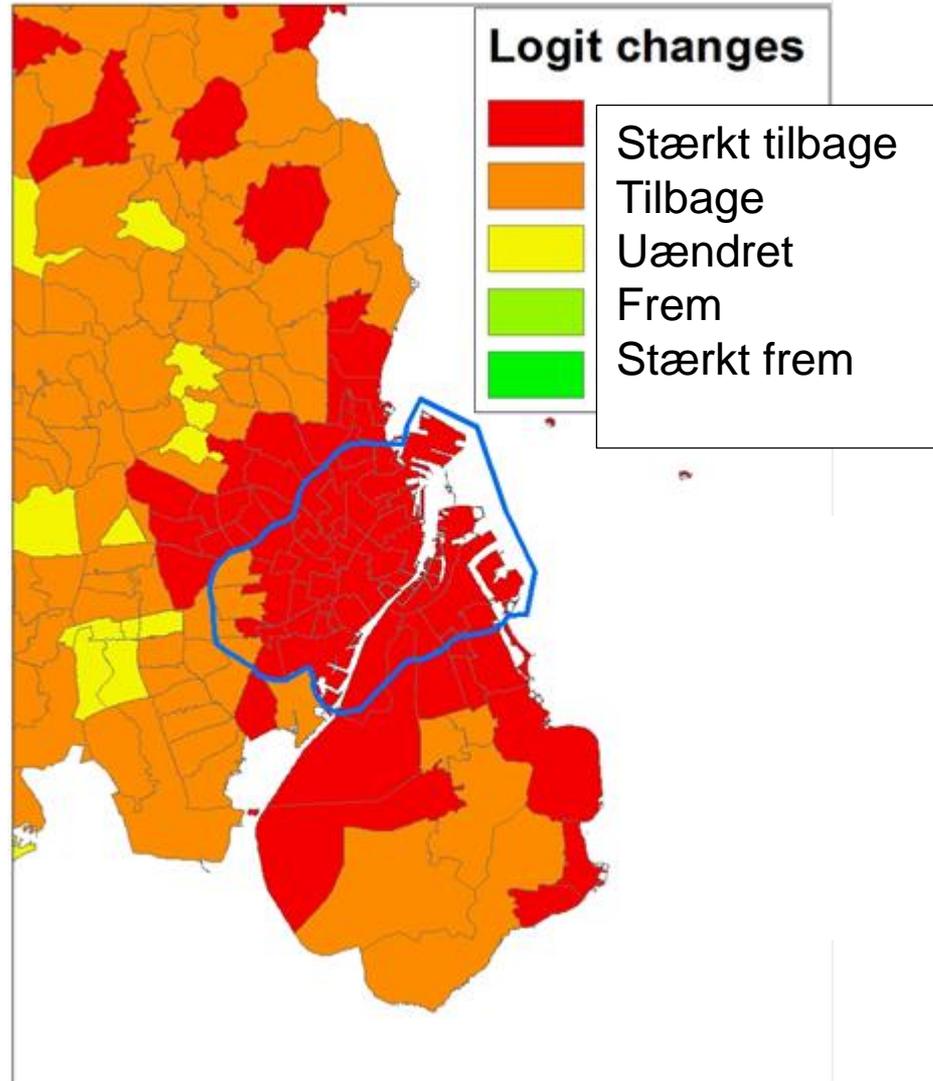
Conservative  
shares of valid  
votes by voting  
precincts NE 2007



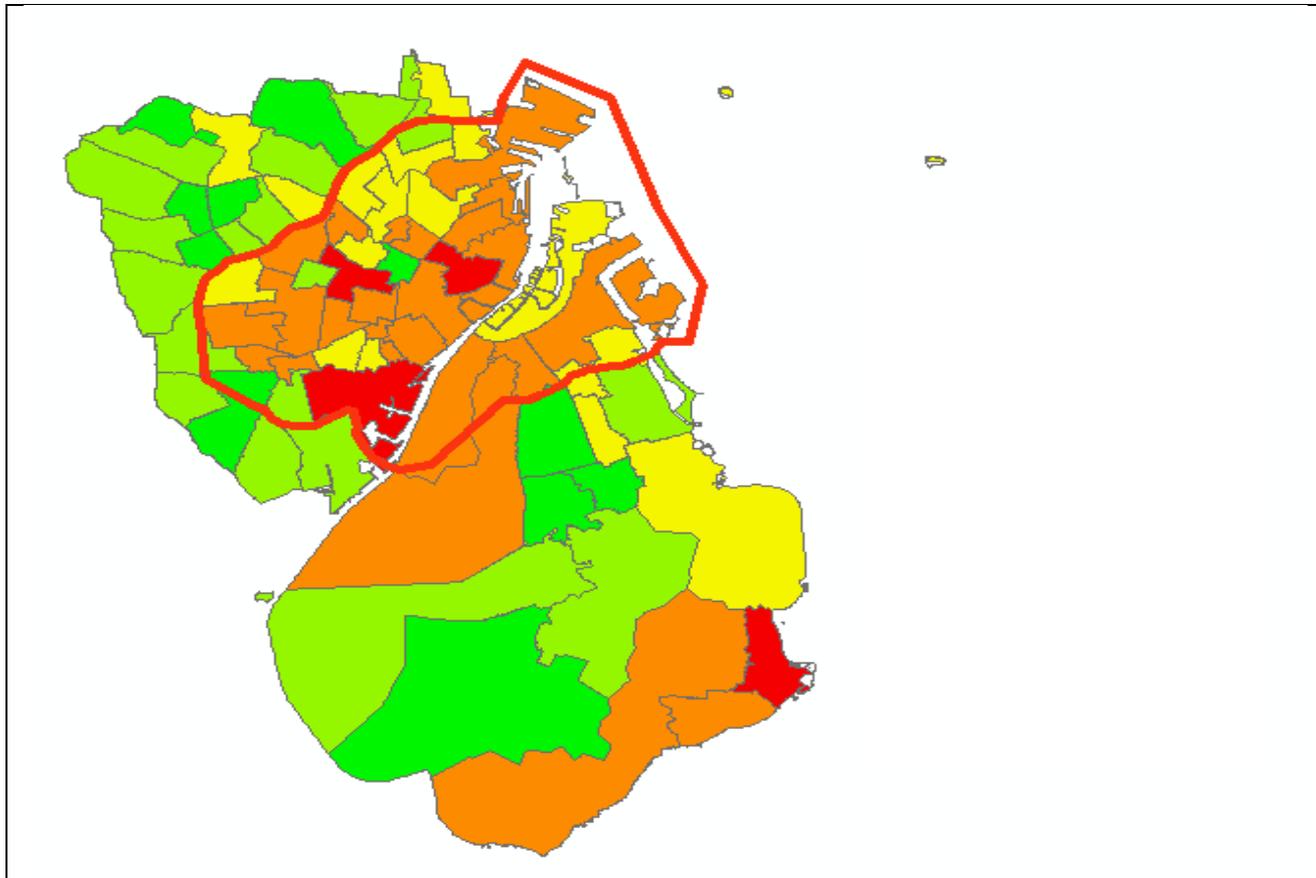
# Socialdemokratiet - Logitændringer FV07 til FV11 på afstemningssted



Ændring i logit tilslutning til Socialdemokratiet (centreret).  
Københavnsområdet med indtegnnet forventet betalingsring

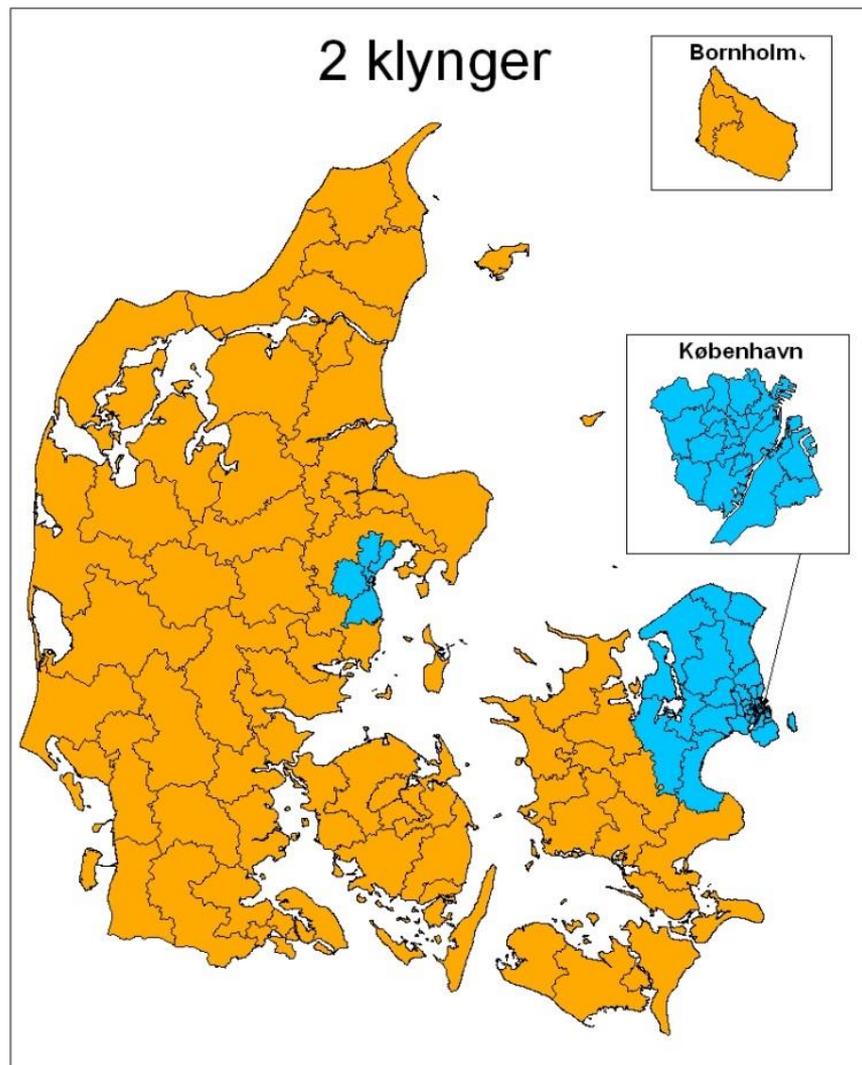


Figur 24. Ændret tilslutning til Socialdemokratiet, rensset for effekten af personlige stemmer

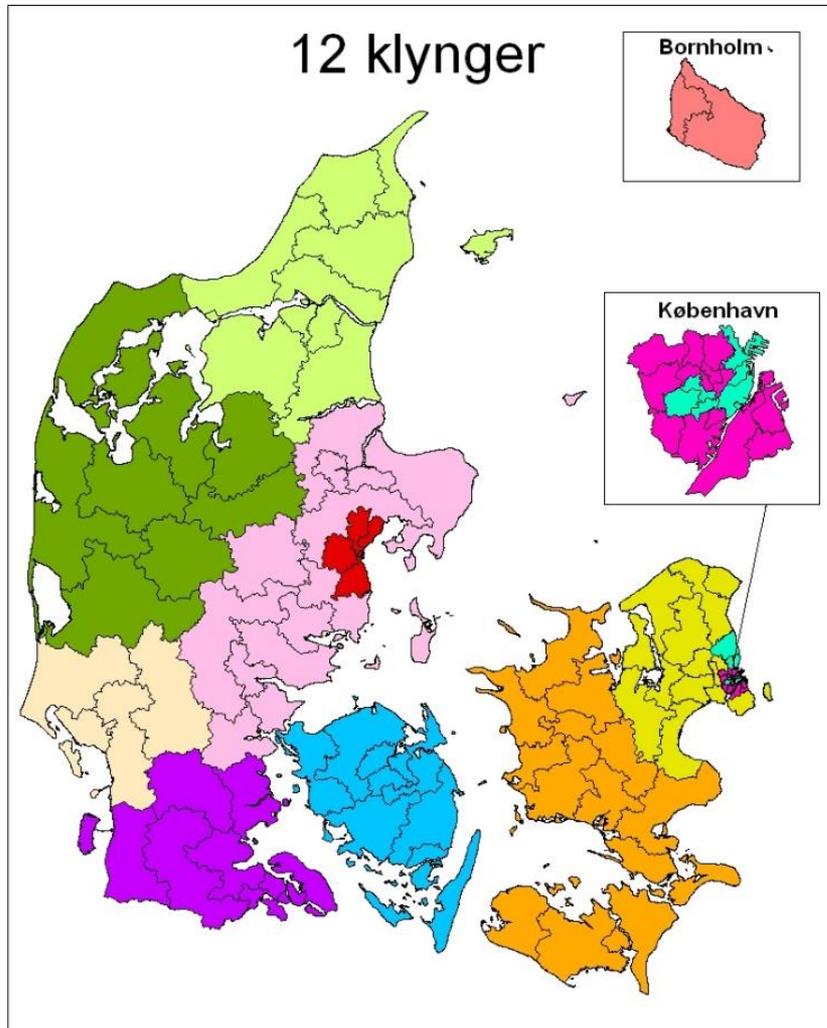


# Finding homogenous dynamic clusters

Figur 17. Politisk kulturelt centrum og periferi udskilt ved klyngeanalyse af ændringer fra valg til valg i perioden 1979-2001 med kun to klynger



Figur 18. Politiske subkulturer i Danmark udskilt ved klyngeanalyse med 12 klynger



# Distance to candidate

Master thesis by Kristian Elgaard Pedersen

# Constituency of Ringkjøbing

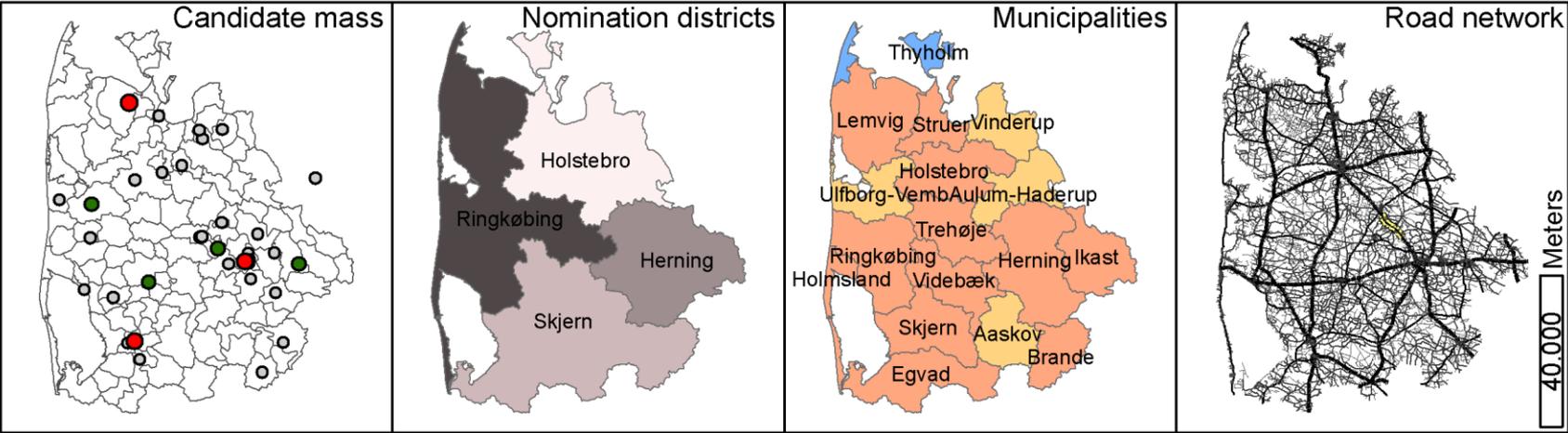
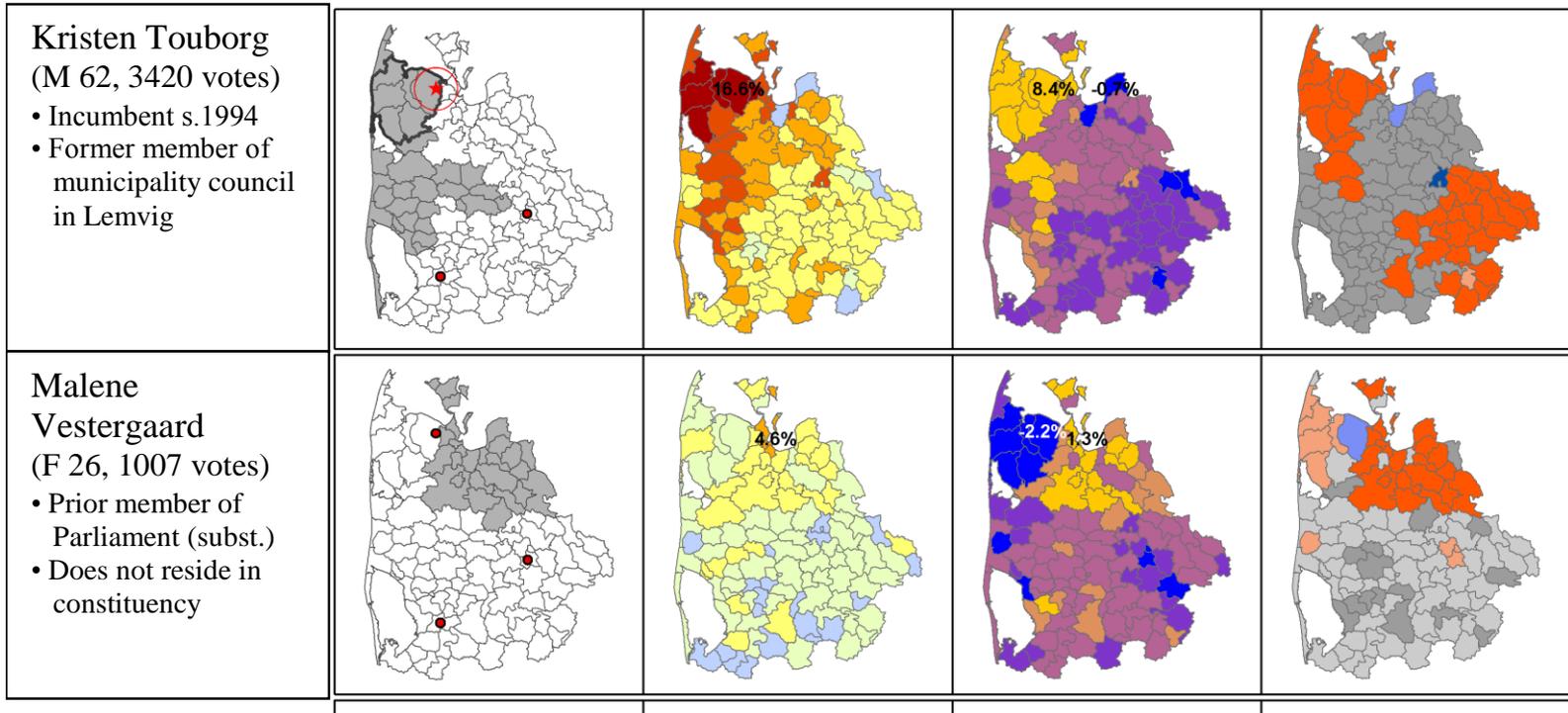
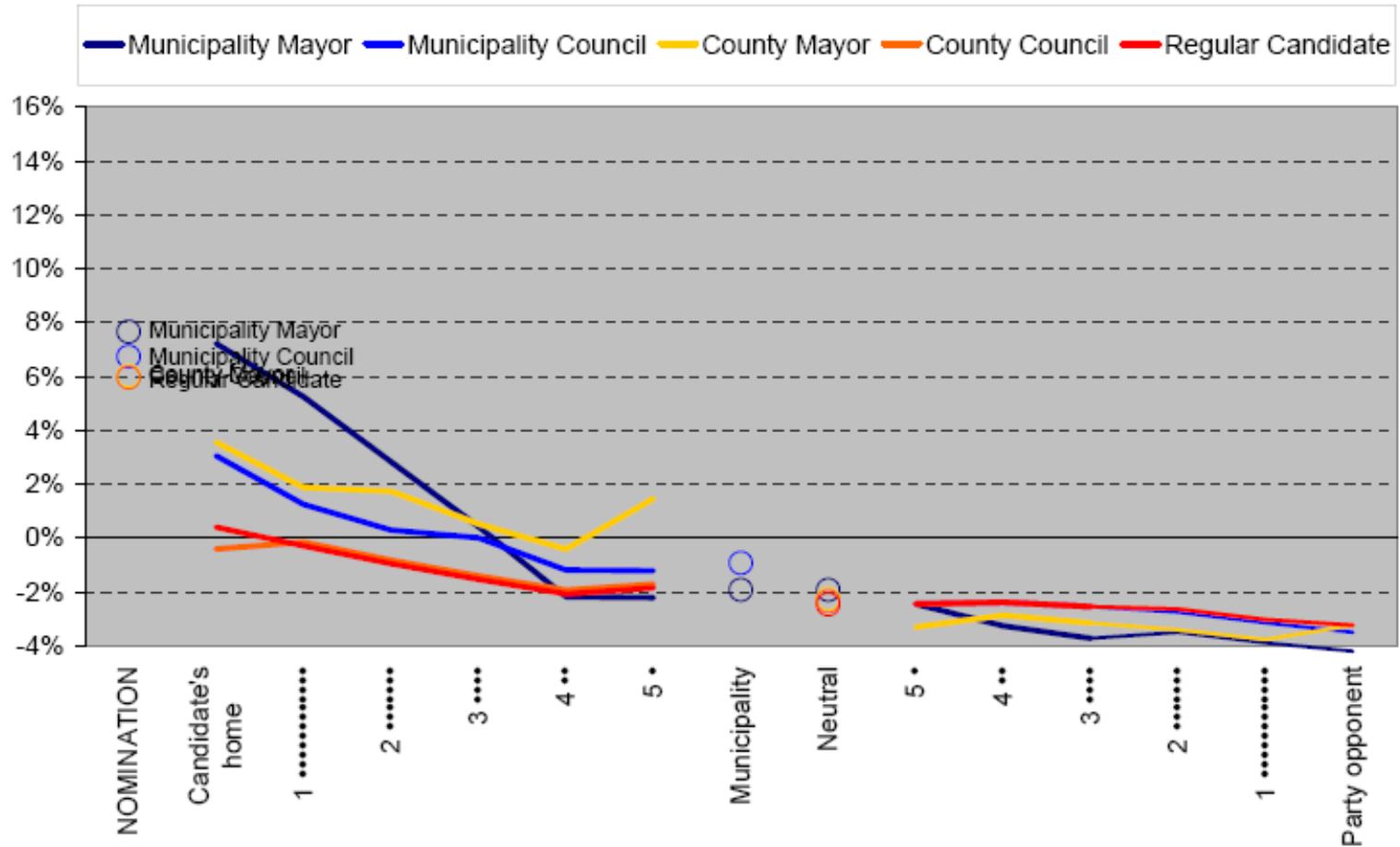


Figure 14: Socialist People's Party Candidates in Constituency of Ringkjøbing

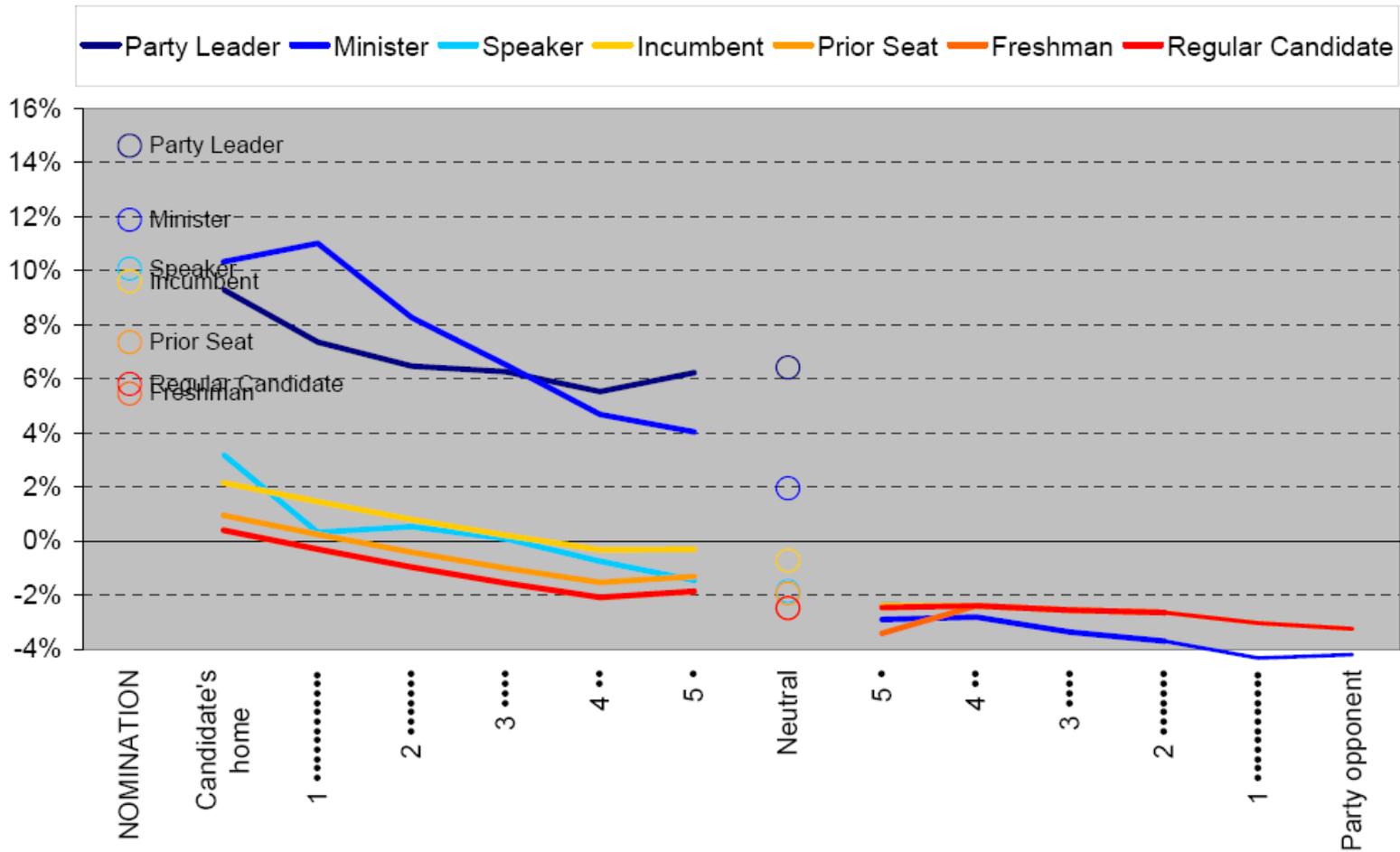
Candidate Residence and Nomination      Actual Preferential Vote Share      Variation in Local Strength Score      Significant Clusters (LISA)



## *Influence of Local Political Experience on Nomination and Residential Effects*

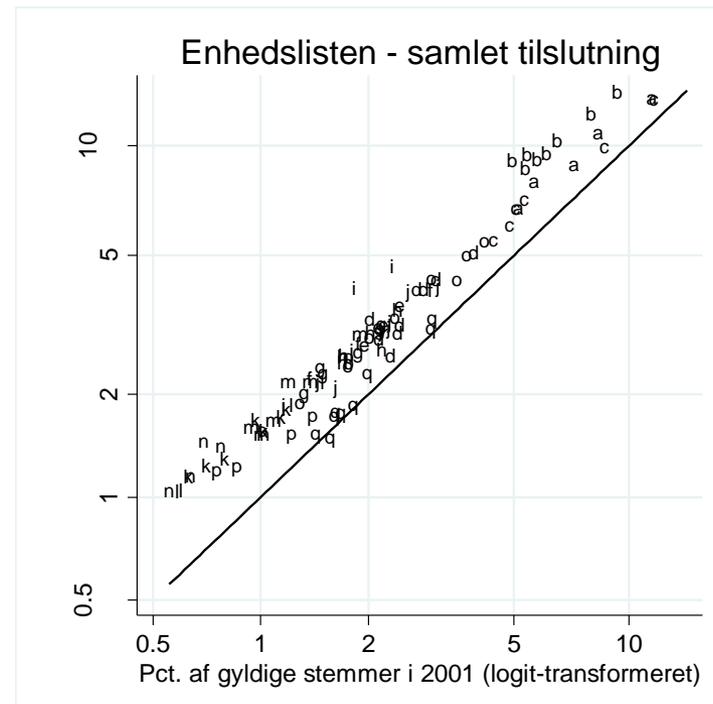
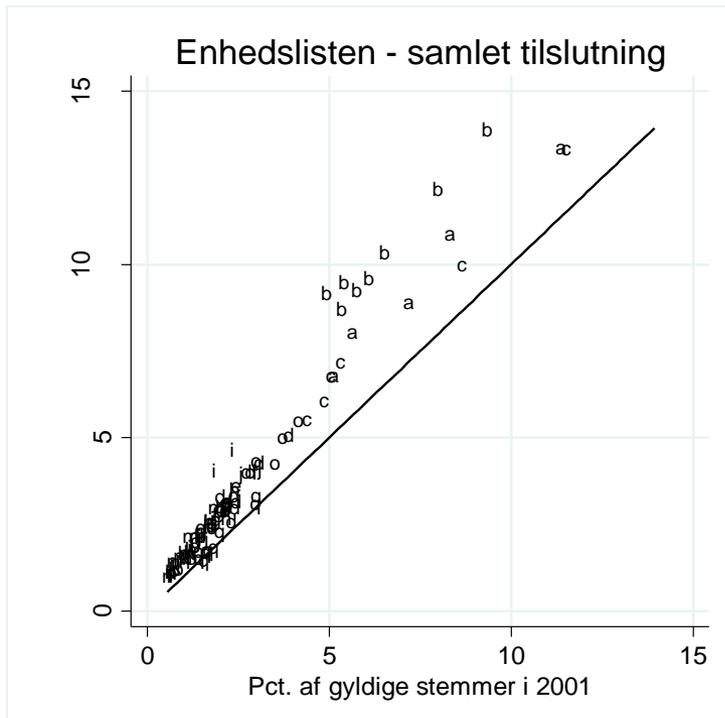


## *Influence of National Political Experience on Nomination and Residential Effects*



# Graphs

Figur 8. Ensartet sving før og efter procent-massage (Enhedslisten 2001-2005)



a Søndre Storkreds  
b Østre Storkreds  
c Vestre Storkreds

d Københavns Amt  
e Frederiksborg Amt  
f Roskilde Amt

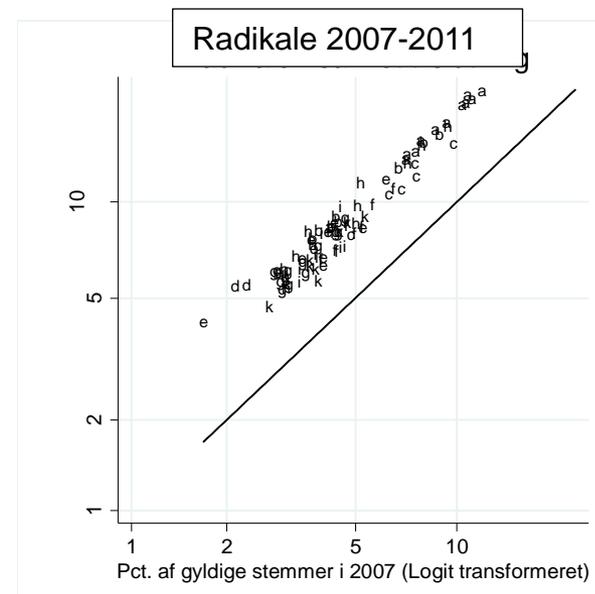
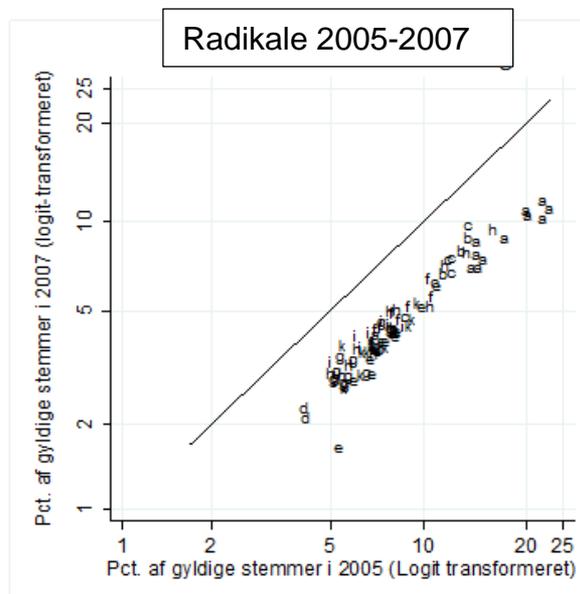
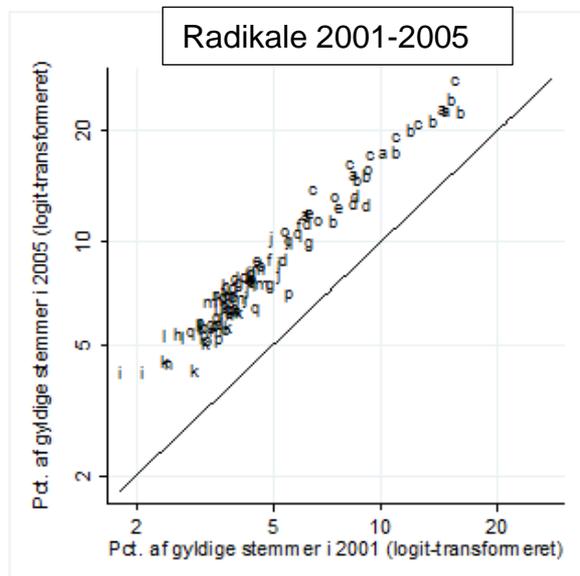
g Vestsjællands Amt  
h Storstrøms Amt  
i Bornholms Amt

j Fyns Amt  
k Sønderjyllands Amt  
l Ribe Amt

m Vejle Amt  
n Ringkøbing Amt  
o Århus Amt

p Viborg Amt  
q Nordjyllands Amt

Figur 9. Den radikale rutschebane-tur fra 2001 til 2011



a Søndre Storkreds  
b Østre Storkreds  
c Vestre Storkreds

d Københavns Amt  
e Frederiksborg Amt  
f Roskilde Amt

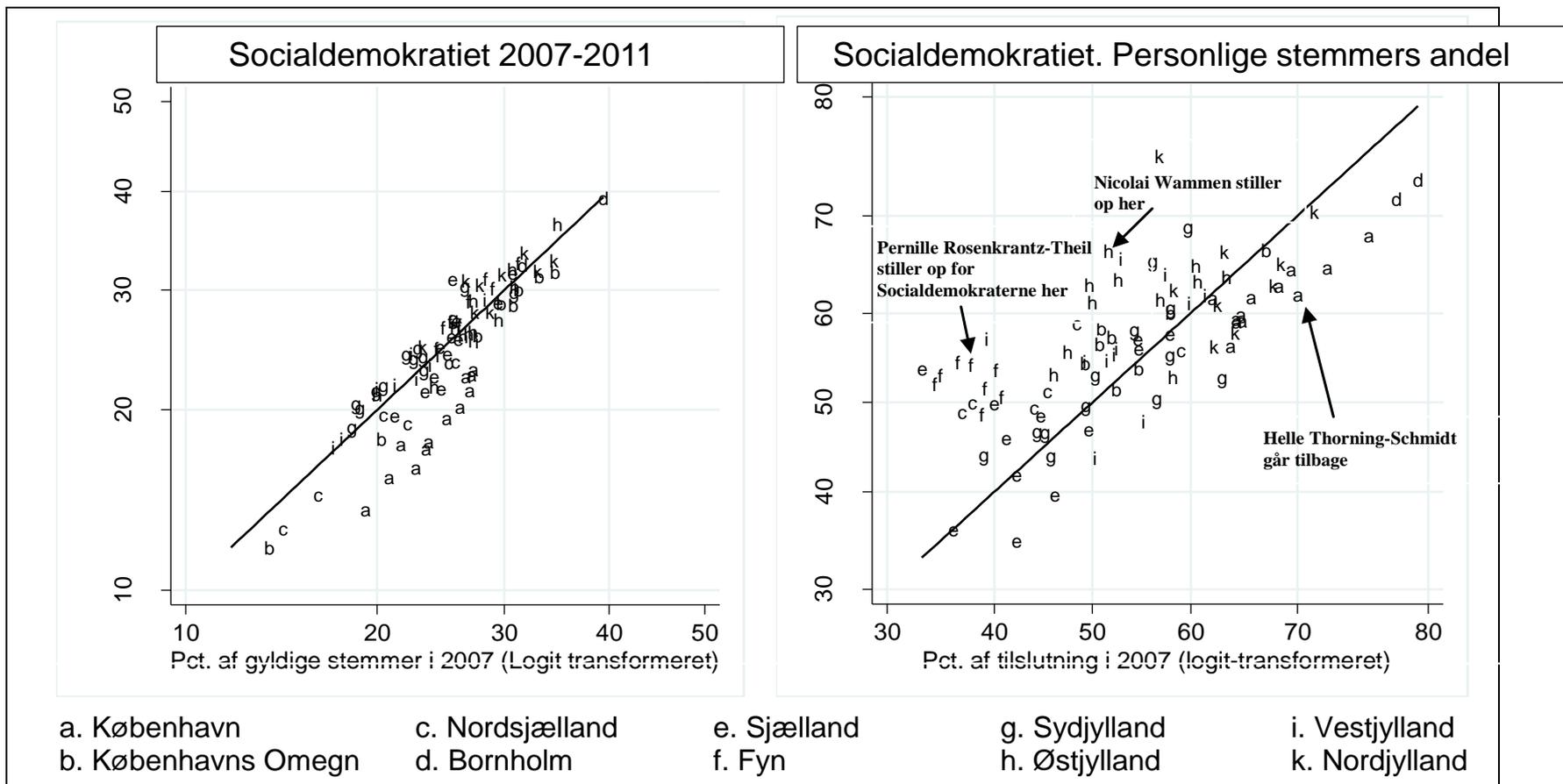
g Vestsjællands Amt  
h Storstrøms Amt  
i Bornholms Amt

j Fyns Amt  
k Sønderjyllands Amt  
l Ribe Amt

m Vejle Amt  
n Ringkøbing Amt  
o Århus Amt

p Viborg Amt  
q Nordjyllands Amt

Figur 23. Ændring i tilslutning og i andel personlige stemmer til Socialdemokratiet



# Statistical analyss

# Personal votes and party strength at local elections

Master thesis by  
Christian Eg Sloth

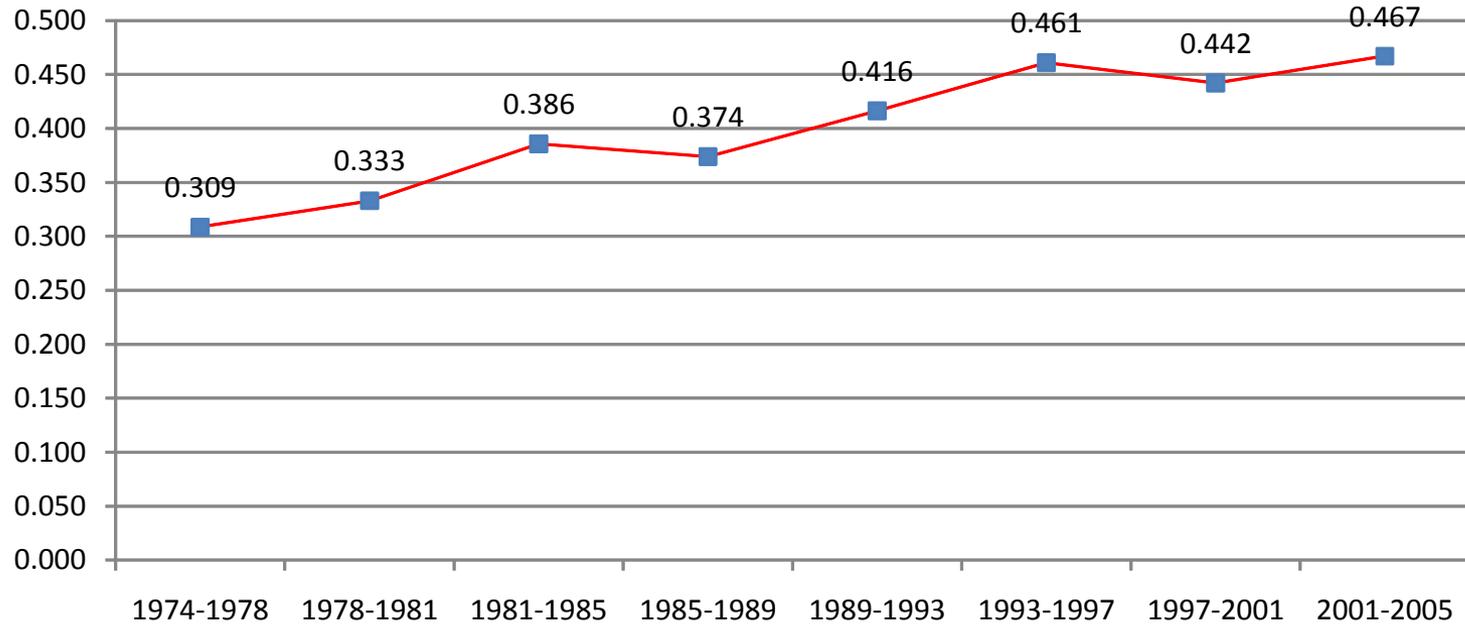
**Random intercept model with party-specific intercept. Dependent variable is change in party support 2005-2009**

<b>Fixed part</b>	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>	<b>Model 5</b>	<b>Model 6*</b>
Constant	<b>0,034</b>	<b>0,067</b>	<b>-0,001</b>	<b>-0,001</b>	<b>0,067</b>	0,040
Change in NE support		0,508	0,728	0,727	0,844	0,431
Difference between LE and NE 2005			0,340	0,340	0,240	0,247
Incumbency				<b>-0,009</b>	<b>-0,016</b>	<b>-0,022</b>
Change in personal votes					0,463	0,476
Mean change in NE support						0,348
Mean change in personal votes						-0,284
<b>Random part</b>						
sd(party), level 2	0,380	0,138	-	-	0,027	-
sd(municipality), Level 1	0,359	0,359	0,312	0,312	0,252	0,248
Rho	0,529	0,129	-	-	0,011	-
<b>Statistics</b>						
Variance reduction on level 1		-	13,1 %	13,1 %	29,8 %	30,9 %
Log likelihood	- 263,0	- 257,4	- 159,2	-159,1	- 28,3	- 15,9

N=627. Alle coefficients are significant < 0,001. Insignificant coefficients in bold..

\* Hausmann test only shows no endogeneity problems for model 6.

### Effect of personal votes at Local Elections 1974-2005



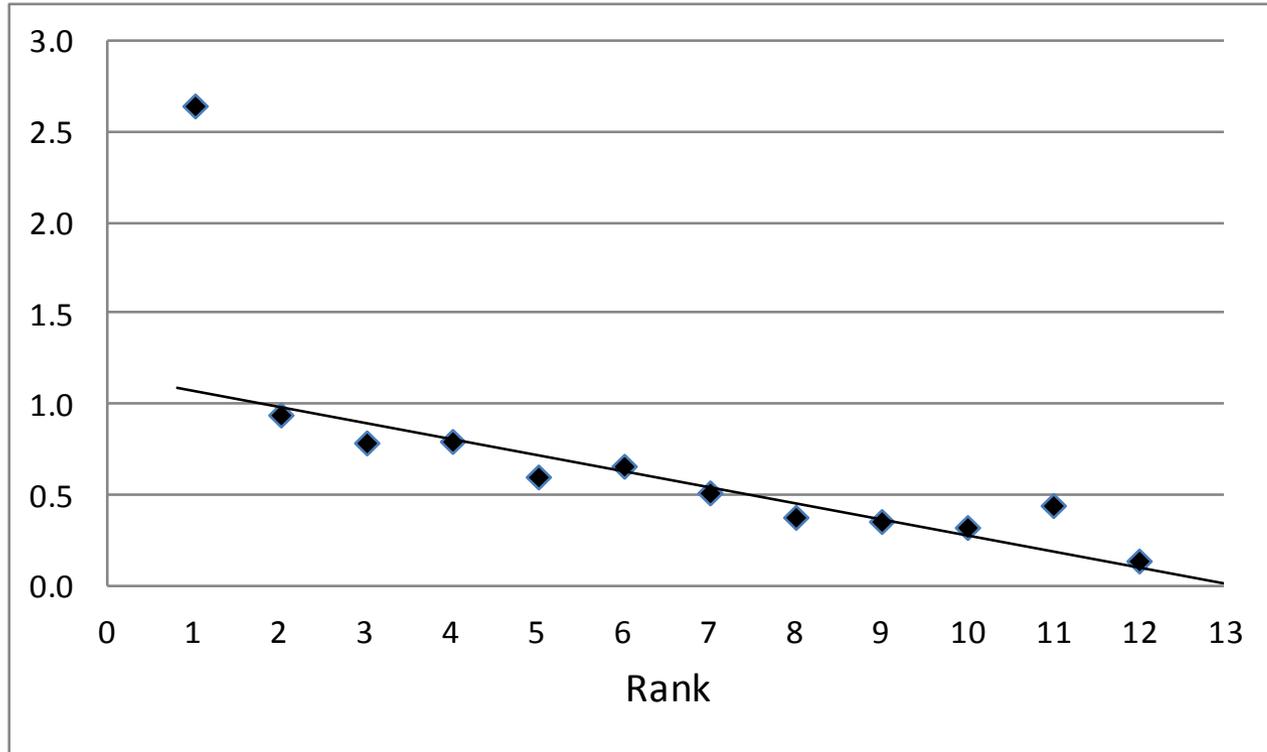
# Candidate standing and preferential voting in Denmark

David Vestergaard Eriksen

Tobias Tangsgaard Varneskov

Søren Risbjerg Thomsen

Table 1. Effect on personal vote by rank on ballot list (logit regression)



Only candidates with open list standing. Control variables in table 2.

Table 2. Multilevel model (FE) for candidate's personal vote shares in 92 nomination districts

	Model 1	Model 2	Model 3	Model 4	Model 4
	Logit	Logit	Logit	Logit	Odds ratio
<i>Candidate attributes</i>					
Woman	0.584 ***	0.635 ***	0.585 ***	0.548 ***	1.730 ***
Age (ref. 18-24)					
36-45	0.124 *	-0.021	-0.142 ***	-0.138 ***	0.871 ***
46-55	-0.137 *	-0.295 ***	-0.302 ***	-0.272 ***	0.762 ***
56+	0.201 ***	-0.030	-0.275 ***	-0.285 ***	0.752 ***
<i>Local experience</i>					
Resident		1.512 ***	1.523 ***	0.712 ***	2.038 ***
Runs again		0.684 ***	-0.090 *	0.035	1.036
local politics					
Less than 5 years		0.878 ***	1.108 ***	1.025 ***	2.787 ***
5 years or more		1.190 ***	1.158 ***	1.037 ***	2.821 ***
Mayor		0.418 *	0.576 **	0.536 ***	1.709 ***
Party work		0.353 ***	0.086 *	0.029	1.029
<i>National experience</i>					
MP (ref.: no exp.)					
Less than 5 years			1.196 ***	1.056 ***	2.875 ***
5 years or more			1.603 ***	1.460 ***	4.306 ***
Minister			0.602 ***	0.695 ***	2.004 ***
Prominent politician			1.549 ***	1.447 ***	4.250 ***
<i>Rank on ballot list</i>					
Rank				-0.072 ***	0.931 ***
First rank				1.679 ***	5.360 ***
<i>Party constants</i>					
Unity List	-0.386	0.164	0.580	0.412	1.510
Soc. P. Party	0.098	0.171 *	0.206 **	0.215 ***	1.240 ***
Social Democrats	0.151 *	0.171 **	-0.035	-0.049	0.952
Social Liberals	0.253 ***	0.384 ***	0.661 ***	0.535 ***	1.707 ***
Christain Democrats	0.351 ***	0.608 ***	0.810 ***	0.778 ***	2.177 ***
Liberal Alliance	0.428 ***	0.779 ***	0.745 ***	0.592 ***	1.808 ***
Conservatives	0.259 ***	0.336 ***	0.219 ***	0.165 ***	1.179 ***
Liberal party	0.155 *	0.047	-0.383 ***	-0.384 ***	0.681 ***
overall constant	-4.554 ***	-5.065 ***	-4.976 ***	-4.633 ***	0.010 ***
N	6593	6593	6593	6593	
R <sup>2</sup> within	0.042	0.220	0.421	0.575	
R <sup>2</sup> between	0.025	0.348	0.240	0.707	
R <sup>2</sup> overall	0.040	0.217	0.406	0.571	
rho - spatial correlation	0.076	0.065	0.094	0.069	

Only candidates with open list standing. Legend: \* p<.05; \*\* p<.01; \*\*\* p<.001

# Integration of ecological data with survey data

Multi-level analysis of the impact of  
incumbency and personal votes on  
individual voting behavior at local elections

Blue vote at Local Elections 2009 . Two-level random intercept logit model with individual voters as level 1 and municipalities as level 2

	Model 1	Model 2	Model 3	Model 4	Model 5
Left-right scale		0.719 ***	0.717 ***	0.716 ***	0.717 ***
Incumbent party dummy			0.232 †		-0.053
Personal votes				0.496 ***	0.528 ***
Constant	-0.232 ***	-0.394 ***	-0.505 ***	-0.507 ***	-0.489 ***
ln(level 2 var)	-1.849	-1.769 ***	-1.867 ***	-2.055 ***	-2.049 ***
N	2697	2697	2697	2697	2697
Log likelihood	-1835.62	-1376.23	-1374.52	-1368.77	-1368.71
rho	0.046	0.049	0.045	0.037	0.038
† p <.1 * p<.05; ** p<.01; *** p<.001					

# Ecological inference

## Estimating individual behavior from aggregate data

# Ecological inference

## Net transitions between parties 2001-2005

TABEL 15.2 *Netto-vandringer mellem partierne 2001-2005 i hele landet (i pct. af samtlige vælgere).*

2001	2005												I alt
	MP	EL	SF	S	R	CD	KD	K	V	DF	UP	St.ik.	
EL	0,0	0,0	<b>-0,4</b>	-0,2	0,2	0,0	0,0	0,0	-0,1	0,0	0,0	-0,2	-0,8
SF	0,0	<b>0,4</b>	0,0	<b>-0,3</b>	<b>0,5</b>	0,0	0,0	0,0	0,0	0,0	0,0	-0,1	0,5
S	0,0	0,2	<b>0,3</b>	0,0	<b>0,5</b>	0,1	0,0	0,0	0,1	<b>0,4</b>	0,0	1,9	3,4
R	0,0	-0,2	<b>-0,5</b>	<b>-0,5</b>	0,0	<b>-0,4</b>	-0,1	<b>-0,3</b>	<b>-0,7</b>	0,0	0,0	-0,5	-3,2
CD	0,0	0,0	0,0	-0,1	<b>0,4</b>	0,0	0,0	0,2	0,1	0,0	0,0	0,0	0,7
KD	0,0	0,0	0,0	0,0	0,1	0,0	0,0	0,1	0,1	0,0	0,0	0,2	0,5
K	0,0	0,0	0,0	0,0	<b>0,3</b>	-0,2	-0,1	0,0	<b>-0,9</b>	0,0	0,0	0,1	-0,8
V	0,0	0,1	0,0	-0,1	<b>0,7</b>	-0,1	-0,1	<b>0,9</b>	0,0	<b>0,7</b>	0,0	0,5	2,6
DF	0,0	0,0	0,0	<b>-0,4</b>	0,0	0,0	0,0	0,0	<b>-0,7</b>	0,0	0,0	0,4	-0,8
FP	0,0	0,0	0,0	0,1	0,0	0,0	0,0	0,0	0,1	0,1	0,0	0,2	0,5
UP	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
St.ik.	0,1	0,2	0,1	-1,9	0,5	0,0	-0,2	-0,1	-0,5	-0,4	0,0	0,0	-2,4
I alt	0,2	0,8	-0,5	-3,4	3,2	-0,7	-0,5	0,8	-2,6	0,8	0,0	2,4	0,0

Note: Estimeret ved økologisk inferens med 1.631 afstemningssteder inden for 17 valgkredse.

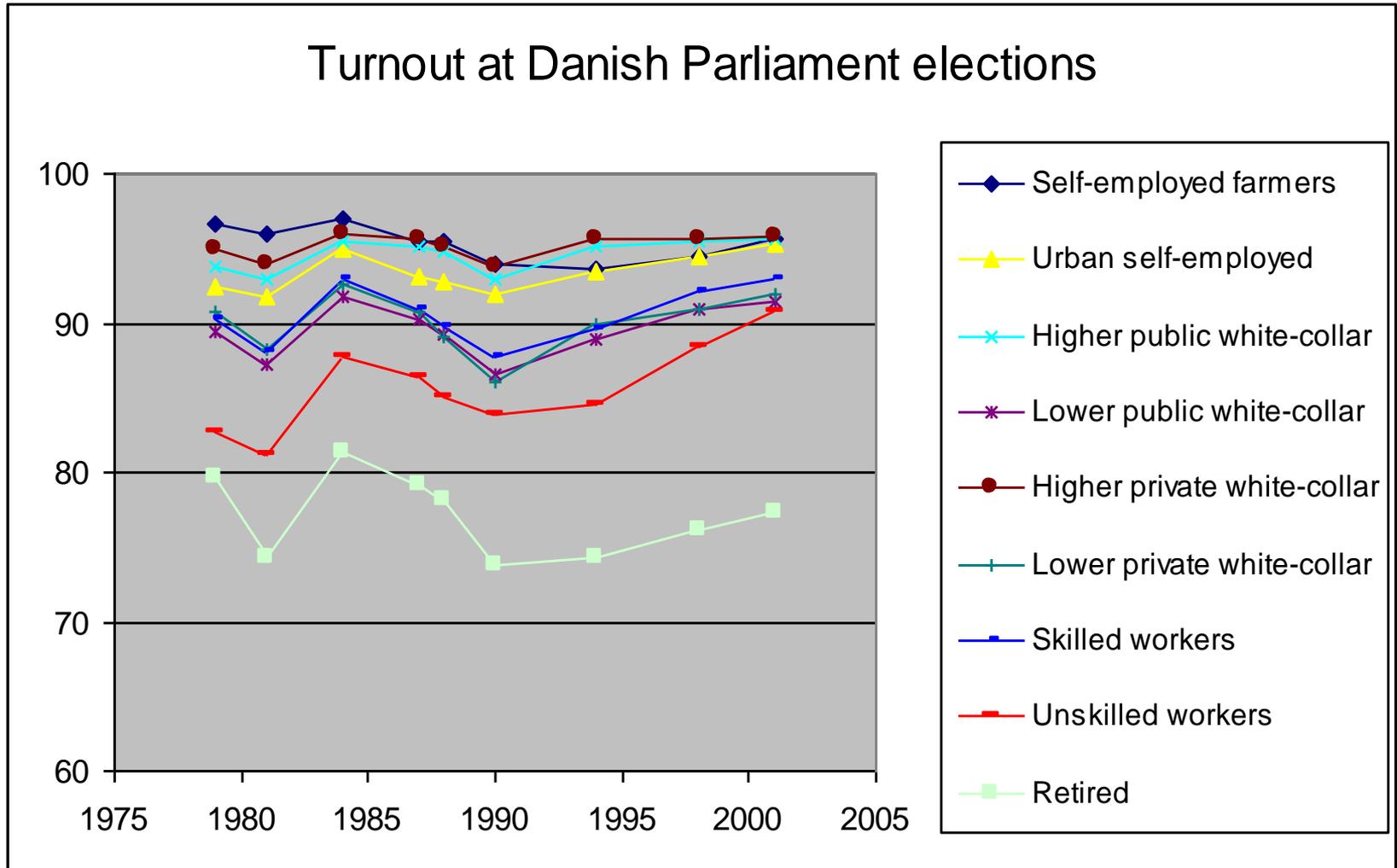
# Ecological inference – net flow within constituencies

TABEL 15.3 Netto-vandringer mellem udvalgte partier 2001-2005 i de enkelte valgkredse.

	SF til EL	SF til R	S til SF	S til R	S til DF	CD til R	V til R	V til K	V til DF
Hele landet	0,4	0,5	0,3	0,5	0,4	0,4	0,7	0,9	0,7
Søndre Storkreds	<b>1,7</b>	0,7	0,6	0,1	0,5	0,9	<b>1,3</b>	0,7	-0,1
Østre Storkreds	<b>2,0</b>	<b>1,2</b>	0,3	0,1	0,6	0,9	<b>1,6</b>	0,9	0,0
Vestre Storkreds	<b>1,3</b>	<b>1,3</b>	0,4	0,5	-0,1	<b>1,0</b>	<b>1,7</b>	0,5	0,1
Københavns Amtskr.	0,6	0,1	0,1	0,0	<b>1,4</b>	0,9	<b>1,6</b>	<b>2,6</b>	0,0
Frederiksborg Amtskr	0,6	0,6	0,2	0,2	<b>1,2</b>	0,3	<b>1,9</b>	<b>2,1</b>	0,5
Roskilde Amtskreds	0,1	0,7	0,4	<b>1,3</b>	0,4	0,1	0,7	0,1	<b>1,9</b>
Vestsjællands Amtsk.	0,2	0,3	0,2	0,5	0,4	0,2	0,3	-0,2	0,8
Storstrøms Amtskr.	0,1	0,3	0,1	0,5	0,5	0,2	0,5	0,2	<b>1,4</b>
Bornholms Amtskreds	0,8	0,3	0,7	<b>1,3</b>	-0,1	0,1	0,0	0,0	-0,2
Fyns Amtskreds	0,3	<b>1,0</b>	0,3	0,3	0,1	0,2	0,0	0,8	0,9
Sønderjyllands Amtsk	0,0	0,4	0,2	0,6	0,8	0,1	0,1	0,3	0,3
Ribe Amtskreds	0,1	0,2	0,6	0,4	0,6	0,2	0,8	0,6	<b>1,4</b>
Vejle Amtskreds	0,0	0,4	0,4	0,5	0,2	0,4	0,5	0,4	0,9
Ringkjøbing Amtskr.	0,0	0,1	0,3	<b>1,6</b>	0,2	0,1	0,2	0,4	0,8
Århus Amtskreds	0,6	0,7	0,3	0,7	-0,2	0,6	0,3	<b>1,1</b>	0,7
Viborg Amtskreds	0,0	0,2	0,3	<b>1,2</b>	0,2	0,1	-0,1	0,7	0,3
Nordjyllands Amtskr.	0,0	0,6	0,0	0,3	-0,2	0,4	0,4	0,8	<b>1,0</b>

# Ecological inference

## Turnout at Danish Parliament elections



THANK YOU