

# Solution Overview Report for Scenario parameters

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## 1 Introduction

This report gives an overview of the solution found for the Irish Constituency Reassignment problem, it also presents details of selected solutions. The problem, a model and the relevant data are described in a companion report.

This version of the analysis considers solutions for a fixed number of seats, and a variable  $\pm$  delta in the population per seat for each county.

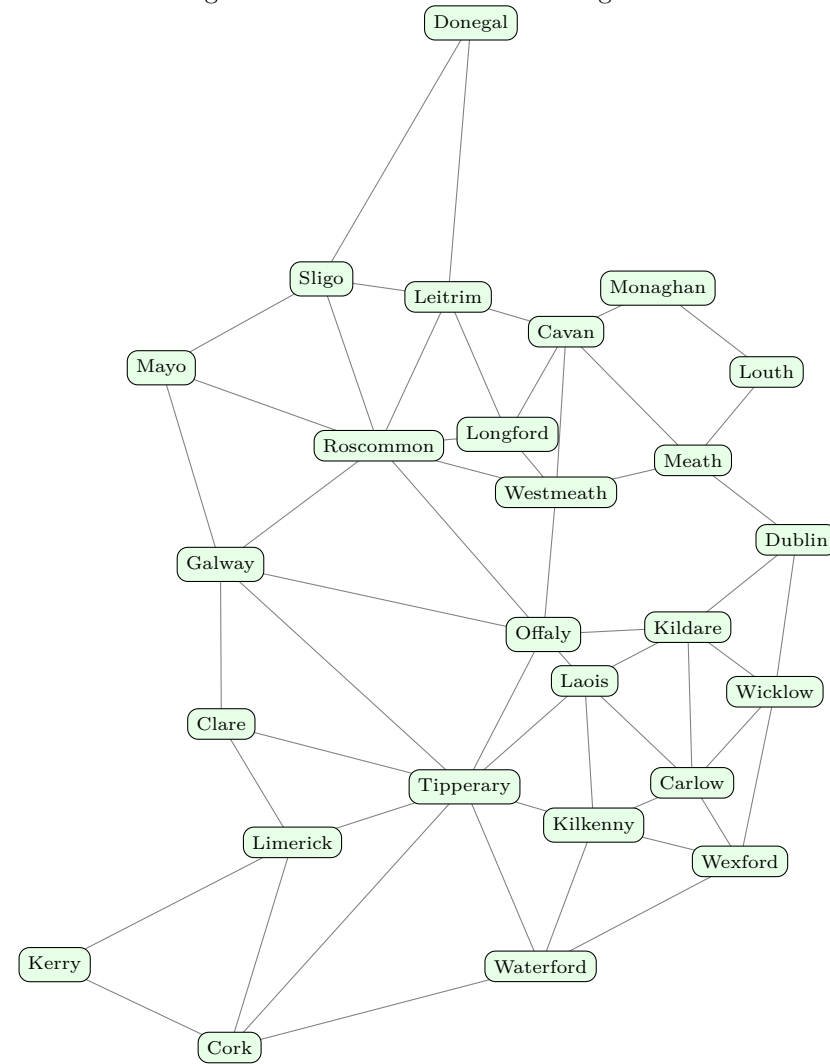
This scenario has 174 seats in total. It is the computational baseline, with balanced weights for alpha, beta, and gamma.

Figure 1 shows a schematic map of the counties in Ireland, with lines indicating that two counties are neighbors, and a reassignment of population from one county to the neighbor can be considered. The positions of the county labels are based on the centroid point of the counties in the map of Ireland.

We also use this map layout in the visualization of the results. We draw two versions, one shows the number of seats allocated, and the number of constituencies of different types created. The nodes are colored by the number of seats given. Transfers between counties are marked by arrows, arrows colored in red indicate that the complete county is transferred to another county. Arrows in gray also show the percentage of the population of the 'from' county transferred to the 'to' county.

The second type of map shows the variation in the number of persons per seat, expressed as a percentage of the overall target average. A green color indicates that the number is below the average, a yellow color indicates that the value is above average. Counties for which the achieved variation is within 1 percent of the maximum delta allowed are outlined in red.

Figure 1: Ireland: Counties and Neighbors

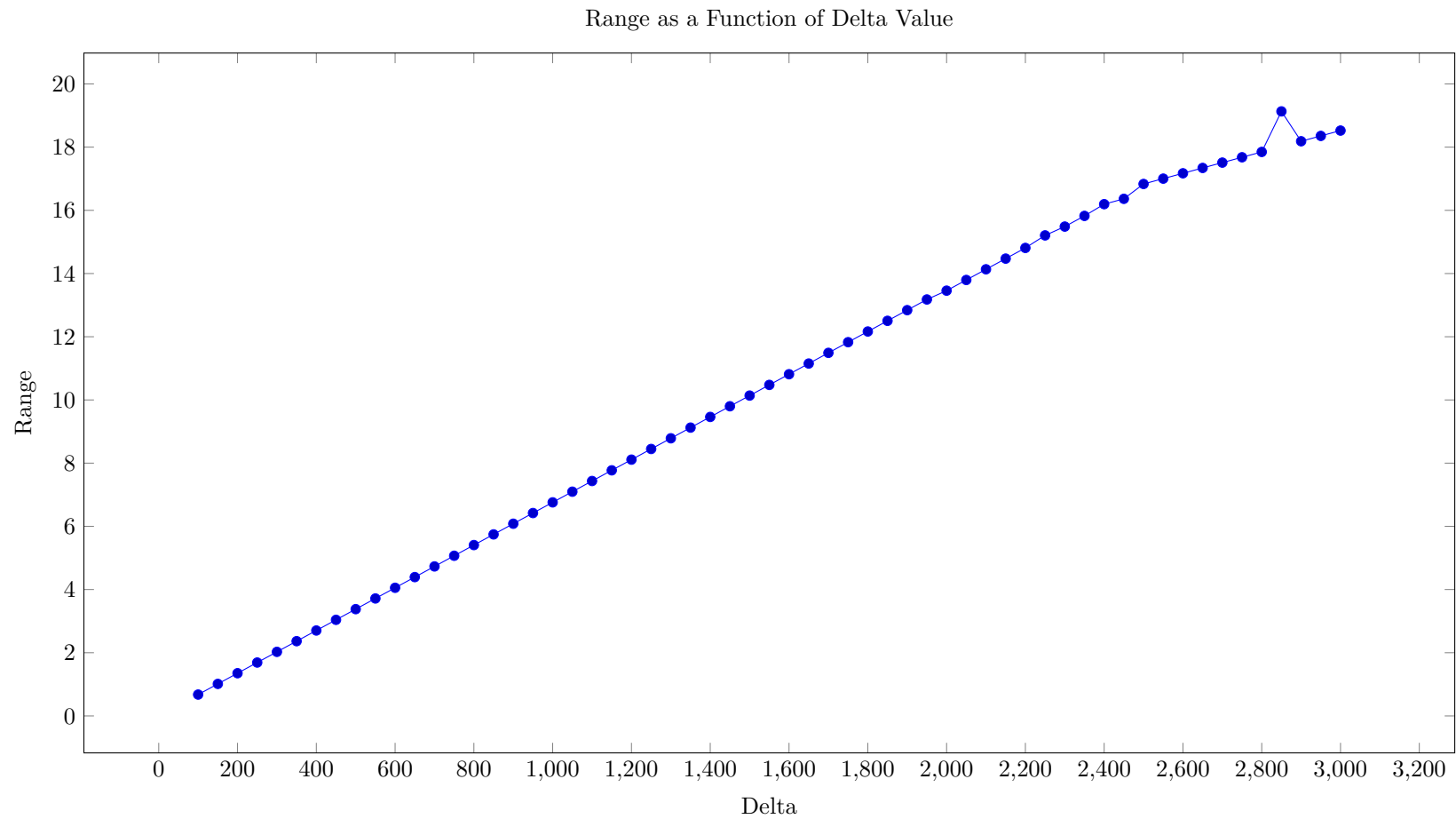


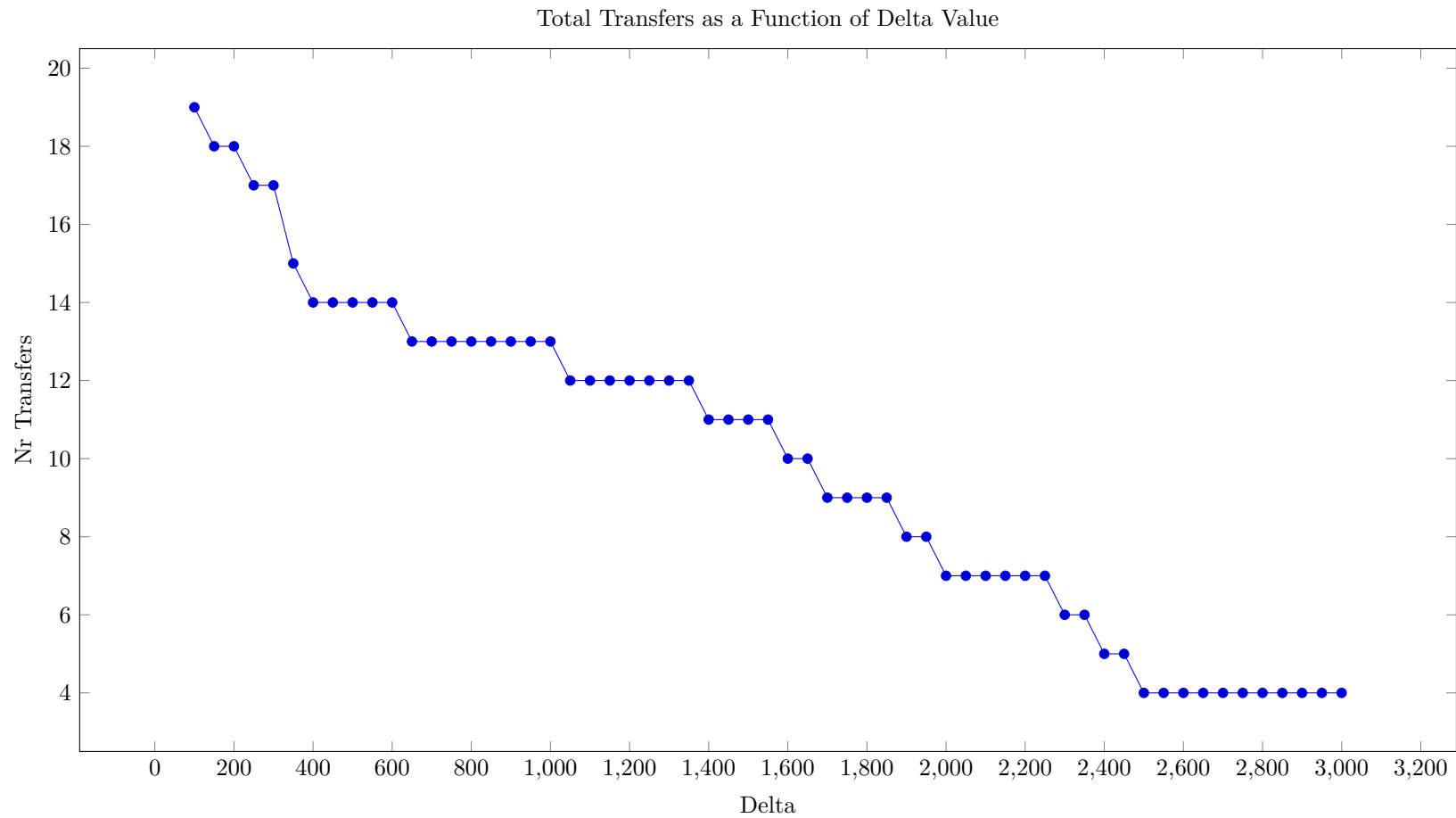
## Solution Overview

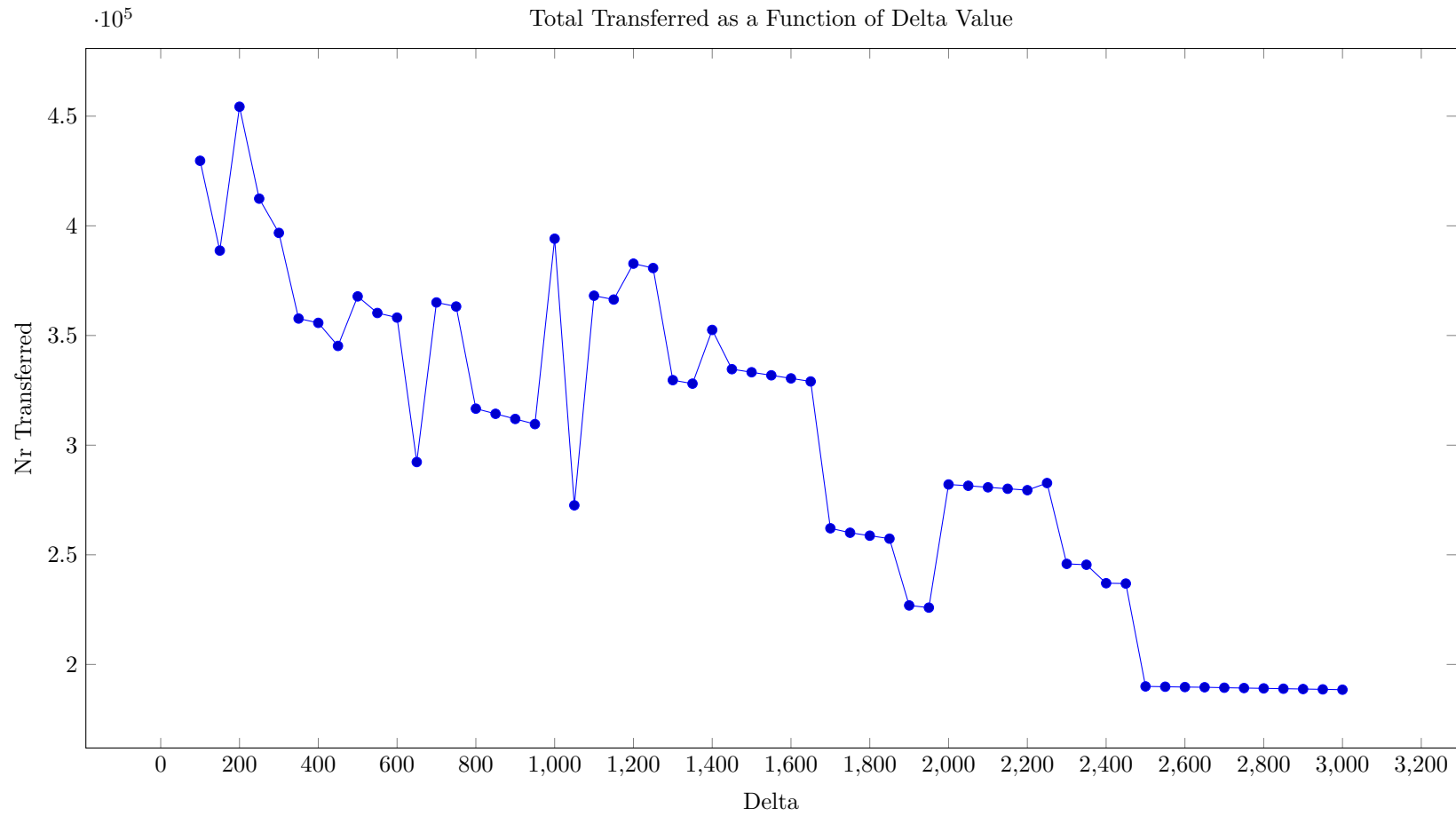
Table 1: Solutions

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol1	174	100	0.34	0.68	29,492.00	29,692.00	29,592.99	6,941.80	0.25	19	429,663	38	0/16/22	4.58	Solution	303.99	29.6993
Sol2	174	150	0.51	1.01	29,442.00	29,742.00	29,593.30	16,318.59	0.38	18	388,711	38	0/16/22	4.58	Solution	304.80	20.9747
Sol3	174	200	0.68	1.35	29,392.00	29,792.00	29,593.68	27,427.65	0.49	18	454,297	39	0/21/18	4.46	Solution	304.00	26.3051
Sol4	174	250	0.84	1.69	29,342.00	29,842.00	29,594.02	37,324.29	0.56	17	412,392	38	0/16/22	4.58	Solution	302.48	18.3777
Sol5	174	300	1.01	2.03	29,292.00	29,892.00	29,594.42	49,351.39	0.64	17	396,779	38	0/16/22	4.58	Solution	303.78	19.3749
Sol6	174	350	1.18	2.37	29,242.00	29,942.00	29,595.07	68,555.65	0.78	15	357,725	39	3/15/21	4.46	Solution	303.29	8.5972
Sol7	174	400	1.35	2.70	29,192.00	29,992.00	29,595.58	83,633.80	0.86	14	355,756	39	3/15/21	4.46	Solution	303.19	5.1500
Sol8	174	450	1.52	3.04	29,142.00	30,042.00	29,596.33	105,705.22	0.95	14	345,232	39	3/15/21	4.46	Solution	300.17	0.5723
Sol9	174	500	1.69	3.38	29,092.00	30,092.00	29,597.04	126,574.67	1.03	14	367,823	39	2/17/20	4.46	Solution	302.15	3.5265
Sol10	174	550	1.86	3.72	29,042.00	30,142.00	29,601.04	245,667.46	1.59	14	360,260	39	1/19/19	4.46	Solution	301.09	1.7294
Sol11	174	600	2.03	4.06	28,992.00	30,192.00	29,601.75	266,400.50	1.63	14	358,160	39	1/19/19	4.46	Optimal	249.04	0.0100
Sol12	174	650	2.20	4.39	28,942.00	30,242.00	29,598.90	181,548.36	1.24	13	292,298	40	6/14/20	4.35	Optimal	68.95	0.0100
Sol13	174	700	2.37	4.73	28,892.00	30,292.00	29,599.84	208,876.19	1.25	13	365,062	39	3/15/21	4.46	Optimal	113.40	0.0100
Sol14	174	750	2.53	5.07	28,842.00	30,342.00	29,600.24	220,991.61	1.27	13	363,212	39	3/15/21	4.46	Optimal	68.31	0.0100
Sol15	174	800	2.70	5.41	28,792.00	30,392.00	29,609.14	485,380.34	2.19	13	316,641	39	2/17/20	4.46	Optimal	45.21	0.0099
Sol16	174	850	2.87	5.74	28,742.00	30,442.00	29,610.23	517,213.50	2.26	13	314,291	39	2/17/20	4.46	Optimal	28.91	0.0100
Sol17	174	900	3.04	6.08	28,692.00	30,492.00	29,611.47	553,546.76	2.33	13	311,941	39	2/17/20	4.46	Optimal	33.59	0.0100
Sol18	174	950	3.21	6.42	28,642.00	30,542.00	29,612.40	580,125.80	2.36	13	309,591	39	2/17/20	4.46	Optimal	59.87	0.0100
Sol19	174	1,000	3.38	6.76	28,592.00	30,592.00	29,607.87	447,038.36	1.80	13	394,123	38	0/16/22	4.58	Optimal	108.86	0.0100
Sol20	174	1,050	3.55	7.10	28,542.00	30,642.00	29,609.64	499,197.24	1.97	12	272,562	40	4/18/18	4.35	Optimal	9.52	0.0098
Sol21	174	1,100	3.72	7.43	28,492.00	30,692.00	29,611.52	554,684.35	2.02	12	368,139	39	3/15/21	4.46	Optimal	11.86	0.0100
Sol22	174	1,150	3.89	7.77	28,442.00	30,742.00	29,612.68	589,049.74	2.07	12	366,389	39	3/15/21	4.46	Optimal	12.44	0.0100
Sol23	174	1,200	4.06	8.11	28,392.00	30,792.00	29,619.28	788,381.12	2.55	12	382,761	38	2/12/24	4.58	Optimal	6.03	0.0095
Sol24	174	1,250	4.22	8.45	28,342.00	30,842.00	29,614.78	650,129.23	2.07	12	380,761	38	2/12/24	4.58	Optimal	4.84	0.0099
Sol25	174	1,300	4.39	8.79	28,292.00	30,892.00	29,618.22	760,257.17	2.51	12	329,637	39	2/17/20	4.46	Optimal	23.99	0.0100
Sol26	174	1,350	4.56	9.12	28,242.00	30,942.00	29,618.48	768,719.90	2.51	12	328,037	39	2/17/20	4.46	Optimal	33.29	0.0100
Sol27	174	1,400	4.73	9.46	28,192.00	30,992.00	29,620.14	818,999.24	2.53	11	352,530	39	3/15/21	4.46	Optimal	4.57	0.0086
Sol28	174	1,450	4.90	9.80	28,142.00	31,042.00	29,621.57	852,113.06	2.37	11	334,640	39	3/15/21	4.46	Optimal	1.62	0.0037
Sol29	174	1,500	5.07	10.14	28,092.00	31,092.00	29,623.57	910,951.37	2.46	11	333,240	39	3/15/21	4.46	Optimal	2.63	0.0089
Sol30	174	1,550	5.24	10.48	28,042.00	31,142.00	29,623.51	909,080.09	2.44	11	331,840	39	3/15/21	4.46	Optimal	2.71	0.0099
Sol31	174	1,600	5.41	10.81	27,992.00	31,192.00	29,625.61	970,728.90	2.53	10	330,440	39	3/15/21	4.46	Optimal	2.26	0.0000
Sol32	174	1,650	5.58	11.15	27,942.00	31,242.00	29,626.51	996,763.39	2.56	10	329,040	39	3/15/21	4.46	Optimal	1.34	0.0100
Sol33	174	1,700	5.74	11.49	27,892.00	31,292.00	29,639.51	1,367,617.50	3.50	9	262,087	40	4/18/18	4.35	Optimal	1.38	0.0093
Sol34	174	1,750	5.91	11.83	27,842.00	31,342.00	29,640.67	1,400,458.62	3.27	9	260,061	40	4/18/18	4.35	Optimal	1.87	0.0098
Sol35	174	1,800	6.08	12.17	27,792.00	31,392.00	29,642.58	1,454,566.18	3.58	9	258,711	40	4/18/18	4.35	Optimal	0.95	0.0094
Sol36	174	1,850	6.25	12.50	27,742.00	31,442.00	29,651.32	1,702,083.35	3.99	9	257,361	40	4/18/18	4.35	Optimal	2.08	0.0087
Sol37	174	1,900	6.42	12.84	27,692.00	31,492.00	29,636.90	1,296,272.35	2.95	8	226,915	40	6/14/20	4.35	Optimal	1.04	0.0077
Sol38	174	1,950	6.59	13.18	27,642.00	31,542.00	29,637.94	1,326,802.00	2.98	8	225,915	40	6/14/20	4.35	Optimal	1.39	0.0000
Sol39	174	2,000	6.76	13.46	27,592.00	31,574.60	29,644.11	1,492,735.94	3.48	7	282,066	39	4/13/22	4.46	Optimal	0.92	0.0077
Sol40	174	2,050	6.93	13.80	27,542.00	31,624.60	29,661.40	2,008,526.25	4.21	7	281,477	39	4/13/22	4.46	Optimal	1.23	0.0093
Sol41	174	2,100	7.10	14.13	27,492.00	31,674.60	29,653.50	1,758,363.43	3.90	7	280,766	39	4/13/22	4.46	Optimal	1.53	0.0000
Sol42	174	2,150	7.27	14.47	27,442.00	31,724.60	29,645.15	1,521,977.35	3.22	7	280,116	39	4/13/22	4.46	Optimal	1.28	0.0000
Sol43	174	2,200	7.43	14.81	27,392.00	31,774.60	29,647.10	1,577,123.80	3.54	7	279,466	39	4/13/22	4.46	Optimal	1.69	0.0041
Sol44	174	2,250	7.60	15.21	27,342.00	31,824.60	29,668.14	2,211,710.66	4.40	7	282,721	39	3/15/21	4.46	Optimal	1.19	0.0000
Sol45	174	2,300	7.77	15.49	27,292.00	31,874.60	29,670.55	2,277,296.40	4.53	6	245,866	40	8/10/22	4.35	Optimal	0.79	0.0082
Sol46	174	2,350	7.94	15.82	27,242.00	31,924.60	29,654.47	1,796,271.51	3.82	6	245,466	40	8/10/22	4.35	Optimal	1.01	0.0085

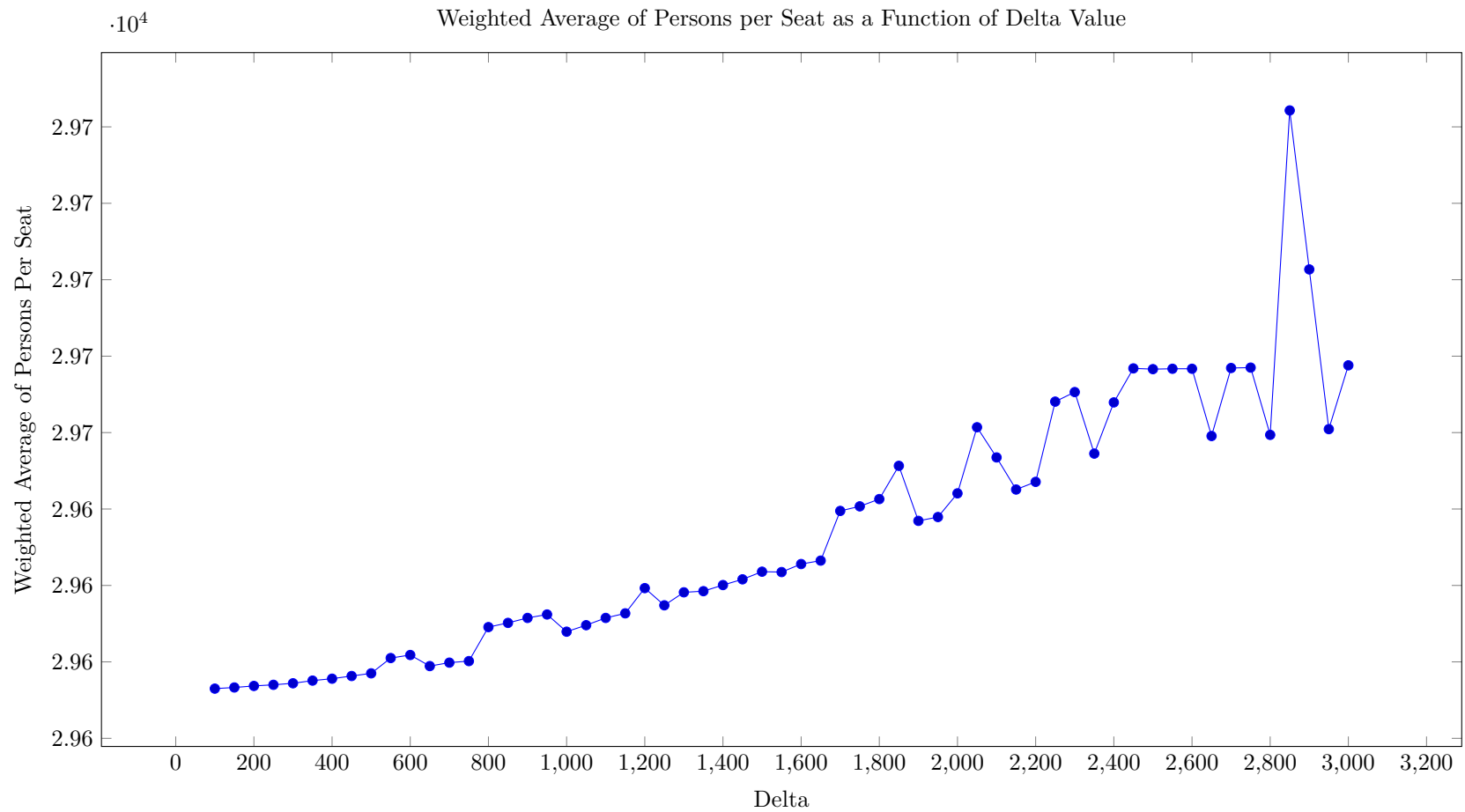
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol47	174	2,400	8.11	16.20	27,192.00	31,984.50	29,667.93	2,205,415.67	4.47	5	237,044	41	10/11/20	4.24	Optimal	0.73	0.0083
Sol48	174	2,450	8.28	16.36	27,142.00	31,984.50	29,676.79	2,452,429.47	4.87	5	236,894	41	10/11/20	4.24	Optimal	1.20	0.0000
Sol49	174	2,500	8.45	16.83	27,092.00	32,073.67	29,676.58	2,456,739.04	4.74	4	189,993	42	13/10/19	4.14	Optimal	0.42	0.0047
Sol50	174	2,550	8.62	17.00	27,042.00	32,073.67	29,676.65	2,458,454.79	4.74	4	189,843	42	13/10/19	4.14	Optimal	0.43	0.0000
Sol51	174	2,600	8.79	17.17	26,992.00	32,073.67	29,676.73	2,460,308.67	4.74	4	189,693	42	13/10/19	4.14	Optimal	0.48	0.0057
Sol52	174	2,650	8.96	17.34	26,942.00	32,073.67	29,659.07	1,934,101.47	3.72	4	189,604	42	13/10/19	4.14	Optimal	0.48	0.0063
Sol53	174	2,700	9.12	17.51	26,892.00	32,073.67	29,676.91	2,464,430.82	4.74	4	189,393	42	13/10/19	4.14	Optimal	0.49	0.0000
Sol54	174	2,750	9.29	17.68	26,842.00	32,073.67	29,677.00	2,466,699.08	4.73	4	189,243	42	13/10/19	4.14	Optimal	0.44	0.0000
Sol55	174	2,800	9.46	17.85	26,792.00	32,073.67	29,659.35	1,940,916.44	3.72	4	189,093	42	13/10/19	4.14	Optimal	0.41	0.0034
Sol56	174	2,850	9.63	19.13	26,742.00	32,403.42	29,744.30	4,566,482.02	6.70	4	188,943	42	13/10/19	4.14	Optimal	0.48	0.0032
Sol57	174	2,900	9.80	18.19	26,692.00	32,073.67	29,702.72	3,258,284.63	5.49	4	188,793	42	13/10/19	4.14	Optimal	0.59	0.0073
Sol58	174	2,950	9.97	18.36	26,642.00	32,073.67	29,660.86	1,981,947.55	4.01	4	188,643	42	13/10/19	4.14	Optimal	0.49	0.0092
Sol59	174	3,000	10.14	18.52	26,592.00	32,073.67	29,677.57	2,480,112.12	4.73	4	188,493	42	13/10/19	4.14	Optimal	0.66	0.0000

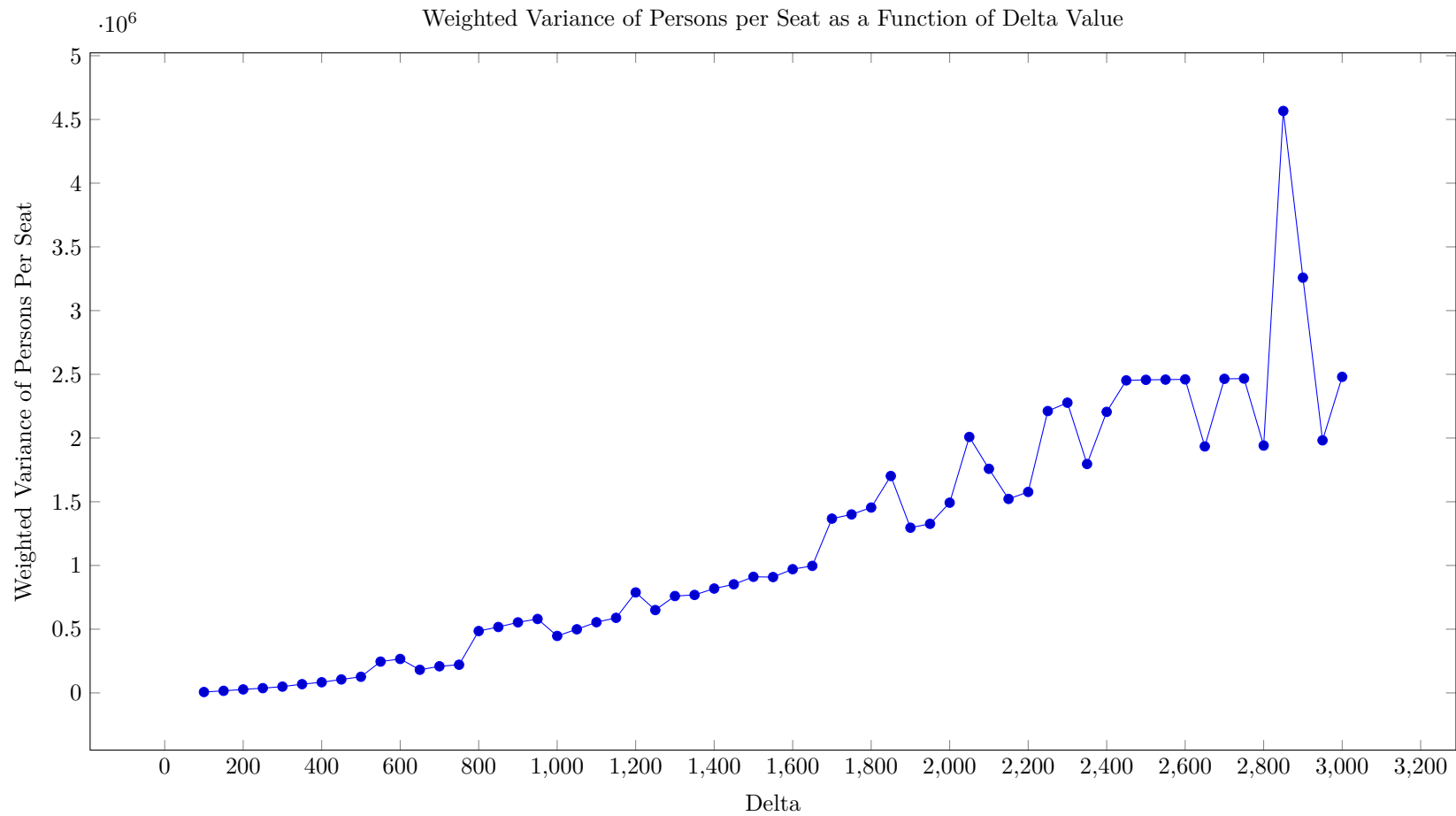


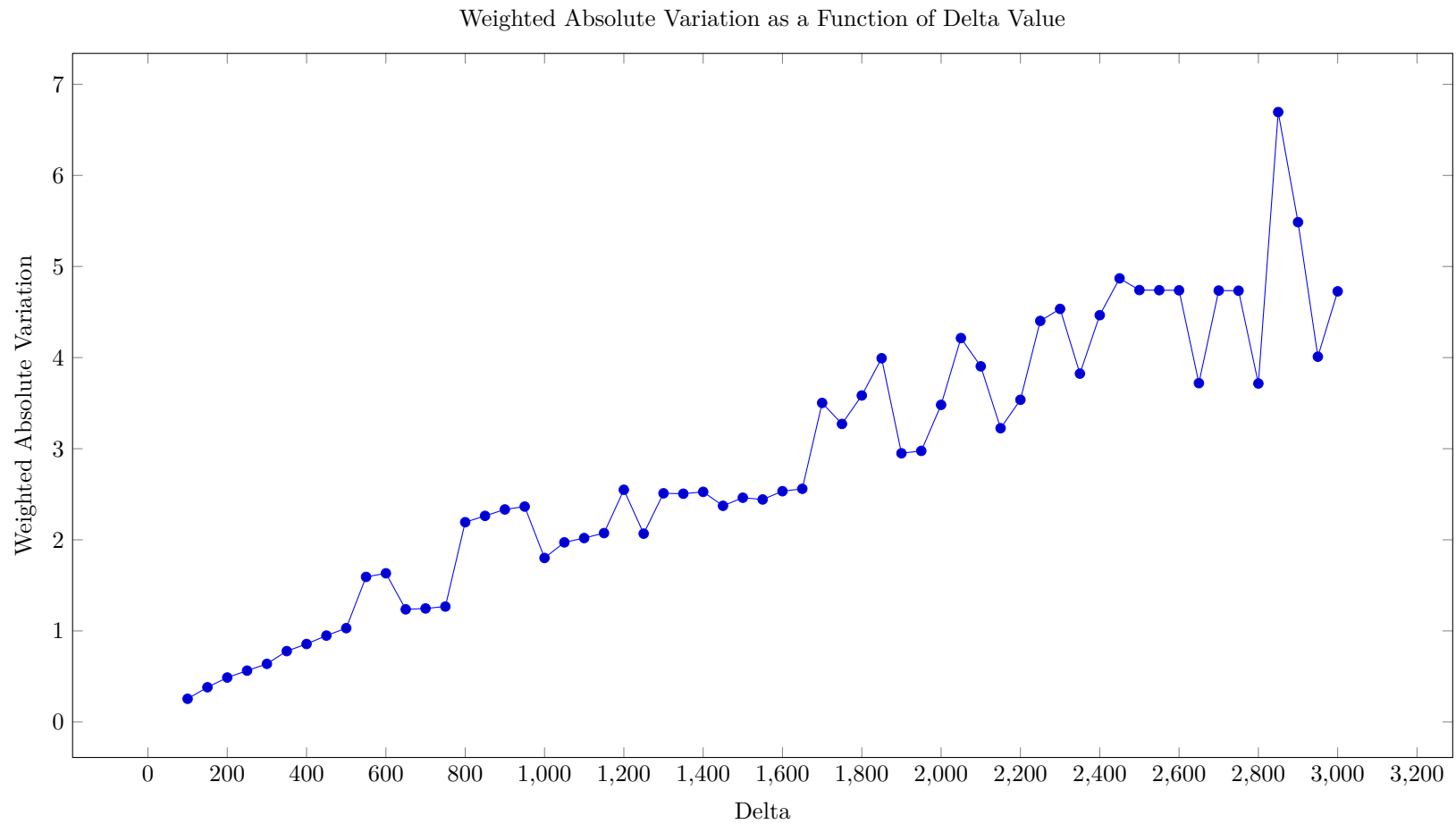












### 3 Details of Selected Solutions

### 3.1 Solution Sol1

Table 2: Solution 1

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol1	174	100	0.34	0.68	29,492.00	29,692.00	29,592.99	6,941.80	0.25	19	429,663	38	0/16/22	4.58	Solution	303.99	29.6993

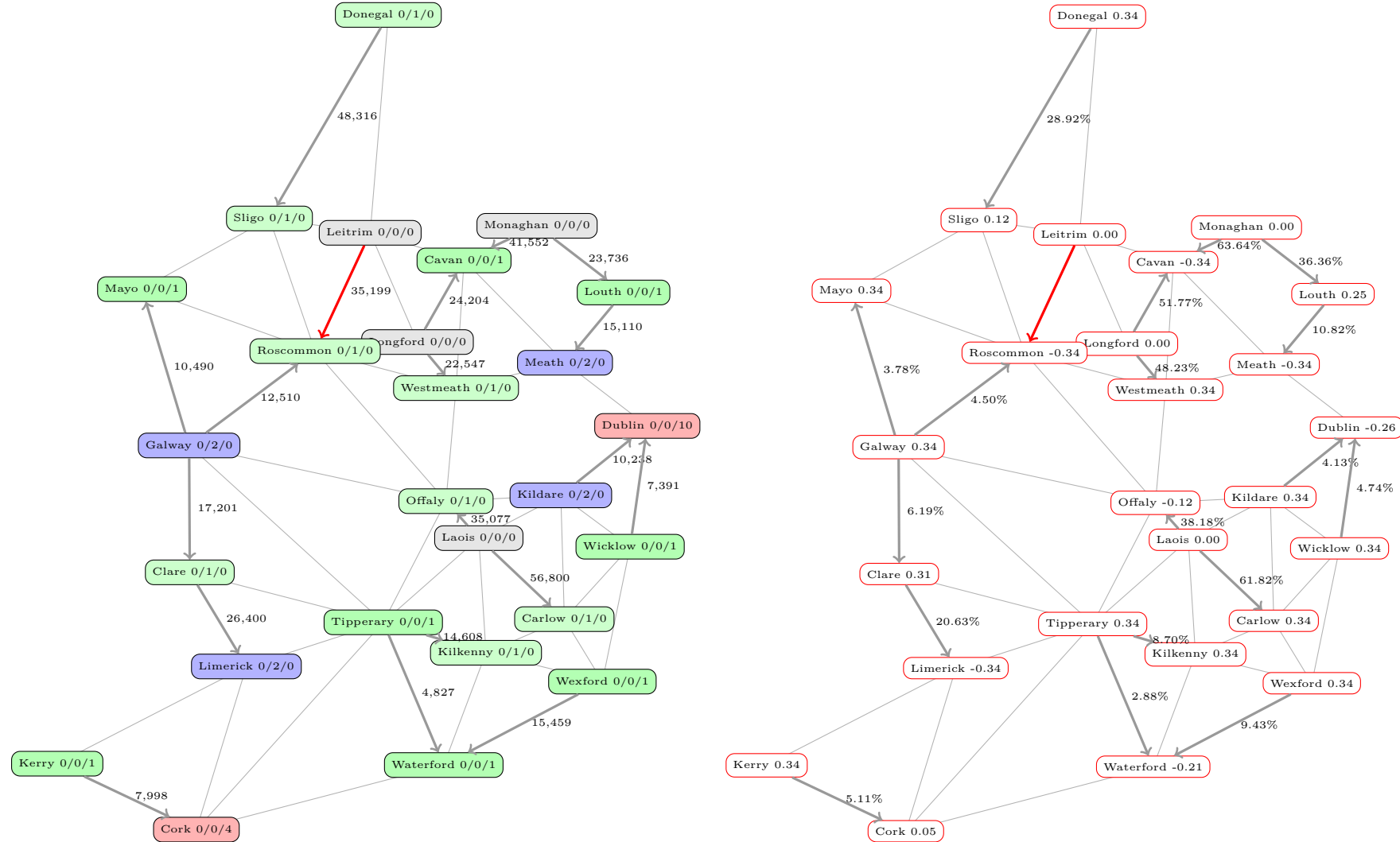
Table 3: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	56,800	118,768	1	0/1/0	4	29,692.00	0.34
Cavan	81,704	2.76	0	65,756	147,460	1	0/0/1	5	29,492.00	-0.34
Clare	127,938	4.32	26,400	17,201	118,739	1	0/1/0	4	29,684.75	0.31
Cork	584,156	19.74	0	7,998	592,154	4	0/0/4	20	29,607.70	0.05
Donegal	167,084	5.65	48,316	0	118,768	1	0/1/0	4	29,692.00	0.34
Dublin	1,458,154	49.28	0	17,629	1,475,783	10	0/0/10	50	29,515.66	-0.26
Galway	277,737	9.39	40,201	0	237,536	2	0/2/0	8	29,692.00	0.34
Kerry	156,458	5.29	7,998	0	148,460	1	0/0/1	5	29,692.00	0.34
Kildare	247,774	8.37	10,238	0	237,536	2	0/2/0	8	29,692.00	0.34
Kilkenny	104,160	3.52	0	14,608	118,768	1	0/1/0	4	29,692.00	0.34
Laois	91,877	3.10	91,877	0	0	0	0/0/0	0	0.00	0.00
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	26,400	235,936	2	0/2/0	8	29,492.00	-0.34
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	15,110	23,736	148,329	1	0/0/1	5	29,665.80	0.25
Mayo	137,970	4.66	0	10,490	148,460	1	0/0/1	5	29,692.00	0.34
Meath	220,826	7.46	0	15,110	235,936	2	0/2/0	8	29,492.00	-0.34
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	35,077	118,227	1	0/1/0	4	29,556.75	-0.12
Roscommon	70,259	2.37	0	47,709	117,968	1	0/1/0	4	29,492.00	-0.34
Sligo	70,198	2.37	0	48,316	118,514	1	0/1/0	4	29,628.50	0.12
Tipperary	167,895	5.67	19,435	0	148,460	1	0/0/1	5	29,692.00	0.34
Waterford	127,363	4.30	0	20,286	147,649	1	0/0/1	5	29,529.80	-0.21

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	22,547	118,768	1	0/1/0	4	29,692.00	0.34
Wexford	163,919	5.54	15,459	0	148,460	1	0/0/1	5	29,692.00	0.34
Wicklow	155,851	5.27	7,391	0	148,460	1	0/0/1	5	29,692.00	0.34

Table 4: 19 Transfers (Total 429663)

From	To	Volume	Percent of From
Kildare	Dublin	10,238	4.13
Laois	Carlow	56,800	61.82
Laois	Offaly	35,077	38.18
Longford	Westmeath	22,547	48.23
Longford	Cavan	24,204	51.77
Louth	Meath	15,110	10.82
Wexford	Waterford	15,459	9.43
Wicklow	Dublin	7,391	4.74
Clare	Limerick	26,400	20.63
Kerry	Cork	7,998	5.11
Tipperary	Kilkenny	14,608	8.70
Tipperary	Waterford	4,827	2.88
Galway	Clare	17,201	6.19
Galway	Mayo	10,490	3.78
Galway	Roscommon	12,510	4.50
Leitrim	Roscommon	35,199	100.00
Donegal	Sligo	48,316	28.92
Monaghan	Louth	23,736	36.36
Monaghan	Cavan	41,552	63.64

Figure 2: Sol1 (174 seats, 38 constituencies, 19 transfers, 29,592.99 persons per TD,  $\Delta_{max}$  100 (0.34% of 29,592), weighted variation 0.25%)

### 3.2 Solution Sol2

Table 5: Solution 2

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol2	174	150	0.51	1.01	29,442.00	29,742.00	29,593.30	16,318.59	0.38	18	388,711	38	0/16/22	4.58	Solution	304.80	20.9747

Table 6: Counties

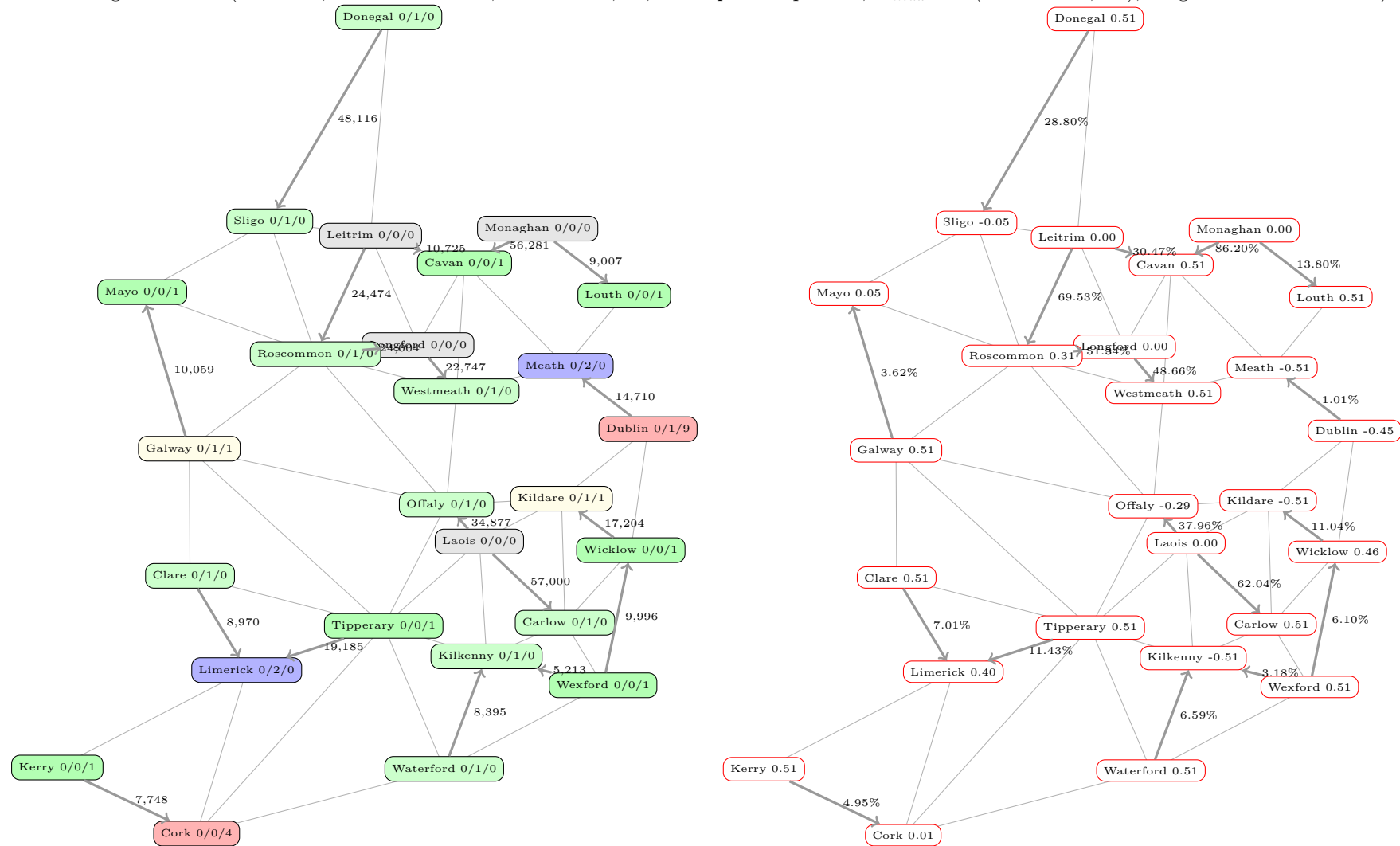
Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	57,000	118,968	1	0/1/0	4	29,742.00	0.51
Cavan	81,704	2.76	0	67,006	148,710	1	0/0/1	5	29,742.00	0.51
Clare	127,938	4.32	8,970	0	118,968	1	0/1/0	4	29,742.00	0.51
Cork	584,156	19.74	0	7,748	591,904	4	0/0/4	20	29,595.20	0.01
Donegal	167,084	5.65	48,116	0	118,968	1	0/1/0	4	29,742.00	0.51
Dublin	1,458,154	49.28	14,710	0	1,443,444	10	0/1/9	49	29,458.04	-0.45
Galway	277,737	9.39	10,059	0	267,678	2	0/1/1	9	29,742.00	0.51
Kerry	156,458	5.29	7,748	0	148,710	1	0/0/1	5	29,742.00	0.51
Kildare	247,774	8.37	0	17,204	264,978	2	0/1/1	9	29,442.00	-0.51
Kilkenny	104,160	3.52	0	13,608	117,768	1	0/1/0	4	29,442.00	-0.51
Laois	91,877	3.10	91,877	0	0	0	0/0/0	0	0.00	0.00
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	28,155	237,691	2	0/2/0	8	29,711.38	0.40
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	0	9,007	148,710	1	0/0/1	5	29,742.00	0.51
Mayo	137,970	4.66	0	10,059	148,029	1	0/0/1	5	29,605.80	0.05
Meath	220,826	7.46	0	14,710	235,536	2	0/2/0	8	29,442.00	-0.51
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	34,877	118,027	1	0/1/0	4	29,506.75	-0.29
Roscommon	70,259	2.37	0	48,478	118,737	1	0/1/0	4	29,684.25	0.31
Sligo	70,198	2.37	0	48,116	118,314	1	0/1/0	4	29,578.50	-0.05
Tipperary	167,895	5.67	19,185	0	148,710	1	0/0/1	5	29,742.00	0.51
Waterford	127,363	4.30	8,395	0	118,968	1	0/1/0	4	29,742.00	0.51

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	22,747	118,968	1	0/1/0	4	29,742.00	0.51
Wexford	163,919	5.54	15,209	0	148,710	1	0/0/1	5	29,742.00	0.51
Wicklow	155,851	5.27	17,204	9,996	148,643	1	0/0/1	5	29,728.60	0.46

Table 7: 18 Transfers (Total 388711)

From	To	Volume	Percent of From
Dublin	Meath	14,710	1.01
Laois	Carlow	57,000	62.04
Laois	Offaly	34,877	37.96
Longford	Westmeath	22,747	48.66
Longford	Roscommon	24,004	51.34
Wexford	Kilkenny	5,213	3.18
Wexford	Wicklow	9,996	6.10
Wicklow	Kildare	17,204	11.04
Clare	Limerick	8,970	7.01
Kerry	Cork	7,748	4.95
Tipperary	Limerick	19,185	11.43
Waterford	Kilkenny	8,395	6.59
Galway	Mayo	10,059	3.62
Leitrim	Roscommon	24,474	69.53
Leitrim	Cavan	10,725	30.47
Donegal	Sligo	48,116	28.80
Monaghan	Louth	9,007	13.80
Monaghan	Cavan	56,281	86.20



Figure 3: Sol2 (174 seats, 38 constituencies, 18 transfers, 29,593.30 persons per TD,  $\Delta_{max}$  150 (0.51% of 29,592), weighted variation 0.38%)

### 3.3 Solution Sol3

Table 8: Solution 3

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol3	174	200	0.68	1.35	29,392.00	29,792.00	29,593.68	27,427.65	0.49	18	454,297	39	0/21/18	4.46	Solution	304.00	26.3051

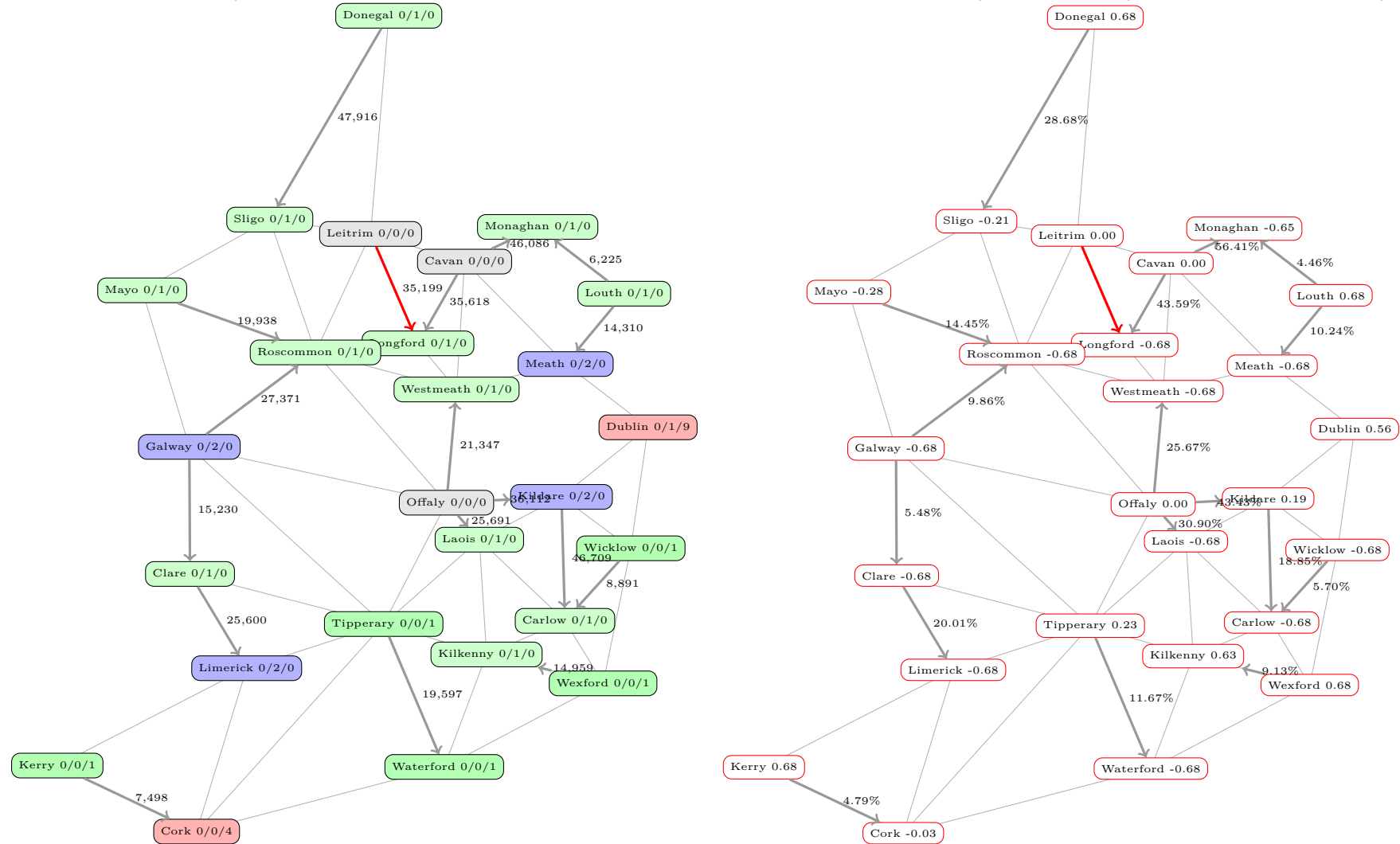
Table 9: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	55,600	117,568	1	0/1/0	4	29,392.00	-0.68
Cavan	81,704	2.76	81,704	0	0	0	0/0/0	0	0.00	0.00
Clare	127,938	4.32	25,600	15,230	117,568	1	0/1/0	4	29,392.00	-0.68
Cork	584,156	19.74	0	7,498	591,654	4	0/0/4	20	29,582.70	-0.03
Donegal	167,084	5.65	47,916	0	119,168	1	0/1/0	4	29,792.00	0.68
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/1/9	49	29,758.24	0.56
Galway	277,737	9.39	42,601	0	235,136	2	0/2/0	8	29,392.00	-0.68
Kerry	156,458	5.29	7,498	0	148,960	1	0/0/1	5	29,792.00	0.68
Kildare	247,774	8.37	46,709	36,112	237,177	2	0/2/0	8	29,647.13	0.19
Kilkenny	104,160	3.52	0	14,959	119,119	1	0/1/0	4	29,779.75	0.63
Laois	91,877	3.10	0	25,691	117,568	1	0/1/0	4	29,392.00	-0.68
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	25,600	235,136	2	0/2/0	8	29,392.00	-0.68
Longford	46,751	1.58	0	70,817	117,568	1	0/1/0	4	29,392.00	-0.68
Louth	139,703	4.72	20,535	0	119,168	1	0/1/0	4	29,792.00	0.68
Mayo	137,970	4.66	19,938	0	118,032	1	0/1/0	4	29,508.00	-0.28
Meath	220,826	7.46	0	14,310	235,136	2	0/2/0	8	29,392.00	-0.68
Monaghan	65,288	2.21	0	52,311	117,599	1	0/1/0	4	29,399.75	-0.65
Offaly	83,150	2.81	83,150	0	0	0	0/0/0	0	0.00	0.00
Roscommon	70,259	2.37	0	47,309	117,568	1	0/1/0	4	29,392.00	-0.68
Sligo	70,198	2.37	0	47,916	118,114	1	0/1/0	4	29,528.50	-0.21
Tipperary	167,895	5.67	19,597	0	148,298	1	0/0/1	5	29,659.60	0.23
Waterford	127,363	4.30	0	19,597	146,960	1	0/0/1	5	29,392.00	-0.68

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	21,347	117,568	1	0/1/0	4	29,392.00	-0.68
Wexford	163,919	5.54	14,959	0	148,960	1	0/0/1	5	29,792.00	0.68
Wicklow	155,851	5.27	8,891	0	146,960	1	0/0/1	5	29,392.00	-0.68

Table 10: 18 Transfers (Total 454297)

From	To	Volume	Percent of From
Kildare	Carlow	46,709	18.85
Louth	Meath	14,310	10.24
Louth	Monaghan	6,225	4.46
Offaly	Kildare	36,112	43.43
Offaly	Laois	25,691	30.90
Offaly	Westmeath	21,347	25.67
Wexford	Kilkenny	14,959	9.13
Wicklow	Carlow	8,891	5.70
Clare	Limerick	25,600	20.01
Kerry	Cork	7,498	4.79
Tipperary	Waterford	19,597	11.67
Galway	Clare	15,230	5.48
Galway	Roscommon	27,371	9.86
Leitrim	Longford	35,199	100.00
Mayo	Roscommon	19,938	14.45
Cavan	Longford	35,618	43.59
Cavan	Monaghan	46,086	56.41
Donegal	Sligo	47,916	28.68

Figure 4: Sol3 (174 seats, 39 constituencies, 18 transfers, 29,593.68 persons per TD,  $\Delta_{max}$  200 (0.68% of 29,592), weighted variation 0.49%)

### 3.4 Solution Sol4

Table 11: Solution 4

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol4	174	250	0.84	1.69	29,342.00	29,842.00	29,594.02	37,324.29	0.56	17	412,392	38	0/16/22	4.58	Solution	302.48	18.3777

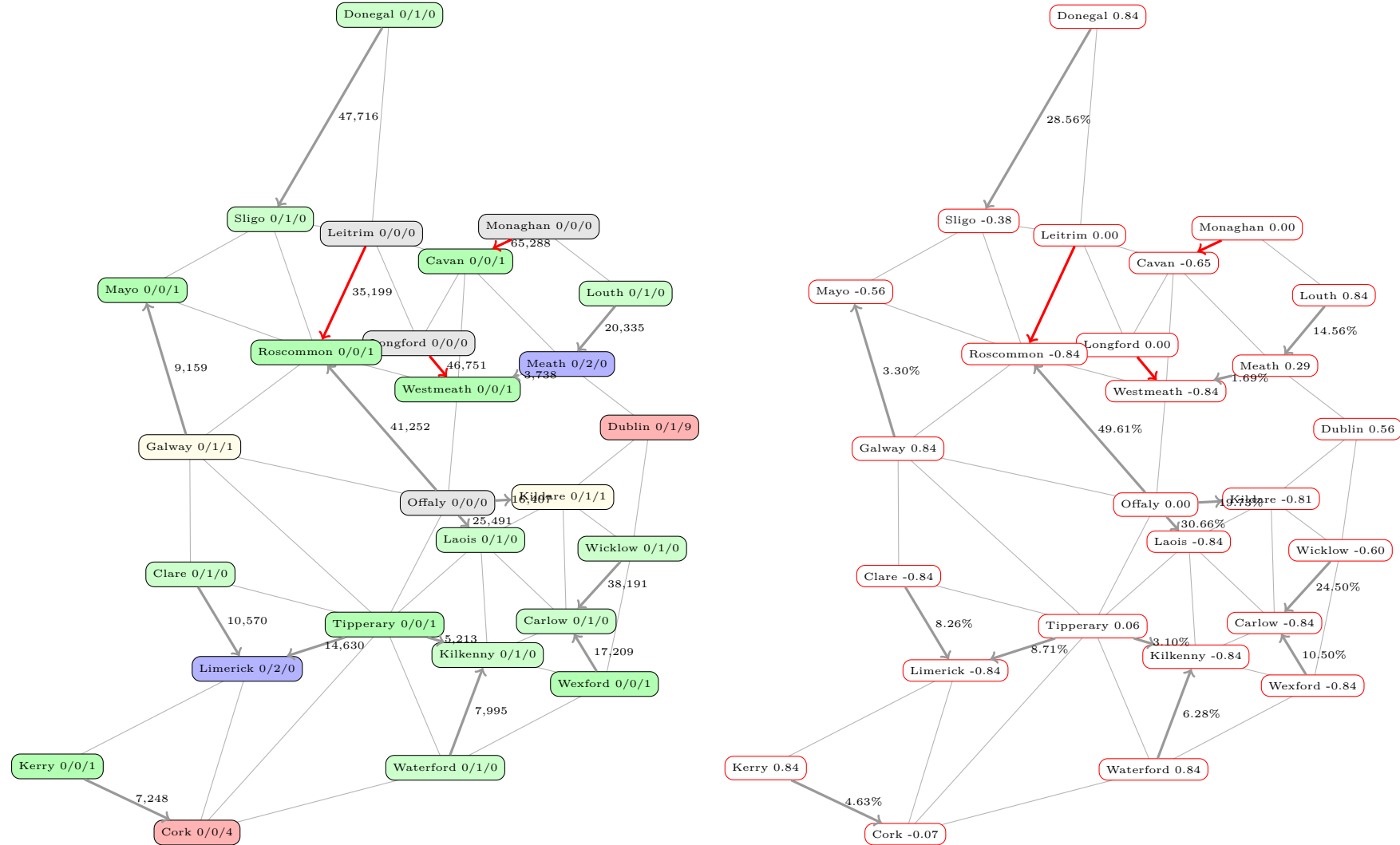
Table 12: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	55,400	117,368	1	0/1/0	4	29,342.00	-0.84
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	10,570	0	117,368	1	0/1/0	4	29,342.00	-0.84
Cork	584,156	19.74	0	7,248	591,404	4	0/0/4	20	29,570.20	-0.07
Donegal	167,084	5.65	47,716	0	119,368	1	0/1/0	4	29,842.00	0.84
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/1/9	49	29,758.24	0.56
Galway	277,737	9.39	9,159	0	268,578	2	0/1/1	9	29,842.00	0.84
Kerry	156,458	5.29	7,248	0	149,210	1	0/0/1	5	29,842.00	0.84
Kildare	247,774	8.37	0	16,407	264,181	2	0/1/1	9	29,353.44	-0.81
Kilkenny	104,160	3.52	0	13,208	117,368	1	0/1/0	4	29,342.00	-0.84
Laois	91,877	3.10	0	25,491	117,368	1	0/1/0	4	29,342.00	-0.84
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	25,200	234,736	2	0/2/0	8	29,342.00	-0.84
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	20,335	0	119,368	1	0/1/0	4	29,842.00	0.84
Mayo	137,970	4.66	0	9,159	147,129	1	0/0/1	5	29,425.80	-0.56
Meath	220,826	7.46	3,738	20,335	237,423	2	0/2/0	8	29,677.88	0.29
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	83,150	0	0	0	0/0/0	0	0.00	0.00
Roscommon	70,259	2.37	0	76,451	146,710	1	0/0/1	5	29,342.00	-0.84
Sligo	70,198	2.37	0	47,716	117,914	1	0/1/0	4	29,478.50	-0.38
Tipperary	167,895	5.67	19,843	0	148,052	1	0/0/1	5	29,610.40	0.06
Waterford	127,363	4.30	7,995	0	119,368	1	0/1/0	4	29,842.00	0.84

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	50,489	146,710	1	0/0/1	5	29,342.00	-0.84
Wexford	163,919	5.54	17,209	0	146,710	1	0/0/1	5	29,342.00	-0.84
Wicklow	155,851	5.27	38,191	0	117,660	1	0/1/0	4	29,415.00	-0.60

Table 13: 17 Transfers (Total 412392)

From	To	Volume	Percent of From
Longford	Westmeath	46,751	100.00
Louth	Meath	20,335	14.56
Meath	Westmeath	3,738	1.69
Offaly	Kildare	16,407	19.73
Offaly	Laois	25,491	30.66
Offaly	Roscommon	41,252	49.61
Wexford	Carlow	17,209	10.50
Wicklow	Carlow	38,191	24.50
Clare	Limerick	10,570	8.26
Kerry	Cork	7,248	4.63
Tipperary	Kilkenny	5,213	3.10
Tipperary	Limerick	14,630	8.71
Waterford	Kilkenny	7,995	6.28
Galway	Mayo	9,159	3.30
Leitrim	Roscommon	35,199	100.00
Donegal	Sligo	47,716	28.56
Monaghan	Cavan	65,288	100.00

Figure 5: Sol4 (174 seats, 38 constituencies, 17 transfers, 29,594.02 persons per TD,  $\Delta_{max}$  250 (0.84% of 29,592), weighted variation 0.56%)

### 3.5 Solution Sol5

Table 14: Solution 5

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol5	174	300	1.01	2.03	29,292.00	29,892.00	29,594.42	49,351.39	0.64	17	396,779	38	0/16/22	4.58	Solution	303.78	19.3749

Table 15: Counties

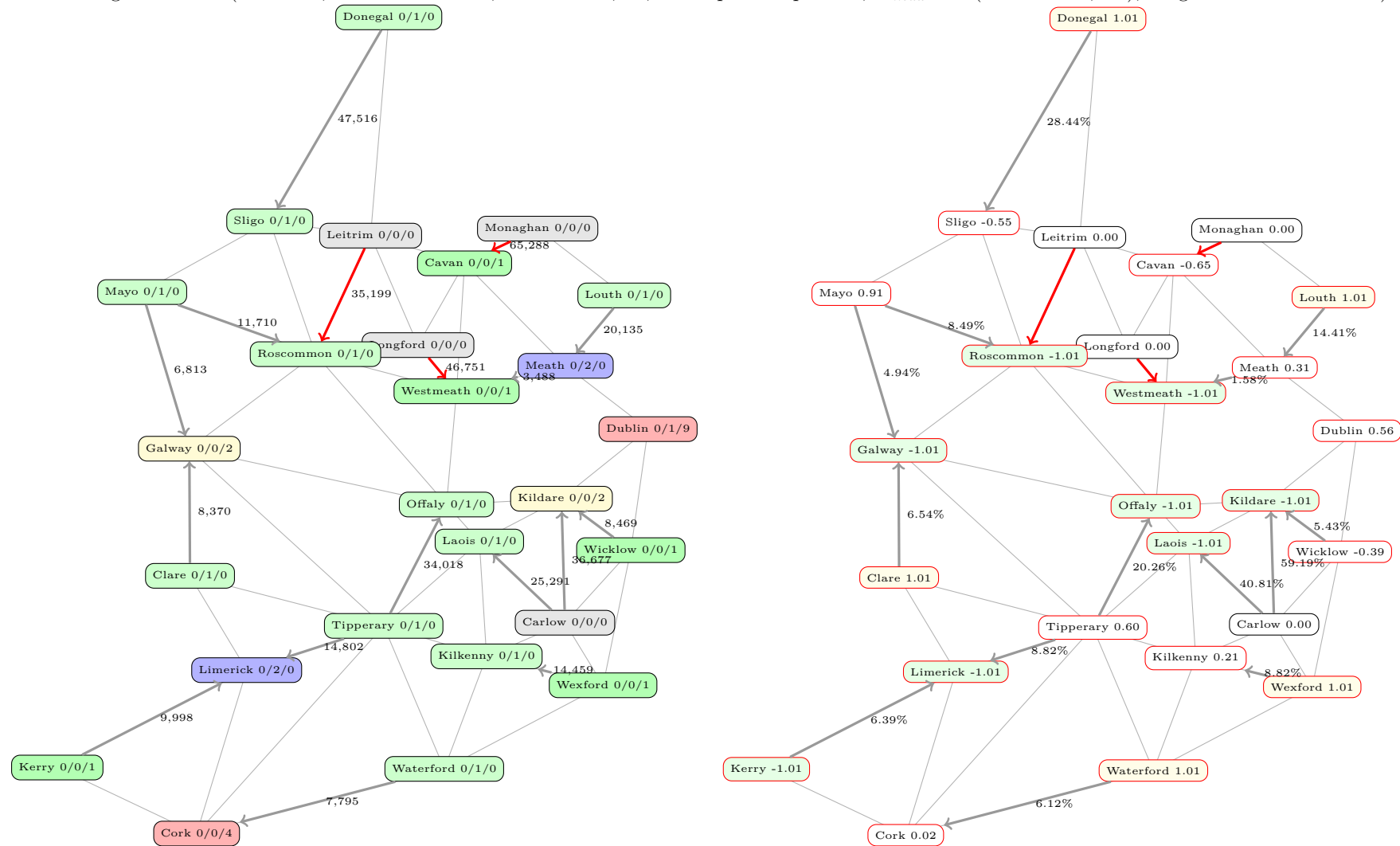
Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	61,968	0	0	0	0/0/0	0	0.00	0.00
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	8,370	0	119,568	1	0/1/0	4	29,892.00	1.01
Cork	584,156	19.74	0	7,795	591,951	4	0/0/4	20	29,597.55	0.02
Donegal	167,084	5.65	47,516	0	119,568	1	0/1/0	4	29,892.00	1.01
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/1/9	49	29,758.24	0.56
Galway	277,737	9.39	0	15,183	292,920	2	0/0/2	10	29,292.00	-1.01
Kerry	156,458	5.29	9,998	0	146,460	1	0/0/1	5	29,292.00	-1.01
Kildare	247,774	8.37	0	45,146	292,920	2	0/0/2	10	29,292.00	-1.01
Kilkenny	104,160	3.52	0	14,459	118,619	1	0/1/0	4	29,654.75	0.21
Laois	91,877	3.10	0	25,291	117,168	1	0/1/0	4	29,292.00	-1.01
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	24,800	234,336	2	0/2/0	8	29,292.00	-1.01
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	20,135	0	119,568	1	0/1/0	4	29,892.00	1.01
Mayo	137,970	4.66	18,523	0	119,447	1	0/1/0	4	29,861.75	0.91
Meath	220,826	7.46	3,488	20,135	237,473	2	0/2/0	8	29,684.13	0.31
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	34,018	117,168	1	0/1/0	4	29,292.00	-1.01
Roscommon	70,259	2.37	0	46,909	117,168	1	0/1/0	4	29,292.00	-1.01
Sligo	70,198	2.37	0	47,516	117,714	1	0/1/0	4	29,428.50	-0.55
Tipperary	167,895	5.67	48,820	0	119,075	1	0/1/0	4	29,768.75	0.60
Waterford	127,363	4.30	7,795	0	119,568	1	0/1/0	4	29,892.00	1.01



Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	50,239	146,460	1	0/0/1	5	29,292.00	-1.01
Wexford	163,919	5.54	14,459	0	149,460	1	0/0/1	5	29,892.00	1.01
Wicklow	155,851	5.27	8,469	0	147,382	1	0/0/1	5	29,476.40	-0.39

Table 16: 17 Transfers (Total 396779)

From	To	Volume	Percent of From
Carlow	Kildare	36,677	59.19
Carlow	Laois	25,291	40.81
Longford	Westmeath	46,751	100.00
Louth	Meath	20,135	14.41
Meath	Westmeath	3,488	1.58
Wexford	Kilkenny	14,459	8.82
Wicklow	Kildare	8,469	5.43
Clare	Galway	8,370	6.54
Kerry	Limerick	9,998	6.39
Tipperary	Offaly	34,018	20.26
Tipperary	Limerick	14,802	8.82
Waterford	Cork	7,795	6.12
Leitrim	Roscommon	35,199	100.00
Mayo	Galway	6,813	4.94
Mayo	Roscommon	11,710	8.49
Donegal	Sligo	47,516	28.44
Monaghan	Cavan	65,288	100.00

Figure 6: Sol5 (174 seats, 38 constituencies, 17 transfers, 29,594.42 persons per TD,  $\Delta_{max}$  300 (1.01% of 29,592), weighted variation 0.64%)

### 3.6 Solution Sol6

Table 17: Solution 6

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol6	174	350	1.18	2.37	29,242.00	29,942.00	29,595.07	68,555.65	0.78	15	357,725	39	3/15/21	4.46	Solution	303.29	8.5972

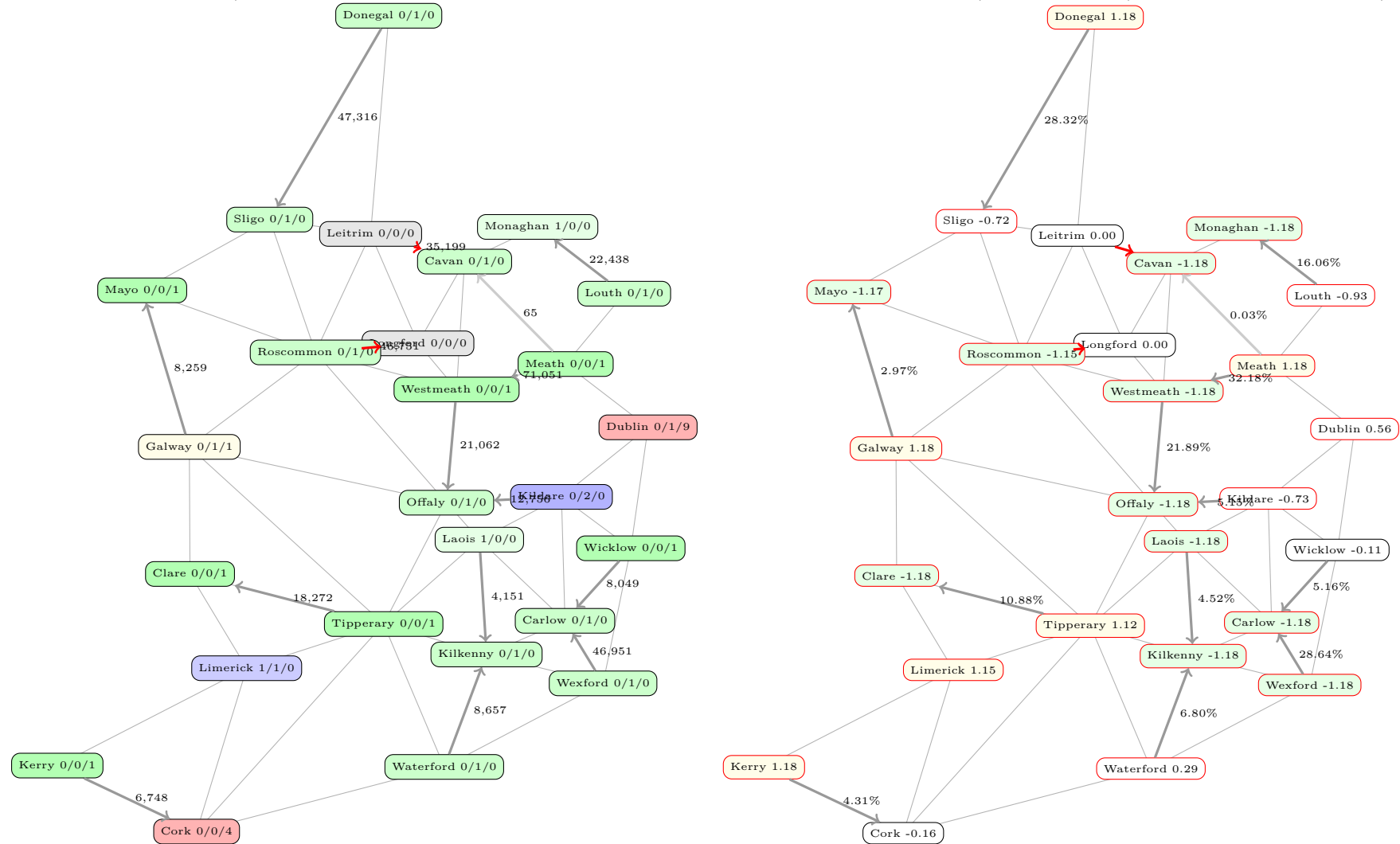
Table 18: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	55,000	116,968	1	0/1/0	4	29,242.00	-1.18
Cavan	81,704	2.76	0	35,264	116,968	1	0/1/0	4	29,242.00	-1.18
Clare	127,938	4.32	0	18,272	146,210	1	0/0/1	5	29,242.00	-1.18
Cork	584,156	19.74	0	6,748	590,904	4	0/0/4	20	29,545.20	-0.16
Donegal	167,084	5.65	47,316	0	119,768	1	0/1/0	4	29,942.00	1.18
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/1/9	49	29,758.24	0.56
Galway	277,737	9.39	8,259	0	269,478	2	0/1/1	9	29,942.00	1.18
Kerry	156,458	5.29	6,748	0	149,710	1	0/0/1	5	29,942.00	1.18
Kildare	247,774	8.37	12,756	0	235,018	2	0/2/0	8	29,377.25	-0.73
Kilkenny	104,160	3.52	0	12,808	116,968	1	0/1/0	4	29,242.00	-1.18
Laois	91,877	3.10	4,151	0	87,726	1	1/0/0	3	29,242.00	-1.18
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	0	209,536	2	1/1/0	7	29,933.71	1.15
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	22,438	0	117,265	1	0/1/0	4	29,316.25	-0.93
Mayo	137,970	4.66	0	8,259	146,229	1	0/0/1	5	29,245.80	-1.17
Meath	220,826	7.46	71,116	0	149,710	1	0/0/1	5	29,942.00	1.18
Monaghan	65,288	2.21	0	22,438	87,726	1	1/0/0	3	29,242.00	-1.18
Offaly	83,150	2.81	0	33,818	116,968	1	0/1/0	4	29,242.00	-1.18
Roscommon	70,259	2.37	0	46,751	117,010	1	0/1/0	4	29,252.50	-1.15
Sligo	70,198	2.37	0	47,316	117,514	1	0/1/0	4	29,378.50	-0.72
Tipperary	167,895	5.67	18,272	0	149,623	1	0/0/1	5	29,924.60	1.12
Waterford	127,363	4.30	8,657	0	118,706	1	0/1/0	4	29,676.50	0.29

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	21,062	71,051	146,210	1	0/0/1	5	29,242.00	-1.18
Wexford	163,919	5.54	46,951	0	116,968	1	0/1/0	4	29,242.00	-1.18
Wicklow	155,851	5.27	8,049	0	147,802	1	0/0/1	5	29,560.40	-0.11

Table 19: 15 Transfers (Total 357725)

From	To	Volume	Percent of From
Kildare	Offaly	12,756	5.15
Laois	Kilkenny	4,151	4.52
Longford	Roscommon	46,751	100.00
Louth	Monaghan	22,438	16.06
Meath	Westmeath	71,051	32.18
Meath	Cavan	65	0.03
Westmeath	Offaly	21,062	21.89
Wexford	Carlow	46,951	28.64
Wicklow	Carlow	8,049	5.16
Kerry	Cork	6,748	4.31
Tipperary	Clare	18,272	10.88
Waterford	Kilkenny	8,657	6.80
Galway	Mayo	8,259	2.97
Leitrim	Cavan	35,199	100.00
Donegal	Sligo	47,316	28.32

Figure 7: Sol6 (174 seats, 39 constituencies, 15 transfers, 29,595.07 persons per TD,  $\Delta_{max}$  350 (1.18% of 29,592), weighted variation 0.78%)

### 3.7 Solution Sol7

Table 20: Solution 7

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol7	174	400	1.35	2.70	29,192.00	29,992.00	29,595.58	83,633.80	0.86	14	355,756	39	3/15/21	4.46	Solution	303.19	5.1500

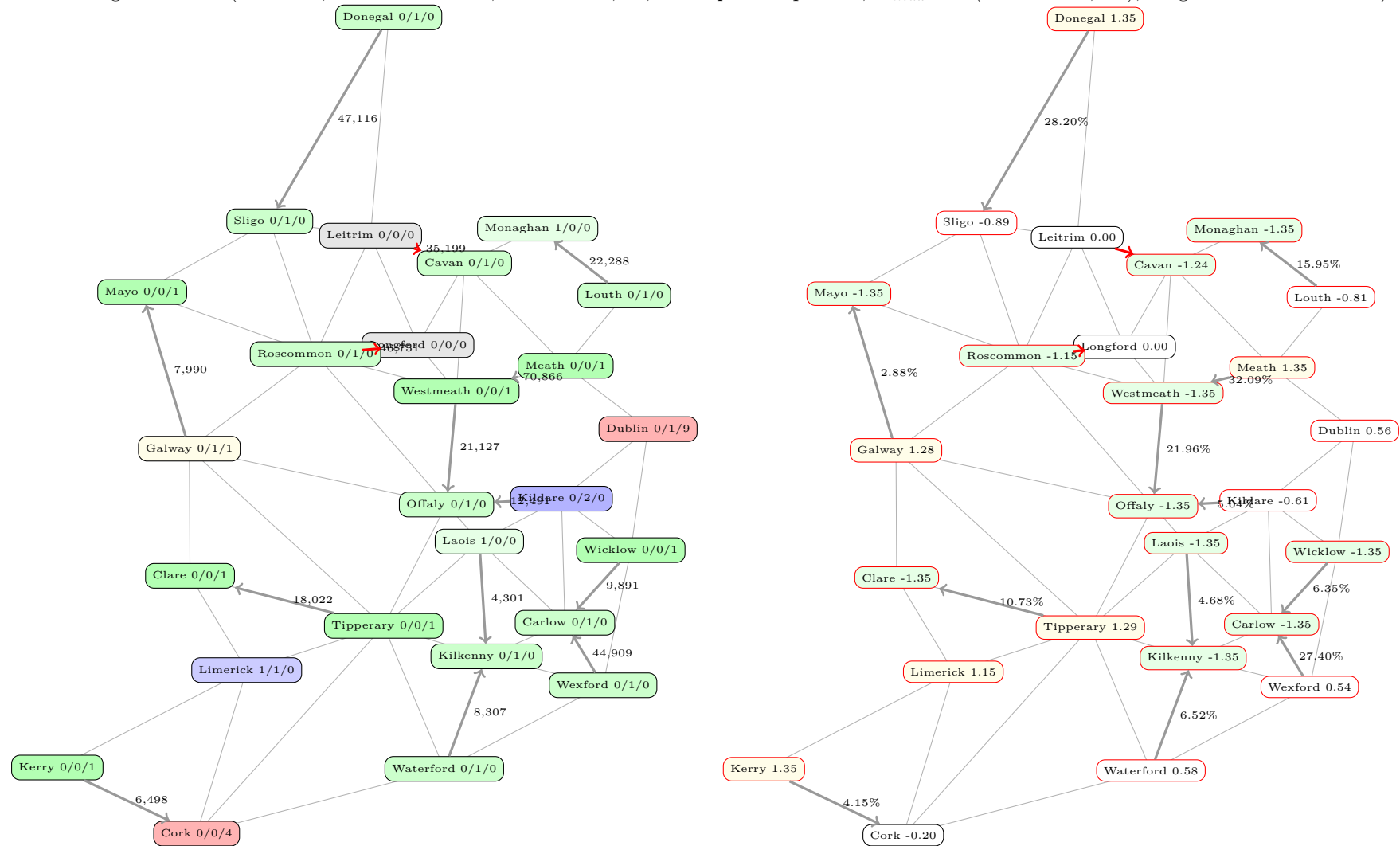
Table 21: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	54,800	116,768	1	0/1/0	4	29,192.00	-1.35
Cavan	81,704	2.76	0	35,199	116,903	1	0/1/0	4	29,225.75	-1.24
Clare	127,938	4.32	0	18,022	145,960	1	0/0/1	5	29,192.00	-1.35
Cork	584,156	19.74	0	6,498	590,654	4	0/0/4	20	29,532.70	-0.20
Donegal	167,084	5.65	47,116	0	119,968	1	0/1/0	4	29,992.00	1.35
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/1/9	49	29,758.24	0.56
Galway	277,737	9.39	7,990	0	269,747	2	0/1/1	9	29,971.89	1.28
Kerry	156,458	5.29	6,498	0	149,960	1	0/0/1	5	29,992.00	1.35
Kildare	247,774	8.37	12,491	0	235,283	2	0/2/0	8	29,410.38	-0.61
Kilkenny	104,160	3.52	0	12,608	116,768	1	0/1/0	4	29,192.00	-1.35
Laois	91,877	3.10	4,301	0	87,576	1	1/0/0	3	29,192.00	-1.35
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	0	209,536	2	1/1/0	7	29,933.71	1.15
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	22,288	0	117,415	1	0/1/0	4	29,353.75	-0.81
Mayo	137,970	4.66	0	7,990	145,960	1	0/0/1	5	29,192.00	-1.35
Meath	220,826	7.46	70,866	0	149,960	1	0/0/1	5	29,992.00	1.35
Monaghan	65,288	2.21	0	22,288	87,576	1	1/0/0	3	29,192.00	-1.35
Offaly	83,150	2.81	0	33,618	116,768	1	0/1/0	4	29,192.00	-1.35
Roscommon	70,259	2.37	0	46,751	117,010	1	0/1/0	4	29,252.50	-1.15
Sligo	70,198	2.37	0	47,116	117,314	1	0/1/0	4	29,328.50	-0.89
Tipperary	167,895	5.67	18,022	0	149,873	1	0/0/1	5	29,974.60	1.29
Waterford	127,363	4.30	8,307	0	119,056	1	0/1/0	4	29,764.00	0.58

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	21,127	70,866	145,960	1	0/0/1	5	29,192.00	-1.35
Wexford	163,919	5.54	44,909	0	119,010	1	0/1/0	4	29,752.50	0.54
Wicklow	155,851	5.27	9,891	0	145,960	1	0/0/1	5	29,192.00	-1.35

Table 22: 14 Transfers (Total 355756)

From	To	Volume	Percent of From
Kildare	Offaly	12,491	5.04
Laois	Kilkenny	4,301	4.68
Longford	Roscommon	46,751	100.00
Louth	Monaghan	22,288	15.95
Meath	Westmeath	70,866	32.09
Westmeath	Offaly	21,127	21.96
Wexford	Carlow	44,909	27.40
Wicklow	Carlow	9,891	6.35
Kerry	Cork	6,498	4.15
Tipperary	Clare	18,022	10.73
Waterford	Kilkenny	8,307	6.52
Galway	Mayo	7,990	2.88
Leitrim	Cavan	35,199	100.00
Donegal	Sligo	47,116	28.20

Figure 8: Sol7 (174 seats, 39 constituencies, 14 transfers, 29,595.58 persons per TD,  $\Delta_{max}$  400 (1.35% of 29,592), weighted variation 0.86%)



### 3.8 Solution Sol8

Table 23: Solution 8

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol8	174	450	1.52	3.04	29,142.00	30,042.00	29,596.33	105,705.22	0.95	14	345,232	39	3/15/21	4.46	Solution	300.17	0.5723

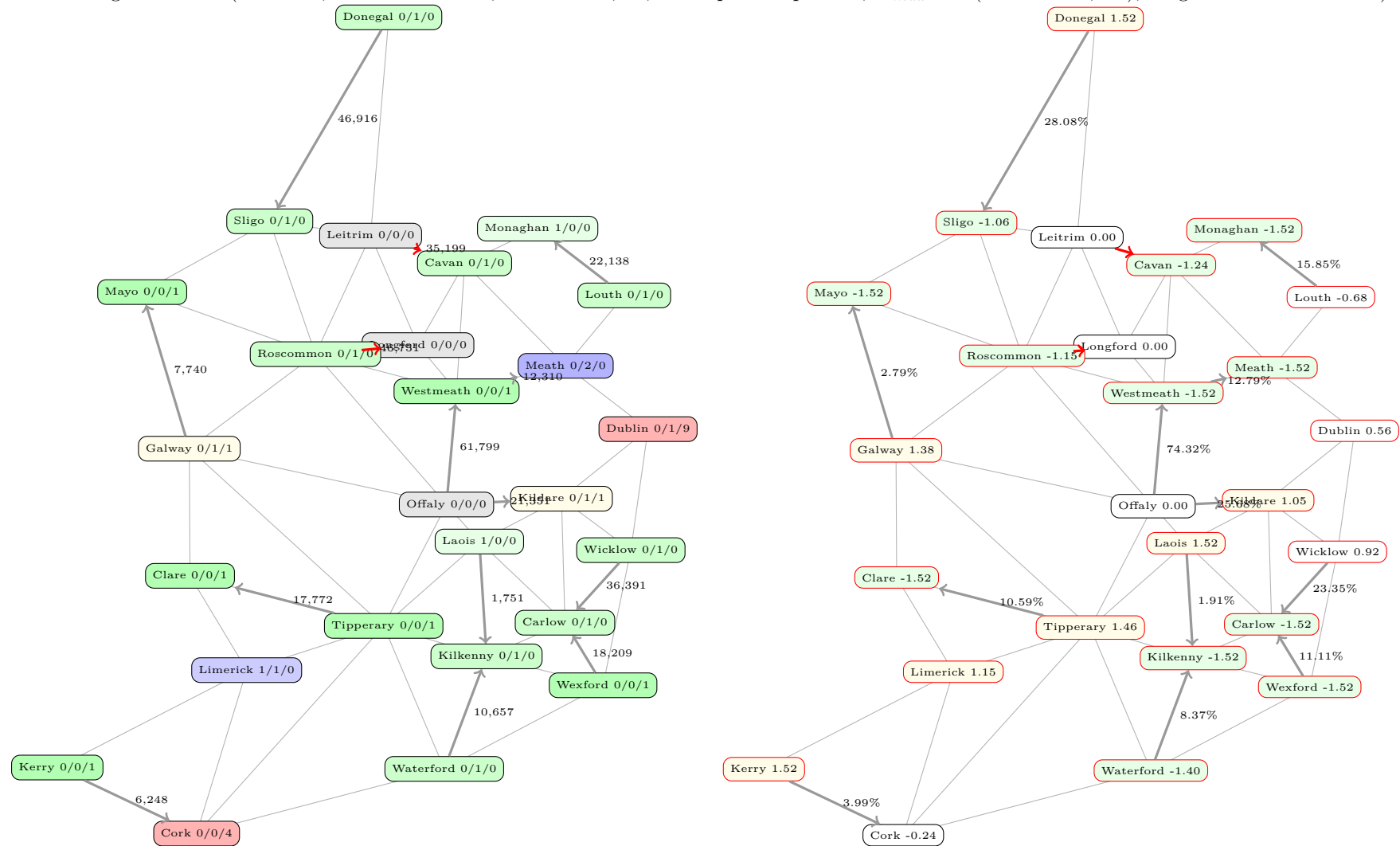
Table 24: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	54,600	116,568	1	0/1/0	4	29,142.00	-1.52
Cavan	81,704	2.76	0	35,199	116,903	1	0/1/0	4	29,225.75	-1.24
Clare	127,938	4.32	0	17,772	145,710	1	0/0/1	5	29,142.00	-1.52
Cork	584,156	19.74	0	6,248	590,404	4	0/0/4	20	29,520.20	-0.24
Donegal	167,084	5.65	46,916	0	120,168	1	0/1/0	4	30,042.00	1.52
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/1/9	49	29,758.24	0.56
Galway	277,737	9.39	7,740	0	269,997	2	0/1/1	9	29,999.67	1.38
Kerry	156,458	5.29	6,248	0	150,210	1	0/0/1	5	30,042.00	1.52
Kildare	247,774	8.37	0	21,351	269,125	2	0/1/1	9	29,902.78	1.05
Kilkenny	104,160	3.52	0	12,408	116,568	1	0/1/0	4	29,142.00	-1.52
Laois	91,877	3.10	1,751	0	90,126	1	1/0/0	3	30,042.00	1.52
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	0	209,536	2	1/1/0	7	29,933.71	1.15
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	22,138	0	117,565	1	0/1/0	4	29,391.25	-0.68
Mayo	137,970	4.66	0	7,740	145,710	1	0/0/1	5	29,142.00	-1.52
Meath	220,826	7.46	0	12,310	233,136	2	0/2/0	8	29,142.00	-1.52
Monaghan	65,288	2.21	0	22,138	87,426	1	1/0/0	3	29,142.00	-1.52
Offaly	83,150	2.81	83,150	0	0	0	0/0/0	0	0.00	0.00
Roscommon	70,259	2.37	0	46,751	117,010	1	0/1/0	4	29,252.50	-1.15
Sligo	70,198	2.37	0	46,916	117,114	1	0/1/0	4	29,278.50	-1.06
Tipperary	167,895	5.67	17,772	0	150,123	1	0/0/1	5	30,024.60	1.46
Waterford	127,363	4.30	10,657	0	116,706	1	0/1/0	4	29,176.50	-1.40

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	12,310	61,799	145,710	1	0/0/1	5	29,142.00	-1.52
Wexford	163,919	5.54	18,209	0	145,710	1	0/0/1	5	29,142.00	-1.52
Wicklow	155,851	5.27	36,391	0	119,460	1	0/1/0	4	29,865.00	0.92

Table 25: 14 Transfers (Total 345232)

From	To	Volume	Percent of From
Laois	Kilkenny	1,751	1.91
Longford	Roscommon	46,751	100.00
Louth	Monaghan	22,138	15.85
Offaly	Kildare	21,351	25.68
Offaly	Westmeath	61,799	74.32
Westmeath	Meath	12,310	12.79
Wexford	Carlow	18,209	11.11
Wicklow	Carlow	36,391	23.35
Kerry	Cork	6,248	3.99
Tipperary	Clare	17,772	10.59
Waterford	Kilkenny	10,657	8.37
Galway	Mayo	7,740	2.79
Leitrim	Cavan	35,199	100.00
Donegal	Sligo	46,916	28.08

Figure 9: Sol8 (174 seats, 39 constituencies, 14 transfers, 29,596.33 persons per TD,  $\Delta_{max}$  450 (1.52% of 29,592), weighted variation 0.95%)

### 3.9 Solution Sol9

Table 26: Solution 9

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol9	174	500	1.69	3.38	29,092.00	30,092.00	29,597.04	126,574.67	1.03	14	367,823	39	2/17/20	4.46	Solution	302.15	3.5265

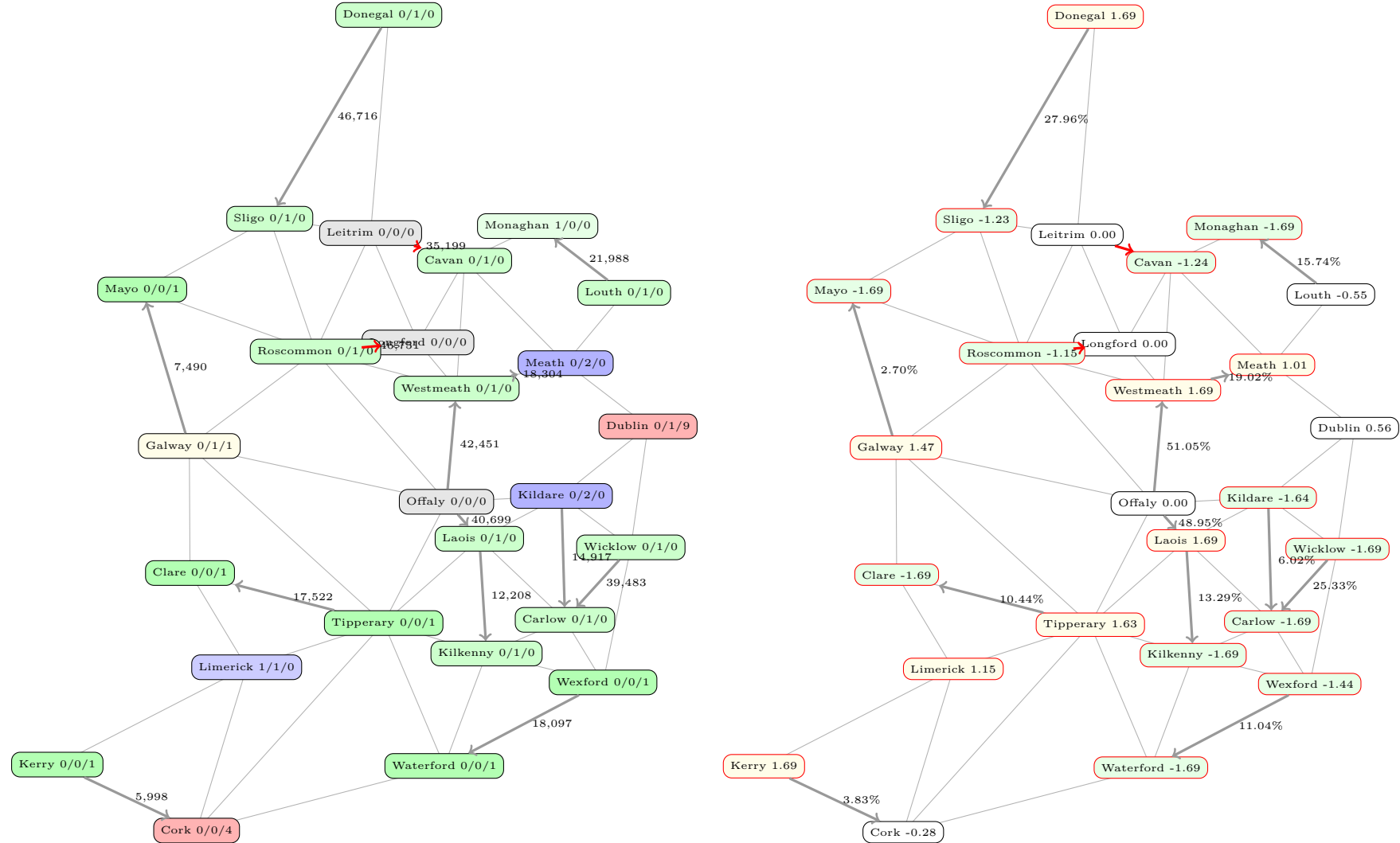
Table 27: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	54,400	116,368	1	0/1/0	4	29,092.00	-1.69
Cavan	81,704	2.76	0	35,199	116,903	1	0/1/0	4	29,225.75	-1.24
Clare	127,938	4.32	0	17,522	145,460	1	0/0/1	5	29,092.00	-1.69
Cork	584,156	19.74	0	5,998	590,154	4	0/0/4	20	29,507.70	-0.28
Donegal	167,084	5.65	46,716	0	120,368	1	0/1/0	4	30,092.00	1.69
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/1/9	49	29,758.24	0.56
Galway	277,737	9.39	7,490	0	270,247	2	0/1/1	9	30,027.44	1.47
Kerry	156,458	5.29	5,998	0	150,460	1	0/0/1	5	30,092.00	1.69
Kildare	247,774	8.37	14,917	0	232,857	2	0/2/0	8	29,107.13	-1.64
Kilkenny	104,160	3.52	0	12,208	116,368	1	0/1/0	4	29,092.00	-1.69
Laois	91,877	3.10	12,208	40,699	120,368	1	0/1/0	4	30,092.00	1.69
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	0	209,536	2	1/1/0	7	29,933.71	1.15
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	21,988	0	117,715	1	0/1/0	4	29,428.75	-0.55
Mayo	137,970	4.66	0	7,490	145,460	1	0/0/1	5	29,092.00	-1.69
Meath	220,826	7.46	0	18,304	239,130	2	0/2/0	8	29,891.25	1.01
Monaghan	65,288	2.21	0	21,988	87,276	1	1/0/0	3	29,092.00	-1.69
Offaly	83,150	2.81	83,150	0	0	0	0/0/0	0	0.00	0.00
Roscommon	70,259	2.37	0	46,751	117,010	1	0/1/0	4	29,252.50	-1.15
Sligo	70,198	2.37	0	46,716	116,914	1	0/1/0	4	29,228.50	-1.23
Tipperary	167,895	5.67	17,522	0	150,373	1	0/0/1	5	30,074.60	1.63
Waterford	127,363	4.30	0	18,097	145,460	1	0/0/1	5	29,092.00	-1.69

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	18,304	42,451	120,368	1	0/1/0	4	30,092.00	1.69
Wexford	163,919	5.54	18,097	0	145,822	1	0/0/1	5	29,164.40	-1.44
Wicklow	155,851	5.27	39,483	0	116,368	1	0/1/0	4	29,092.00	-1.69

Table 28: 14 Transfers (Total 367823)

From	To	Volume	Percent of From
Kildare	Carlow	14,917	6.02
Laois	Kilkenny	12,208	13.29
Longford	Roscommon	46,751	100.00
Louth	Monaghan	21,988	15.74
Offaly	Laois	40,699	48.95
Offaly	Westmeath	42,451	51.05
Westmeath	Meath	18,304	19.02
Wexford	Waterford	18,097	11.04
Wicklow	Carlow	39,483	25.33
Kerry	Cork	5,998	3.83
Tipperary	Clare	17,522	10.44
Galway	Mayo	7,490	2.70
Leitrim	Cavan	35,199	100.00
Donegal	Sligo	46,716	27.96

Figure 10: Sol9 (174 seats, 39 constituencies, 14 transfers, 29,597.04 persons per TD,  $\Delta_{max}$  500 (1.69% of 29,592), weighted variation 1.03%)

### 3.10 Solution Sol10

Table 29: Solution 10

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol10	174	550	1.86	3.72	29,042.00	30,142.00	29,601.04	245,667.46	1.59	14	360,260	39	1/19/19	4.46	Solution	301.09	1.7294

Table 30: Counties

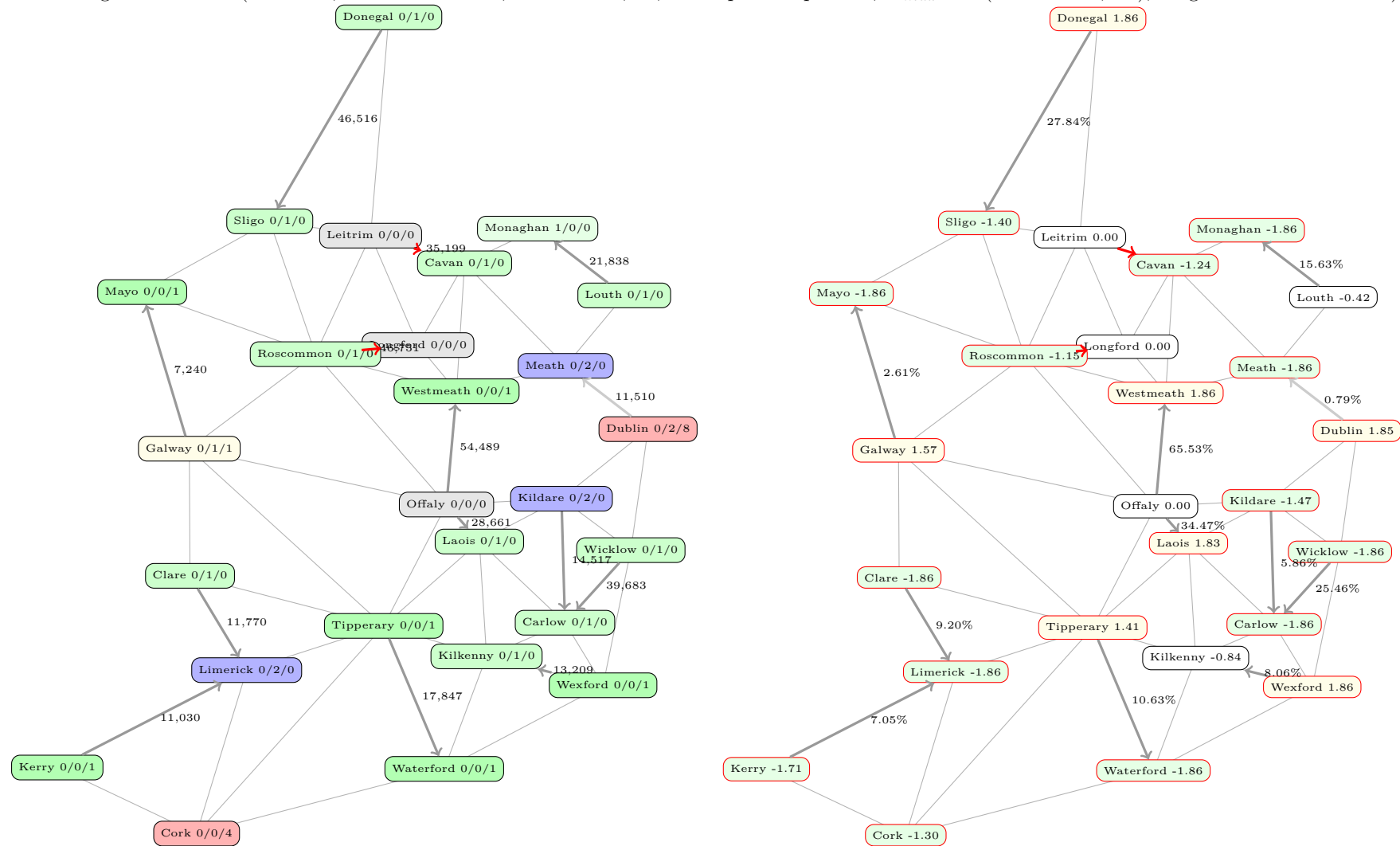
Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	54,200	116,168	1	0/1/0	4	29,042.00	-1.86
Cavan	81,704	2.76	0	35,199	116,903	1	0/1/0	4	29,225.75	-1.24
Clare	127,938	4.32	11,770	0	116,168	1	0/1/0	4	29,042.00	-1.86
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	46,516	0	120,568	1	0/1/0	4	30,142.00	1.86
Dublin	1,458,154	49.28	11,510	0	1,446,644	10	0/2/8	48	30,138.42	1.85
Galway	277,737	9.39	7,240	0	270,497	2	0/1/1	9	30,055.22	1.57
Kerry	156,458	5.29	11,030	0	145,428	1	0/0/1	5	29,085.60	-1.71
Kildare	247,774	8.37	14,517	0	233,257	2	0/2/0	8	29,157.13	-1.47
Kilkenny	104,160	3.52	0	13,209	117,369	1	0/1/0	4	29,342.25	-0.84
Laois	91,877	3.10	0	28,661	120,538	1	0/1/0	4	30,134.50	1.83
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	22,800	232,336	2	0/2/0	8	29,042.00	-1.86
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	21,838	0	117,865	1	0/1/0	4	29,466.25	-0.42
Mayo	137,970	4.66	0	7,240	145,210	1	0/0/1	5	29,042.00	-1.86
Meath	220,826	7.46	0	11,510	232,336	2	0/2/0	8	29,042.00	-1.86
Monaghan	65,288	2.21	0	21,838	87,126	1	1/0/0	3	29,042.00	-1.86
Offaly	83,150	2.81	83,150	0	0	0	0/0/0	0	0.00	0.00
Roscommon	70,259	2.37	0	46,751	117,010	1	0/1/0	4	29,252.50	-1.15
Sligo	70,198	2.37	0	46,516	116,714	1	0/1/0	4	29,178.50	-1.40
Tipperary	167,895	5.67	17,847	0	150,048	1	0/0/1	5	30,009.60	1.41
Waterford	127,363	4.30	0	17,847	145,210	1	0/0/1	5	29,042.00	-1.86

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	54,489	150,710	1	0/0/1	5	30,142.00	1.86
Wexford	163,919	5.54	13,209	0	150,710	1	0/0/1	5	30,142.00	1.86
Wicklow	155,851	5.27	39,683	0	116,168	1	0/1/0	4	29,042.00	-1.86

Table 31: 14 Transfers (Total 360260)

From	To	Volume	Percent of From
Dublin	Meath	11,510	0.79
Kildare	Carlow	14,517	5.86
Longford	Roscommon	46,751	100.00
Louth	Monaghan	21,838	15.63
Offaly	Laois	28,661	34.47
Offaly	Westmeath	54,489	65.53
Wexford	Kilkenny	13,209	8.06
Wicklow	Carlow	39,683	25.46
Clare	Limerick	11,770	9.20
Kerry	Limerick	11,030	7.05
Tipperary	Waterford	17,847	10.63
Galway	Mayo	7,240	2.61
Leitrim	Cavan	35,199	100.00
Donegal	Sligo	46,516	27.84



Figure 11: Sol10 (174 seats, 39 constituencies, 14 transfers, 29,601.04 persons per TD,  $\Delta_{max}$  550 (1.86% of 29,592), weighted variation 1.59%)

### 3.11 Solution Sol11

Table 32: Solution 11

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol11	174	600	2.03	4.06	28,992.00	30,192.00	29,601.75	266,400.50	1.63	14	358,160	39	1/19/19	4.46	Optimal	249.04	0.0100

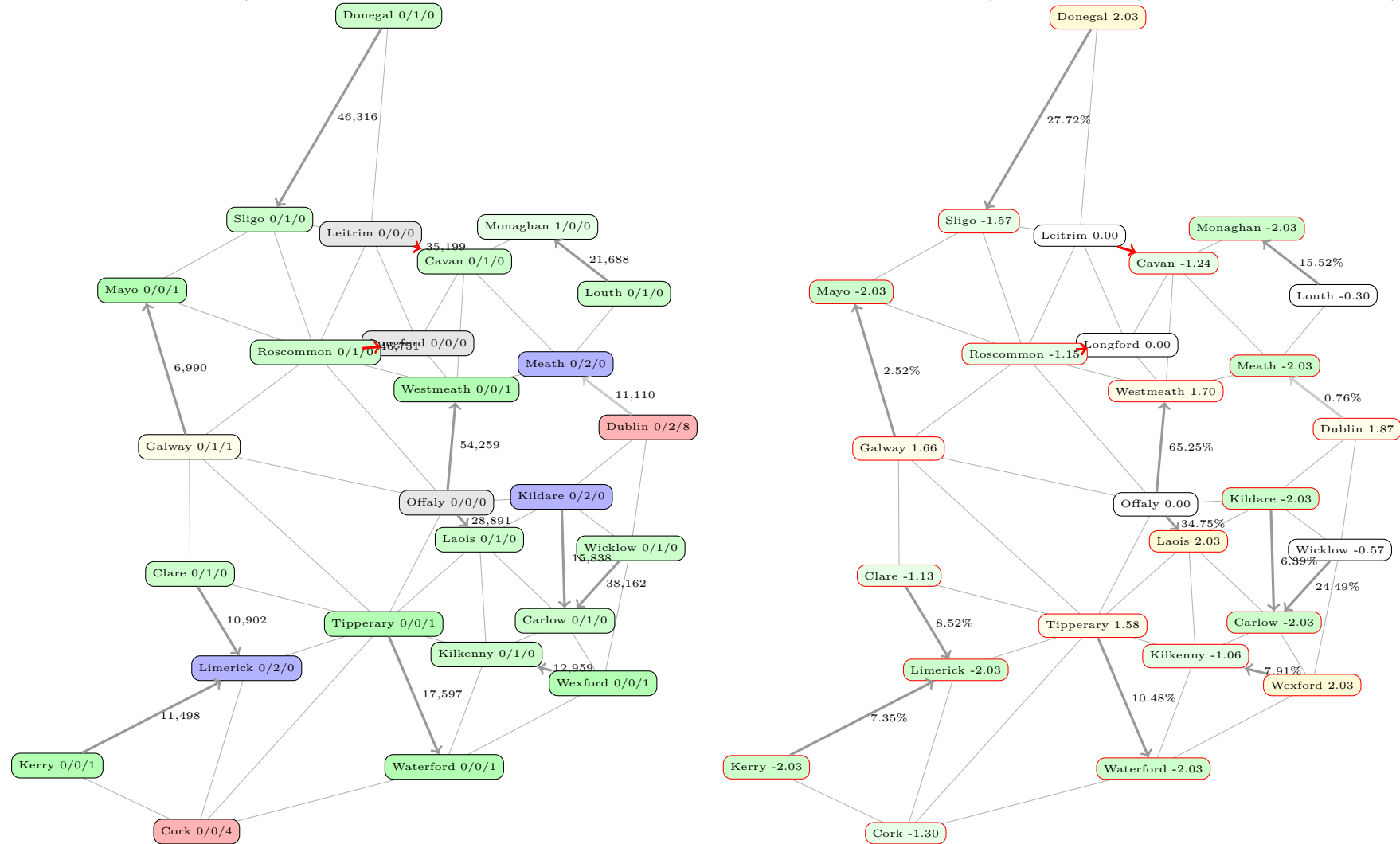
Table 33: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	54,000	115,968	1	0/1/0	4	28,992.00	-2.03
Cavan	81,704	2.76	0	35,199	116,903	1	0/1/0	4	29,225.75	-1.24
Clare	127,938	4.32	10,902	0	117,036	1	0/1/0	4	29,259.00	-1.13
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	46,316	0	120,768	1	0/1/0	4	30,192.00	2.03
Dublin	1,458,154	49.28	11,110	0	1,447,044	10	0/2/8	48	30,146.75	1.87
Galway	277,737	9.39	6,990	0	270,747	2	0/1/1	9	30,083.00	1.66
Kerry	156,458	5.29	11,498	0	144,960	1	0/0/1	5	28,992.00	-2.03
Kildare	247,774	8.37	15,838	0	231,936	2	0/2/0	8	28,992.00	-2.03
Kilkenny	104,160	3.52	0	12,959	117,119	1	0/1/0	4	29,279.75	-1.06
Laois	91,877	3.10	0	28,891	120,768	1	0/1/0	4	30,192.00	2.03
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	22,400	231,936	2	0/2/0	8	28,992.00	-2.03
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	21,688	0	118,015	1	0/1/0	4	29,503.75	-0.30
Mayo	137,970	4.66	0	6,990	144,960	1	0/0/1	5	28,992.00	-2.03
Meath	220,826	7.46	0	11,110	231,936	2	0/2/0	8	28,992.00	-2.03
Monaghan	65,288	2.21	0	21,688	86,976	1	1/0/0	3	28,992.00	-2.03
Offaly	83,150	2.81	83,150	0	0	0	0/0/0	0	0.00	0.00
Roscommon	70,259	2.37	0	46,751	117,010	1	0/1/0	4	29,252.50	-1.15
Sligo	70,198	2.37	0	46,316	116,514	1	0/1/0	4	29,128.50	-1.57
Tipperary	167,895	5.67	17,597	0	150,298	1	0/0/1	5	30,059.60	1.58
Waterford	127,363	4.30	0	17,597	144,960	1	0/0/1	5	28,992.00	-2.03

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	54,259	150,480	1	0/0/1	5	30,096.00	1.70
Wexford	163,919	5.54	12,959	0	150,960	1	0/0/1	5	30,192.00	2.03
Wicklow	155,851	5.27	38,162	0	117,689	1	0/1/0	4	29,422.25	-0.57

Table 34: 14 Transfers (Total 358160)

From	To	Volume	Percent of From
Dublin	Meath	11,110	0.76
Kildare	Carlow	15,838	6.39
Longford	Roscommon	46,751	100.00
Louth	Monaghan	21,688	15.52
Offaly	Laois	28,891	34.75
Offaly	Westmeath	54,259	65.25
Wexford	Kilkenny	12,959	7.91
Wicklow	Carlow	38,162	24.49
Clare	Limerick	10,902	8.52
Kerry	Limerick	11,498	7.35
Tipperary	Waterford	17,597	10.48
Galway	Mayo	6,990	2.52
Leitrim	Cavan	35,199	100.00
Donegal	Sligo	46,316	27.72

Figure 12: Sol11 (174 seats, 39 constituencies, 14 transfers, 29,601.75 persons per TD,  $\Delta_{max}$  600 (2.03% of 29,592), weighted variation 1.63%)

### 3.12 Solution Sol12

Table 35: Solution 12

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol12	174	650	2.20	4.39	28,942.00	30,242.00	29,598.90	181,548.36	1.24	13	292,298	40	6/14/20	4.35	Optimal	68.95	0.0100

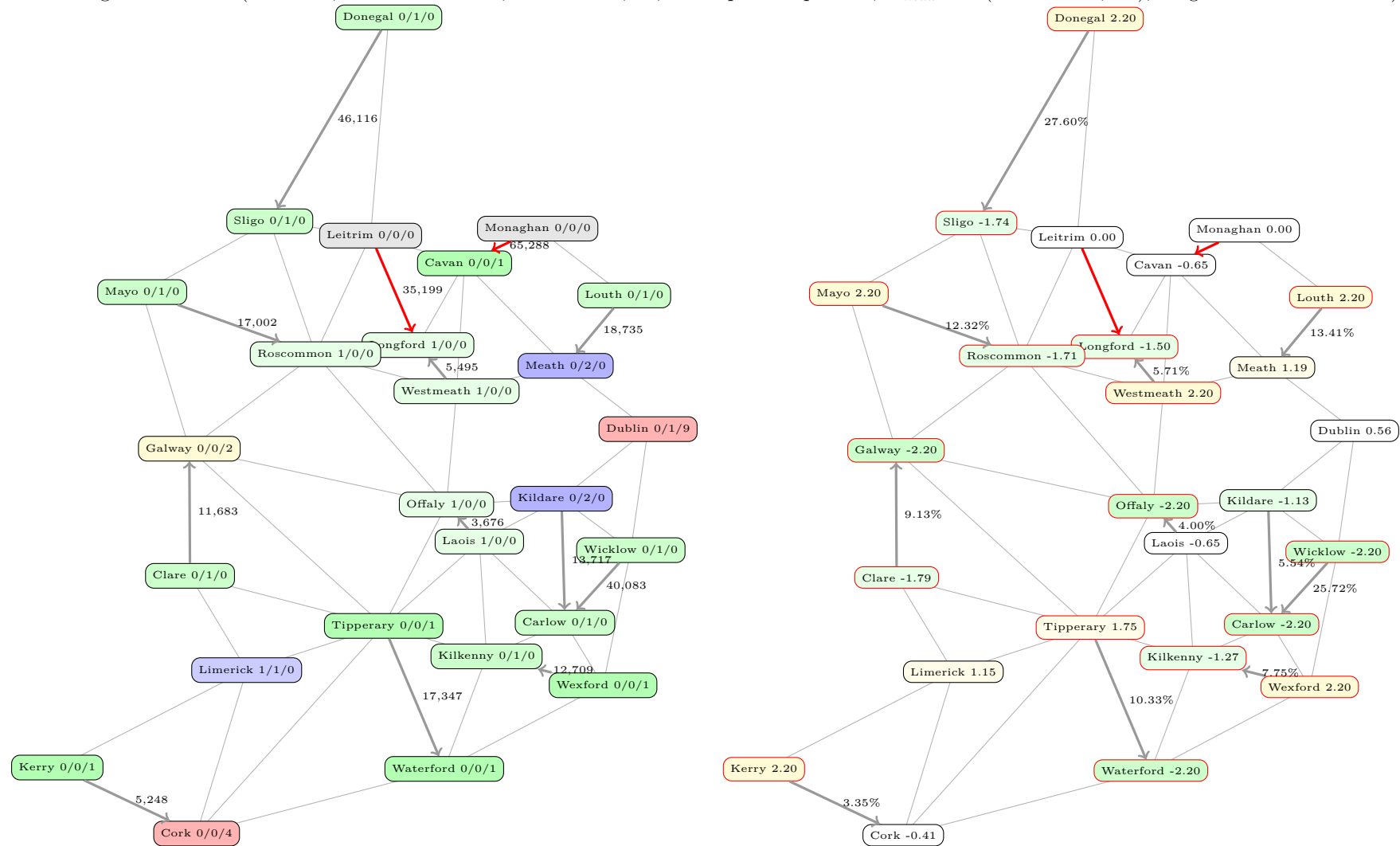
Table 36: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	53,800	115,768	1	0/1/0	4	28,942.00	-2.20
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	11,683	0	116,255	1	0/1/0	4	29,063.75	-1.79
Cork	584,156	19.74	0	5,248	589,404	4	0/0/4	20	29,470.20	-0.41
Donegal	167,084	5.65	46,116	0	120,968	1	0/1/0	4	30,242.00	2.20
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/1/9	49	29,758.24	0.56
Galway	277,737	9.39	0	11,683	289,420	2	0/0/2	10	28,942.00	-2.20
Kerry	156,458	5.29	5,248	0	151,210	1	0/0/1	5	30,242.00	2.20
Kildare	247,774	8.37	13,717	0	234,057	2	0/2/0	8	29,257.13	-1.13
Kilkenny	104,160	3.52	0	12,709	116,869	1	0/1/0	4	29,217.25	-1.27
Laois	91,877	3.10	3,676	0	88,201	1	1/0/0	3	29,400.33	-0.65
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	0	209,536	2	1/1/0	7	29,933.71	1.15
Longford	46,751	1.58	0	40,694	87,445	1	1/0/0	3	29,148.33	-1.50
Louth	139,703	4.72	18,735	0	120,968	1	0/1/0	4	30,242.00	2.20
Mayo	137,970	4.66	17,002	0	120,968	1	0/1/0	4	30,242.00	2.20
Meath	220,826	7.46	0	18,735	239,561	2	0/2/0	8	29,945.13	1.19
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	3,676	86,826	1	1/0/0	3	28,942.00	-2.20
Roscommon	70,259	2.37	0	17,002	87,261	1	1/0/0	3	29,087.00	-1.71
Sligo	70,198	2.37	0	46,116	116,314	1	0/1/0	4	29,078.50	-1.74
Tipperary	167,895	5.67	17,347	0	150,548	1	0/0/1	5	30,109.60	1.75
Waterford	127,363	4.30	0	17,347	144,710	1	0/0/1	5	28,942.00	-2.20

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	5,495	0	90,726	1	1/0/0	3	30,242.00	2.20
Wexford	163,919	5.54	12,709	0	151,210	1	0/0/1	5	30,242.00	2.20
Wicklow	155,851	5.27	40,083	0	115,768	1	0/1/0	4	28,942.00	-2.20

Table 37: 13 Transfers (Total 292298)

From	To	Volume	Percent of From
Kildare	Carlow	13,717	5.54
Laois	Offaly	3,676	4.00
Louth	Meath	18,735	13.41
Westmeath	Longford	5,495	5.71
Wexford	Kilkenny	12,709	7.75
Wicklow	Carlow	40,083	25.72
Clare	Galway	11,683	9.13
Kerry	Cork	5,248	3.35
Tipperary	Waterford	17,347	10.33
Leitrim	Longford	35,199	100.00
Mayo	Roscommon	17,002	12.32
Donegal	Sligo	46,116	27.60
Monaghan	Cavan	65,288	100.00

Figure 13: Sol12 (174 seats, 40 constituencies, 13 transfers, 29,598.90 persons per TD,  $\Delta_{max}$  650 (2.20% of 29,592), weighted variation 1.24%)

### 3.13 Solution Sol13

Table 38: Solution 13

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol13	174	700	2.37	4.73	28,892.00	30,292.00	29,599.84	208,876.19	1.25	13	365,062	39	3/15/21	4.46	Optimal	113.40	0.0100

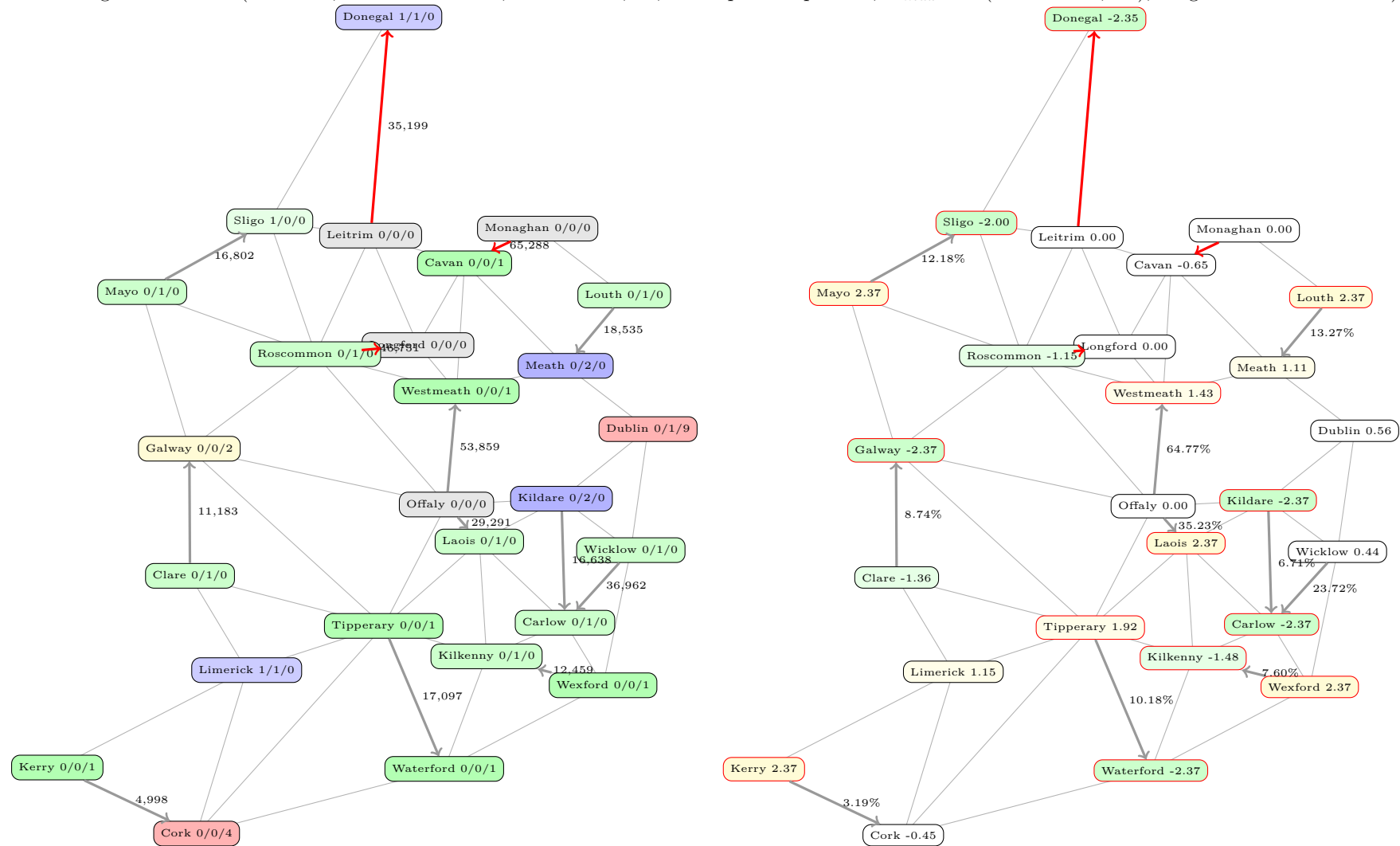
Table 39: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	53,600	115,568	1	0/1/0	4	28,892.00	-2.37
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	11,183	0	116,755	1	0/1/0	4	29,188.75	-1.36
Cork	584,156	19.74	0	4,998	589,154	4	0/0/4	20	29,457.70	-0.45
Donegal	167,084	5.65	0	35,199	202,283	2	1/1/0	7	28,897.57	-2.35
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/1/9	49	29,758.24	0.56
Galway	277,737	9.39	0	11,183	288,920	2	0/0/2	10	28,892.00	-2.37
Kerry	156,458	5.29	4,998	0	151,460	1	0/0/1	5	30,292.00	2.37
Kildare	247,774	8.37	16,638	0	231,136	2	0/2/0	8	28,892.00	-2.37
Kilkenny	104,160	3.52	0	12,459	116,619	1	0/1/0	4	29,154.75	-1.48
Laois	91,877	3.10	0	29,291	121,168	1	0/1/0	4	30,292.00	2.37
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	0	209,536	2	1/1/0	7	29,933.71	1.15
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	18,535	0	121,168	1	0/1/0	4	30,292.00	2.37
Mayo	137,970	4.66	16,802	0	121,168	1	0/1/0	4	30,292.00	2.37
Meath	220,826	7.46	0	18,535	239,361	2	0/2/0	8	29,920.13	1.11
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	83,150	0	0	0	0/0/0	0	0.00	0.00
Roscommon	70,259	2.37	0	46,751	117,010	1	0/1/0	4	29,252.50	-1.15
Sligo	70,198	2.37	0	16,802	87,000	1	1/0/0	3	29,000.00	-2.00
Tipperary	167,895	5.67	17,097	0	150,798	1	0/0/1	5	30,159.60	1.92
Waterford	127,363	4.30	0	17,097	144,460	1	0/0/1	5	28,892.00	-2.37



Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	53,859	150,080	1	0/0/1	5	30,016.00	1.43
Wexford	163,919	5.54	12,459	0	151,460	1	0/0/1	5	30,292.00	2.37
Wicklow	155,851	5.27	36,962	0	118,889	1	0/1/0	4	29,722.25	0.44

Table 40: 13 Transfers (Total 365062)			
From	To	Volume	Percent of From
Kildare	Carlow	16,638	6.71
Longford	Roscommon	46,751	100.00
Louth	Meath	18,535	13.27
Offaly	Laois	29,291	35.23
Offaly	Westmeath	53,859	64.77
Wexford	Kilkenny	12,459	7.60
Wicklow	Carlow	36,962	23.72
Clare	Galway	11,183	8.74
Kerry	Cork	4,998	3.19
Tipperary	Waterford	17,097	10.18
Leitrim	Donegal	35,199	100.00
Mayo	Sligo	16,802	12.18
Monaghan	Cavan	65,288	100.00

Figure 14: Sol13 (174 seats, 39 constituencies, 13 transfers, 29,599.84 persons per TD,  $\Delta_{max}$  700 (2.37% of 29,592), weighted variation 1.25%)

### 3.14 Solution Sol14

Table 41: Solution 14

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol14	174	750	2.53	5.07	28,842.00	30,342.00	29,600.24	220,991.61	1.27	13	363,212	39	3/15/21	4.46	Optimal	68.31	0.0100

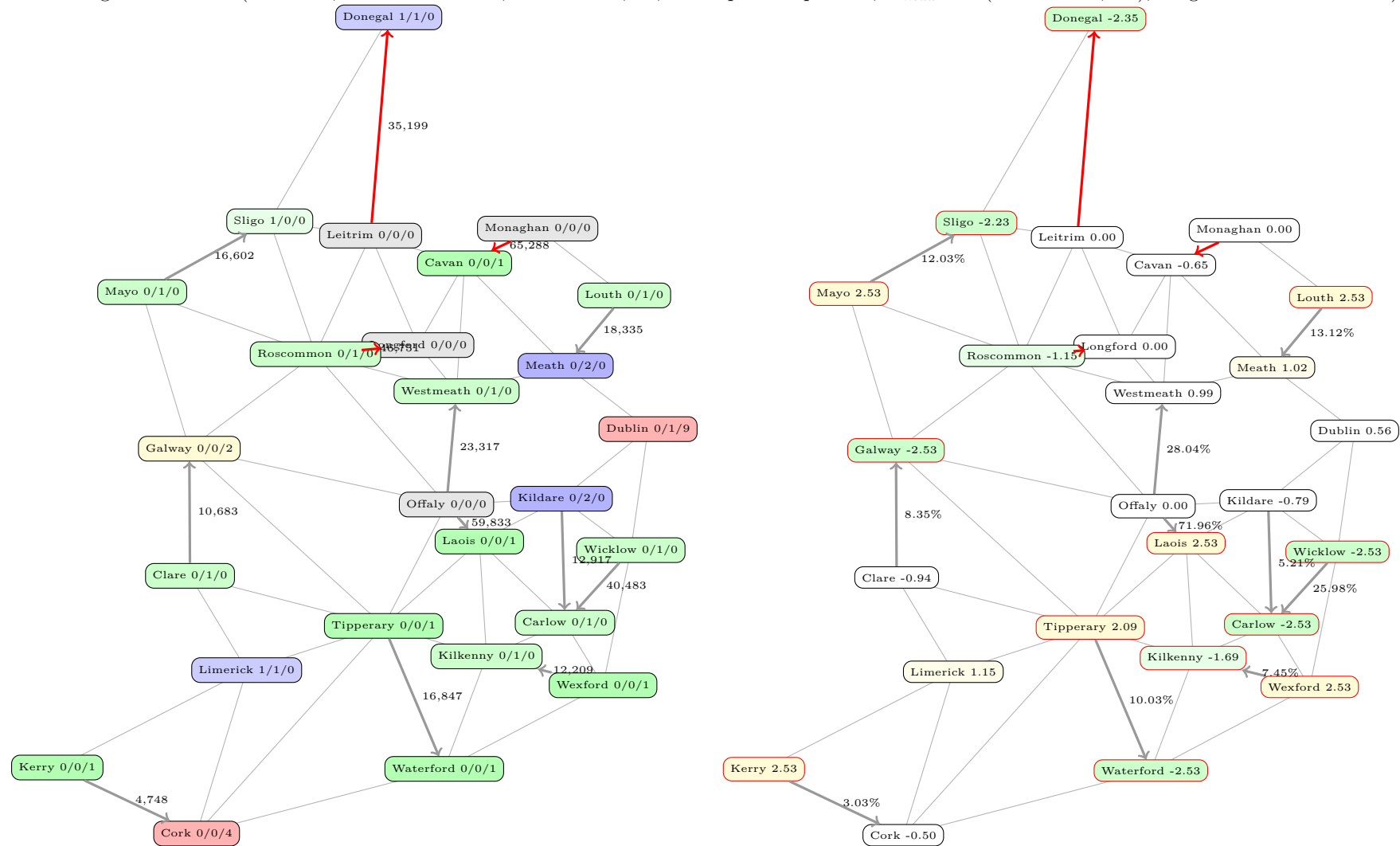
Table 42: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	53,400	115,368	1	0/1/0	4	28,842.00	-2.53
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	10,683	0	117,255	1	0/1/0	4	29,313.75	-0.94
Cork	584,156	19.74	0	4,748	588,904	4	0/0/4	20	29,445.20	-0.50
Donegal	167,084	5.65	0	35,199	202,283	2	1/1/0	7	28,897.57	-2.35
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/1/9	49	29,758.24	0.56
Galway	277,737	9.39	0	10,683	288,420	2	0/0/2	10	28,842.00	-2.53
Kerry	156,458	5.29	4,748	0	151,710	1	0/0/1	5	30,342.00	2.53
Kildare	247,774	8.37	12,917	0	234,857	2	0/2/0	8	29,357.13	-0.79
Kilkenny	104,160	3.52	0	12,209	116,369	1	0/1/0	4	29,092.25	-1.69
Laois	91,877	3.10	0	59,833	151,710	1	0/0/1	5	30,342.00	2.53
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	0	209,536	2	1/1/0	7	29,933.71	1.15
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	18,335	0	121,368	1	0/1/0	4	30,342.00	2.53
Mayo	137,970	4.66	16,602	0	121,368	1	0/1/0	4	30,342.00	2.53
Meath	220,826	7.46	0	18,335	239,161	2	0/2/0	8	29,895.13	1.02
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	83,150	0	0	0	0/0/0	0	0.00	0.00
Roscommon	70,259	2.37	0	46,751	117,010	1	0/1/0	4	29,252.50	-1.15
Sligo	70,198	2.37	0	16,602	86,800	1	1/0/0	3	28,933.33	-2.23
Tipperary	167,895	5.67	16,847	0	151,048	1	0/0/1	5	30,209.60	2.09
Waterford	127,363	4.30	0	16,847	144,210	1	0/0/1	5	28,842.00	-2.53

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	23,317	119,538	1	0/1/0	4	29,884.50	0.99
Wexford	163,919	5.54	12,209	0	151,710	1	0/0/1	5	30,342.00	2.53
Wicklow	155,851	5.27	40,483	0	115,368	1	0/1/0	4	28,842.00	-2.53

Table 43: 13 Transfers (Total 363212)

From	To	Volume	Percent of From
Kildare	Carlow	12,917	5.21
Longford	Roscommon	46,751	100.00
Louth	Meath	18,335	13.12
Offaly	Laois	59,833	71.96
Offaly	Westmeath	23,317	28.04
Wexford	Kilkenny	12,209	7.45
Wicklow	Carlow	40,483	25.98
Clare	Galway	10,683	8.35
Kerry	Cork	4,748	3.03
Tipperary	Waterford	16,847	10.03
Leitrim	Donegal	35,199	100.00
Mayo	Sligo	16,602	12.03
Monaghan	Cavan	65,288	100.00

Figure 15: Sol14 (174 seats, 39 constituencies, 13 transfers, 29,600.24 persons per TD,  $\Delta_{max}$  750 (2.53% of 29,592), weighted variation 1.27%)

### 3.15 Solution Sol15

Table 44: Solution 15

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol15	174	800	2.70	5.41	28,792.00	30,392.00	29,609.14	485,380.34	2.19	13	316,641	39	2/17/20	4.46	Optimal	45.21	0.0099

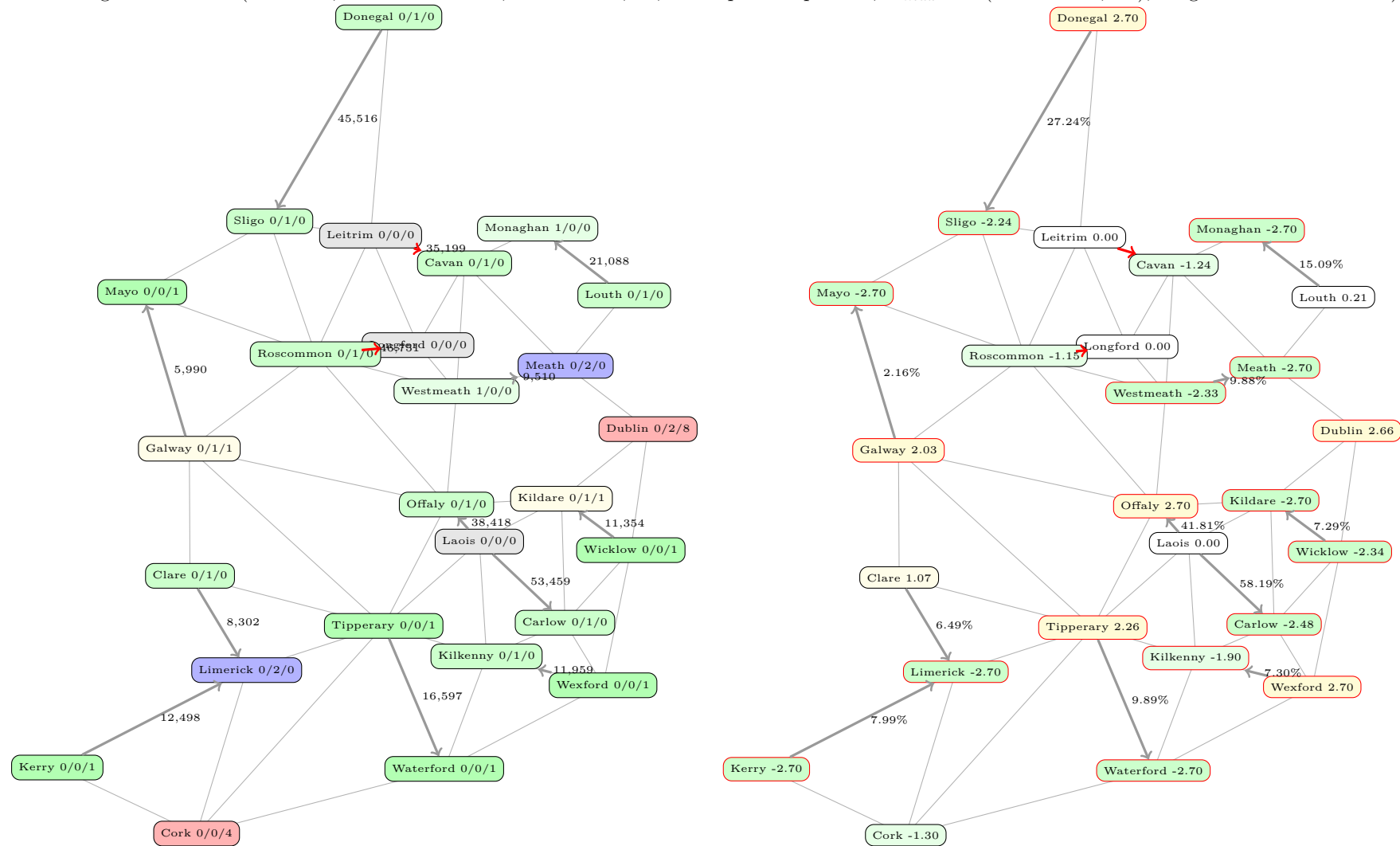
Table 45: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	53,459	115,427	1	0/1/0	4	28,856.75	-2.48
Cavan	81,704	2.76	0	35,199	116,903	1	0/1/0	4	29,225.75	-1.24
Clare	127,938	4.32	8,302	0	119,636	1	0/1/0	4	29,909.00	1.07
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	45,516	0	121,568	1	0/1/0	4	30,392.00	2.70
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/2/8	48	30,378.21	2.66
Galway	277,737	9.39	5,990	0	271,747	2	0/1/1	9	30,194.11	2.03
Kerry	156,458	5.29	12,498	0	143,960	1	0/0/1	5	28,792.00	-2.70
Kildare	247,774	8.37	0	11,354	259,128	2	0/1/1	9	28,792.00	-2.70
Kilkenny	104,160	3.52	0	11,959	116,119	1	0/1/0	4	29,029.75	-1.90
Laois	91,877	3.10	91,877	0	0	0	0/0/0	0	0.00	0.00
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	20,800	230,336	2	0/2/0	8	28,792.00	-2.70
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	21,088	0	118,615	1	0/1/0	4	29,653.75	0.21
Mayo	137,970	4.66	0	5,990	143,960	1	0/0/1	5	28,792.00	-2.70
Meath	220,826	7.46	0	9,510	230,336	2	0/2/0	8	28,792.00	-2.70
Monaghan	65,288	2.21	0	21,088	86,376	1	1/0/0	3	28,792.00	-2.70
Offaly	83,150	2.81	0	38,418	121,568	1	0/1/0	4	30,392.00	2.70
Roscommon	70,259	2.37	0	46,751	117,010	1	0/1/0	4	29,252.50	-1.15
Sligo	70,198	2.37	0	45,516	115,714	1	0/1/0	4	28,928.50	-2.24
Tipperary	167,895	5.67	16,597	0	151,298	1	0/0/1	5	30,259.60	2.26
Waterford	127,363	4.30	0	16,597	143,960	1	0/0/1	5	28,792.00	-2.70

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	9,510	0	86,711	1	1/0/0	3	28,903.67	-2.33
Wexford	163,919	5.54	11,959	0	151,960	1	0/0/1	5	30,392.00	2.70
Wicklow	155,851	5.27	11,354	0	144,497	1	0/0/1	5	28,899.40	-2.34

Table 46: 13 Transfers (Total 316641)

From	To	Volume	Percent of From
Laois	Carlow	53,459	58.19
Laois	Offaly	38,418	41.81
Longford	Roscommon	46,751	100.00
Louth	Monaghan	21,088	15.09
Westmeath	Meath	9,510	9.88
Wexford	Kilkenny	11,959	7.30
Wicklow	Kildare	11,354	7.29
Clare	Limerick	8,302	6.49
Kerry	Limerick	12,498	7.99
Tipperary	Waterford	16,597	9.89
Galway	Mayo	5,990	2.16
Leitrim	Cavan	35,199	100.00
Donegal	Sligo	45,516	27.24

Figure 16: Sol15 (174 seats, 39 constituencies, 13 transfers, 29,609.14 persons per TD,  $\Delta_{max}$  800 (2.70% of 29,592), weighted variation 2.19%)



### 3.16 Solution Sol16

Table 47: Solution 16

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol16	174	850	2.87	5.74	28,742.00	30,442.00	29,610.23	517,213.50	2.26	13	314,291	39	2/17/20	4.46	Optimal	28.91	0.0100

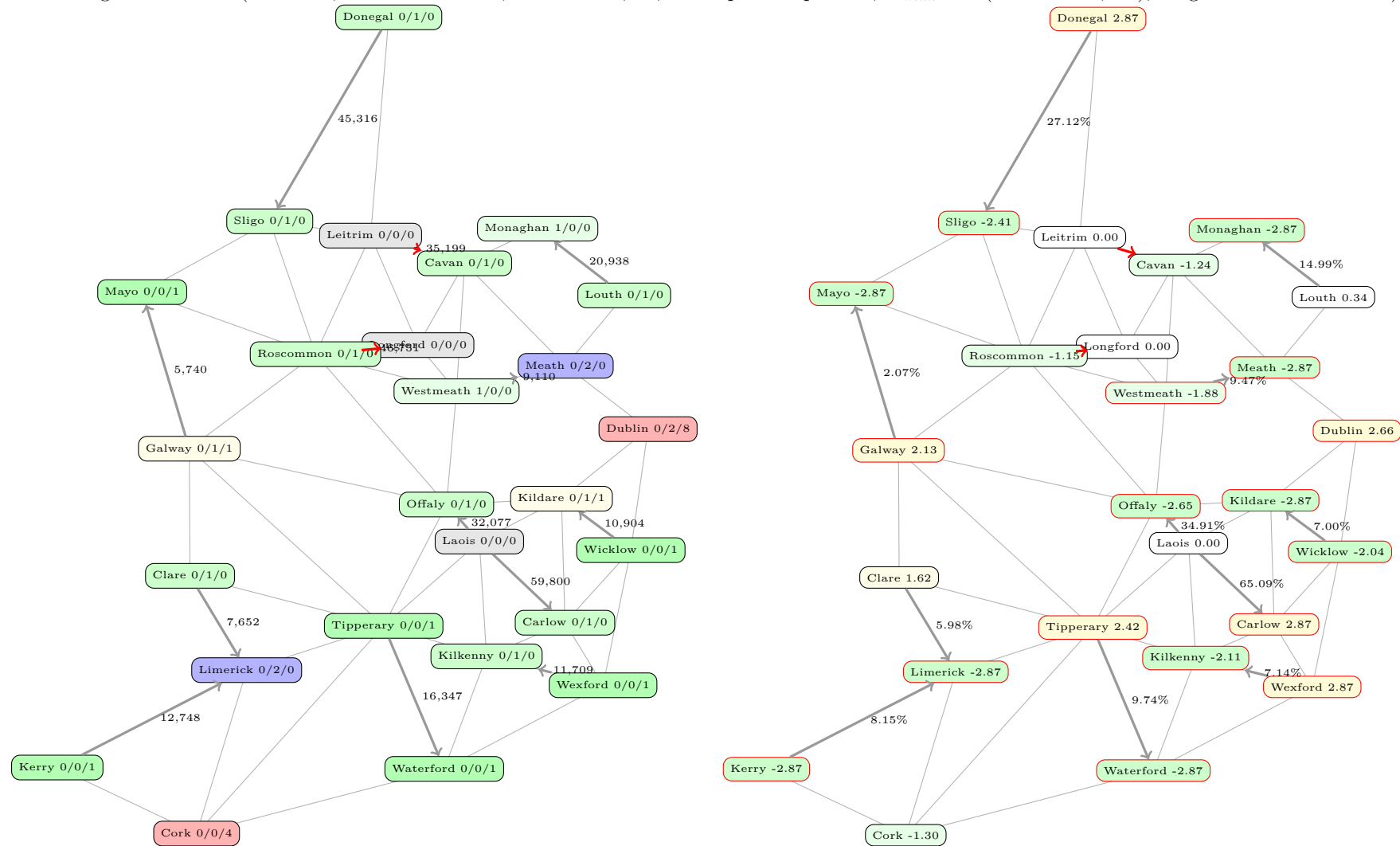
Table 48: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	59,800	121,768	1	0/1/0	4	30,442.00	2.87
Cavan	81,704	2.76	0	35,199	116,903	1	0/1/0	4	29,225.75	-1.24
Clare	127,938	4.32	7,652	0	120,286	1	0/1/0	4	30,071.50	1.62
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	45,316	0	121,768	1	0/1/0	4	30,442.00	2.87
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/2/8	48	30,378.21	2.66
Galway	277,737	9.39	5,740	0	271,997	2	0/1/1	9	30,221.89	2.13
Kerry	156,458	5.29	12,748	0	143,710	1	0/0/1	5	28,742.00	-2.87
Kildare	247,774	8.37	0	10,904	258,678	2	0/1/1	9	28,742.00	-2.87
Kilkenny	104,160	3.52	0	11,709	115,869	1	0/1/0	4	28,967.25	-2.11
Laois	91,877	3.10	91,877	0	0	0	0/0/0	0	0.00	0.00
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	20,400	229,936	2	0/2/0	8	28,742.00	-2.87
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	20,938	0	118,765	1	0/1/0	4	29,691.25	0.34
Mayo	137,970	4.66	0	5,740	143,710	1	0/0/1	5	28,742.00	-2.87
Meath	220,826	7.46	0	9,110	229,936	2	0/2/0	8	28,742.00	-2.87
Monaghan	65,288	2.21	0	20,938	86,226	1	1/0/0	3	28,742.00	-2.87
Offaly	83,150	2.81	0	32,077	115,227	1	0/1/0	4	28,806.75	-2.65
Roscommon	70,259	2.37	0	46,751	117,010	1	0/1/0	4	29,252.50	-1.15
Sligo	70,198	2.37	0	45,316	115,514	1	0/1/0	4	28,878.50	-2.41
Tipperary	167,895	5.67	16,347	0	151,548	1	0/0/1	5	30,309.60	2.42
Waterford	127,363	4.30	0	16,347	143,710	1	0/0/1	5	28,742.00	-2.87

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	9,110	0	87,111	1	1/0/0	3	29,037.00	-1.88
Wexford	163,919	5.54	11,709	0	152,210	1	0/0/1	5	30,442.00	2.87
Wicklow	155,851	5.27	10,904	0	144,947	1	0/0/1	5	28,989.40	-2.04

Table 49: 13 Transfers (Total 314291)

From	To	Volume	Percent of From
Laois	Carlow	59,800	65.09
Laois	Offaly	32,077	34.91
Longford	Roscommon	46,751	100.00
Louth	Monaghan	20,938	14.99
Westmeath	Meath	9,110	9.47
Wexford	Kilkenny	11,709	7.14
Wicklow	Kildare	10,904	7.00
Clare	Limerick	7,652	5.98
Kerry	Limerick	12,748	8.15
Tipperary	Waterford	16,347	9.74
Galway	Mayo	5,740	2.07
Leitrim	Cavan	35,199	100.00
Donegal	Sligo	45,316	27.12

Figure 17: Sol16 (174 seats, 39 constituencies, 13 transfers, 29,610.23 persons per TD,  $\Delta_{max}$  850 (2.87% of 29,592), weighted variation 2.26%)

### 3.17 Solution Sol17

Table 50: Solution 17

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol17	174	900	3.04	6.08	28,692.00	30,492.00	29,611.47	553,546.76	2.33	13	311,941	39	2/17/20	4.46	Optimal	33.59	0.0100

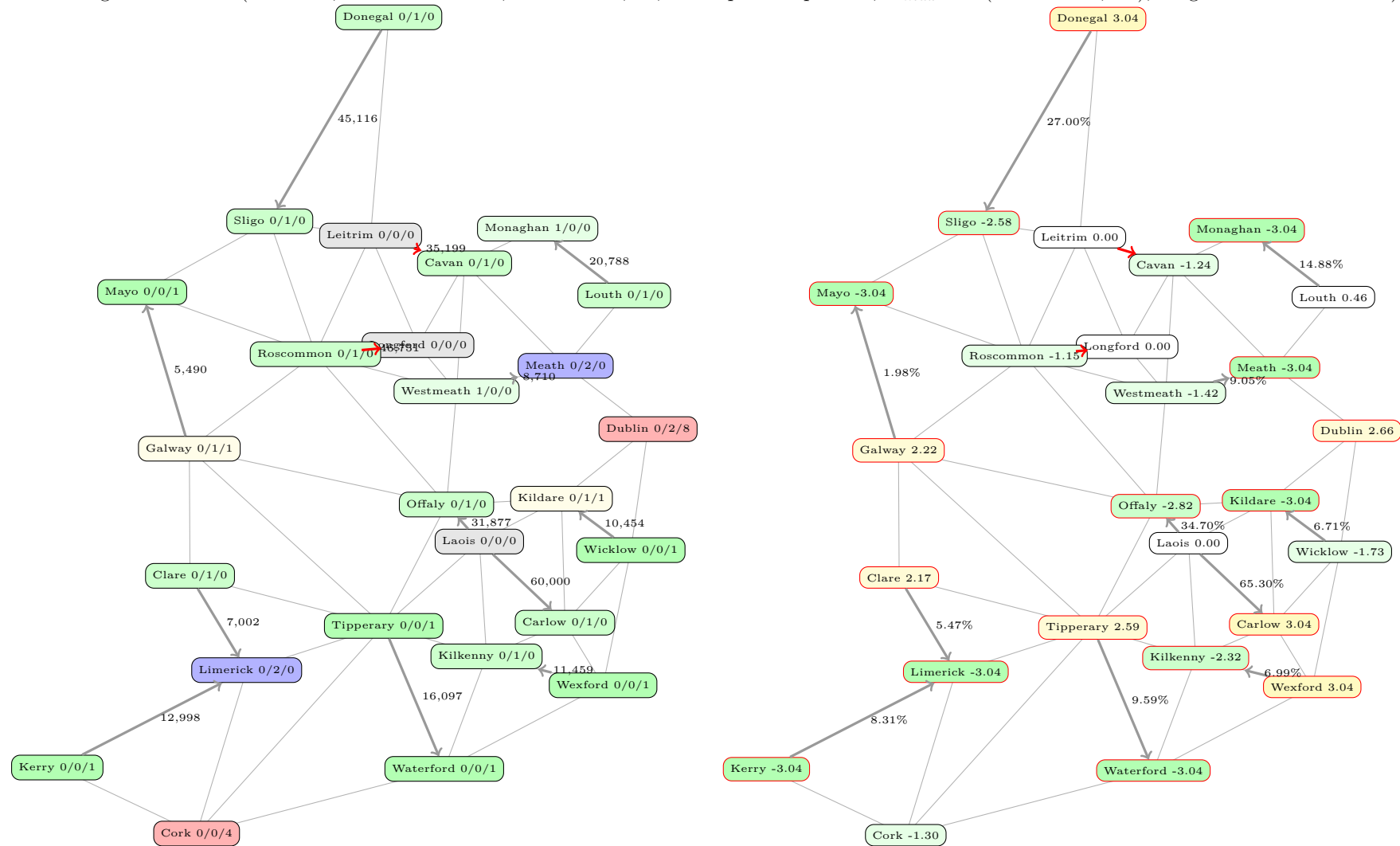
Table 51: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	60,000	121,968	1	0/1/0	4	30,492.00	3.04
Cavan	81,704	2.76	0	35,199	116,903	1	0/1/0	4	29,225.75	-1.24
Clare	127,938	4.32	7,002	0	120,936	1	0/1/0	4	30,234.00	2.17
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	45,116	0	121,968	1	0/1/0	4	30,492.00	3.04
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/2/8	48	30,378.21	2.66
Galway	277,737	9.39	5,490	0	272,247	2	0/1/1	9	30,249.67	2.22
Kerry	156,458	5.29	12,998	0	143,460	1	0/0/1	5	28,692.00	-3.04
Kildare	247,774	8.37	0	10,454	258,228	2	0/1/1	9	28,692.00	-3.04
Kilkenny	104,160	3.52	0	11,459	115,619	1	0/1/0	4	28,904.75	-2.32
Laois	91,877	3.10	91,877	0	0	0	0/0/0	0	0.00	0.00
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	20,000	229,536	2	0/2/0	8	28,692.00	-3.04
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	20,788	0	118,915	1	0/1/0	4	29,728.75	0.46
Mayo	137,970	4.66	0	5,490	143,460	1	0/0/1	5	28,692.00	-3.04
Meath	220,826	7.46	0	8,710	229,536	2	0/2/0	8	28,692.00	-3.04
Monaghan	65,288	2.21	0	20,788	86,076	1	1/0/0	3	28,692.00	-3.04
Offaly	83,150	2.81	0	31,877	115,027	1	0/1/0	4	28,756.75	-2.82
Roscommon	70,259	2.37	0	46,751	117,010	1	0/1/0	4	29,252.50	-1.15
Sligo	70,198	2.37	0	45,116	115,314	1	0/1/0	4	28,828.50	-2.58
Tipperary	167,895	5.67	16,097	0	151,798	1	0/0/1	5	30,359.60	2.59
Waterford	127,363	4.30	0	16,097	143,460	1	0/0/1	5	28,692.00	-3.04

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	8,710	0	87,511	1	1/0/0	3	29,170.33	-1.42
Wexford	163,919	5.54	11,459	0	152,460	1	0/0/1	5	30,492.00	3.04
Wicklow	155,851	5.27	10,454	0	145,397	1	0/0/1	5	29,079.40	-1.73

Table 52: 13 Transfers (Total 311941)

From	To	Volume	Percent of From
Laois	Carlow	60,000	65.30
Laois	Offaly	31,877	34.70
Longford	Roscommon	46,751	100.00
Louth	Monaghan	20,788	14.88
Westmeath	Meath	8,710	9.05
Wexford	Kilkenny	11,459	6.99
Wicklow	Kildare	10,454	6.71
Clare	Limerick	7,002	5.47
Kerry	Limerick	12,998	8.31
Tipperary	Waterford	16,097	9.59
Galway	Mayo	5,490	1.98
Leitrim	Cavan	35,199	100.00
Donegal	Sligo	45,116	27.00

Figure 18: Sol17 (174 seats, 39 constituencies, 13 transfers, 29,611.47 persons per TD,  $\Delta_{max}$  900 (3.04% of 29,592), weighted variation 2.33%)

### 3.18 Solution Sol18

Table 53: Solution 18

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol18	174	950	3.21	6.42	28,642.00	30,542.00	29,612.40	580,125.80	2.36	13	309,591	39	2/17/20	4.46	Optimal	59.87	0.0100

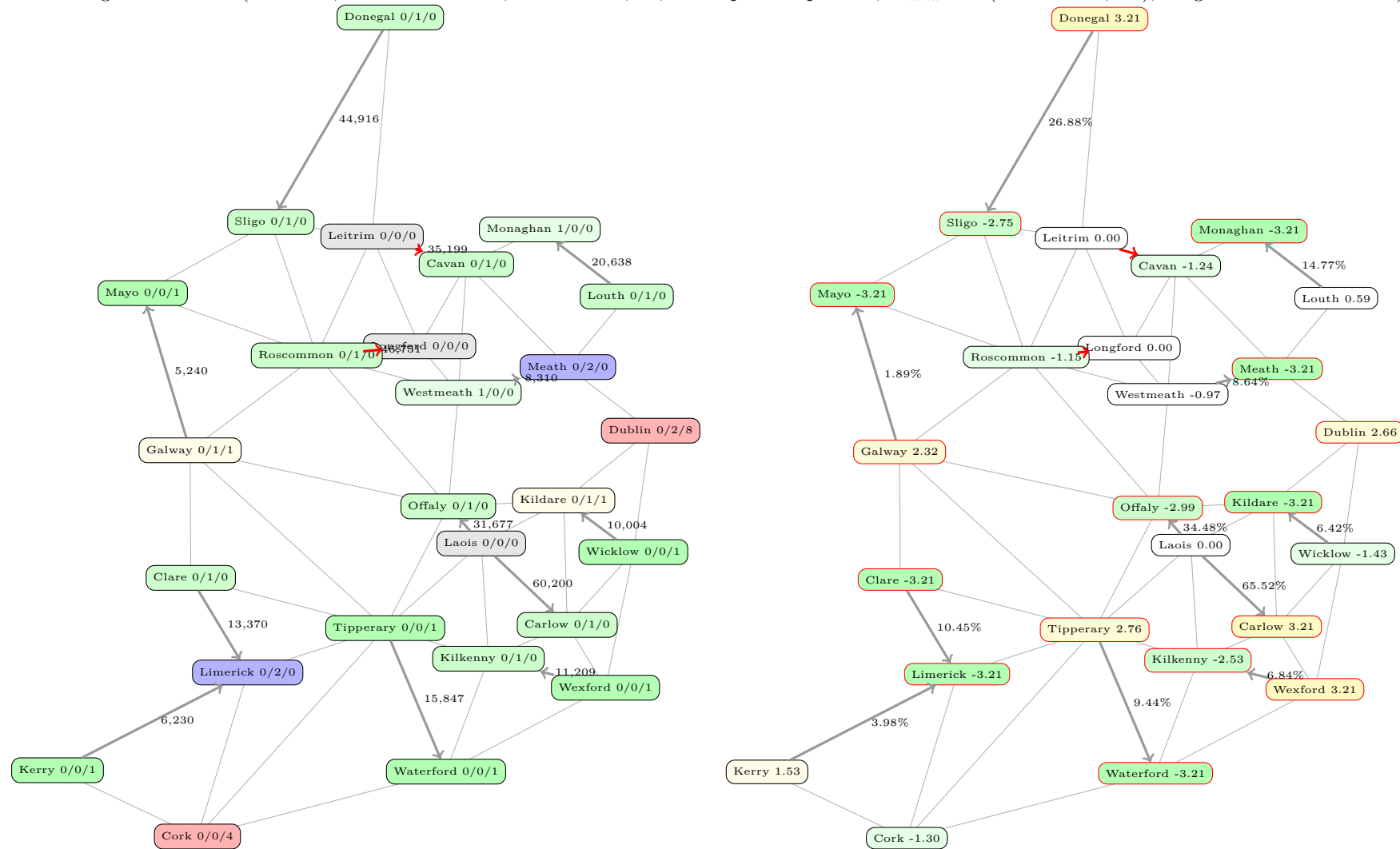
Table 54: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	60,200	122,168	1	0/1/0	4	30,542.00	3.21
Cavan	81,704	2.76	0	35,199	116,903	1	0/1/0	4	29,225.75	-1.24
Clare	127,938	4.32	13,370	0	114,568	1	0/1/0	4	28,642.00	-3.21
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	44,916	0	122,168	1	0/1/0	4	30,542.00	3.21
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/2/8	48	30,378.21	2.66
Galway	277,737	9.39	5,240	0	272,497	2	0/1/1	9	30,277.44	2.32
Kerry	156,458	5.29	6,230	0	150,228	1	0/0/1	5	30,045.60	1.53
Kildare	247,774	8.37	0	10,004	257,778	2	0/1/1	9	28,642.00	-3.21
Kilkenny	104,160	3.52	0	11,209	115,369	1	0/1/0	4	28,842.25	-2.53
Laois	91,877	3.10	91,877	0	0	0	0/0/0	0	0.00	0.00
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	19,600	229,136	2	0/2/0	8	28,642.00	-3.21
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	20,638	0	119,065	1	0/1/0	4	29,766.25	0.59
Mayo	137,970	4.66	0	5,240	143,210	1	0/0/1	5	28,642.00	-3.21
Meath	220,826	7.46	0	8,310	229,136	2	0/2/0	8	28,642.00	-3.21
Monaghan	65,288	2.21	0	20,638	85,926	1	1/0/0	3	28,642.00	-3.21
Offaly	83,150	2.81	0	31,677	114,827	1	0/1/0	4	28,706.75	-2.99
Roscommon	70,259	2.37	0	46,751	117,010	1	0/1/0	4	29,252.50	-1.15
Sligo	70,198	2.37	0	44,916	115,114	1	0/1/0	4	28,778.50	-2.75
Tipperary	167,895	5.67	15,847	0	152,048	1	0/0/1	5	30,409.60	2.76
Waterford	127,363	4.30	0	15,847	143,210	1	0/0/1	5	28,642.00	-3.21

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	8,310	0	87,911	1	1/0/0	3	29,303.67	-0.97
Wexford	163,919	5.54	11,209	0	152,710	1	0/0/1	5	30,542.00	3.21
Wicklow	155,851	5.27	10,004	0	145,847	1	0/0/1	5	29,169.40	-1.43

Table 55: 13 Transfers (Total 309591)			
From	To	Volume	Percent of From
Laois	Carlow	60,200	65.52
Laois	Offaly	31,677	34.48
Longford	Roscommon	46,751	100.00
Louth	Monaghan	20,638	14.77
Westmeath	Meath	8,310	8.64
Wexford	Kilkenny	11,209	6.84
Wicklow	Kildare	10,004	6.42
Clare	Limerick	13,370	10.45
Kerry	Limerick	6,230	3.98
Tipperary	Waterford	15,847	9.44
Galway	Mayo	5,240	1.89
Leitrim	Cavan	35,199	100.00
Donegal	Sligo	44,916	26.88



Figure 19: Sol18 (174 seats, 39 constituencies, 13 transfers, 29,612.40 persons per TD,  $\Delta_{max}$  950 (3.21% of 29,592), weighted variation 2.36%)

### 3.19 Solution Sol19

Table 56: Solution 19

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol19	174	1,000	3.38	6.76	28,592.00	30,592.00	29,607.87	447,038.36	1.80	13	394,123	38	0/16/22	4.58	Optimal	108.86	0.0100

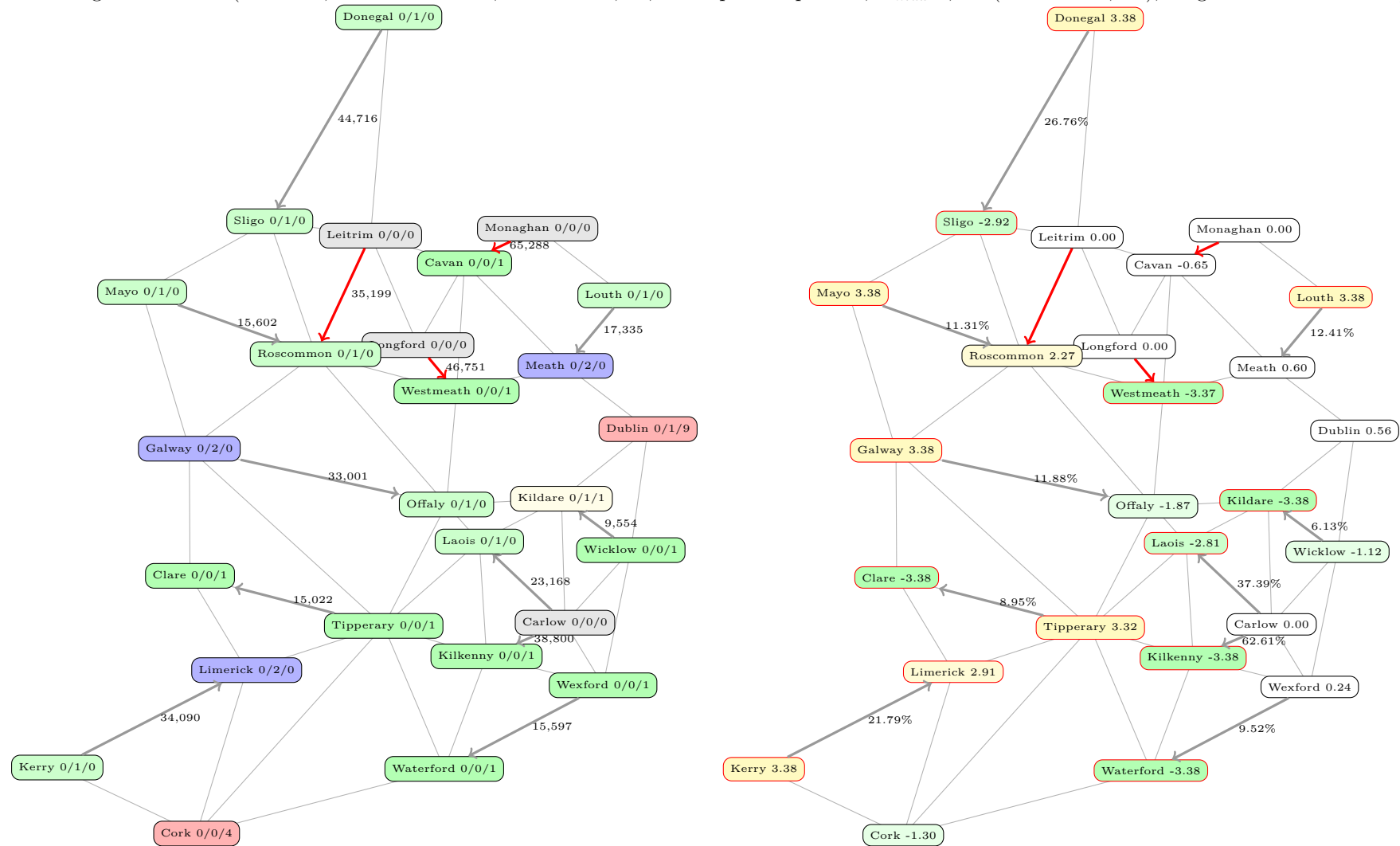
Table 57: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	61,968	0	0	0	0/0/0	0	0.00	0.00
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	0	15,022	142,960	1	0/0/1	5	28,592.00	-3.38
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	44,716	0	122,368	1	0/1/0	4	30,592.00	3.38
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/1/9	49	29,758.24	0.56
Galway	277,737	9.39	33,001	0	244,736	2	0/2/0	8	30,592.00	3.38
Kerry	156,458	5.29	34,090	0	122,368	1	0/1/0	4	30,592.00	3.38
Kildare	247,774	8.37	0	9,554	257,328	2	0/1/1	9	28,592.00	-3.38
Kilkenny	104,160	3.52	0	38,800	142,960	1	0/0/1	5	28,592.00	-3.38
Laois	91,877	3.10	0	23,168	115,045	1	0/1/0	4	28,761.25	-2.81
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	34,090	243,626	2	0/2/0	8	30,453.25	2.91
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	17,335	0	122,368	1	0/1/0	4	30,592.00	3.38
Mayo	137,970	4.66	15,602	0	122,368	1	0/1/0	4	30,592.00	3.38
Meath	220,826	7.46	0	17,335	238,161	2	0/2/0	8	29,770.13	0.60
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	33,001	116,151	1	0/1/0	4	29,037.75	-1.87
Roscommon	70,259	2.37	0	50,801	121,060	1	0/1/0	4	30,265.00	2.27
Sligo	70,198	2.37	0	44,716	114,914	1	0/1/0	4	28,728.50	-2.92
Tipperary	167,895	5.67	15,022	0	152,873	1	0/0/1	5	30,574.60	3.32
Waterford	127,363	4.30	0	15,597	142,960	1	0/0/1	5	28,592.00	-3.38

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	46,751	142,972	1	0/0/1	5	28,594.40	-3.37
Wexford	163,919	5.54	15,597	0	148,322	1	0/0/1	5	29,664.40	0.24
Wicklow	155,851	5.27	9,554	0	146,297	1	0/0/1	5	29,259.40	-1.12

Table 58: 13 Transfers (Total 394123)

From	To	Volume	Percent of From
Carlow	Kilkenny	38,800	62.61
Carlow	Laois	23,168	37.39
Longford	Westmeath	46,751	100.00
Louth	Meath	17,335	12.41
Wexford	Waterford	15,597	9.52
Wicklow	Kildare	9,554	6.13
Kerry	Limerick	34,090	21.79
Tipperary	Clare	15,022	8.95
Galway	Offaly	33,001	11.88
Leitrim	Roscommon	35,199	100.00
Mayo	Roscommon	15,602	11.31
Donegal	Sligo	44,716	26.76
Monaghan	Cavan	65,288	100.00

Figure 20: Sol19 (174 seats, 38 constituencies, 13 transfers, 29,607.87 persons per TD,  $\Delta_{max}$  1,000 (3.38% of 29,592), weighted variation 1.80%)

### 3.20 Solution Sol20

Table 59: Solution 20

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol20	174	1,050	3.55	7.10	28,542.00	30,642.00	29,609.64	499,197.24	1.97	12	272,562	40	4/18/18	4.35	Optimal	9.52	0.0098

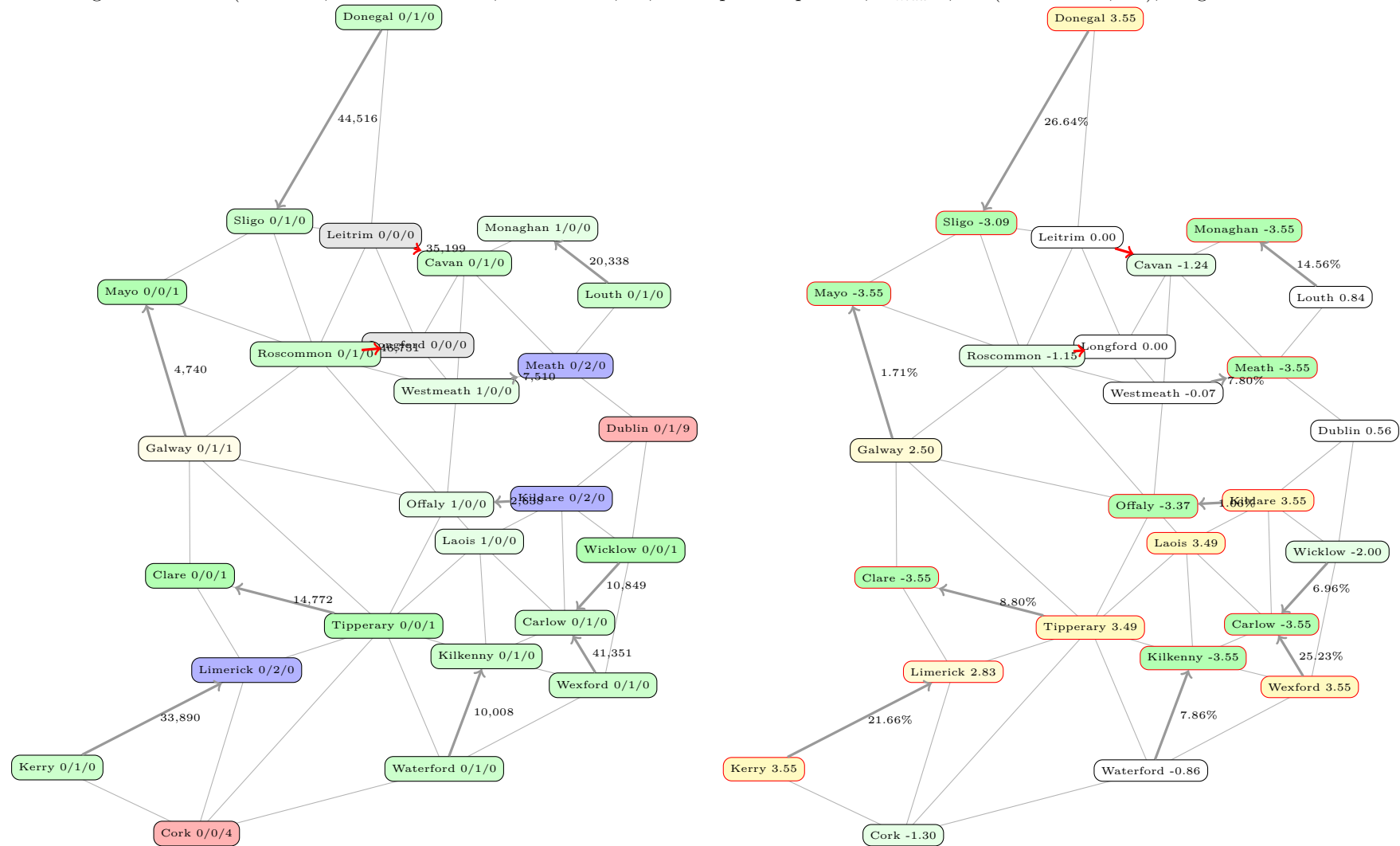
Table 60: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	52,200	114,168	1	0/1/0	4	28,542.00	-3.55
Cavan	81,704	2.76	0	35,199	116,903	1	0/1/0	4	29,225.75	-1.24
Clare	127,938	4.32	0	14,772	142,710	1	0/0/1	5	28,542.00	-3.55
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	44,516	0	122,568	1	0/1/0	4	30,642.00	3.55
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/1/9	49	29,758.24	0.56
Galway	277,737	9.39	4,740	0	272,997	2	0/1/1	9	30,333.00	2.50
Kerry	156,458	5.29	33,890	0	122,568	1	0/1/0	4	30,642.00	3.55
Kildare	247,774	8.37	2,638	0	245,136	2	0/2/0	8	30,642.00	3.55
Kilkenny	104,160	3.52	0	10,008	114,168	1	0/1/0	4	28,542.00	-3.55
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	33,890	243,426	2	0/2/0	8	30,428.25	2.83
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	20,338	0	119,365	1	0/1/0	4	29,841.25	0.84
Mayo	137,970	4.66	0	4,740	142,710	1	0/0/1	5	28,542.00	-3.55
Meath	220,826	7.46	0	7,510	228,336	2	0/2/0	8	28,542.00	-3.55
Monaghan	65,288	2.21	0	20,338	85,626	1	1/0/0	3	28,542.00	-3.55
Offaly	83,150	2.81	0	2,638	85,788	1	1/0/0	3	28,596.00	-3.37
Roscommon	70,259	2.37	0	46,751	117,010	1	0/1/0	4	29,252.50	-1.15
Sligo	70,198	2.37	0	44,516	114,714	1	0/1/0	4	28,678.50	-3.09
Tipperary	167,895	5.67	14,772	0	153,123	1	0/0/1	5	30,624.60	3.49
Waterford	127,363	4.30	10,008	0	117,355	1	0/1/0	4	29,338.75	-0.86

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	7,510	0	88,711	1	1/0/0	3	29,570.33	-0.07
Wexford	163,919	5.54	41,351	0	122,568	1	0/1/0	4	30,642.00	3.55
Wicklow	155,851	5.27	10,849	0	145,002	1	0/0/1	5	29,000.40	-2.00

Table 61: 12 Transfers (Total 272562)

From	To	Volume	Percent of From
Kildare	Offaly	2,638	1.06
Longford	Roscommon	46,751	100.00
Louth	Monaghan	20,338	14.56
Westmeath	Meath	7,510	7.80
Wexford	Carlow	41,351	25.23
Wicklow	Carlow	10,849	6.96
Kerry	Limerick	33,890	21.66
Tipperary	Clare	14,772	8.80
Waterford	Kilkenny	10,008	7.86
Galway	Mayo	4,740	1.71
Leitrim	Cavan	35,199	100.00
Donegal	Sligo	44,516	26.64

Figure 21: Sol20 (174 seats, 40 constituencies, 12 transfers, 29,609.64 persons per TD,  $\Delta_{max}$  1,050 (3.55% of 29,592), weighted variation 1.97%)

### 3.21 Solution Sol21

Table 62: Solution 21

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol21	174	1,100	3.72	7.43	28,492.00	30,692.00	29,611.52	554,684.35	2.02	12	368,139	39	3/15/21	4.46	Optimal	11.86	0.0100

Table 63: Counties

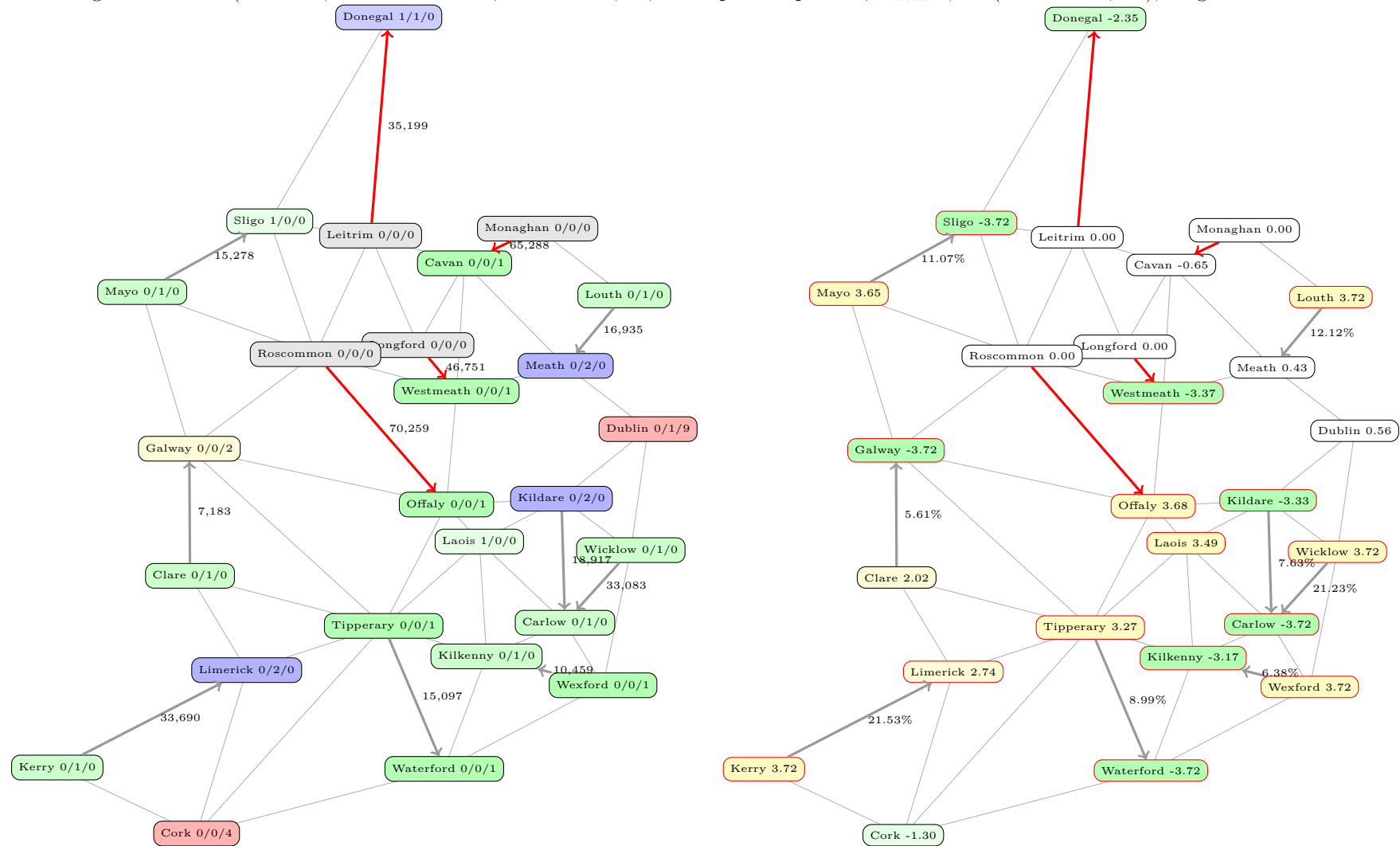
Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	52,000	113,968	1	0/1/0	4	28,492.00	-3.72
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	7,183	0	120,755	1	0/1/0	4	30,188.75	2.02
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	0	35,199	202,283	2	1/1/0	7	28,897.57	-2.35
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/1/9	49	29,758.24	0.56
Galway	277,737	9.39	0	7,183	284,920	2	0/0/2	10	28,492.00	-3.72
Kerry	156,458	5.29	33,690	0	122,768	1	0/1/0	4	30,692.00	3.72
Kildare	247,774	8.37	18,917	0	228,857	2	0/2/0	8	28,607.13	-3.33
Kilkenny	104,160	3.52	0	10,459	114,619	1	0/1/0	4	28,654.75	-3.17
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	33,690	243,226	2	0/2/0	8	30,403.25	2.74
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	16,935	0	122,768	1	0/1/0	4	30,692.00	3.72
Mayo	137,970	4.66	15,278	0	122,692	1	0/1/0	4	30,673.00	3.65
Meath	220,826	7.46	0	16,935	237,761	2	0/2/0	8	29,720.13	0.43
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	70,259	153,409	1	0/0/1	5	30,681.80	3.68
Roscommon	70,259	2.37	70,259	0	0	0	0/0/0	0	0.00	0.00
Sligo	70,198	2.37	0	15,278	85,476	1	1/0/0	3	28,492.00	-3.72
Tipperary	167,895	5.67	15,097	0	152,798	1	0/0/1	5	30,559.60	3.27
Waterford	127,363	4.30	0	15,097	142,460	1	0/0/1	5	28,492.00	-3.72



Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	46,751	142,972	1	0/0/1	5	28,594.40	-3.37
Wexford	163,919	5.54	10,459	0	153,460	1	0/0/1	5	30,692.00	3.72
Wicklow	155,851	5.27	33,083	0	122,768	1	0/1/0	4	30,692.00	3.72

Table 64: 12 Transfers (Total 368139)			
From	To	Volume	Percent of From
Kildare	Carlow	18,917	7.63
Longford	Westmeath	46,751	100.00
Louth	Meath	16,935	12.12
Wexford	Kilkenny	10,459	6.38
Wicklow	Carlow	33,083	21.23
Clare	Galway	7,183	5.61
Kerry	Limerick	33,690	21.53
Tipperary	Waterford	15,097	8.99
Leitrim	Donegal	35,199	100.00
Mayo	Sligo	15,278	11.07
Roscommon	Offaly	70,259	100.00
Monaghan	Cavan	65,288	100.00

Figure 22: Sol21 (174 seats, 39 constituencies, 12 transfers, 29,611.52 persons per TD,  $\Delta_{max}$  1,100 (3.72% of 29,592), weighted variation 2.02%)



### 3.22 Solution Sol22

Table 65: Solution 22

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol22	174	1,150	3.89	7.77	28,442.00	30,742.00	29,612.68	589,049.74	2.07	12	366,389	39	3/15/21	4.46	Optimal	12.44	0.0100

Table 66: Counties

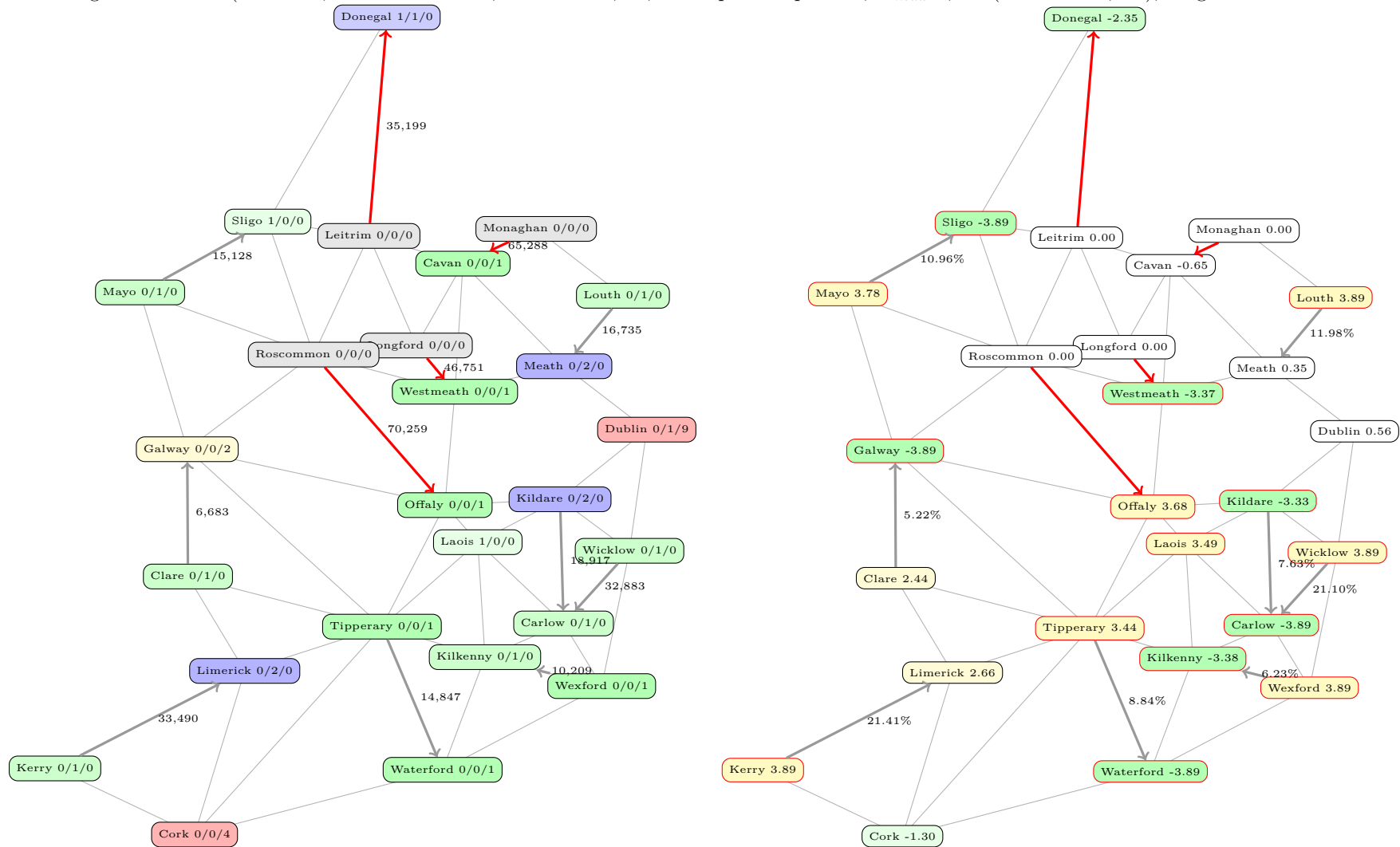
Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	51,800	113,768	1	0/1/0	4	28,442.00	-3.89
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	6,683	0	121,255	1	0/1/0	4	30,313.75	2.44
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	0	35,199	202,283	2	1/1/0	7	28,897.57	-2.35
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/1/9	49	29,758.24	0.56
Galway	277,737	9.39	0	6,683	284,420	2	0/0/2	10	28,442.00	-3.89
Kerry	156,458	5.29	33,490	0	122,968	1	0/1/0	4	30,742.00	3.89
Kildare	247,774	8.37	18,917	0	228,857	2	0/2/0	8	28,607.13	-3.33
Kilkenny	104,160	3.52	0	10,209	114,369	1	0/1/0	4	28,592.25	-3.38
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	33,490	243,026	2	0/2/0	8	30,378.25	2.66
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	16,735	0	122,968	1	0/1/0	4	30,742.00	3.89
Mayo	137,970	4.66	15,128	0	122,842	1	0/1/0	4	30,710.50	3.78
Meath	220,826	7.46	0	16,735	237,561	2	0/2/0	8	29,695.13	0.35
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	70,259	153,409	1	0/0/1	5	30,681.80	3.68
Roscommon	70,259	2.37	70,259	0	0	0	0/0/0	0	0.00	0.00
Sligo	70,198	2.37	0	15,128	85,326	1	1/0/0	3	28,442.00	-3.89
Tipperary	167,895	5.67	14,847	0	153,048	1	0/0/1	5	30,609.60	3.44
Waterford	127,363	4.30	0	14,847	142,210	1	0/0/1	5	28,442.00	-3.89

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	46,751	142,972	1	0/0/1	5	28,594.40	-3.37
Wexford	163,919	5.54	10,209	0	153,710	1	0/0/1	5	30,742.00	3.89
Wicklow	155,851	5.27	32,883	0	122,968	1	0/1/0	4	30,742.00	3.89

Table 67: 12 Transfers (Total 366389)

From	To	Volume	Percent of From
Kildare	Carlow	18,917	7.63
Longford	Westmeath	46,751	100.00
Louth	Meath	16,735	11.98
Wexford	Kilkenny	10,209	6.23
Wicklow	Carlow	32,883	21.10
Clare	Galway	6,683	5.22
Kerry	Limerick	33,490	21.41
Tipperary	Waterford	14,847	8.84
Leitrim	Donegal	35,199	100.00
Mayo	Sligo	15,128	10.96
Roscommon	Offaly	70,259	100.00
Monaghan	Cavan	65,288	100.00

Figure 23: Sol22 (174 seats, 39 constituencies, 12 transfers, 29,612.68 persons per TD,  $\Delta_{max}$  1,150 (3.89% of 29,592), weighted variation 2.07%)



### 3.23 Solution Sol23

Table 68: Solution 23

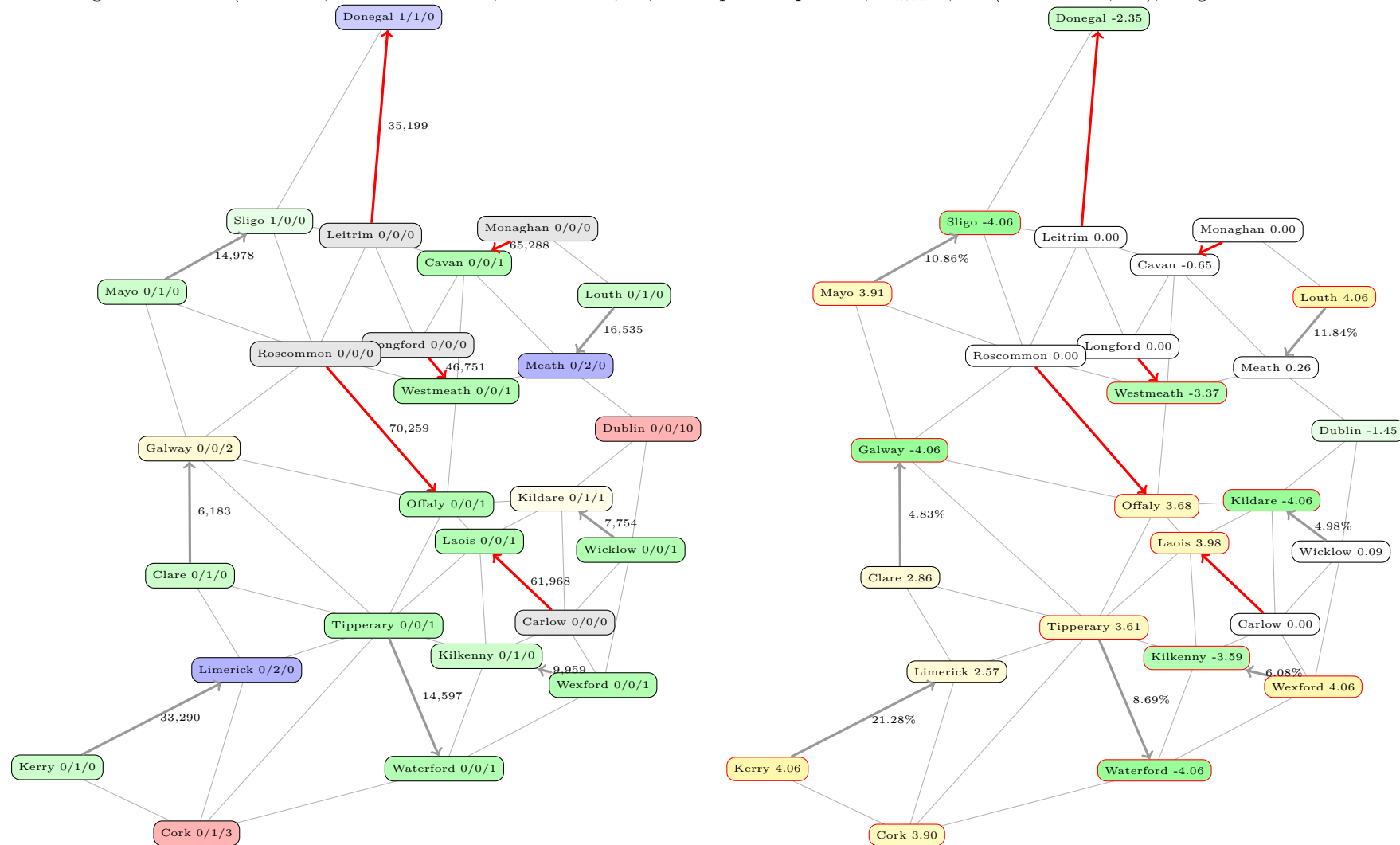
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol23	174	1,200	4.06	8.11	28,392.00	30,792.00	29,619.28	788,381.12	2.55	12	382,761	38	2/12/24	4.58	Optimal	6.03	0.0095

Table 69: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	61,968	0	0	0	0/0/0	0	0.00	0.00
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	6,183	0	121,755	1	0/1/0	4	30,438.75	2.86
Cork	584,156	19.74	0	0	584,156	4	0/1/3	19	30,745.05	3.90
Donegal	167,084	5.65	0	35,199	202,283	2	1/1/0	7	28,897.57	-2.35
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/0/10	50	29,163.08	-1.45
Galway	277,737	9.39	0	6,183	283,920	2	0/0/2	10	28,392.00	-4.06
Kerry	156,458	5.29	33,290	0	123,168	1	0/1/0	4	30,792.00	4.06
Kildare	247,774	8.37	0	7,754	255,528	2	0/1/1	9	28,392.00	-4.06
Kilkenny	104,160	3.52	0	9,959	114,119	1	0/1/0	4	28,529.75	-3.59
Laois	91,877	3.10	0	61,968	153,845	1	0/0/1	5	30,769.00	3.98
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	33,290	242,826	2	0/2/0	8	30,353.25	2.57
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	16,535	0	123,168	1	0/1/0	4	30,792.00	4.06
Mayo	137,970	4.66	14,978	0	122,992	1	0/1/0	4	30,748.00	3.91
Meath	220,826	7.46	0	16,535	237,361	2	0/2/0	8	29,670.13	0.26
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	70,259	153,409	1	0/0/1	5	30,681.80	3.68
Roscommon	70,259	2.37	70,259	0	0	0	0/0/0	0	0.00	0.00
Sligo	70,198	2.37	0	14,978	85,176	1	1/0/0	3	28,392.00	-4.06
Tipperary	167,895	5.67	14,597	0	153,298	1	0/0/1	5	30,659.60	3.61
Waterford	127,363	4.30	0	14,597	141,960	1	0/0/1	5	28,392.00	-4.06

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	46,751	142,972	1	0/0/1	5	28,594.40	-3.37
Wexford	163,919	5.54	9,959	0	153,960	1	0/0/1	5	30,792.00	4.06
Wicklow	155,851	5.27	7,754	0	148,097	1	0/0/1	5	29,619.40	0.09

Table 70: 12 Transfers (Total 382761)			
From	To	Volume	Percent of From
Carlow	Laois	61,968	100.00
Longford	Westmeath	46,751	100.00
Louth	Meath	16,535	11.84
Wexford	Kilkenny	9,959	6.08
Wicklow	Kildare	7,754	4.98
Clare	Galway	6,183	4.83
Kerry	Limerick	33,290	21.28
Tipperary	Waterford	14,597	8.69
Leitrim	Donegal	35,199	100.00
Mayo	Sligo	14,978	10.86
Roscommon	Offaly	70,259	100.00
Monaghan	Cavan	65,288	100.00

Figure 24: Sol23 (174 seats, 38 constituencies, 12 transfers, 29,619.28 persons per TD,  $\Delta_{max}$  1,200 (4.06% of 29,592), weighted variation 2.55%)



### 3.24 Solution Sol24

Table 71: Solution 24

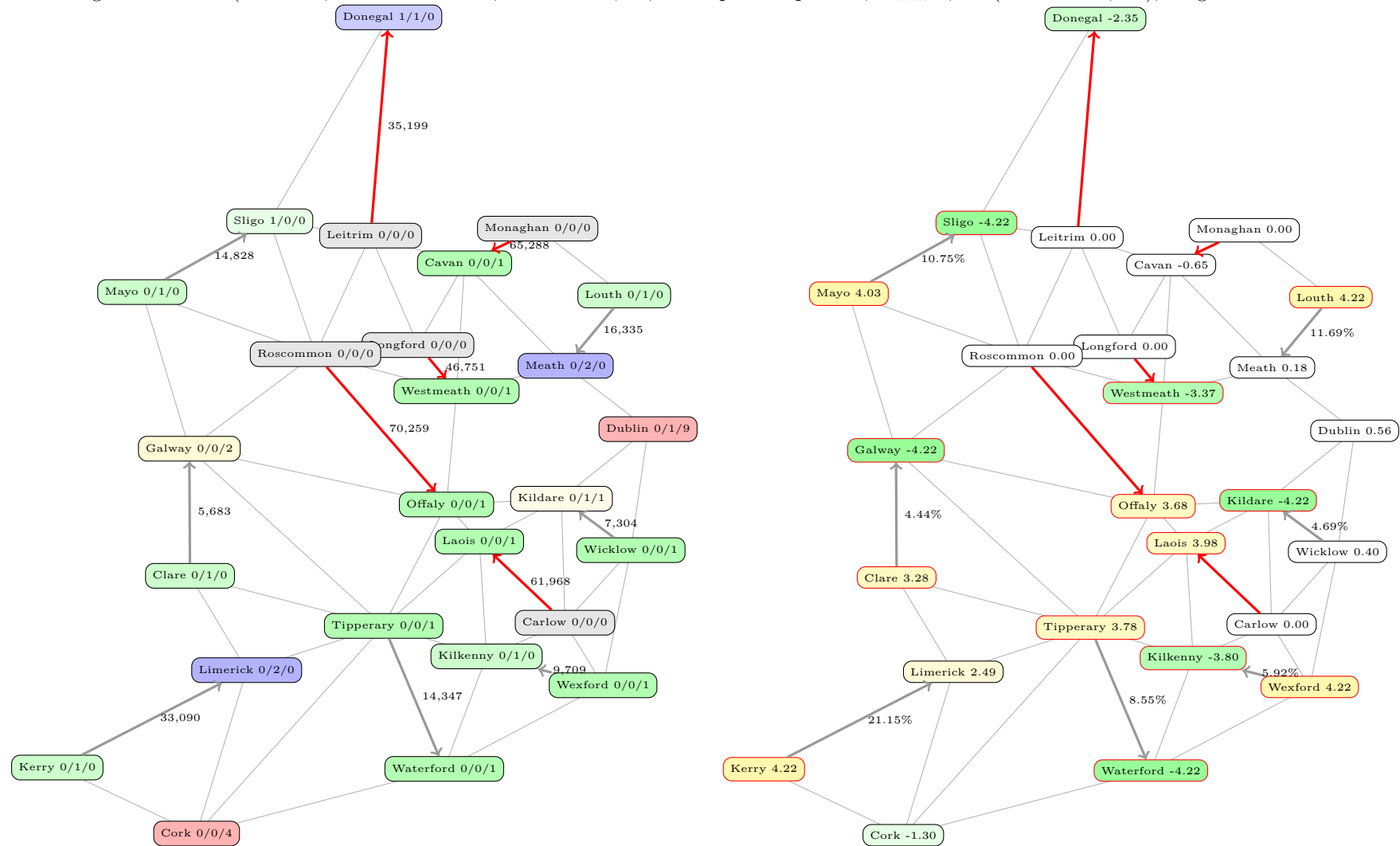
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol24	174	1,250	4.22	8.45	28,342.00	30,842.00	29,614.78	650,129.23	2.07	12	380,761	38	2/12/24	4.58	Optimal	4.84	0.0099

Table 72: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	61,968	0	0	0	0/0/0	0	0.00	0.00
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	5,683	0	122,255	1	0/1/0	4	30,563.75	3.28
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	0	35,199	202,283	2	1/1/0	7	28,897.57	-2.35
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/1/9	49	29,758.24	0.56
Galway	277,737	9.39	0	5,683	283,420	2	0/0/2	10	28,342.00	-4.22
Kerry	156,458	5.29	33,090	0	123,368	1	0/1/0	4	30,842.00	4.22
Kildare	247,774	8.37	0	7,304	255,078	2	0/1/1	9	28,342.00	-4.22
Kilkenny	104,160	3.52	0	9,709	113,869	1	0/1/0	4	28,467.25	-3.80
Laois	91,877	3.10	0	61,968	153,845	1	0/0/1	5	30,769.00	3.98
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	33,090	242,626	2	0/2/0	8	30,328.25	2.49
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	16,335	0	123,368	1	0/1/0	4	30,842.00	4.22
Mayo	137,970	4.66	14,828	0	123,142	1	0/1/0	4	30,785.50	4.03
Meath	220,826	7.46	0	16,335	237,161	2	0/2/0	8	29,645.13	0.18
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	70,259	153,409	1	0/0/1	5	30,681.80	3.68
Roscommon	70,259	2.37	70,259	0	0	0	0/0/0	0	0.00	0.00
Sligo	70,198	2.37	0	14,828	85,026	1	1/0/0	3	28,342.00	-4.22
Tipperary	167,895	5.67	14,347	0	153,548	1	0/0/1	5	30,709.60	3.78
Waterford	127,363	4.30	0	14,347	141,710	1	0/0/1	5	28,342.00	-4.22

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	46,751	142,972	1	0/0/1	5	28,594.40	-3.37
Wexford	163,919	5.54	9,709	0	154,210	1	0/0/1	5	30,842.00	4.22
Wicklow	155,851	5.27	7,304	0	148,547	1	0/0/1	5	29,709.40	0.40

Table 73: 12 Transfers (Total 380761)			
From	To	Volume	Percent of From
Carlow	Laois	61,968	100.00
Longford	Westmeath	46,751	100.00
Louth	Meath	16,335	11.69
Wexford	Kilkenny	9,709	5.92
Wicklow	Kildare	7,304	4.69
Clare	Galway	5,683	4.44
Kerry	Limerick	33,090	21.15
Tipperary	Waterford	14,347	8.55
Leitrim	Donegal	35,199	100.00
Mayo	Sligo	14,828	10.75
Roscommon	Offaly	70,259	100.00
Monaghan	Cavan	65,288	100.00

Figure 25: Sol24 (174 seats, 38 constituencies, 12 transfers, 29,614.78 persons per TD,  $\Delta_{max}$  1,250 (4.22% of 29,592), weighted variation 2.07%)

### 3.25 Solution Sol25

Table 74: Solution 25

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol25	174	1,300	4.39	8.79	28,292.00	30,892.00	29,618.22	760,257.17	2.51	12	329,637	39	2/17/20	4.46	Optimal	23.99	0.0100

Table 75: Counties

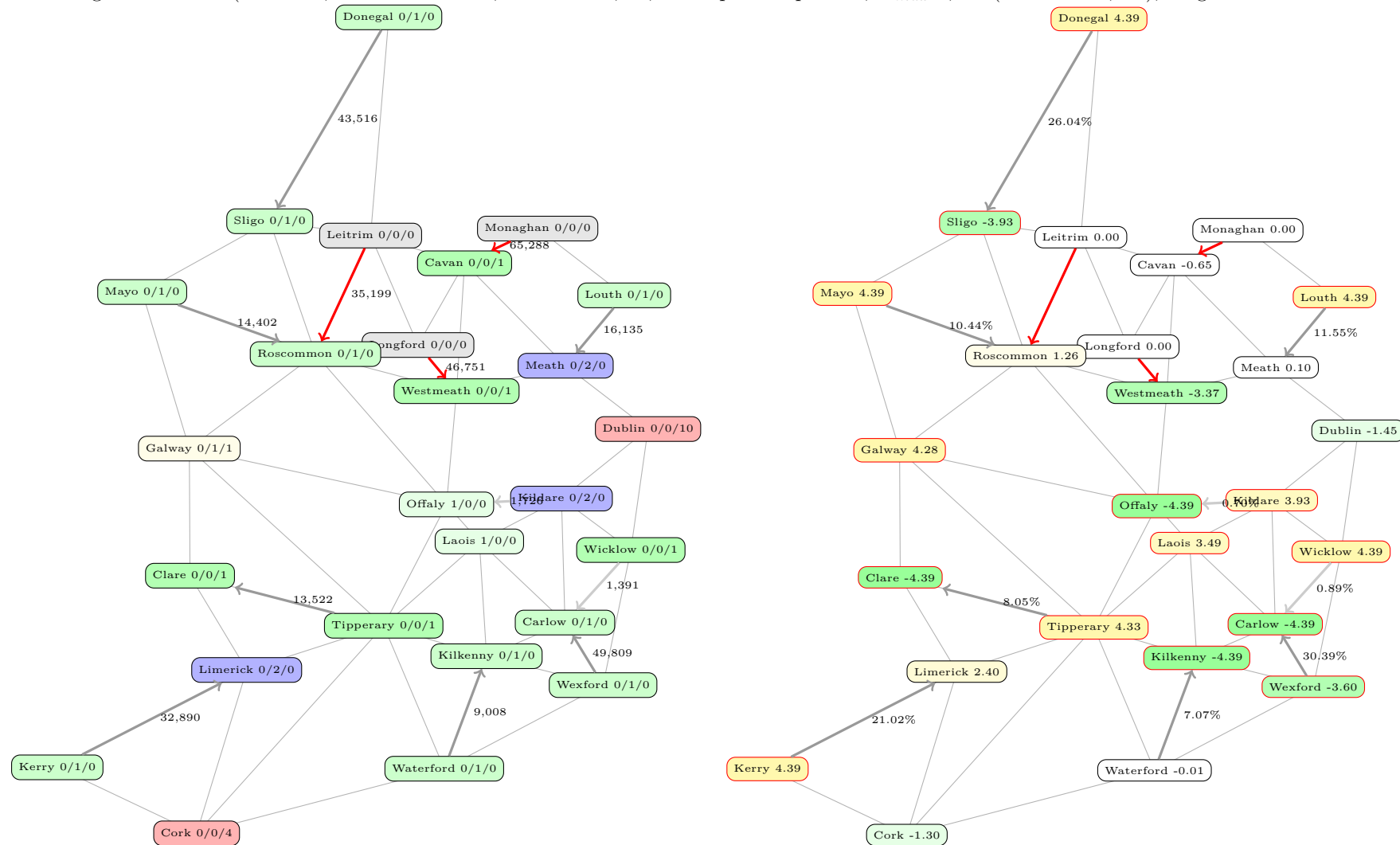
Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	51,200	113,168	1	0/1/0	4	28,292.00	-4.39
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	0	13,522	141,460	1	0/0/1	5	28,292.00	-4.39
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	43,516	0	123,568	1	0/1/0	4	30,892.00	4.39
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/0/10	50	29,163.08	-1.45
Galway	277,737	9.39	0	0	277,737	2	0/1/1	9	30,859.67	4.28
Kerry	156,458	5.29	32,890	0	123,568	1	0/1/0	4	30,892.00	4.39
Kildare	247,774	8.37	1,726	0	246,048	2	0/2/0	8	30,756.00	3.93
Kilkenny	104,160	3.52	0	9,008	113,168	1	0/1/0	4	28,292.00	-4.39
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	32,890	242,426	2	0/2/0	8	30,303.25	2.40
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	16,135	0	123,568	1	0/1/0	4	30,892.00	4.39
Mayo	137,970	4.66	14,402	0	123,568	1	0/1/0	4	30,892.00	4.39
Meath	220,826	7.46	0	16,135	236,961	2	0/2/0	8	29,620.13	0.10
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	1,726	84,876	1	1/0/0	3	28,292.00	-4.39
Roscommon	70,259	2.37	0	49,601	119,860	1	0/1/0	4	29,965.00	1.26
Sligo	70,198	2.37	0	43,516	113,714	1	0/1/0	4	28,428.50	-3.93
Tipperary	167,895	5.67	13,522	0	154,373	1	0/0/1	5	30,874.60	4.33
Waterford	127,363	4.30	9,008	0	118,355	1	0/1/0	4	29,588.75	-0.01

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	46,751	142,972	1	0/0/1	5	28,594.40	-3.37
Wexford	163,919	5.54	49,809	0	114,110	1	0/1/0	4	28,527.50	-3.60
Wicklow	155,851	5.27	1,391	0	154,460	1	0/0/1	5	30,892.00	4.39

Table 76: 12 Transfers (Total 329637)

From	To	Volume	Percent of From
Kildare	Offaly	1,726	0.70
Longford	Westmeath	46,751	100.00
Louth	Meath	16,135	11.55
Wexford	Carlow	49,809	30.39
Wicklow	Carlow	1,391	0.89
Kerry	Limerick	32,890	21.02
Tipperary	Clare	13,522	8.05
Waterford	Kilkenny	9,008	7.07
Leitrim	Roscommon	35,199	100.00
Mayo	Roscommon	14,402	10.44
Donegal	Sligo	43,516	26.04
Monaghan	Cavan	65,288	100.00

Figure 26: Sol25 (174 seats, 39 constituencies, 12 transfers, 29,618.22 persons per TD,  $\Delta_{max}$  1,300 (4.39% of 29,592), weighted variation 2.51%)



### 3.26 Solution Sol26

Table 77: Solution 26

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol26	174	1,350	4.56	9.12	28,242.00	30,942.00	29,618.48	768,719.90	2.51	12	328,037	39	2/17/20	4.46	Optimal	33.29	0.0100

Table 78: Counties

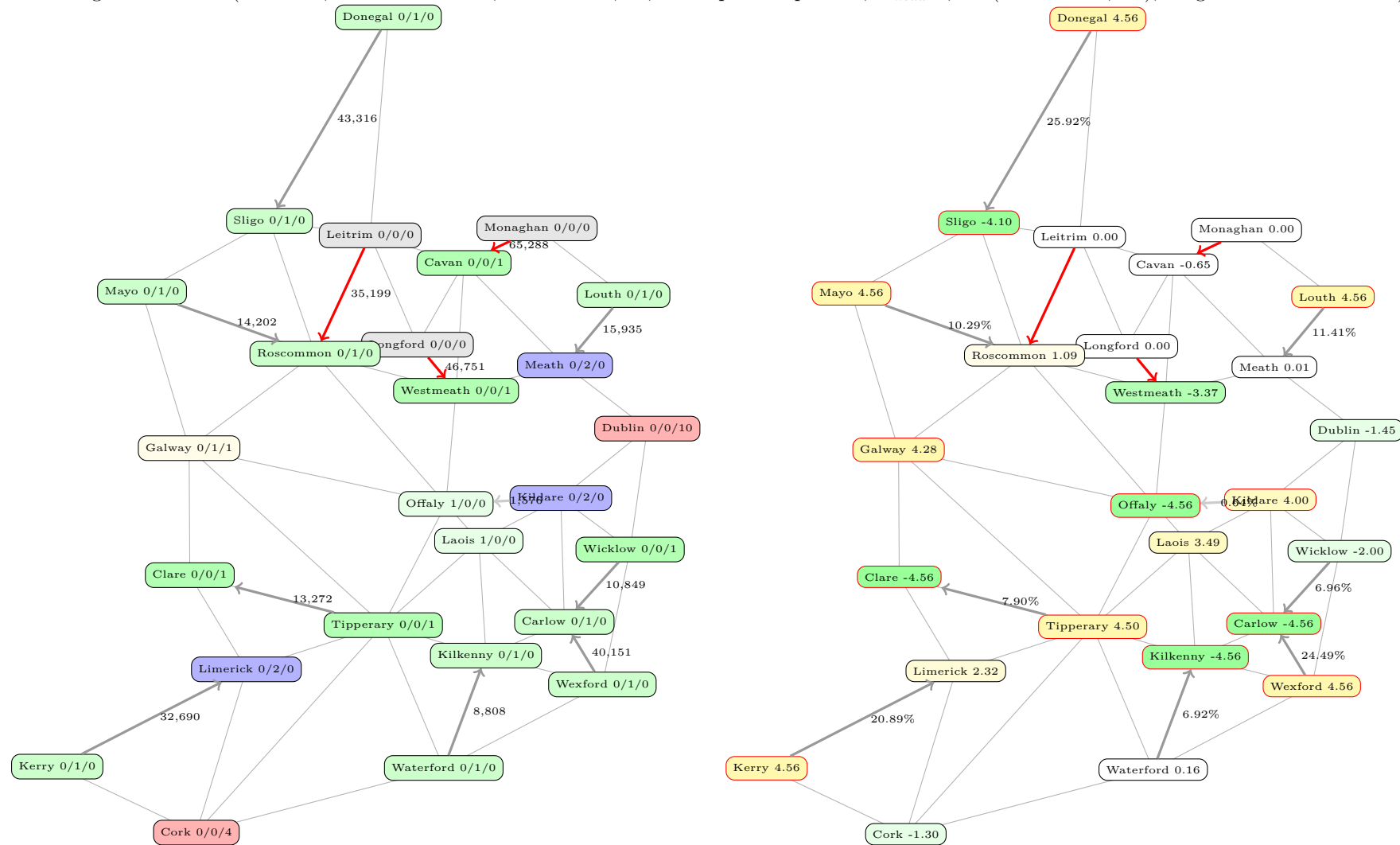
Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	51,000	112,968	1	0/1/0	4	28,242.00	-4.56
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	0	13,272	141,210	1	0/0/1	5	28,242.00	-4.56
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	43,316	0	123,768	1	0/1/0	4	30,942.00	4.56
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/0/10	50	29,163.08	-1.45
Galway	277,737	9.39	0	0	277,737	2	0/1/1	9	30,859.67	4.28
Kerry	156,458	5.29	32,690	0	123,768	1	0/1/0	4	30,942.00	4.56
Kildare	247,774	8.37	1,576	0	246,198	2	0/2/0	8	30,774.75	4.00
Kilkenny	104,160	3.52	0	8,808	112,968	1	0/1/0	4	28,242.00	-4.56
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	32,690	242,226	2	0/2/0	8	30,278.25	2.32
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	15,935	0	123,768	1	0/1/0	4	30,942.00	4.56
Mayo	137,970	4.66	14,202	0	123,768	1	0/1/0	4	30,942.00	4.56
Meath	220,826	7.46	0	15,935	236,761	2	0/2/0	8	29,595.13	0.01
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	1,576	84,726	1	1/0/0	3	28,242.00	-4.56
Roscommon	70,259	2.37	0	49,401	119,660	1	0/1/0	4	29,915.00	1.09
Sligo	70,198	2.37	0	43,316	113,514	1	0/1/0	4	28,378.50	-4.10
Tipperary	167,895	5.67	13,272	0	154,623	1	0/0/1	5	30,924.60	4.50
Waterford	127,363	4.30	8,808	0	118,555	1	0/1/0	4	29,638.75	0.16

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	46,751	142,972	1	0/0/1	5	28,594.40	-3.37
Wexford	163,919	5.54	40,151	0	123,768	1	0/1/0	4	30,942.00	4.56
Wicklow	155,851	5.27	10,849	0	145,002	1	0/0/1	5	29,000.40	-2.00

Table 79: 12 Transfers (Total 328037)

From	To	Volume	Percent of From
Kildare	Offaly	1,576	0.64
Longford	Westmeath	46,751	100.00
Louth	Meath	15,935	11.41
Wexford	Carlow	40,151	24.49
Wicklow	Carlow	10,849	6.96
Kerry	Limerick	32,690	20.89
Tipperary	Clare	13,272	7.90
Waterford	Kilkenny	8,808	6.92
Leitrim	Roscommon	35,199	100.00
Mayo	Roscommon	14,202	10.29
Donegal	Sligo	43,316	25.92
Monaghan	Cavan	65,288	100.00



Figure 27: Sol26 (174 seats, 39 constituencies, 12 transfers, 29,618.48 persons per TD,  $\Delta_{max}$  1,350 (4.56% of 29,592), weighted variation 2.51%)

### 3.27 Solution Sol27

Table 80: Solution 27

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol27	174	1,400	4.73	9.46	28,192.00	30,992.00	29,620.14	818,999.24	2.53	11	352,530	39	3/15/21	4.46	Optimal	4.57	0.0086

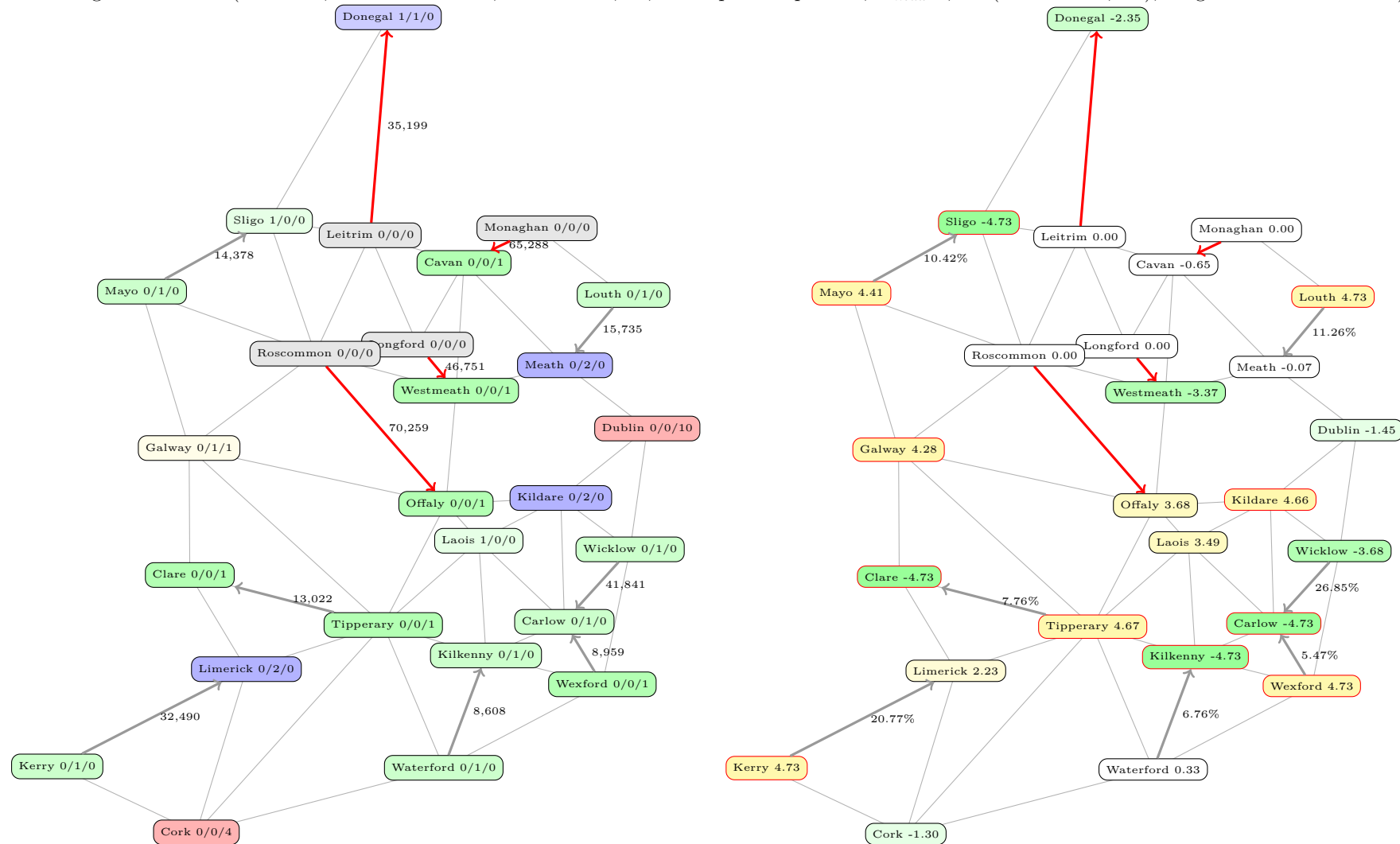
Table 81: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	50,800	112,768	1	0/1/0	4	28,192.00	-4.73
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	0	13,022	140,960	1	0/0/1	5	28,192.00	-4.73
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	0	35,199	202,283	2	1/1/0	7	28,897.57	-2.35
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/0/10	50	29,163.08	-1.45
Galway	277,737	9.39	0	0	277,737	2	0/1/1	9	30,859.67	4.28
Kerry	156,458	5.29	32,490	0	123,968	1	0/1/0	4	30,992.00	4.73
Kildare	247,774	8.37	0	0	247,774	2	0/2/0	8	30,971.75	4.66
Kilkenny	104,160	3.52	0	8,608	112,768	1	0/1/0	4	28,192.00	-4.73
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	32,490	242,026	2	0/2/0	8	30,253.25	2.23
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	15,735	0	123,968	1	0/1/0	4	30,992.00	4.73
Mayo	137,970	4.66	14,378	0	123,592	1	0/1/0	4	30,898.00	4.41
Meath	220,826	7.46	0	15,735	236,561	2	0/2/0	8	29,570.13	-0.07
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	70,259	153,409	1	0/0/1	5	30,681.80	3.68
Roscommon	70,259	2.37	70,259	0	0	0	0/0/0	0	0.00	0.00
Sligo	70,198	2.37	0	14,378	84,576	1	1/0/0	3	28,192.00	-4.73
Tipperary	167,895	5.67	13,022	0	154,873	1	0/0/1	5	30,974.60	4.67
Waterford	127,363	4.30	8,608	0	118,755	1	0/1/0	4	29,688.75	0.33

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	46,751	142,972	1	0/0/1	5	28,594.40	-3.37
Wexford	163,919	5.54	8,959	0	154,960	1	0/0/1	5	30,992.00	4.73
Wicklow	155,851	5.27	41,841	0	114,010	1	0/1/0	4	28,502.50	-3.68

Table 82: 11 Transfers (Total 352530)			
From	To	Volume	Percent of From
Longford	Westmeath	46,751	100.00
Louth	Meath	15,735	11.26
Wexford	Carlow	8,959	5.47
Wicklow	Carlow	41,841	26.85
Kerry	Limerick	32,490	20.77
Tipperary	Clare	13,022	7.76
Waterford	Kilkenny	8,608	6.76
Leitrim	Donegal	35,199	100.00
Mayo	Sligo	14,378	10.42
Roscommon	Offaly	70,259	100.00
Monaghan	Cavan	65,288	100.00

Figure 28: Sol27 (174 seats, 39 constituencies, 11 transfers, 29,620.14 persons per TD,  $\Delta_{max}$  1,400 (4.73% of 29,592), weighted variation 2.53%)



### 3.28 Solution Sol28

Table 83: Solution 28

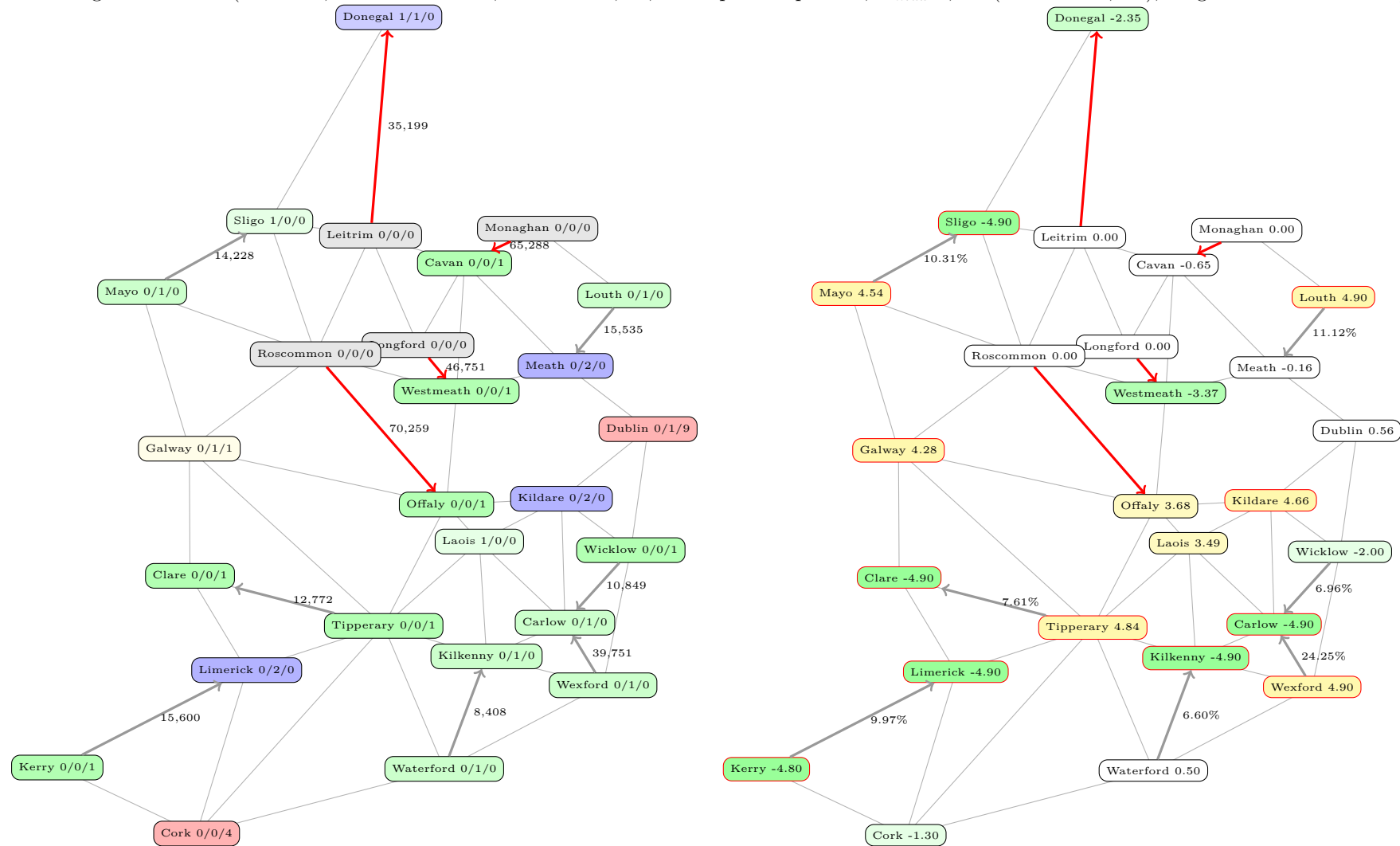
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol28	174	1,450	4.90	9.80	28,142.00	31,042.00	29,621.57	852,113.06	2.37	11	334,640	39	3/15/21	4.46	Optimal	1.62	0.0037

Table 84: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	50,600	112,568	1	0/1/0	4	28,142.00	-4.90
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	0	12,772	140,710	1	0/0/1	5	28,142.00	-4.90
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	0	35,199	202,283	2	1/1/0	7	28,897.57	-2.35
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/1/9	49	29,758.24	0.56
Galway	277,737	9.39	0	0	277,737	2	0/1/1	9	30,859.67	4.28
Kerry	156,458	5.29	15,600	0	140,858	1	0/0/1	5	28,171.60	-4.80
Kildare	247,774	8.37	0	0	247,774	2	0/2/0	8	30,971.75	4.66
Kilkenny	104,160	3.52	0	8,408	112,568	1	0/1/0	4	28,142.00	-4.90
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	15,600	225,136	2	0/2/0	8	28,142.00	-4.90
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	15,535	0	124,168	1	0/1/0	4	31,042.00	4.90
Mayo	137,970	4.66	14,228	0	123,742	1	0/1/0	4	30,935.50	4.54
Meath	220,826	7.46	0	15,535	236,361	2	0/2/0	8	29,545.13	-0.16
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	70,259	153,409	1	0/0/1	5	30,681.80	3.68
Roscommon	70,259	2.37	70,259	0	0	0	0/0/0	0	0.00	0.00
Sligo	70,198	2.37	0	14,228	84,426	1	1/0/0	3	28,142.00	-4.90
Tipperary	167,895	5.67	12,772	0	155,123	1	0/0/1	5	31,024.60	4.84
Waterford	127,363	4.30	8,408	0	118,955	1	0/1/0	4	29,738.75	0.50

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	46,751	142,972	1	0/0/1	5	28,594.40	-3.37
Wexford	163,919	5.54	39,751	0	124,168	1	0/1/0	4	31,042.00	4.90
Wicklow	155,851	5.27	10,849	0	145,002	1	0/0/1	5	29,000.40	-2.00

Table 85: 11 Transfers (Total 334640)			
From	To	Volume	Percent of From
Longford	Westmeath	46,751	100.00
Louth	Meath	15,535	11.12
Wexford	Carlow	39,751	24.25
Wicklow	Carlow	10,849	6.96
Kerry	Limerick	15,600	9.97
Tipperary	Clare	12,772	7.61
Waterford	Kilkenny	8,408	6.60
Leitrim	Donegal	35,199	100.00
Mayo	Sligo	14,228	10.31
Roscommon	Offaly	70,259	100.00
Monaghan	Cavan	65,288	100.00

Figure 29: Sol28 (174 seats, 39 constituencies, 11 transfers, 29,621.57 persons per TD,  $\Delta_{max}$  1,450 (4.90% of 29,592), weighted variation 2.37%)

### 3.29 Solution Sol29

Table 86: Solution 29

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol29	174	1,500	5.07	10.14	28,092.00	31,092.00	29,623.57	910,951.37	2.46	11	333,240	39	3/15/21	4.46	Optimal	2.63	0.0089

Table 87: Counties

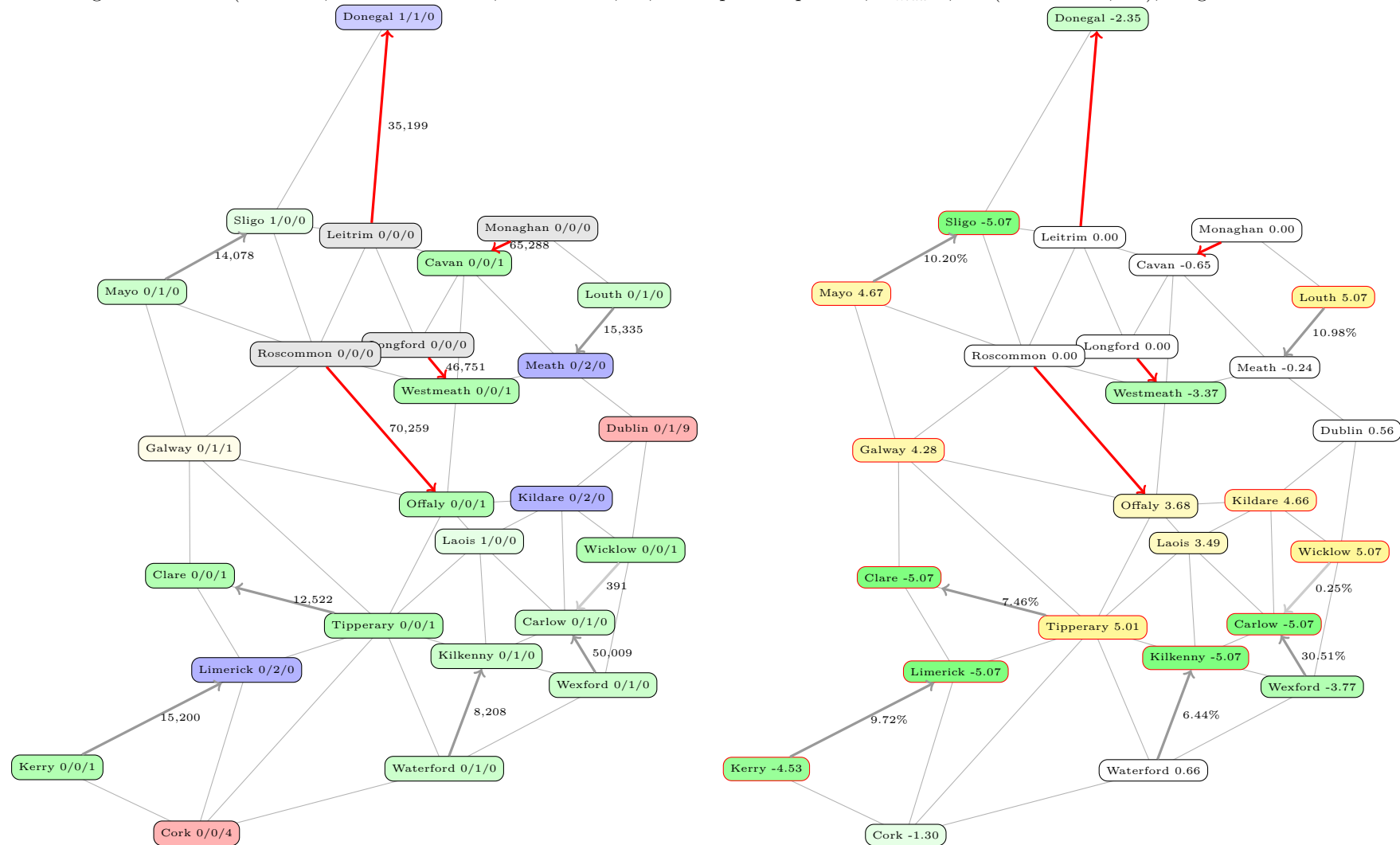
Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	50,400	112,368	1	0/1/0	4	28,092.00	-5.07
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	0	12,522	140,460	1	0/0/1	5	28,092.00	-5.07
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	0	35,199	202,283	2	1/1/0	7	28,897.57	-2.35
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/1/9	49	29,758.24	0.56
Galway	277,737	9.39	0	0	277,737	2	0/1/1	9	30,859.67	4.28
Kerry	156,458	5.29	15,200	0	141,258	1	0/0/1	5	28,251.60	-4.53
Kildare	247,774	8.37	0	0	247,774	2	0/2/0	8	30,971.75	4.66
Kilkenny	104,160	3.52	0	8,208	112,368	1	0/1/0	4	28,092.00	-5.07
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	15,200	224,736	2	0/2/0	8	28,092.00	-5.07
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	15,335	0	124,368	1	0/1/0	4	31,092.00	5.07
Mayo	137,970	4.66	14,078	0	123,892	1	0/1/0	4	30,973.00	4.67
Meath	220,826	7.46	0	15,335	236,161	2	0/2/0	8	29,520.13	-0.24
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	70,259	153,409	1	0/0/1	5	30,681.80	3.68
Roscommon	70,259	2.37	70,259	0	0	0	0/0/0	0	0.00	0.00
Sligo	70,198	2.37	0	14,078	84,276	1	1/0/0	3	28,092.00	-5.07
Tipperary	167,895	5.67	12,522	0	155,373	1	0/0/1	5	31,074.60	5.01
Waterford	127,363	4.30	8,208	0	119,155	1	0/1/0	4	29,788.75	0.66



Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	46,751	142,972	1	0/0/1	5	28,594.40	-3.37
Wexford	163,919	5.54	50,009	0	113,910	1	0/1/0	4	28,477.50	-3.77
Wicklow	155,851	5.27	391	0	155,460	1	0/0/1	5	31,092.00	5.07

Table 88: 11 Transfers (Total 333240)			
From	To	Volume	Percent of From
Longford	Westmeath	46,751	100.00
Louth	Meath	15,335	10.98
Wexford	Carlow	50,009	30.51
Wicklow	Carlow	391	0.25
Kerry	Limerick	15,200	9.72
Tipperary	Clare	12,522	7.46
Waterford	Kilkenny	8,208	6.44
Leitrim	Donegal	35,199	100.00
Mayo	Sligo	14,078	10.20
Roscommon	Offaly	70,259	100.00
Monaghan	Cavan	65,288	100.00

Figure 30: Sol29 (174 seats, 39 constituencies, 11 transfers, 29,623.57 persons per TD,  $\Delta_{max}$  1,500 (5.07% of 29,592), weighted variation 2.46%)



### 3.30 Solution Sol30

Table 89: Solution 30

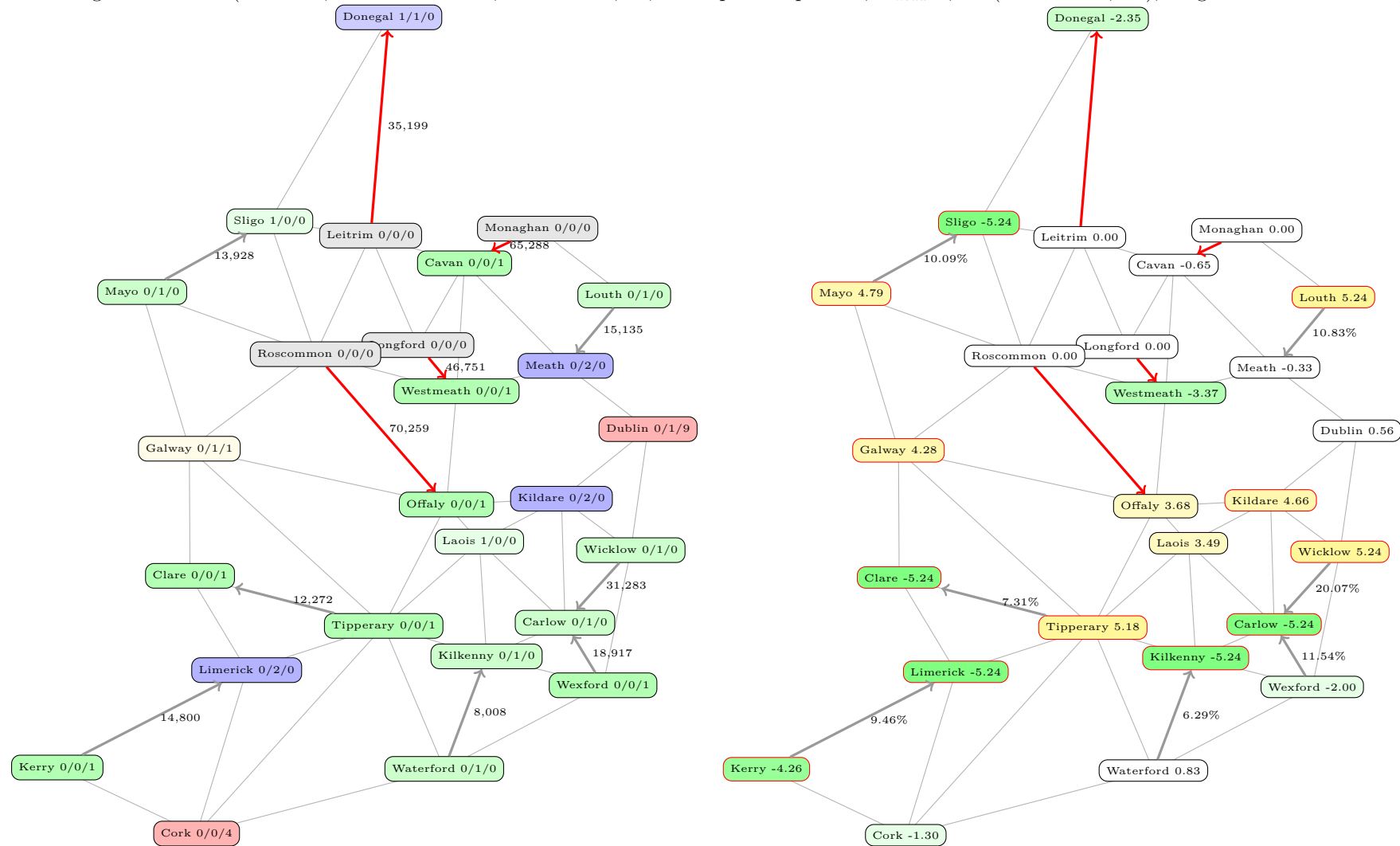
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol30	174	1,550	5.24	10.48	28,042.00	31,142.00	29,623.51	909,080.09	2.44	11	331,840	39	3/15/21	4.46	Optimal	2.71	0.0099

Table 90: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	50,200	112,168	1	0/1/0	4	28,042.00	-5.24
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	0	12,272	140,210	1	0/0/1	5	28,042.00	-5.24
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	0	35,199	202,283	2	1/1/0	7	28,897.57	-2.35
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/1/9	49	29,758.24	0.56
Galway	277,737	9.39	0	0	277,737	2	0/1/1	9	30,859.67	4.28
Kerry	156,458	5.29	14,800	0	141,658	1	0/0/1	5	28,331.60	-4.26
Kildare	247,774	8.37	0	0	247,774	2	0/2/0	8	30,971.75	4.66
Kilkenny	104,160	3.52	0	8,008	112,168	1	0/1/0	4	28,042.00	-5.24
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	14,800	224,336	2	0/2/0	8	28,042.00	-5.24
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	15,135	0	124,568	1	0/1/0	4	31,142.00	5.24
Mayo	137,970	4.66	13,928	0	124,042	1	0/1/0	4	31,010.50	4.79
Meath	220,826	7.46	0	15,135	235,961	2	0/2/0	8	29,495.13	-0.33
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	70,259	153,409	1	0/0/1	5	30,681.80	3.68
Roscommon	70,259	2.37	70,259	0	0	0	0/0/0	0	0.00	0.00
Sligo	70,198	2.37	0	13,928	84,126	1	1/0/0	3	28,042.00	-5.24
Tipperary	167,895	5.67	12,272	0	155,623	1	0/0/1	5	31,124.60	5.18
Waterford	127,363	4.30	8,008	0	119,355	1	0/1/0	4	29,838.75	0.83

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	46,751	142,972	1	0/0/1	5	28,594.40	-3.37
Wexford	163,919	5.54	18,917	0	145,002	1	0/0/1	5	29,000.40	-2.00
Wicklow	155,851	5.27	31,283	0	124,568	1	0/1/0	4	31,142.00	5.24

Table 91: 11 Transfers (Total 331840)			
From	To	Volume	Percent of From
Longford	Westmeath	46,751	100.00
Louth	Meath	15,135	10.83
Wexford	Carlow	18,917	11.54
Wicklow	Carlow	31,283	20.07
Kerry	Limerick	14,800	9.46
Tipperary	Clare	12,272	7.31
Waterford	Kilkenny	8,008	6.29
Leitrim	Donegal	35,199	100.00
Mayo	Sligo	13,928	10.09
Roscommon	Offaly	70,259	100.00
Monaghan	Cavan	65,288	100.00

Figure 31: Sol30 (174 seats, 39 constituencies, 11 transfers, 29,623.51 persons per TD,  $\Delta_{max}$  1,550 (5.24% of 29,592), weighted variation 2.44%)

### 3.31 Solution Sol31

Table 92: Solution 31

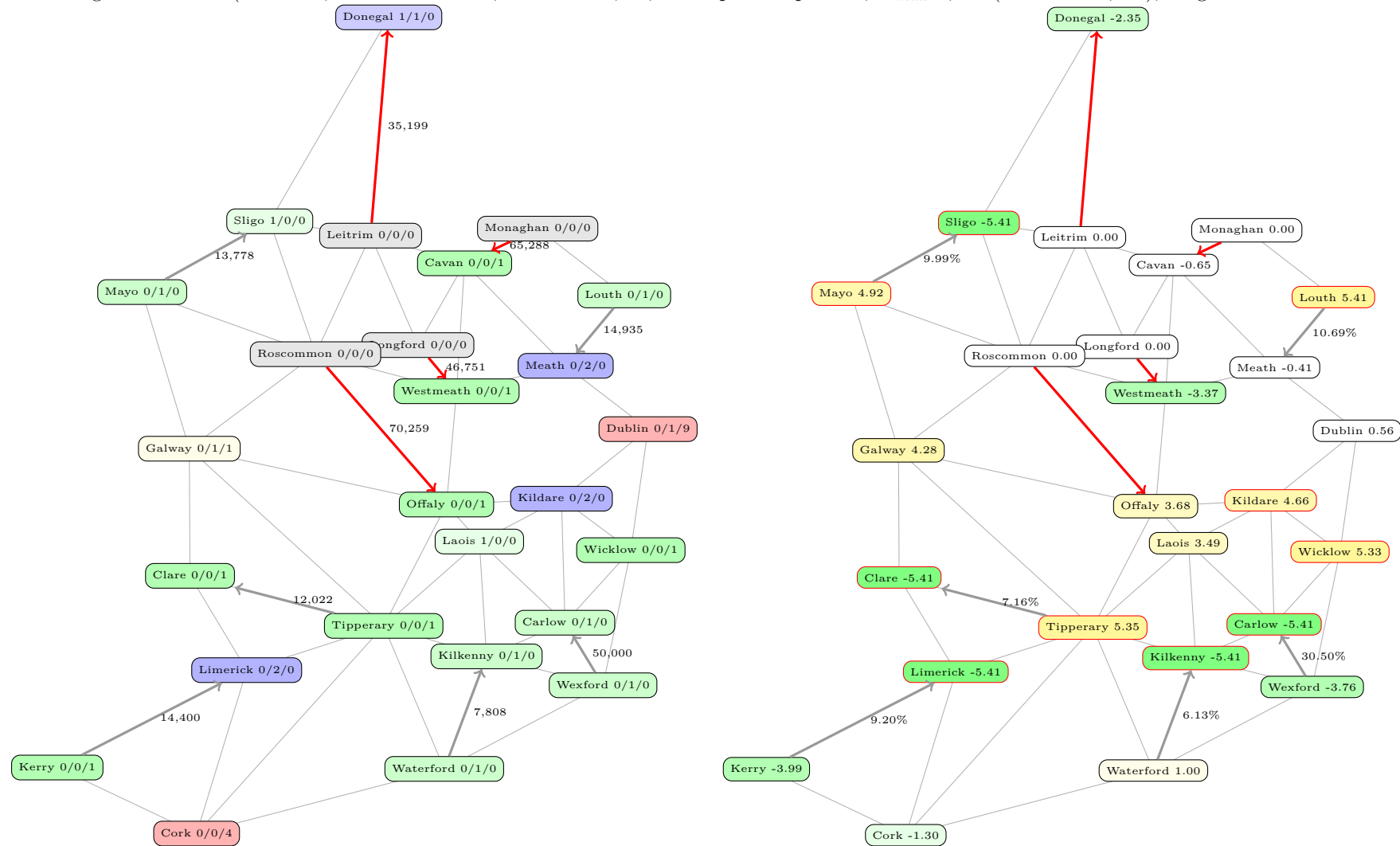
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol31	174	1,600	5.41	10.81	27,992.00	31,192.00	29,625.61	970,728.90	2.53	10	330,440	39	3/15/21	4.46	Optimal	2.26	0.0000

Table 93: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	50,000	111,968	1	0/1/0	4	27,992.00	-5.41
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	0	12,022	139,960	1	0/0/1	5	27,992.00	-5.41
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	0	35,199	202,283	2	1/1/0	7	28,897.57	-2.35
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/1/9	49	29,758.24	0.56
Galway	277,737	9.39	0	0	277,737	2	0/1/1	9	30,859.67	4.28
Kerry	156,458	5.29	14,400	0	142,058	1	0/0/1	5	28,411.60	-3.99
Kildare	247,774	8.37	0	0	247,774	2	0/2/0	8	30,971.75	4.66
Kilkenny	104,160	3.52	0	7,808	111,968	1	0/1/0	4	27,992.00	-5.41
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	14,400	223,936	2	0/2/0	8	27,992.00	-5.41
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	14,935	0	124,768	1	0/1/0	4	31,192.00	5.41
Mayo	137,970	4.66	13,778	0	124,192	1	0/1/0	4	31,048.00	4.92
Meath	220,826	7.46	0	14,935	235,761	2	0/2/0	8	29,470.13	-0.41
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	70,259	153,409	1	0/0/1	5	30,681.80	3.68
Roscommon	70,259	2.37	70,259	0	0	0	0/0/0	0	0.00	0.00
Sligo	70,198	2.37	0	13,778	83,976	1	1/0/0	3	27,992.00	-5.41
Tipperary	167,895	5.67	12,022	0	155,873	1	0/0/1	5	31,174.60	5.35
Waterford	127,363	4.30	7,808	0	119,555	1	0/1/0	4	29,888.75	1.00

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	46,751	142,972	1	0/0/1	5	28,594.40	-3.37
Wexford	163,919	5.54	50,000	0	113,919	1	0/1/0	4	28,479.75	-3.76
Wicklow	155,851	5.27	0	0	155,851	1	0/0/1	5	31,170.20	5.33

Table 94: 10 Transfers (Total 330440)			
From	To	Volume	Percent of From
Longford	Westmeath	46,751	100.00
Louth	Meath	14,935	10.69
Wexford	Carlow	50,000	30.50
Kerry	Limerick	14,400	9.20
Tipperary	Clare	12,022	7.16
Waterford	Kilkenny	7,808	6.13
Leitrim	Donegal	35,199	100.00
Mayo	Sligo	13,778	9.99
Roscommon	Offaly	70,259	100.00
Monaghan	Cavan	65,288	100.00

Figure 32: Sol31 (174 seats, 39 constituencies, 10 transfers, 29,625.61 persons per TD,  $\Delta_{max}$  1,600 (5.41% of 29,592), weighted variation 2.53%)



### 3.32 Solution Sol32

Table 95: Solution 32

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol32	174	1,650	5.58	11.15	27,942.00	31,242.00	29,626.51	996,763.39	2.56	10	329,040	39	3/15/21	4.46	Optimal	1.34	0.0100

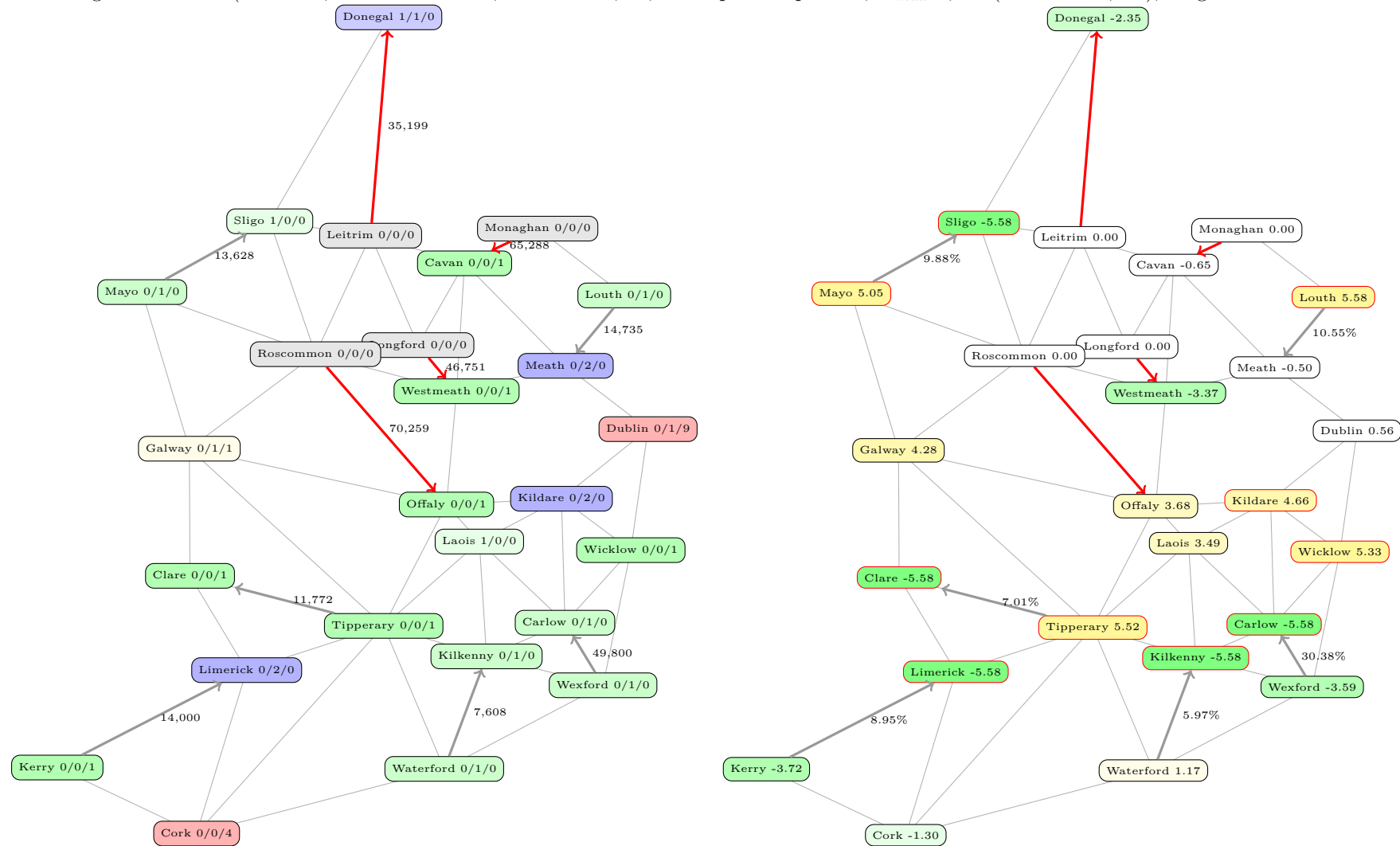
Table 96: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	49,800	111,768	1	0/1/0	4	27,942.00	-5.58
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	0	11,772	139,710	1	0/0/1	5	27,942.00	-5.58
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	0	35,199	202,283	2	1/1/0	7	28,897.57	-2.35
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/1/9	49	29,758.24	0.56
Galway	277,737	9.39	0	0	277,737	2	0/1/1	9	30,859.67	4.28
Kerry	156,458	5.29	14,000	0	142,458	1	0/0/1	5	28,491.60	-3.72
Kildare	247,774	8.37	0	0	247,774	2	0/2/0	8	30,971.75	4.66
Kilkenny	104,160	3.52	0	7,608	111,768	1	0/1/0	4	27,942.00	-5.58
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	14,000	223,536	2	0/2/0	8	27,942.00	-5.58
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	14,735	0	124,968	1	0/1/0	4	31,242.00	5.58
Mayo	137,970	4.66	13,628	0	124,342	1	0/1/0	4	31,085.50	5.05
Meath	220,826	7.46	0	14,735	235,561	2	0/2/0	8	29,445.13	-0.50
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	70,259	153,409	1	0/0/1	5	30,681.80	3.68
Roscommon	70,259	2.37	70,259	0	0	0	0/0/0	0	0.00	0.00
Sligo	70,198	2.37	0	13,628	83,826	1	1/0/0	3	27,942.00	-5.58
Tipperary	167,895	5.67	11,772	0	156,123	1	0/0/1	5	31,224.60	5.52
Waterford	127,363	4.30	7,608	0	119,755	1	0/1/0	4	29,938.75	1.17

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	46,751	142,972	1	0/0/1	5	28,594.40	-3.37
Wexford	163,919	5.54	49,800	0	114,119	1	0/1/0	4	28,529.75	-3.59
Wicklow	155,851	5.27	0	0	155,851	1	0/0/1	5	31,170.20	5.33

Table 97: 10 Transfers (Total 329040)

From	To	Volume	Percent of From
Longford	Westmeath	46,751	100.00
Louth	Meath	14,735	10.55
Wexford	Carlow	49,800	30.38
Kerry	Limerick	14,000	8.95
Tipperary	Clare	11,772	7.01
Waterford	Kilkenny	7,608	5.97
Leitrim	Donegal	35,199	100.00
Mayo	Sligo	13,628	9.88
Roscommon	Offaly	70,259	100.00
Monaghan	Cavan	65,288	100.00

Figure 33: Sol32 (174 seats, 39 constituencies, 10 transfers, 29,626.51 persons per TD,  $\Delta_{max}$  1,650 (5.58% of 29,592), weighted variation 2.56%)

### 3.33 Solution Sol33

Table 98: Solution 33

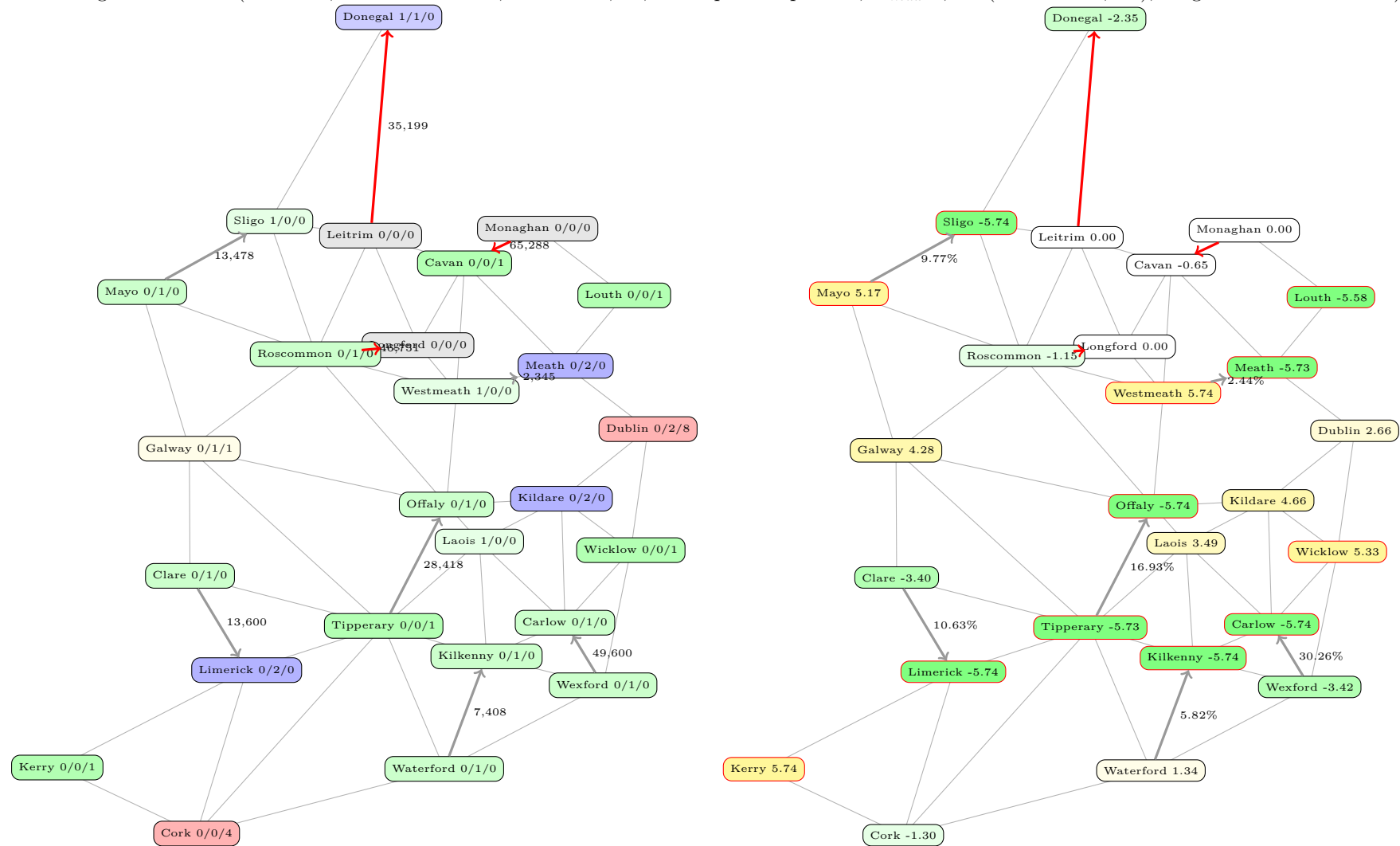
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol33	174	1,700	5.74	11.49	27,892.00	31,292.00	29,639.51	1,367,617.50	3.50	9	262,087	40	4/18/18	4.35	Optimal	1.38	0.0093

Table 99: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	49,600	111,568	1	0/1/0	4	27,892.00	-5.74
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	13,600	0	114,338	1	0/1/0	4	28,584.50	-3.40
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	0	35,199	202,283	2	1/1/0	7	28,897.57	-2.35
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/2/8	48	30,378.21	2.66
Galway	277,737	9.39	0	0	277,737	2	0/1/1	9	30,859.67	4.28
Kerry	156,458	5.29	0	0	156,458	1	0/0/1	5	31,291.60	5.74
Kildare	247,774	8.37	0	0	247,774	2	0/2/0	8	30,971.75	4.66
Kilkenny	104,160	3.52	0	7,408	111,568	1	0/1/0	4	27,892.00	-5.74
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	13,600	223,136	2	0/2/0	8	27,892.00	-5.74
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	0	0	139,703	1	0/0/1	5	27,940.60	-5.58
Mayo	137,970	4.66	13,478	0	124,492	1	0/1/0	4	31,123.00	5.17
Meath	220,826	7.46	0	2,345	223,171	2	0/2/0	8	27,896.38	-5.73
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	28,418	111,568	1	0/1/0	4	27,892.00	-5.74
Roscommon	70,259	2.37	0	46,751	117,010	1	0/1/0	4	29,252.50	-1.15
Sligo	70,198	2.37	0	13,478	83,676	1	1/0/0	3	27,892.00	-5.74
Tipperary	167,895	5.67	28,418	0	139,477	1	0/0/1	5	27,895.40	-5.73
Waterford	127,363	4.30	7,408	0	119,955	1	0/1/0	4	29,988.75	1.34

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	2,345	0	93,876	1	1/0/0	3	31,292.00	5.74
Wexford	163,919	5.54	49,600	0	114,319	1	0/1/0	4	28,579.75	-3.42
Wicklow	155,851	5.27	0	0	155,851	1	0/0/1	5	31,170.20	5.33

Table 100: 9 Transfers (Total 262087)			
From	To	Volume	Percent of From
Longford	Roscommon	46,751	100.00
Westmeath	Meath	2,345	2.44
Wexford	Carlow	49,600	30.26
Clare	Limerick	13,600	10.63
Tipperary	Offaly	28,418	16.93
Waterford	Kilkenny	7,408	5.82
Leitrim	Donegal	35,199	100.00
Mayo	Sligo	13,478	9.77
Monaghan	Cavan	65,288	100.00

Figure 34: Sol33 (174 seats, 40 constituencies, 9 transfers, 29,639.51 persons per TD,  $\Delta_{max}$  1,700 (5.74% of 29,592), weighted variation 3.50%)

### 3.34 Solution Sol34

Table 101: Solution 34

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol34	174	1,750	5.91	11.83	27,842.00	31,342.00	29,640.67	1,400,458.62	3.27	9	260,061	40	4/18/18	4.35	Optimal	1.87	0.0098

Table 102: Counties

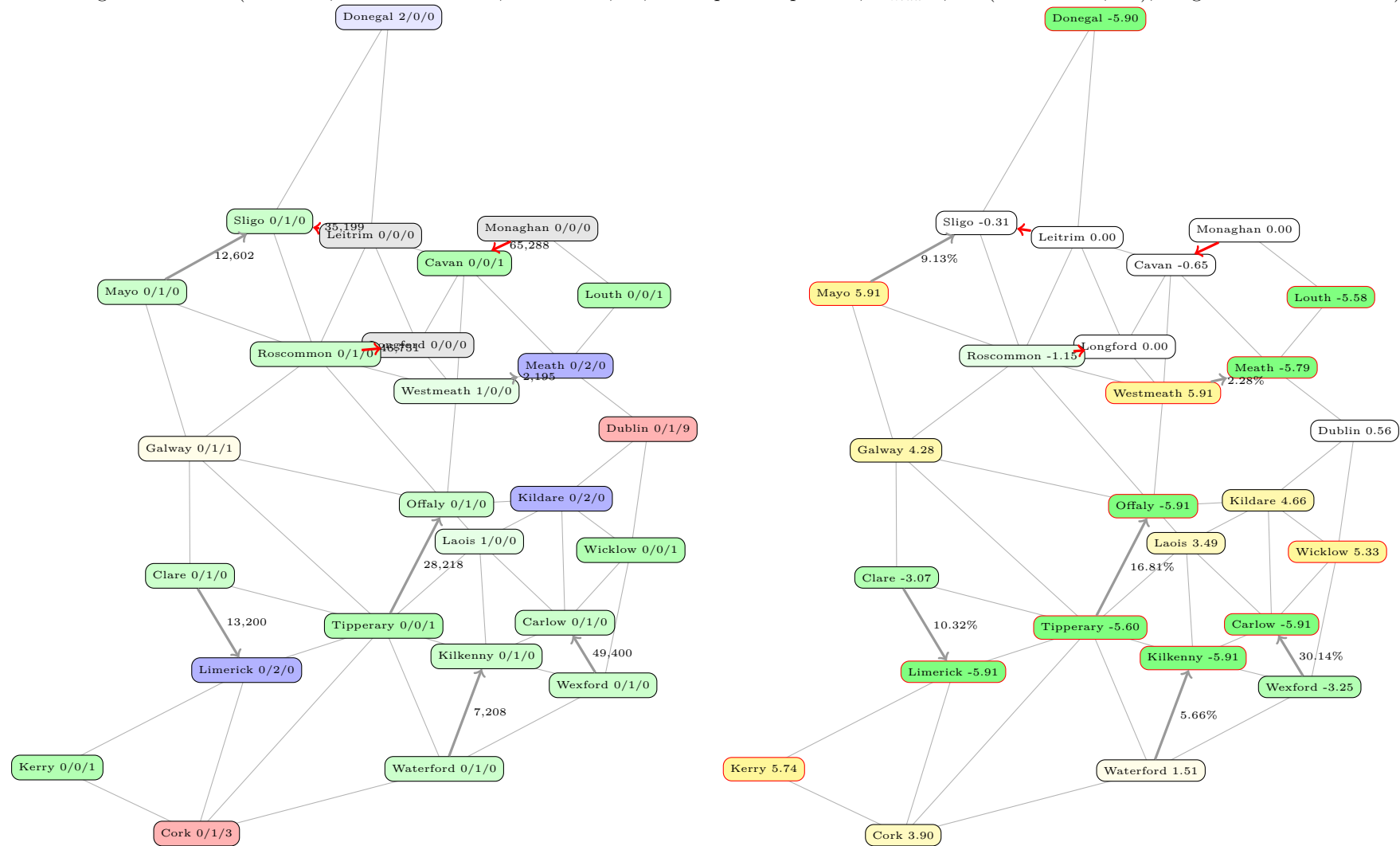
Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	49,400	111,368	1	0/1/0	4	27,842.00	-5.91
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	13,200	0	114,738	1	0/1/0	4	28,684.50	-3.07
Cork	584,156	19.74	0	0	584,156	4	0/1/3	19	30,745.05	3.90
Donegal	167,084	5.65	0	0	167,084	2	2/0/0	6	27,847.33	-5.90
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/1/9	49	29,758.24	0.56
Galway	277,737	9.39	0	0	277,737	2	0/1/1	9	30,859.67	4.28
Kerry	156,458	5.29	0	0	156,458	1	0/0/1	5	31,291.60	5.74
Kildare	247,774	8.37	0	0	247,774	2	0/2/0	8	30,971.75	4.66
Kilkenny	104,160	3.52	0	7,208	111,368	1	0/1/0	4	27,842.00	-5.91
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	13,200	222,736	2	0/2/0	8	27,842.00	-5.91
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	0	0	139,703	1	0/0/1	5	27,940.60	-5.58
Mayo	137,970	4.66	12,602	0	125,368	1	0/1/0	4	31,342.00	5.91
Meath	220,826	7.46	0	2,195	223,021	2	0/2/0	8	27,877.63	-5.79
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	28,218	111,368	1	0/1/0	4	27,842.00	-5.91
Roscommon	70,259	2.37	0	46,751	117,010	1	0/1/0	4	29,252.50	-1.15
Sligo	70,198	2.37	0	47,801	117,999	1	0/1/0	4	29,499.75	-0.31
Tipperary	167,895	5.67	28,218	0	139,677	1	0/0/1	5	27,935.40	-5.60
Waterford	127,363	4.30	7,208	0	120,155	1	0/1/0	4	30,038.75	1.51

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	2,195	0	94,026	1	1/0/0	3	31,342.00	5.91
Wexford	163,919	5.54	49,400	0	114,519	1	0/1/0	4	28,629.75	-3.25
Wicklow	155,851	5.27	0	0	155,851	1	0/0/1	5	31,170.20	5.33

Table 103: 9 Transfers (Total 260061)

From	To	Volume	Percent of From
Longford	Roscommon	46,751	100.00
Westmeath	Meath	2,195	2.28
Wexford	Carlow	49,400	30.14
Clare	Limerick	13,200	10.32
Tipperary	Offaly	28,218	16.81
Waterford	Kilkenny	7,208	5.66
Leitrim	Sligo	35,199	100.00
Mayo	Sligo	12,602	9.13
Monaghan	Cavan	65,288	100.00



Figure 35: Sol34 (174 seats, 40 constituencies, 9 transfers, 29,640.67 persons per TD,  $\Delta_{max}$  1,750 (5.91% of 29,592), weighted variation 3.27%)

### 3.35 Solution Sol35

Table 104: Solution 35

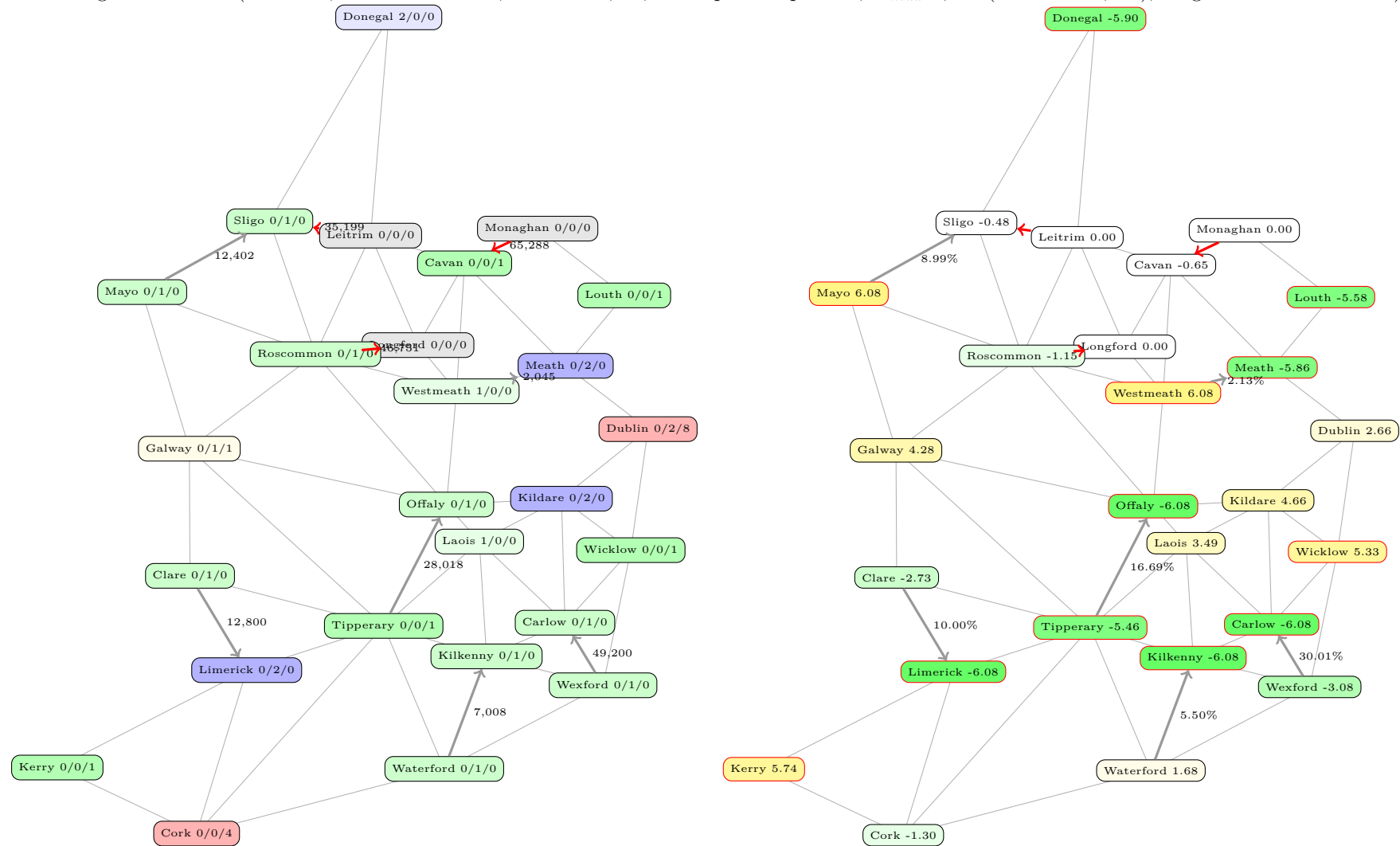
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol35	174	1,800	6.08	12.17	27,792.00	31,392.00	29,642.58	1,454,566.18	3.58	9	258,711	40	4/18/18	4.35	Optimal	0.95	0.0094

Table 105: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	49,200	111,168	1	0/1/0	4	27,792.00	-6.08
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	12,800	0	115,138	1	0/1/0	4	28,784.50	-2.73
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	0	0	167,084	2	2/0/0	6	27,847.33	-5.90
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/2/8	48	30,378.21	2.66
Galway	277,737	9.39	0	0	277,737	2	0/1/1	9	30,859.67	4.28
Kerry	156,458	5.29	0	0	156,458	1	0/0/1	5	31,291.60	5.74
Kildare	247,774	8.37	0	0	247,774	2	0/2/0	8	30,971.75	4.66
Kilkenny	104,160	3.52	0	7,008	111,168	1	0/1/0	4	27,792.00	-6.08
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	12,800	222,336	2	0/2/0	8	27,792.00	-6.08
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	0	0	139,703	1	0/0/1	5	27,940.60	-5.58
Mayo	137,970	4.66	12,402	0	125,568	1	0/1/0	4	31,392.00	6.08
Meath	220,826	7.46	0	2,045	222,871	2	0/2/0	8	27,858.88	-5.86
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	28,018	111,168	1	0/1/0	4	27,792.00	-6.08
Roscommon	70,259	2.37	0	46,751	117,010	1	0/1/0	4	29,252.50	-1.15
Sligo	70,198	2.37	0	47,601	117,799	1	0/1/0	4	29,449.75	-0.48
Tipperary	167,895	5.67	28,018	0	139,877	1	0/0/1	5	27,975.40	-5.46
Waterford	127,363	4.30	7,008	0	120,355	1	0/1/0	4	30,088.75	1.68

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	2,045	0	94,176	1	1/0/0	3	31,392.00	6.08
Wexford	163,919	5.54	49,200	0	114,719	1	0/1/0	4	28,679.75	-3.08
Wicklow	155,851	5.27	0	0	155,851	1	0/0/1	5	31,170.20	5.33

Table 106: 9 Transfers (Total 258711)			
From	To	Volume	Percent of From
Longford	Roscommon	46,751	100.00
Westmeath	Meath	2,045	2.13
Wexford	Carlow	49,200	30.01
Clare	Limerick	12,800	10.00
Tipperary	Offaly	28,018	16.69
Waterford	Kilkenny	7,008	5.50
Leitrim	Sligo	35,199	100.00
Mayo	Sligo	12,402	8.99
Monaghan	Cavan	65,288	100.00

Figure 36: Sol35 (174 seats, 40 constituencies, 9 transfers, 29,642.58 persons per TD,  $\Delta_{max}$  1,800 (6.08% of 29,592), weighted variation 3.58%)

### 3.36 Solution Sol36

Table 107: Solution 36

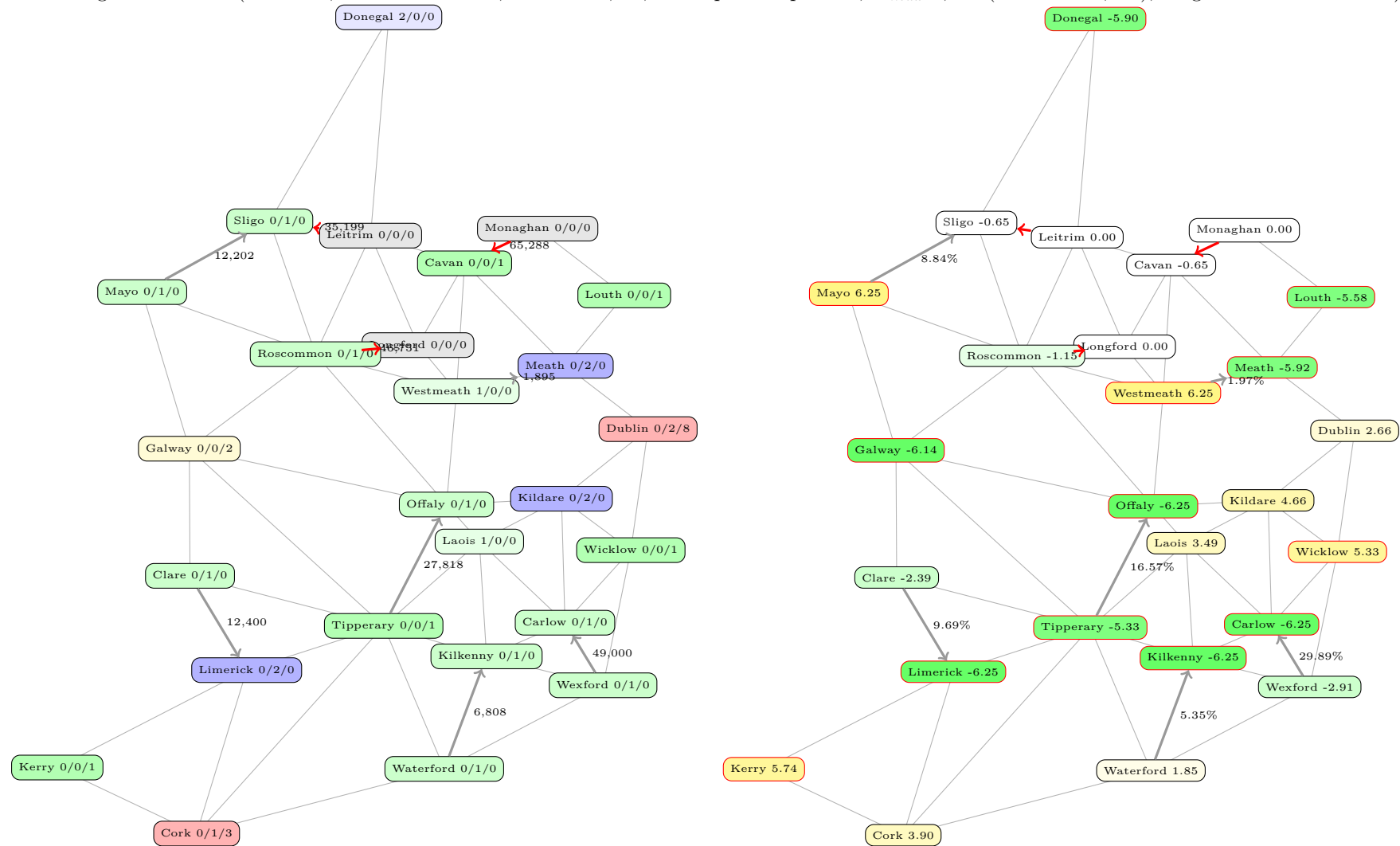
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol36	174	1,850	6.25	12.50	27,742.00	31,442.00	29,651.32	1,702,083.35	3.99	9	257,361	40	4/18/18	4.35	Optimal	2.08	0.0087

Table 108: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	49,000	110,968	1	0/1/0	4	27,742.00	-6.25
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	12,400	0	115,538	1	0/1/0	4	28,884.50	-2.39
Cork	584,156	19.74	0	0	584,156	4	0/1/3	19	30,745.05	3.90
Donegal	167,084	5.65	0	0	167,084	2	2/0/0	6	27,847.33	-5.90
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/2/8	48	30,378.21	2.66
Galway	277,737	9.39	0	0	277,737	2	0/0/2	10	27,773.70	-6.14
Kerry	156,458	5.29	0	0	156,458	1	0/0/1	5	31,291.60	5.74
Kildare	247,774	8.37	0	0	247,774	2	0/2/0	8	30,971.75	4.66
Kilkenny	104,160	3.52	0	6,808	110,968	1	0/1/0	4	27,742.00	-6.25
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	12,400	221,936	2	0/2/0	8	27,742.00	-6.25
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	0	0	139,703	1	0/0/1	5	27,940.60	-5.58
Mayo	137,970	4.66	12,202	0	125,768	1	0/1/0	4	31,442.00	6.25
Meath	220,826	7.46	0	1,895	222,721	2	0/2/0	8	27,840.13	-5.92
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	27,818	110,968	1	0/1/0	4	27,742.00	-6.25
Roscommon	70,259	2.37	0	46,751	117,010	1	0/1/0	4	29,252.50	-1.15
Sligo	70,198	2.37	0	47,401	117,599	1	0/1/0	4	29,399.75	-0.65
Tipperary	167,895	5.67	27,818	0	140,077	1	0/0/1	5	28,015.40	-5.33
Waterford	127,363	4.30	6,808	0	120,555	1	0/1/0	4	30,138.75	1.85

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	1,895	0	94,326	1	1/0/0	3	31,442.00	6.25
Wexford	163,919	5.54	49,000	0	114,919	1	0/1/0	4	28,729.75	-2.91
Wicklow	155,851	5.27	0	0	155,851	1	0/0/1	5	31,170.20	5.33

Table 109: 9 Transfers (Total 257361)			
From	To	Volume	Percent of From
Longford	Roscommon	46,751	100.00
Westmeath	Meath	1,895	1.97
Wexford	Carlow	49,000	29.89
Clare	Limerick	12,400	9.69
Tipperary	Offaly	27,818	16.57
Waterford	Kilkenny	6,808	5.35
Leitrim	Sligo	35,199	100.00
Mayo	Sligo	12,202	8.84
Monaghan	Cavan	65,288	100.00

Figure 37: Sol36 (174 seats, 40 constituencies, 9 transfers, 29,651.32 persons per TD,  $\Delta_{max}$  1,850 (6.25% of 29,592), weighted variation 3.99%)

### 3.37 Solution Sol37

Table 110: Solution 37

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol37	174	1,900	6.42	12.84	27,692.00	31,492.00	29,636.90	1,296,272.35	2.95	8	226,915	40	6/14/20	4.35	Optimal	1.04	0.0077

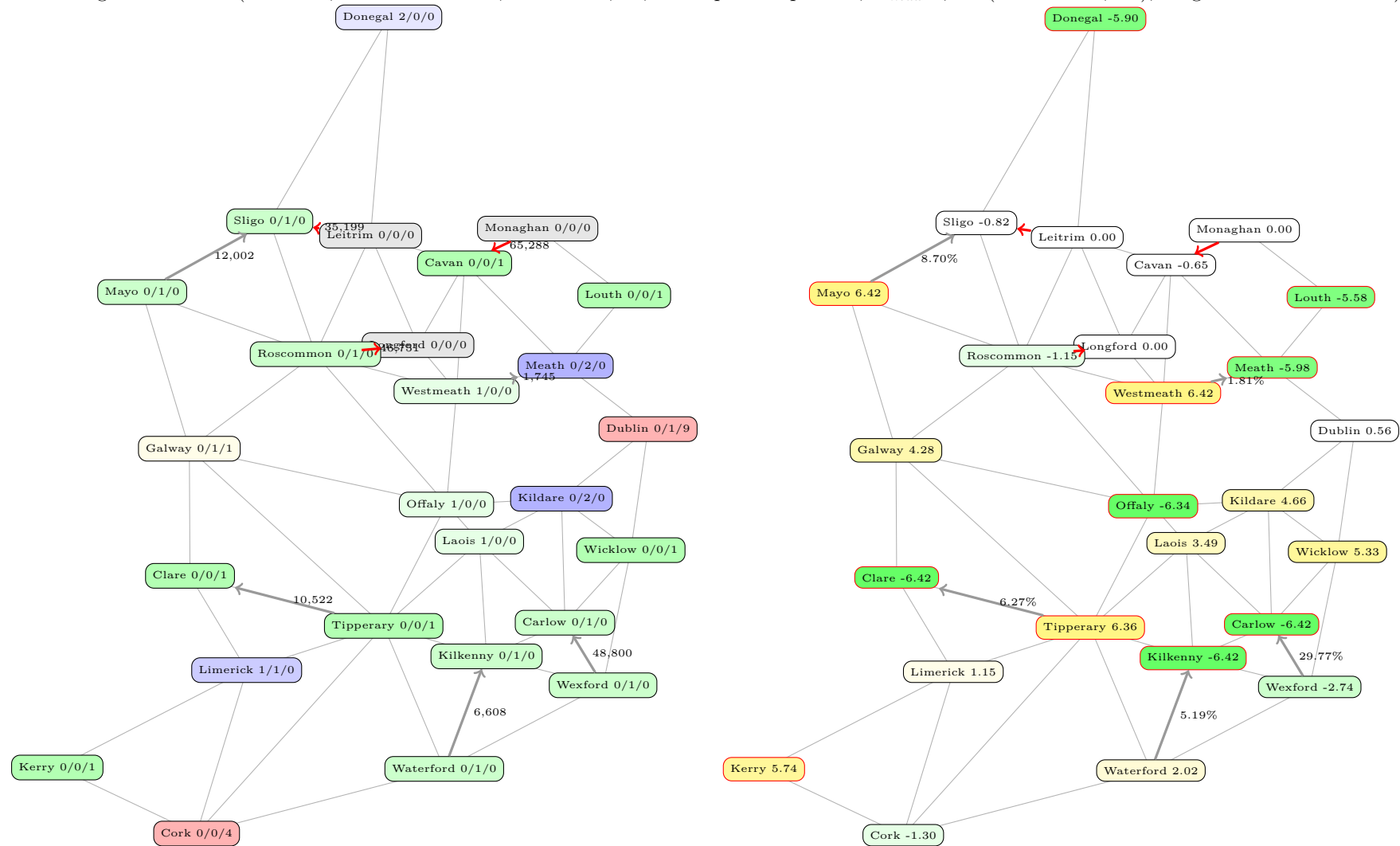
Table 111: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	48,800	110,768	1	0/1/0	4	27,692.00	-6.42
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	0	10,522	138,460	1	0/0/1	5	27,692.00	-6.42
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	0	0	167,084	2	2/0/0	6	27,847.33	-5.90
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/1/9	49	29,758.24	0.56
Galway	277,737	9.39	0	0	277,737	2	0/1/1	9	30,859.67	4.28
Kerry	156,458	5.29	0	0	156,458	1	0/0/1	5	31,291.60	5.74
Kildare	247,774	8.37	0	0	247,774	2	0/2/0	8	30,971.75	4.66
Kilkenny	104,160	3.52	0	6,608	110,768	1	0/1/0	4	27,692.00	-6.42
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	0	209,536	2	1/1/0	7	29,933.71	1.15
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	0	0	139,703	1	0/0/1	5	27,940.60	-5.58
Mayo	137,970	4.66	12,002	0	125,968	1	0/1/0	4	31,492.00	6.42
Meath	220,826	7.46	0	1,745	222,571	2	0/2/0	8	27,821.38	-5.98
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	0	83,150	1	1/0/0	3	27,716.67	-6.34
Roscommon	70,259	2.37	0	46,751	117,010	1	0/1/0	4	29,252.50	-1.15
Sligo	70,198	2.37	0	47,201	117,399	1	0/1/0	4	29,349.75	-0.82
Tipperary	167,895	5.67	10,522	0	157,373	1	0/0/1	5	31,474.60	6.36
Waterford	127,363	4.30	6,608	0	120,755	1	0/1/0	4	30,188.75	2.02



Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	1,745	0	94,476	1	1/0/0	3	31,492.00	6.42
Wexford	163,919	5.54	48,800	0	115,119	1	0/1/0	4	28,779.75	-2.74
Wicklow	155,851	5.27	0	0	155,851	1	0/0/1	5	31,170.20	5.33

Table 112: 8 Transfers (Total 226915)			
From	To	Volume	Percent of From
Longford	Roscommon	46,751	100.00
Westmeath	Meath	1,745	1.81
Wexford	Carlow	48,800	29.77
Tipperary	Clare	10,522	6.27
Waterford	Kilkenny	6,608	5.19
Leitrim	Sligo	35,199	100.00
Mayo	Sligo	12,002	8.70
Monaghan	Cavan	65,288	100.00

Figure 38: Sol37 (174 seats, 40 constituencies, 8 transfers, 29,636.90 persons per TD,  $\Delta_{max}$  1,900 (6.42% of 29,592), weighted variation 2.95%)

### 3.38 Solution Sol38

Table 113: Solution 38

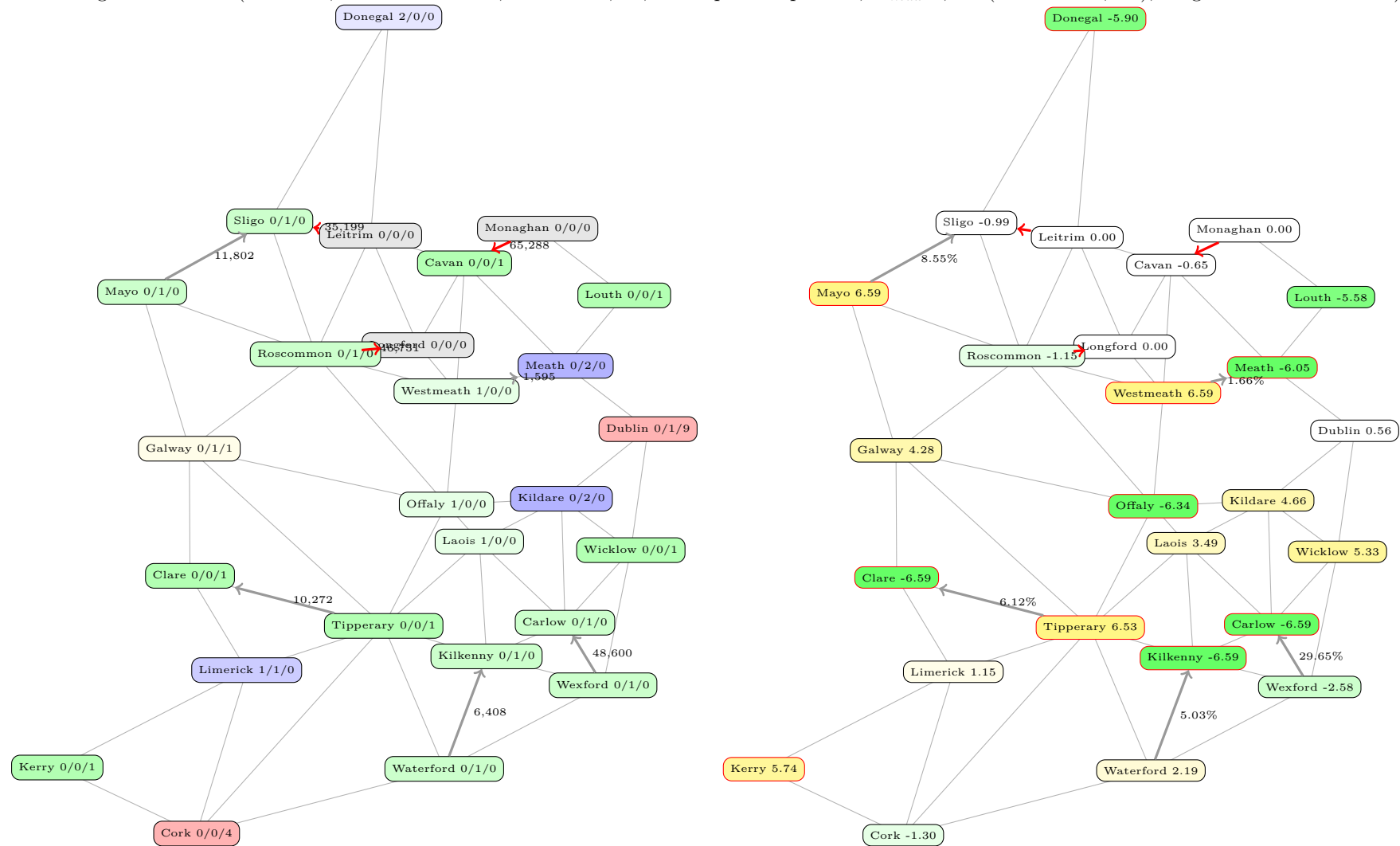
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol38	174	1,950	6.59	13.18	27,642.00	31,542.00	29,637.94	1,326,802.00	2.98	8	225,915	40	6/14/20	4.35	Optimal	1.39	0.0000

Table 114: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	48,600	110,568	1	0/1/0	4	27,642.00	-6.59
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	0	10,272	138,210	1	0/0/1	5	27,642.00	-6.59
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	0	0	167,084	2	2/0/0	6	27,847.33	-5.90
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/1/9	49	29,758.24	0.56
Galway	277,737	9.39	0	0	277,737	2	0/1/1	9	30,859.67	4.28
Kerry	156,458	5.29	0	0	156,458	1	0/0/1	5	31,291.60	5.74
Kildare	247,774	8.37	0	0	247,774	2	0/2/0	8	30,971.75	4.66
Kilkenny	104,160	3.52	0	6,408	110,568	1	0/1/0	4	27,642.00	-6.59
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	0	209,536	2	1/1/0	7	29,933.71	1.15
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	0	0	139,703	1	0/0/1	5	27,940.60	-5.58
Mayo	137,970	4.66	11,802	0	126,168	1	0/1/0	4	31,542.00	6.59
Meath	220,826	7.46	0	1,595	222,421	2	0/2/0	8	27,802.63	-6.05
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	0	83,150	1	1/0/0	3	27,716.67	-6.34
Roscommon	70,259	2.37	0	46,751	117,010	1	0/1/0	4	29,252.50	-1.15
Sligo	70,198	2.37	0	47,001	117,199	1	0/1/0	4	29,299.75	-0.99
Tipperary	167,895	5.67	10,272	0	157,623	1	0/0/1	5	31,524.60	6.53
Waterford	127,363	4.30	6,408	0	120,955	1	0/1/0	4	30,238.75	2.19

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	1,595	0	94,626	1	1/0/0	3	31,542.00	6.59
Wexford	163,919	5.54	48,600	0	115,319	1	0/1/0	4	28,829.75	-2.58
Wicklow	155,851	5.27	0	0	155,851	1	0/0/1	5	31,170.20	5.33

Table 115: 8 Transfers (Total 225915)			
From	To	Volume	Percent of From
Longford	Roscommon	46,751	100.00
Westmeath	Meath	1,595	1.66
Wexford	Carlow	48,600	29.65
Tipperary	Clare	10,272	6.12
Waterford	Kilkenny	6,408	5.03
Leitrim	Sligo	35,199	100.00
Mayo	Sligo	11,802	8.55
Monaghan	Cavan	65,288	100.00

Figure 39: Sol38 (174 seats, 40 constituencies, 8 transfers, 29,637.94 persons per TD,  $\Delta_{max}$  1,950 (6.59% of 29,592), weighted variation 2.98%)

### 3.39 Solution Sol39

Table 116: Solution 39

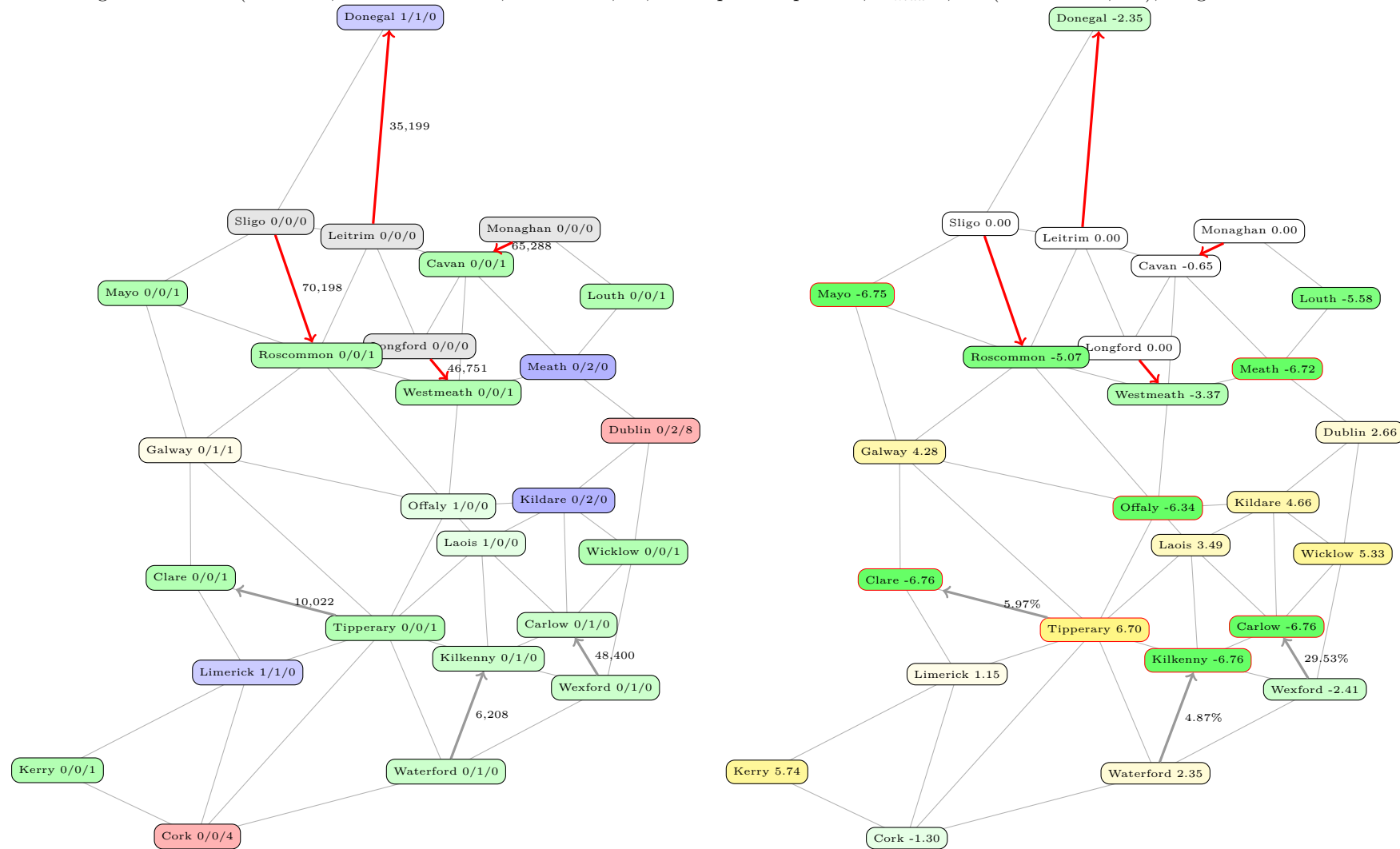
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol39	174	2,000	6.76	13.46	27,592.00	31,574.60	29,644.11	1,492,735.94	3.48	7	282,066	39	4/13/22	4.46	Optimal	0.92	0.0077

Table 117: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	48,400	110,368	1	0/1/0	4	27,592.00	-6.76
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	0	10,022	137,960	1	0/0/1	5	27,592.00	-6.76
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	0	35,199	202,283	2	1/1/0	7	28,897.57	-2.35
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/2/8	48	30,378.21	2.66
Galway	277,737	9.39	0	0	277,737	2	0/1/1	9	30,859.67	4.28
Kerry	156,458	5.29	0	0	156,458	1	0/0/1	5	31,291.60	5.74
Kildare	247,774	8.37	0	0	247,774	2	0/2/0	8	30,971.75	4.66
Kilkenny	104,160	3.52	0	6,208	110,368	1	0/1/0	4	27,592.00	-6.76
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	0	209,536	2	1/1/0	7	29,933.71	1.15
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	0	0	139,703	1	0/0/1	5	27,940.60	-5.58
Mayo	137,970	4.66	0	0	137,970	1	0/0/1	5	27,594.00	-6.75
Meath	220,826	7.46	0	0	220,826	2	0/2/0	8	27,603.25	-6.72
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	0	83,150	1	1/0/0	3	27,716.67	-6.34
Roscommon	70,259	2.37	0	70,198	140,457	1	0/0/1	5	28,091.40	-5.07
Sligo	70,198	2.37	70,198	0	0	0	0/0/0	0	0.00	0.00
Tipperary	167,895	5.67	10,022	0	157,873	1	0/0/1	5	31,574.60	6.70
Waterford	127,363	4.30	6,208	0	121,155	1	0/1/0	4	30,288.75	2.35

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	46,751	142,972	1	0/0/1	5	28,594.40	-3.37
Wexford	163,919	5.54	48,400	0	115,519	1	0/1/0	4	28,879.75	-2.41
Wicklow	155,851	5.27	0	0	155,851	1	0/0/1	5	31,170.20	5.33

Table 118: 7 Transfers (Total 282066)			
From	To	Volume	Percent of From
Longford	Westmeath	46,751	100.00
Wexford	Carlow	48,400	29.53
Tipperary	Clare	10,022	5.97
Waterford	Kilkenny	6,208	4.87
Leitrim	Donegal	35,199	100.00
Sligo	Roscommon	70,198	100.00
Monaghan	Cavan	65,288	100.00

Figure 40: Sol39 (174 seats, 39 constituencies, 7 transfers, 29,644.11 persons per TD,  $\Delta_{max}$  2,000 (6.76% of 29,592), weighted variation 3.48%)



### 3.40 Solution Sol40

Table 119: Solution 40

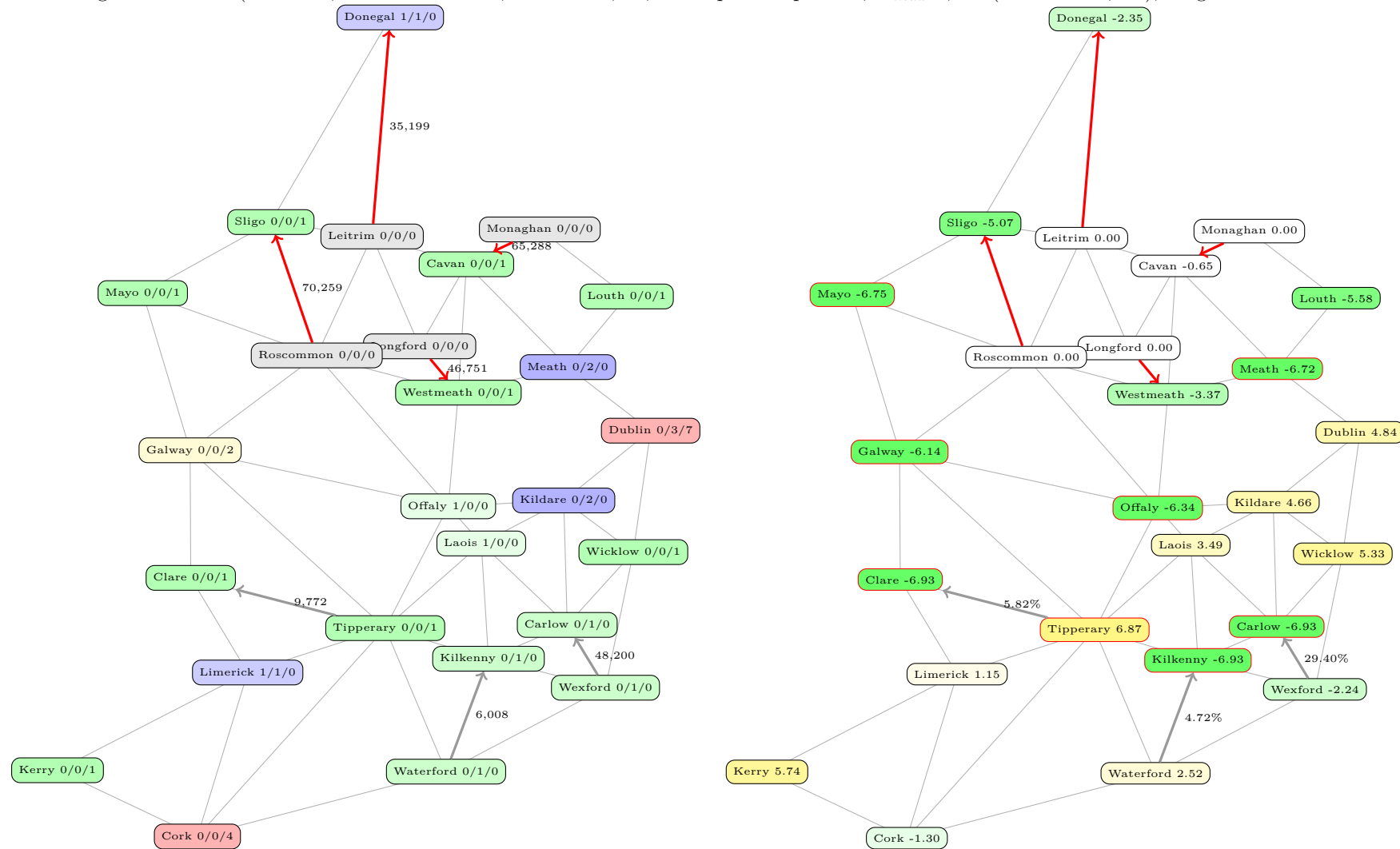
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol40	174	2,050	6.93	13.80	27,542.00	31,624.60	29,661.40	2,008,526.25	4.21	7	281,477	39	4/13/22	4.46	Optimal	1.23	0.0093

Table 120: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	48,200	110,168	1	0/1/0	4	27,542.00	-6.93
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	0	9,772	137,710	1	0/0/1	5	27,542.00	-6.93
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	0	35,199	202,283	2	1/1/0	7	28,897.57	-2.35
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/3/7	47	31,024.55	4.84
Galway	277,737	9.39	0	0	277,737	2	0/0/2	10	27,773.70	-6.14
Kerry	156,458	5.29	0	0	156,458	1	0/0/1	5	31,291.60	5.74
Kildare	247,774	8.37	0	0	247,774	2	0/2/0	8	30,971.75	4.66
Kilkenny	104,160	3.52	0	6,008	110,168	1	0/1/0	4	27,542.00	-6.93
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	0	209,536	2	1/1/0	7	29,933.71	1.15
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	0	0	139,703	1	0/0/1	5	27,940.60	-5.58
Mayo	137,970	4.66	0	0	137,970	1	0/0/1	5	27,594.00	-6.75
Meath	220,826	7.46	0	0	220,826	2	0/2/0	8	27,603.25	-6.72
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	0	83,150	1	1/0/0	3	27,716.67	-6.34
Roscommon	70,259	2.37	70,259	0	0	0	0/0/0	0	0.00	0.00
Sligo	70,198	2.37	0	70,259	140,457	1	0/0/1	5	28,091.40	-5.07
Tipperary	167,895	5.67	9,772	0	158,123	1	0/0/1	5	31,624.60	6.87
Waterford	127,363	4.30	6,008	0	121,355	1	0/1/0	4	30,338.75	2.52

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	46,751	142,972	1	0/0/1	5	28,594.40	-3.37
Wexford	163,919	5.54	48,200	0	115,719	1	0/1/0	4	28,929.75	-2.24
Wicklow	155,851	5.27	0	0	155,851	1	0/0/1	5	31,170.20	5.33

Table 121: 7 Transfers (Total 281477)			
From	To	Volume	Percent of From
Longford	Westmeath	46,751	100.00
Wexford	Carlow	48,200	29.40
Tipperary	Clare	9,772	5.82
Waterford	Kilkenny	6,008	4.72
Leitrim	Donegal	35,199	100.00
Roscommon	Sligo	70,259	100.00
Monaghan	Cavan	65,288	100.00

Figure 41: Sol40 (174 seats, 39 constituencies, 7 transfers, 29,661.40 persons per TD,  $\Delta_{max}$  2,050 (6.93% of 29,592), weighted variation 4.21%)

### 3.41 Solution Sol41

Table 122: Solution 41

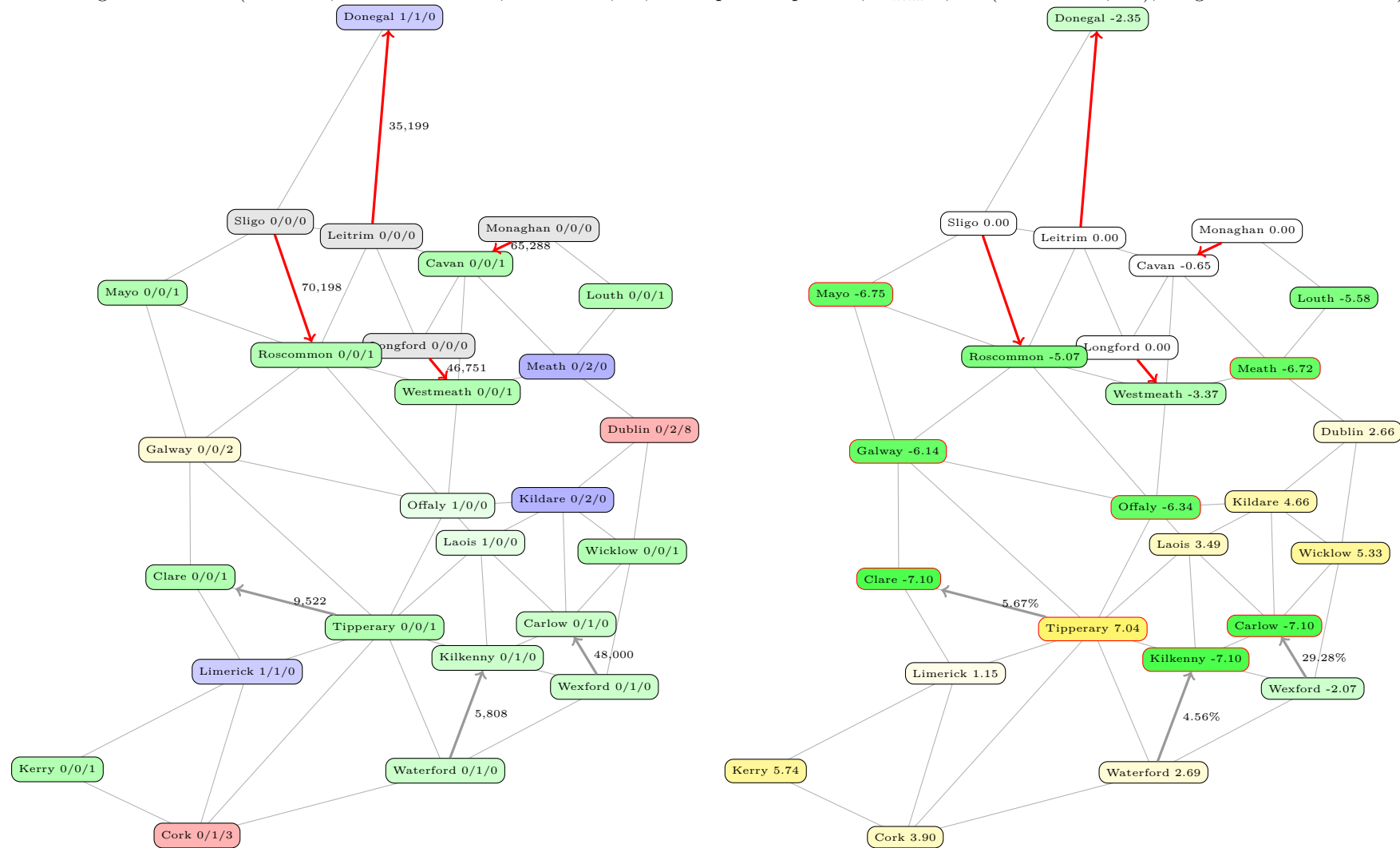
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol41	174	2,100	7.10	14.13	27,492.00	31,674.60	29,653.50	1,758,363.43	3.90	7	280,766	39	4/13/22	4.46	Optimal	1.53	0.0000

Table 123: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	48,000	109,968	1	0/1/0	4	27,492.00	-7.10
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	0	9,522	137,460	1	0/0/1	5	27,492.00	-7.10
Cork	584,156	19.74	0	0	584,156	4	0/1/3	19	30,745.05	3.90
Donegal	167,084	5.65	0	35,199	202,283	2	1/1/0	7	28,897.57	-2.35
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/2/8	48	30,378.21	2.66
Galway	277,737	9.39	0	0	277,737	2	0/0/2	10	27,773.70	-6.14
Kerry	156,458	5.29	0	0	156,458	1	0/0/1	5	31,291.60	5.74
Kildare	247,774	8.37	0	0	247,774	2	0/2/0	8	30,971.75	4.66
Kilkenny	104,160	3.52	0	5,808	109,968	1	0/1/0	4	27,492.00	-7.10
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	0	209,536	2	1/1/0	7	29,933.71	1.15
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	0	0	139,703	1	0/0/1	5	27,940.60	-5.58
Mayo	137,970	4.66	0	0	137,970	1	0/0/1	5	27,594.00	-6.75
Meath	220,826	7.46	0	0	220,826	2	0/2/0	8	27,603.25	-6.72
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	0	83,150	1	1/0/0	3	27,716.67	-6.34
Roscommon	70,259	2.37	0	70,198	140,457	1	0/0/1	5	28,091.40	-5.07
Sligo	70,198	2.37	70,198	0	0	0	0/0/0	0	0.00	0.00
Tipperary	167,895	5.67	9,522	0	158,373	1	0/0/1	5	31,674.60	7.04
Waterford	127,363	4.30	5,808	0	121,555	1	0/1/0	4	30,388.75	2.69

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	46,751	142,972	1	0/0/1	5	28,594.40	-3.37
Wexford	163,919	5.54	48,000	0	115,919	1	0/1/0	4	28,979.75	-2.07
Wicklow	155,851	5.27	0	0	155,851	1	0/0/1	5	31,170.20	5.33

Table 124: 7 Transfers (Total 280766)			
From	To	Volume	Percent of From
Longford	Westmeath	46,751	100.00
Wexford	Carlow	48,000	29.28
Tipperary	Clare	9,522	5.67
Waterford	Kilkenny	5,808	4.56
Leitrim	Donegal	35,199	100.00
Sligo	Roscommon	70,198	100.00
Monaghan	Cavan	65,288	100.00

Figure 42: Sol41 (174 seats, 39 constituencies, 7 transfers, 29,653.50 persons per TD,  $\Delta_{max}$  2,100 (7.10% of 29,592), weighted variation 3.90%)

### 3.42 Solution Sol42

Table 125: Solution 42

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol42	174	2,150	7.27	14.47	27,442.00	31,724.60	29,645.15	1,521,977.35	3.22	7	280,116	39	4/13/22	4.46	Optimal	1.28	0.0000

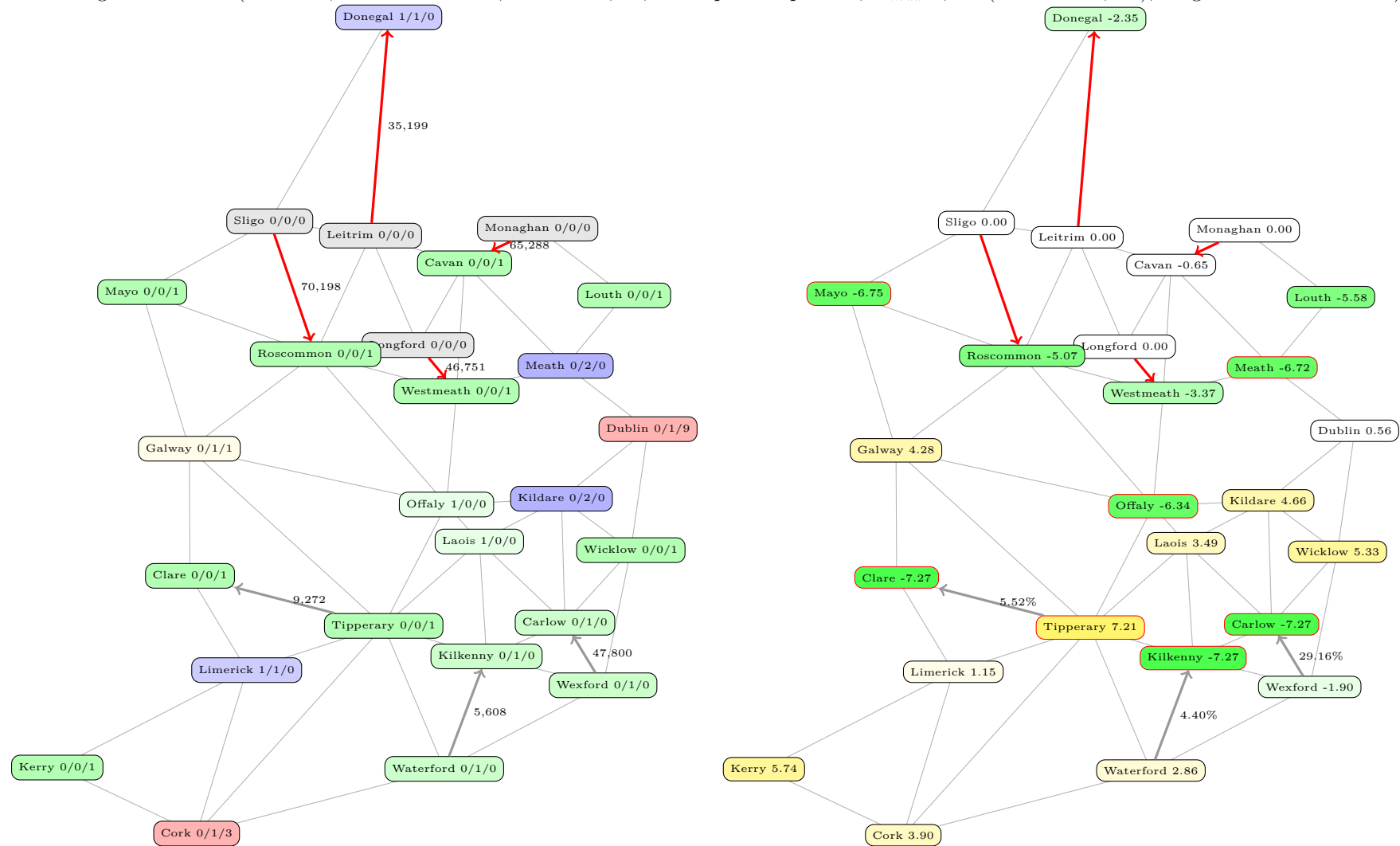
Table 126: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	47,800	109,768	1	0/1/0	4	27,442.00	-7.27
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	0	9,272	137,210	1	0/0/1	5	27,442.00	-7.27
Cork	584,156	19.74	0	0	584,156	4	0/1/3	19	30,745.05	3.90
Donegal	167,084	5.65	0	35,199	202,283	2	1/1/0	7	28,897.57	-2.35
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/1/9	49	29,758.24	0.56
Galway	277,737	9.39	0	0	277,737	2	0/1/1	9	30,859.67	4.28
Kerry	156,458	5.29	0	0	156,458	1	0/0/1	5	31,291.60	5.74
Kildare	247,774	8.37	0	0	247,774	2	0/2/0	8	30,971.75	4.66
Kilkenny	104,160	3.52	0	5,608	109,768	1	0/1/0	4	27,442.00	-7.27
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	0	209,536	2	1/1/0	7	29,933.71	1.15
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	0	0	139,703	1	0/0/1	5	27,940.60	-5.58
Mayo	137,970	4.66	0	0	137,970	1	0/0/1	5	27,594.00	-6.75
Meath	220,826	7.46	0	0	220,826	2	0/2/0	8	27,603.25	-6.72
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	0	83,150	1	1/0/0	3	27,716.67	-6.34
Roscommon	70,259	2.37	0	70,198	140,457	1	0/0/1	5	28,091.40	-5.07
Sligo	70,198	2.37	70,198	0	0	0	0/0/0	0	0.00	0.00
Tipperary	167,895	5.67	9,272	0	158,623	1	0/0/1	5	31,724.60	7.21
Waterford	127,363	4.30	5,608	0	121,755	1	0/1/0	4	30,438.75	2.86

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	46,751	142,972	1	0/0/1	5	28,594.40	-3.37
Wexford	163,919	5.54	47,800	0	116,119	1	0/1/0	4	29,029.75	-1.90
Wicklow	155,851	5.27	0	0	155,851	1	0/0/1	5	31,170.20	5.33

Table 127: 7 Transfers (Total 280116)			
From	To	Volume	Percent of From
Longford	Westmeath	46,751	100.00
Wexford	Carlow	47,800	29.16
Tipperary	Clare	9,272	5.52
Waterford	Kilkenny	5,608	4.40
Leitrim	Donegal	35,199	100.00
Sligo	Roscommon	70,198	100.00
Monaghan	Cavan	65,288	100.00



Figure 43: Sol42 (174 seats, 39 constituencies, 7 transfers, 29,645.15 persons per TD,  $\Delta_{max}$  2,150 (7.27% of 29,592), weighted variation 3.22%)

### 3.43 Solution Sol43

Table 128: Solution 43

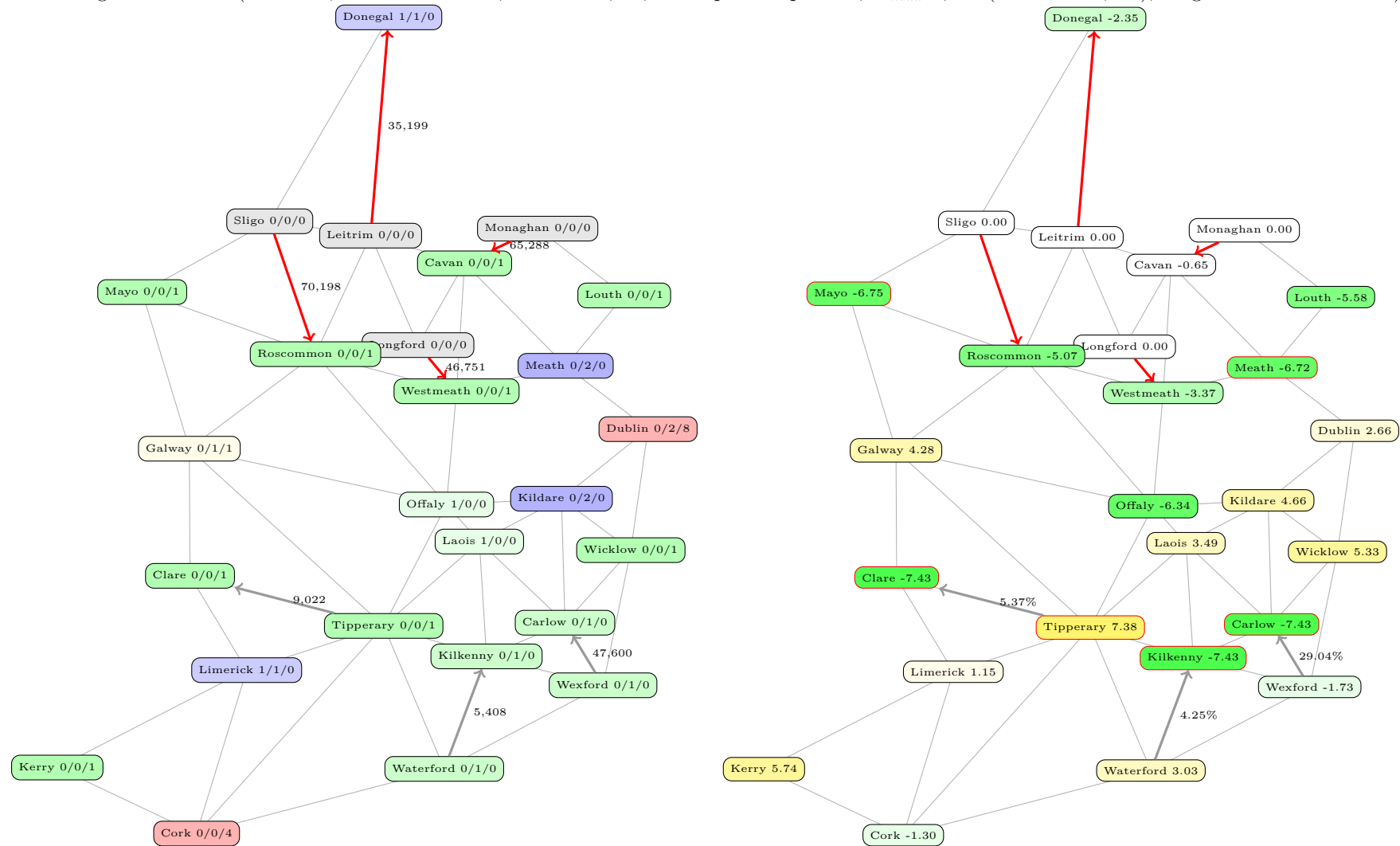
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol43	174	2,200	7.43	14.81	27,392.00	31,774.60	29,647.10	1,577,123.80	3.54	7	279,466	39	4/13/22	4.46	Optimal	1.69	0.0041

Table 129: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	47,600	109,568	1	0/1/0	4	27,392.00	-7.43
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	0	9,022	136,960	1	0/0/1	5	27,392.00	-7.43
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	0	35,199	202,283	2	1/1/0	7	28,897.57	-2.35
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/2/8	48	30,378.21	2.66
Galway	277,737	9.39	0	0	277,737	2	0/1/1	9	30,859.67	4.28
Kerry	156,458	5.29	0	0	156,458	1	0/0/1	5	31,291.60	5.74
Kildare	247,774	8.37	0	0	247,774	2	0/2/0	8	30,971.75	4.66
Kilkenny	104,160	3.52	0	5,408	109,568	1	0/1/0	4	27,392.00	-7.43
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	0	209,536	2	1/1/0	7	29,933.71	1.15
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	0	0	139,703	1	0/0/1	5	27,940.60	-5.58
Mayo	137,970	4.66	0	0	137,970	1	0/0/1	5	27,594.00	-6.75
Meath	220,826	7.46	0	0	220,826	2	0/2/0	8	27,603.25	-6.72
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	0	83,150	1	1/0/0	3	27,716.67	-6.34
Roscommon	70,259	2.37	0	70,198	140,457	1	0/0/1	5	28,091.40	-5.07
Sligo	70,198	2.37	70,198	0	0	0	0/0/0	0	0.00	0.00
Tipperary	167,895	5.67	9,022	0	158,873	1	0/0/1	5	31,774.60	7.38
Waterford	127,363	4.30	5,408	0	121,955	1	0/1/0	4	30,488.75	3.03

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	46,751	142,972	1	0/0/1	5	28,594.40	-3.37
Wexford	163,919	5.54	47,600	0	116,319	1	0/1/0	4	29,079.75	-1.73
Wicklow	155,851	5.27	0	0	155,851	1	0/0/1	5	31,170.20	5.33

Table 130: 7 Transfers (Total 279466)			
From	To	Volume	Percent of From
Longford	Westmeath	46,751	100.00
Wexford	Carlow	47,600	29.04
Tipperary	Clare	9,022	5.37
Waterford	Kilkenny	5,408	4.25
Leitrim	Donegal	35,199	100.00
Sligo	Roscommon	70,198	100.00
Monaghan	Cavan	65,288	100.00

Figure 44: Sol43 (174 seats, 39 constituencies, 7 transfers, 29,647.10 persons per TD,  $\Delta_{max}$  2,200 (7.43% of 29,592), weighted variation 3.54%)

### 3.44 Solution Sol44

Table 131: Solution 44

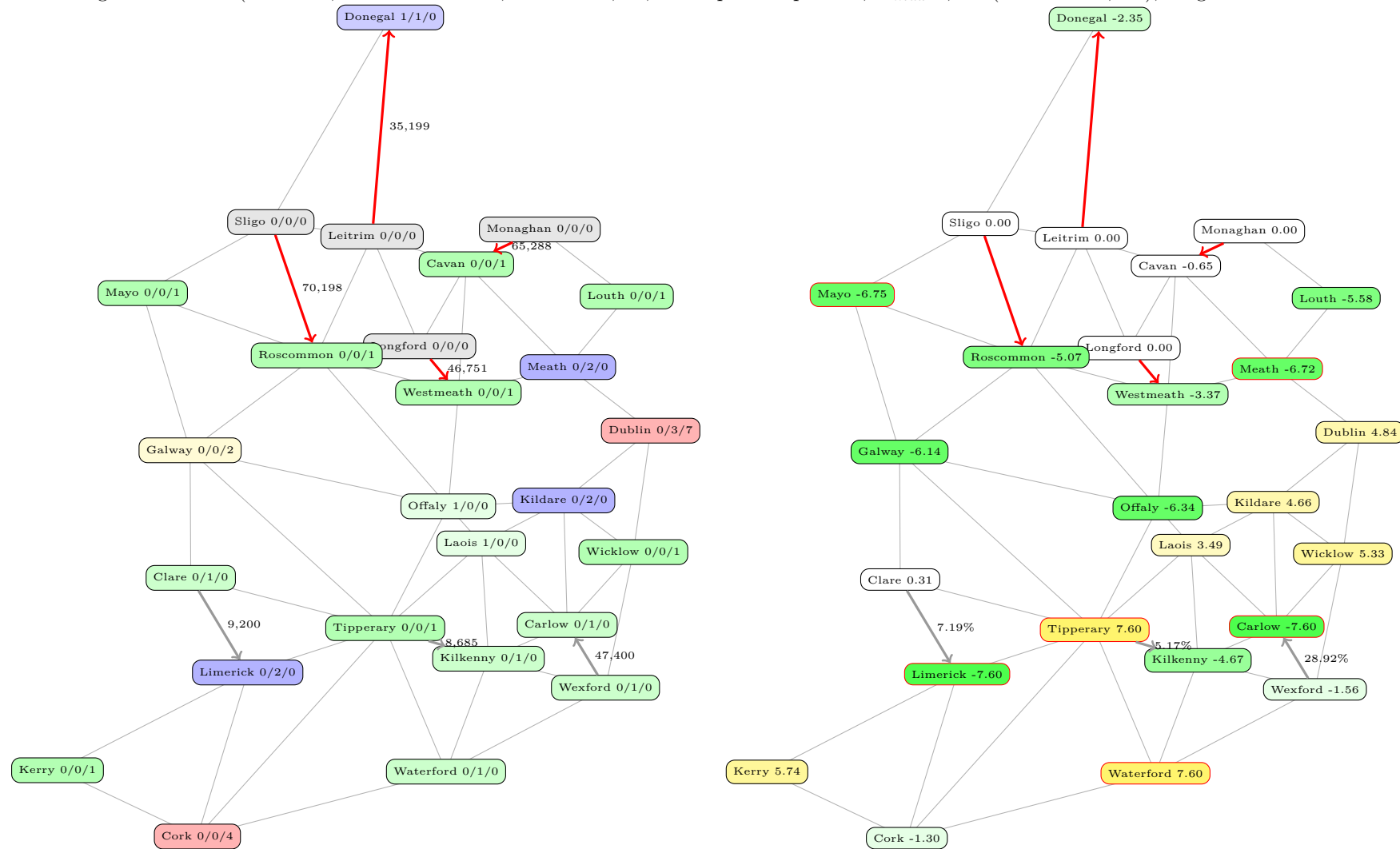
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol44	174	2,250	7.60	15.21	27,342.00	31,842.00	29,668.14	2,211,710.66	4.40	7	282,721	39	3/15/21	4.46	Optimal	1.19	0.0000

Table 132: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	47,400	109,368	1	0/1/0	4	27,342.00	-7.60
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	9,200	0	118,738	1	0/1/0	4	29,684.50	0.31
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	0	35,199	202,283	2	1/1/0	7	28,897.57	-2.35
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/3/7	47	31,024.55	4.84
Galway	277,737	9.39	0	0	277,737	2	0/0/2	10	27,773.70	-6.14
Kerry	156,458	5.29	0	0	156,458	1	0/0/1	5	31,291.60	5.74
Kildare	247,774	8.37	0	0	247,774	2	0/2/0	8	30,971.75	4.66
Kilkenny	104,160	3.52	0	8,685	112,845	1	0/1/0	4	28,211.25	-4.67
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	9,200	218,736	2	0/2/0	8	27,342.00	-7.60
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	0	0	139,703	1	0/0/1	5	27,940.60	-5.58
Mayo	137,970	4.66	0	0	137,970	1	0/0/1	5	27,594.00	-6.75
Meath	220,826	7.46	0	0	220,826	2	0/2/0	8	27,603.25	-6.72
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	0	83,150	1	1/0/0	3	27,716.67	-6.34
Roscommon	70,259	2.37	0	70,198	140,457	1	0/0/1	5	28,091.40	-5.07
Sligo	70,198	2.37	70,198	0	0	0	0/0/0	0	0.00	0.00
Tipperary	167,895	5.67	8,685	0	159,210	1	0/0/1	5	31,842.00	7.60
Waterford	127,363	4.30	0	0	127,363	1	0/1/0	4	31,840.75	7.60

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	46,751	142,972	1	0/0/1	5	28,594.40	-3.37
Wexford	163,919	5.54	47,400	0	116,519	1	0/1/0	4	29,129.75	-1.56
Wicklow	155,851	5.27	0	0	155,851	1	0/0/1	5	31,170.20	5.33

Table 133: 7 Transfers (Total 282721)			
From	To	Volume	Percent of From
Longford	Westmeath	46,751	100.00
Wexford	Carlow	47,400	28.92
Clare	Limerick	9,200	7.19
Tipperary	Kilkenny	8,685	5.17
Leitrim	Donegal	35,199	100.00
Sligo	Roscommon	70,198	100.00
Monaghan	Cavan	65,288	100.00

Figure 45: Sol44 (174 seats, 39 constituencies, 7 transfers, 29,668.14 persons per TD,  $\Delta_{max}$  2,250 (7.60% of 29,592), weighted variation 4.40%)

### 3.45 Solution Sol45

Table 134: Solution 45

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol45	174	2,300	7.77	15.49	27,292.00	31,874.60	29,670.55	2,277,296.40	4.53	6	245,866	40	8/10/22	4.35	Optimal	0.79	0.0082

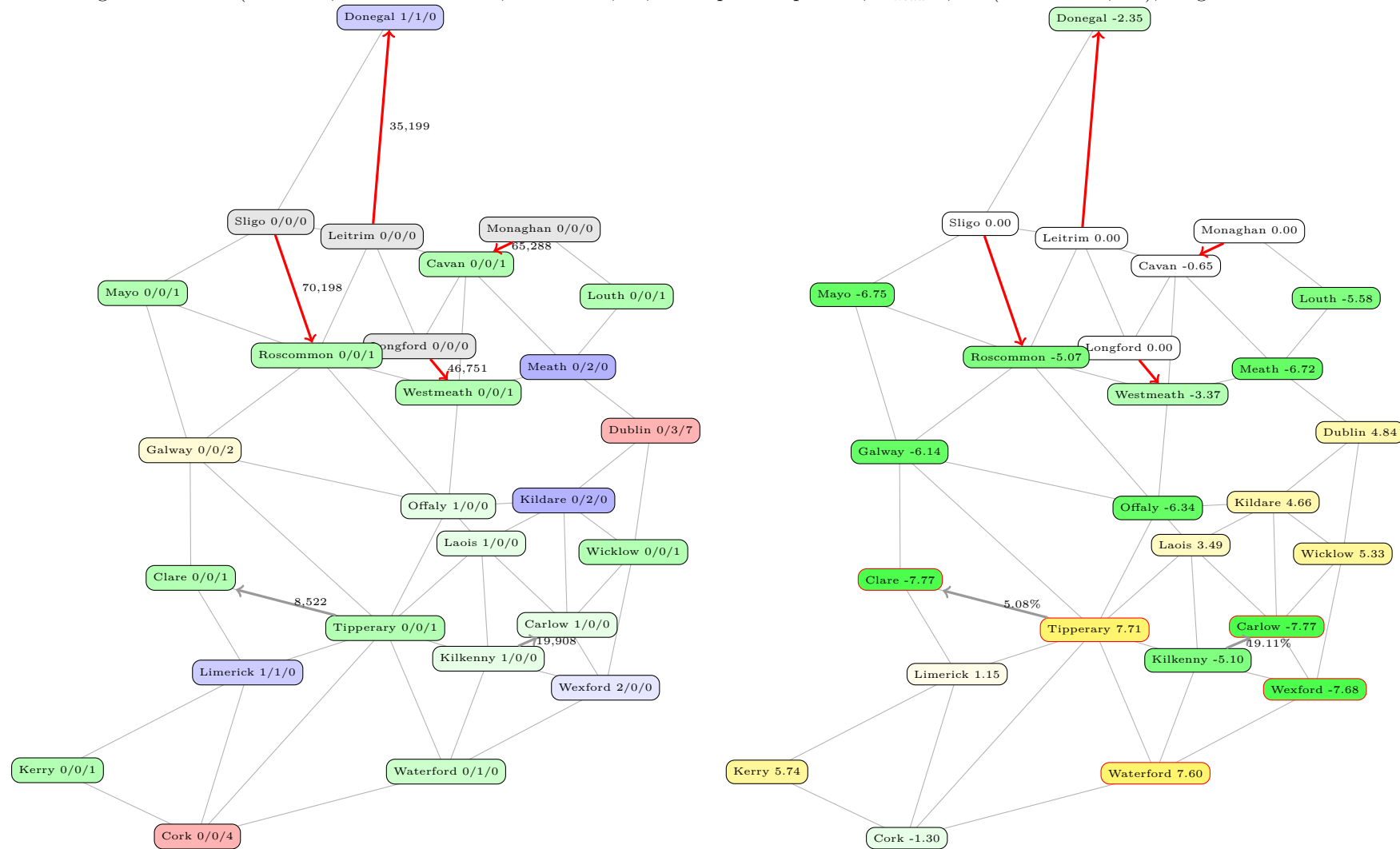
Table 135: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	19,908	81,876	1	1/0/0	3	27,292.00	-7.77
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	0	8,522	136,460	1	0/0/1	5	27,292.00	-7.77
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	0	35,199	202,283	2	1/1/0	7	28,897.57	-2.35
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/3/7	47	31,024.55	4.84
Galway	277,737	9.39	0	0	277,737	2	0/0/2	10	27,773.70	-6.14
Kerry	156,458	5.29	0	0	156,458	1	0/0/1	5	31,291.60	5.74
Kildare	247,774	8.37	0	0	247,774	2	0/2/0	8	30,971.75	4.66
Kilkenny	104,160	3.52	19,908	0	84,252	1	1/0/0	3	28,084.00	-5.10
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	0	209,536	2	1/1/0	7	29,933.71	1.15
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	0	0	139,703	1	0/0/1	5	27,940.60	-5.58
Mayo	137,970	4.66	0	0	137,970	1	0/0/1	5	27,594.00	-6.75
Meath	220,826	7.46	0	0	220,826	2	0/2/0	8	27,603.25	-6.72
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	0	83,150	1	1/0/0	3	27,716.67	-6.34
Roscommon	70,259	2.37	0	70,198	140,457	1	0/0/1	5	28,091.40	-5.07
Sligo	70,198	2.37	70,198	0	0	0	0/0/0	0	0.00	0.00
Tipperary	167,895	5.67	8,522	0	159,373	1	0/0/1	5	31,874.60	7.71
Waterford	127,363	4.30	0	0	127,363	1	0/1/0	4	31,840.75	7.60



Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	46,751	142,972	1	0/0/1	5	28,594.40	-3.37
Wexford	163,919	5.54	0	0	163,919	2	2/0/0	6	27,319.83	-7.68
Wicklow	155,851	5.27	0	0	155,851	1	0/0/1	5	31,170.20	5.33

Table 136: 6 Transfers (Total 245866)			
From	To	Volume	Percent of From
Kilkenny	Carlow	19,908	19.11
Longford	Westmeath	46,751	100.00
Tipperary	Clare	8,522	5.08
Leitrim	Donegal	35,199	100.00
Sligo	Roscommon	70,198	100.00
Monaghan	Cavan	65,288	100.00

Figure 46: Sol45 (174 seats, 40 constituencies, 6 transfers, 29,670.55 persons per TD,  $\Delta_{max}$  2,300 (7.77% of 29,592), weighted variation 4.53%)

### 3.46 Solution Sol46

Table 137: Solution 46

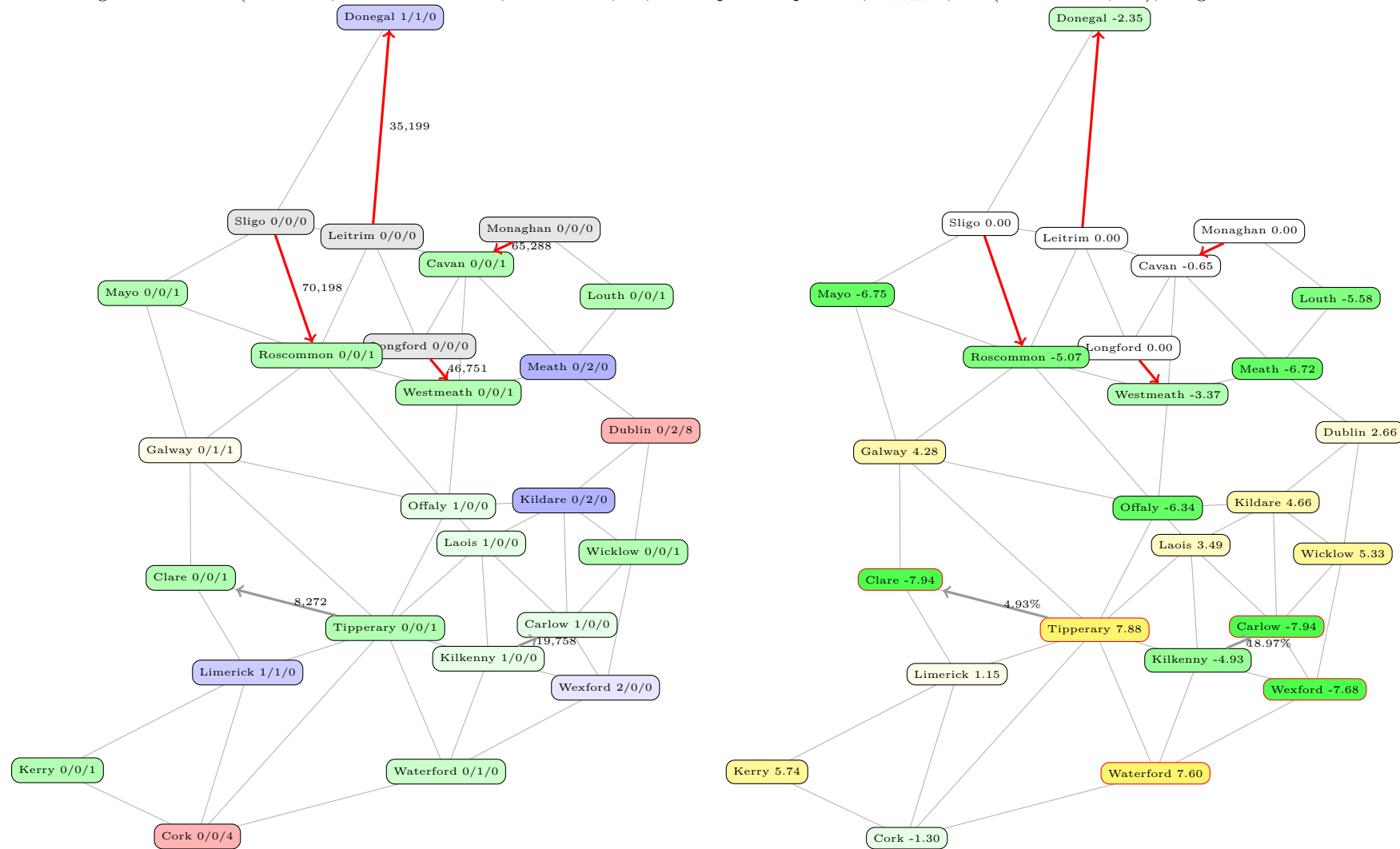
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol46	174	2,350	7.94	15.82	27,242.00	31,924.60	29,654.47	1,796,271.51	3.82	6	245,466	40	8/10/22	4.35	Optimal	1.01	0.0085

Table 138: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	19,758	81,726	1	1/0/0	3	27,242.00	-7.94
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	0	8,272	136,210	1	0/0/1	5	27,242.00	-7.94
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	0	35,199	202,283	2	1/1/0	7	28,897.57	-2.35
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/2/8	48	30,378.21	2.66
Galway	277,737	9.39	0	0	277,737	2	0/1/1	9	30,859.67	4.28
Kerry	156,458	5.29	0	0	156,458	1	0/0/1	5	31,291.60	5.74
Kildare	247,774	8.37	0	0	247,774	2	0/2/0	8	30,971.75	4.66
Kilkenny	104,160	3.52	19,758	0	84,402	1	1/0/0	3	28,134.00	-4.93
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	0	209,536	2	1/1/0	7	29,933.71	1.15
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	0	0	139,703	1	0/0/1	5	27,940.60	-5.58
Mayo	137,970	4.66	0	0	137,970	1	0/0/1	5	27,594.00	-6.75
Meath	220,826	7.46	0	0	220,826	2	0/2/0	8	27,603.25	-6.72
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	0	83,150	1	1/0/0	3	27,716.67	-6.34
Roscommon	70,259	2.37	0	70,198	140,457	1	0/0/1	5	28,091.40	-5.07
Sligo	70,198	2.37	70,198	0	0	0	0/0/0	0	0.00	0.00
Tipperary	167,895	5.67	8,272	0	159,623	1	0/0/1	5	31,924.60	7.88
Waterford	127,363	4.30	0	0	127,363	1	0/1/0	4	31,840.75	7.60

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	46,751	142,972	1	0/0/1	5	28,594.40	-3.37
Wexford	163,919	5.54	0	0	163,919	2	2/0/0	6	27,319.83	-7.68
Wicklow	155,851	5.27	0	0	155,851	1	0/0/1	5	31,170.20	5.33

Table 139: 6 Transfers (Total 245466)			
From	To	Volume	Percent of From
Kilkenny	Carlow	19,758	18.97
Longford	Westmeath	46,751	100.00
Tipperary	Clare	8,272	4.93
Leitrim	Donegal	35,199	100.00
Sligo	Roscommon	70,198	100.00
Monaghan	Cavan	65,288	100.00

Figure 47: Sol46 (174 seats, 40 constituencies, 6 transfers, 29,654.47 persons per TD,  $\Delta_{max}$  2,350 (7.94% of 29,592), weighted variation 3.82%)

### 3.47 Solution Sol47

Table 140: Solution 47

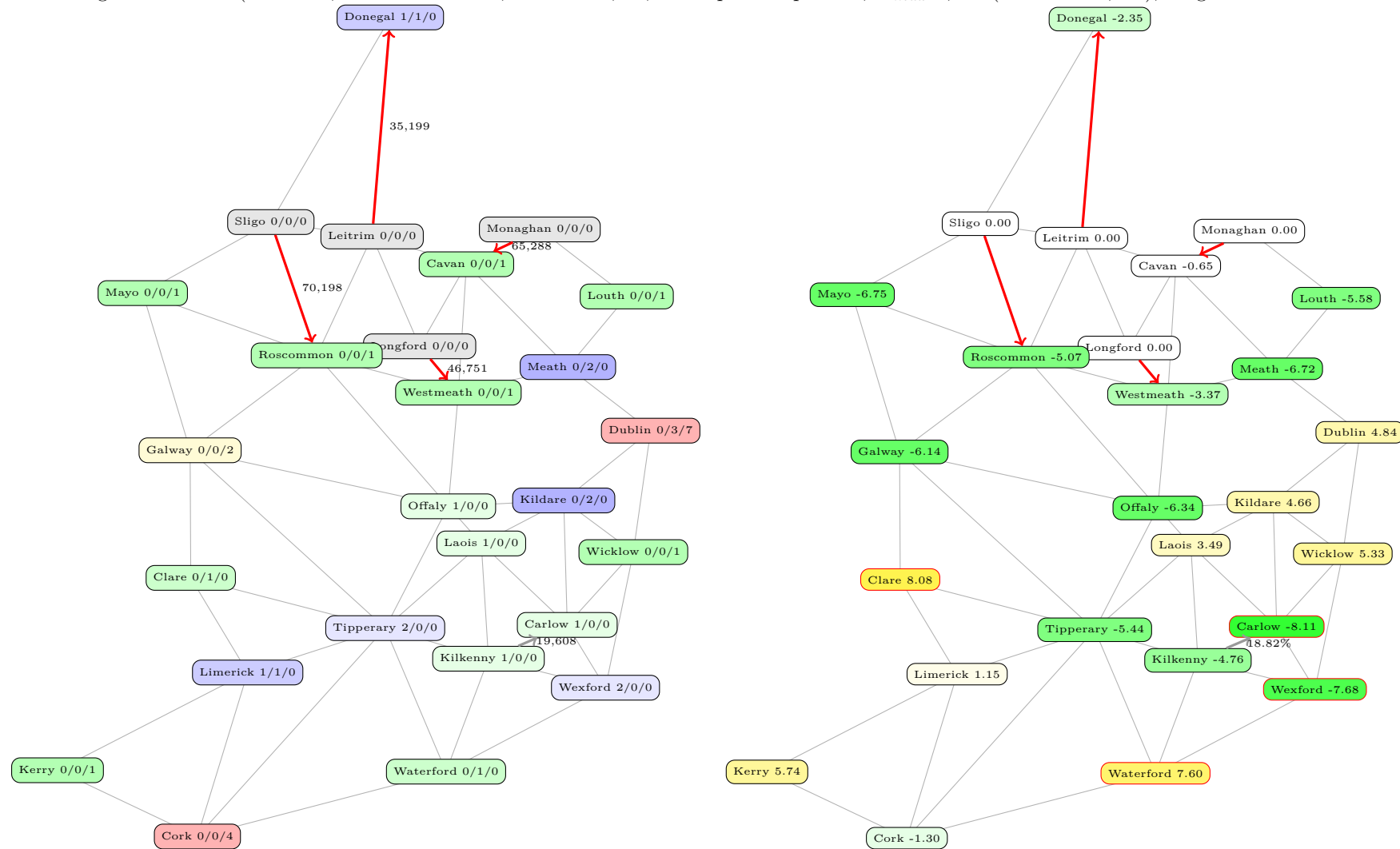
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol47	174	2,400	8.11	16.20	27,192.00	31,984.50	29,667.93	2,205,415.67	4.47	5	237,044	41	10/11/20	4.24	Optimal	0.73	0.0083

Table 141: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	19,608	81,576	1	1/0/0	3	27,192.00	-8.11
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	0	0	127,938	1	0/1/0	4	31,984.50	8.08
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	0	35,199	202,283	2	1/1/0	7	28,897.57	-2.35
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/3/7	47	31,024.55	4.84
Galway	277,737	9.39	0	0	277,737	2	0/0/2	10	27,773.70	-6.14
Kerry	156,458	5.29	0	0	156,458	1	0/0/1	5	31,291.60	5.74
Kildare	247,774	8.37	0	0	247,774	2	0/2/0	8	30,971.75	4.66
Kilkenny	104,160	3.52	19,608	0	84,552	1	1/0/0	3	28,184.00	-4.76
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	0	209,536	2	1/1/0	7	29,933.71	1.15
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	0	0	139,703	1	0/0/1	5	27,940.60	-5.58
Mayo	137,970	4.66	0	0	137,970	1	0/0/1	5	27,594.00	-6.75
Meath	220,826	7.46	0	0	220,826	2	0/2/0	8	27,603.25	-6.72
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	0	83,150	1	1/0/0	3	27,716.67	-6.34
Roscommon	70,259	2.37	0	70,198	140,457	1	0/0/1	5	28,091.40	-5.07
Sligo	70,198	2.37	70,198	0	0	0	0/0/0	0	0.00	0.00
Tipperary	167,895	5.67	0	0	167,895	2	2/0/0	6	27,982.50	-5.44
Waterford	127,363	4.30	0	0	127,363	1	0/1/0	4	31,840.75	7.60

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	46,751	142,972	1	0/0/1	5	28,594.40	-3.37
Wexford	163,919	5.54	0	0	163,919	2	2/0/0	6	27,319.83	-7.68
Wicklow	155,851	5.27	0	0	155,851	1	0/0/1	5	31,170.20	5.33

Table 142: 5 Transfers (Total 237044)			
From	To	Volume	Percent of From
Kilkenny	Carlow	19,608	18.82
Longford	Westmeath	46,751	100.00
Leitrim	Donegal	35,199	100.00
Sligo	Roscommon	70,198	100.00
Monaghan	Cavan	65,288	100.00

Figure 48: Sol47 (174 seats, 41 constituencies, 5 transfers, 29,667.93 persons per TD,  $\Delta_{max}$  2,400 (8.11% of 29,592), weighted variation 4.47%)



### 3.48 Solution Sol48

Table 143: Solution 48

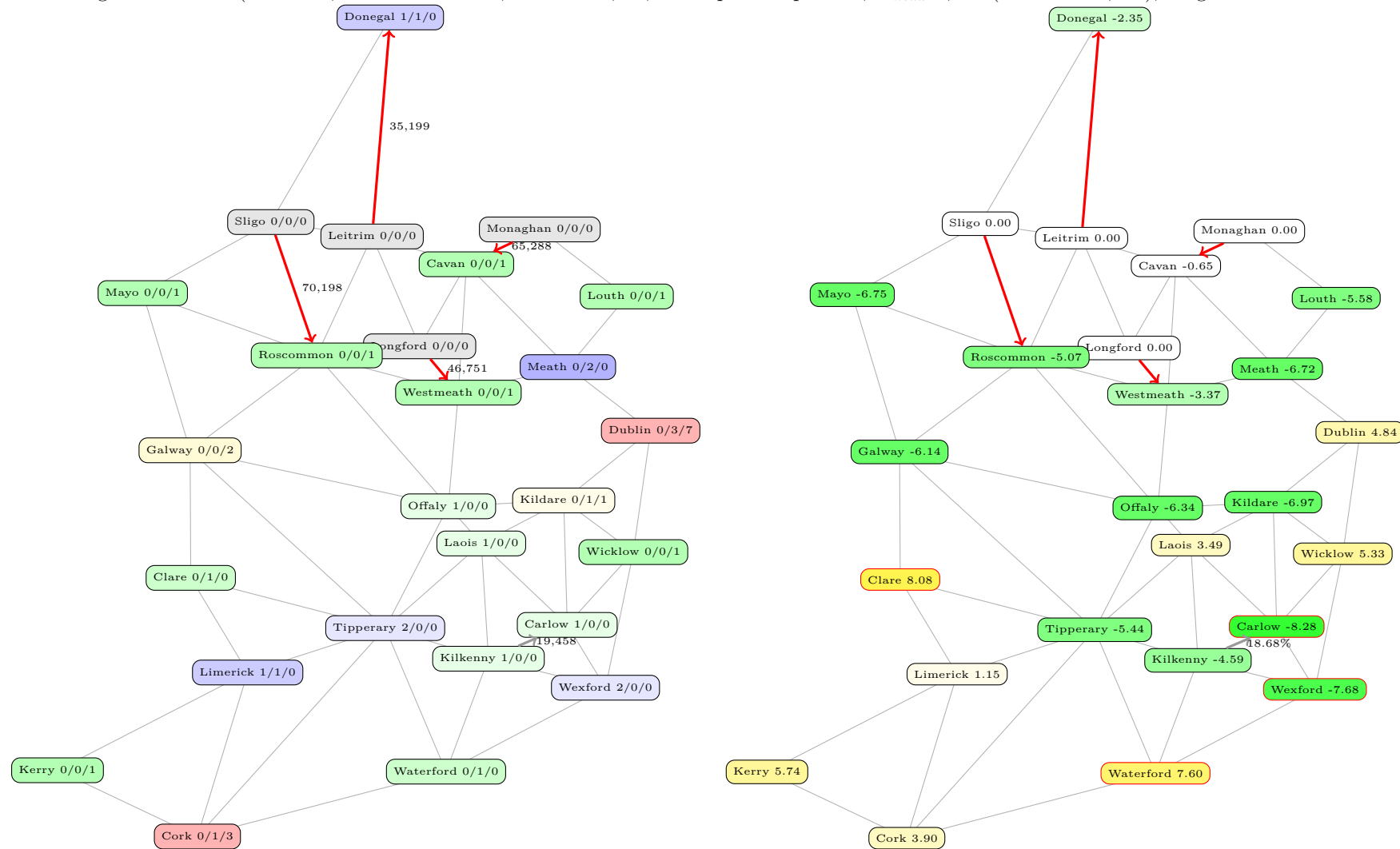
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol48	174	2,450	8.28	16.36	27,142.00	31,984.50	29,676.79	2,452,429.47	4.87	5	236,894	41	10/11/20	4.24	Optimal	1.20	0.0000

Table 144: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	19,458	81,426	1	1/0/0	3	27,142.00	-8.28
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	0	0	127,938	1	0/1/0	4	31,984.50	8.08
Cork	584,156	19.74	0	0	584,156	4	0/1/3	19	30,745.05	3.90
Donegal	167,084	5.65	0	35,199	202,283	2	1/1/0	7	28,897.57	-2.35
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/3/7	47	31,024.55	4.84
Galway	277,737	9.39	0	0	277,737	2	0/0/2	10	27,773.70	-6.14
Kerry	156,458	5.29	0	0	156,458	1	0/0/1	5	31,291.60	5.74
Kildare	247,774	8.37	0	0	247,774	2	0/1/1	9	27,530.44	-6.97
Kilkenny	104,160	3.52	19,458	0	84,702	1	1/0/0	3	28,234.00	-4.59
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	0	209,536	2	1/1/0	7	29,933.71	1.15
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	0	0	139,703	1	0/0/1	5	27,940.60	-5.58
Mayo	137,970	4.66	0	0	137,970	1	0/0/1	5	27,594.00	-6.75
Meath	220,826	7.46	0	0	220,826	2	0/2/0	8	27,603.25	-6.72
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	0	83,150	1	1/0/0	3	27,716.67	-6.34
Roscommon	70,259	2.37	0	70,198	140,457	1	0/0/1	5	28,091.40	-5.07
Sligo	70,198	2.37	70,198	0	0	0	0/0/0	0	0.00	0.00
Tipperary	167,895	5.67	0	0	167,895	2	2/0/0	6	27,982.50	-5.44
Waterford	127,363	4.30	0	0	127,363	1	0/1/0	4	31,840.75	7.60

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	46,751	142,972	1	0/0/1	5	28,594.40	-3.37
Wexford	163,919	5.54	0	0	163,919	2	2/0/0	6	27,319.83	-7.68
Wicklow	155,851	5.27	0	0	155,851	1	0/0/1	5	31,170.20	5.33

Table 145: 5 Transfers (Total 236894)			
From	To	Volume	Percent of From
Kilkenny	Carlow	19,458	18.68
Longford	Westmeath	46,751	100.00
Leitrim	Donegal	35,199	100.00
Sligo	Roscommon	70,198	100.00
Monaghan	Cavan	65,288	100.00

Figure 49: Sol48 (174 seats, 41 constituencies, 5 transfers, 29,676.79 persons per TD,  $\Delta_{max}$  2,450 (8.28% of 29,592), weighted variation 4.87%)

### 3.49 Solution Sol49

Table 146: Solution 49

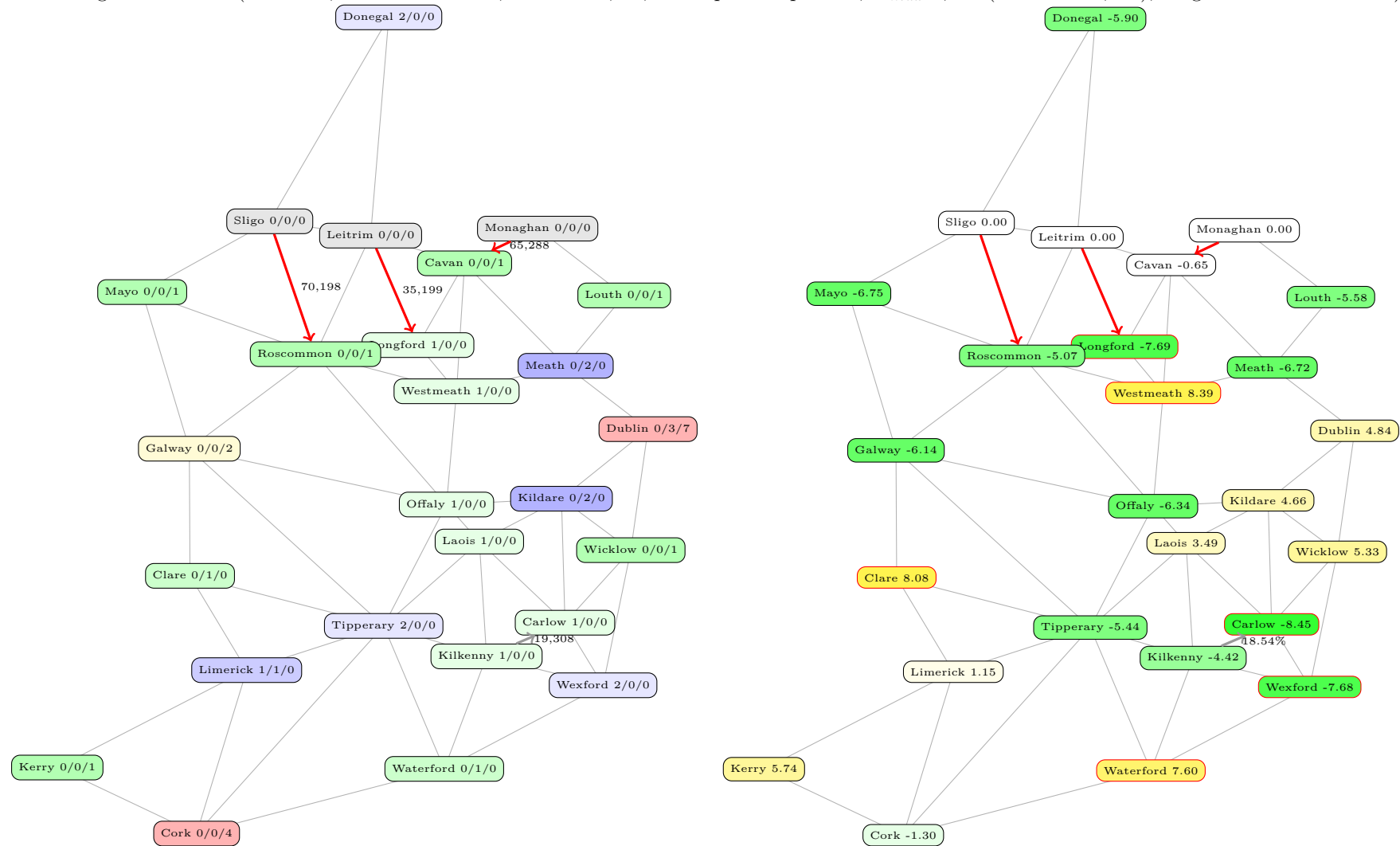
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol49	174	2,500	8.45	16.83	27,092.00	32,073.67	29,676.58	2,456,739.04	4.74	4	189,993	42	13/10/19	4.14	Optimal	0.42	0.0047

Table 147: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	19,308	81,276	1	1/0/0	3	27,092.00	-8.45
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	0	0	127,938	1	0/1/0	4	31,984.50	8.08
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	0	0	167,084	2	2/0/0	6	27,847.33	-5.90
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/3/7	47	31,024.55	4.84
Galway	277,737	9.39	0	0	277,737	2	0/0/2	10	27,773.70	-6.14
Kerry	156,458	5.29	0	0	156,458	1	0/0/1	5	31,291.60	5.74
Kildare	247,774	8.37	0	0	247,774	2	0/2/0	8	30,971.75	4.66
Kilkenny	104,160	3.52	19,308	0	84,852	1	1/0/0	3	28,284.00	-4.42
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	0	209,536	2	1/1/0	7	29,933.71	1.15
Longford	46,751	1.58	0	35,199	81,950	1	1/0/0	3	27,316.67	-7.69
Louth	139,703	4.72	0	0	139,703	1	0/0/1	5	27,940.60	-5.58
Mayo	137,970	4.66	0	0	137,970	1	0/0/1	5	27,594.00	-6.75
Meath	220,826	7.46	0	0	220,826	2	0/2/0	8	27,603.25	-6.72
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	0	83,150	1	1/0/0	3	27,716.67	-6.34
Roscommon	70,259	2.37	0	70,198	140,457	1	0/0/1	5	28,091.40	-5.07
Sligo	70,198	2.37	70,198	0	0	0	0/0/0	0	0.00	0.00
Tipperary	167,895	5.67	0	0	167,895	2	2/0/0	6	27,982.50	-5.44
Waterford	127,363	4.30	0	0	127,363	1	0/1/0	4	31,840.75	7.60

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	0	96,221	1	1/0/0	3	32,073.67	8.39
Wexford	163,919	5.54	0	0	163,919	2	2/0/0	6	27,319.83	-7.68
Wicklow	155,851	5.27	0	0	155,851	1	0/0/1	5	31,170.20	5.33

Table 148: 4 Transfers (Total 189993)			
From	To	Volume	Percent of From
Kilkenny	Carlow	19,308	18.54
Leitrim	Longford	35,199	100.00
Sligo	Roscommon	70,198	100.00
Monaghan	Cavan	65,288	100.00

Figure 50: Sol49 (174 seats, 42 constituencies, 4 transfers, 29,676.58 persons per TD,  $\Delta_{max}$  2,500 (8.45% of 29,592), weighted variation 4.74%)

### 3.50 Solution Sol50

Table 149: Solution 50

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol50	174	2,550	8.62	17.00	27,042.00	32,073.67	29,676.65	2,458,454.79	4.74	4	189,843	42	13/10/19	4.14	Optimal	0.43	0.0000

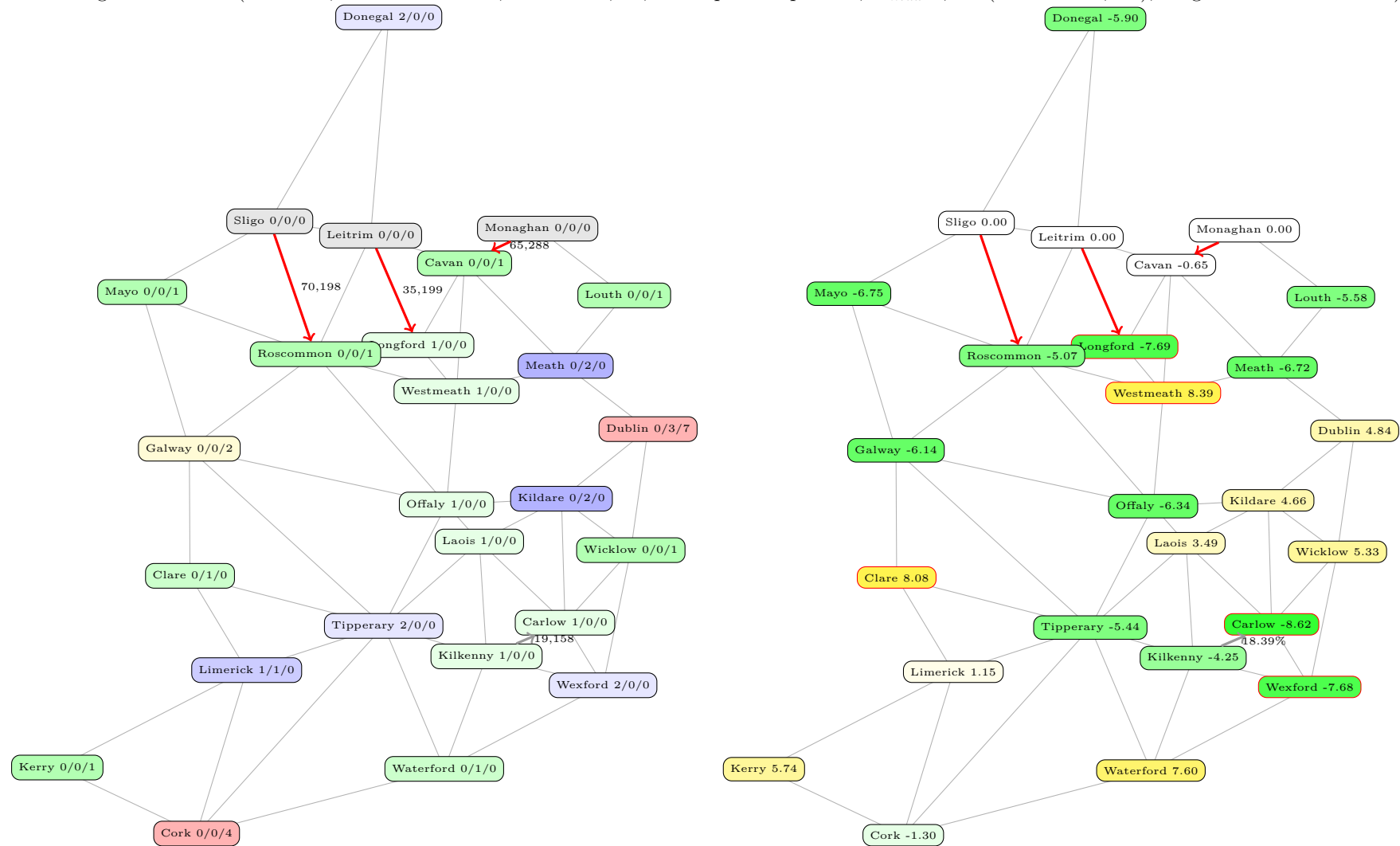
Table 150: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	19,158	81,126	1	1/0/0	3	27,042.00	-8.62
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	0	0	127,938	1	0/1/0	4	31,984.50	8.08
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	0	0	167,084	2	2/0/0	6	27,847.33	-5.90
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/3/7	47	31,024.55	4.84
Galway	277,737	9.39	0	0	277,737	2	0/0/2	10	27,773.70	-6.14
Kerry	156,458	5.29	0	0	156,458	1	0/0/1	5	31,291.60	5.74
Kildare	247,774	8.37	0	0	247,774	2	0/2/0	8	30,971.75	4.66
Kilkenny	104,160	3.52	19,158	0	85,002	1	1/0/0	3	28,334.00	-4.25
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	0	209,536	2	1/1/0	7	29,933.71	1.15
Longford	46,751	1.58	0	35,199	81,950	1	1/0/0	3	27,316.67	-7.69
Louth	139,703	4.72	0	0	139,703	1	0/0/1	5	27,940.60	-5.58
Mayo	137,970	4.66	0	0	137,970	1	0/0/1	5	27,594.00	-6.75
Meath	220,826	7.46	0	0	220,826	2	0/2/0	8	27,603.25	-6.72
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	0	83,150	1	1/0/0	3	27,716.67	-6.34
Roscommon	70,259	2.37	0	70,198	140,457	1	0/0/1	5	28,091.40	-5.07
Sligo	70,198	2.37	70,198	0	0	0	0/0/0	0	0.00	0.00
Tipperary	167,895	5.67	0	0	167,895	2	2/0/0	6	27,982.50	-5.44
Waterford	127,363	4.30	0	0	127,363	1	0/1/0	4	31,840.75	7.60

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	0	96,221	1	1/0/0	3	32,073.67	8.39
Wexford	163,919	5.54	0	0	163,919	2	2/0/0	6	27,319.83	-7.68
Wicklow	155,851	5.27	0	0	155,851	1	0/0/1	5	31,170.20	5.33

Table 151: 4 Transfers (Total 189843)			
From	To	Volume	Percent of From
Kilkenny	Carlow	19,158	18.39
Leitrim	Longford	35,199	100.00
Sligo	Roscommon	70,198	100.00
Monaghan	Cavan	65,288	100.00



Figure 51: Sol50 (174 seats, 42 constituencies, 4 transfers, 29,676.65 persons per TD,  $\Delta_{max}$  2,550 (8.62% of 29,592), weighted variation 4.74%)

### 3.51 Solution Sol51

Table 152: Solution 51

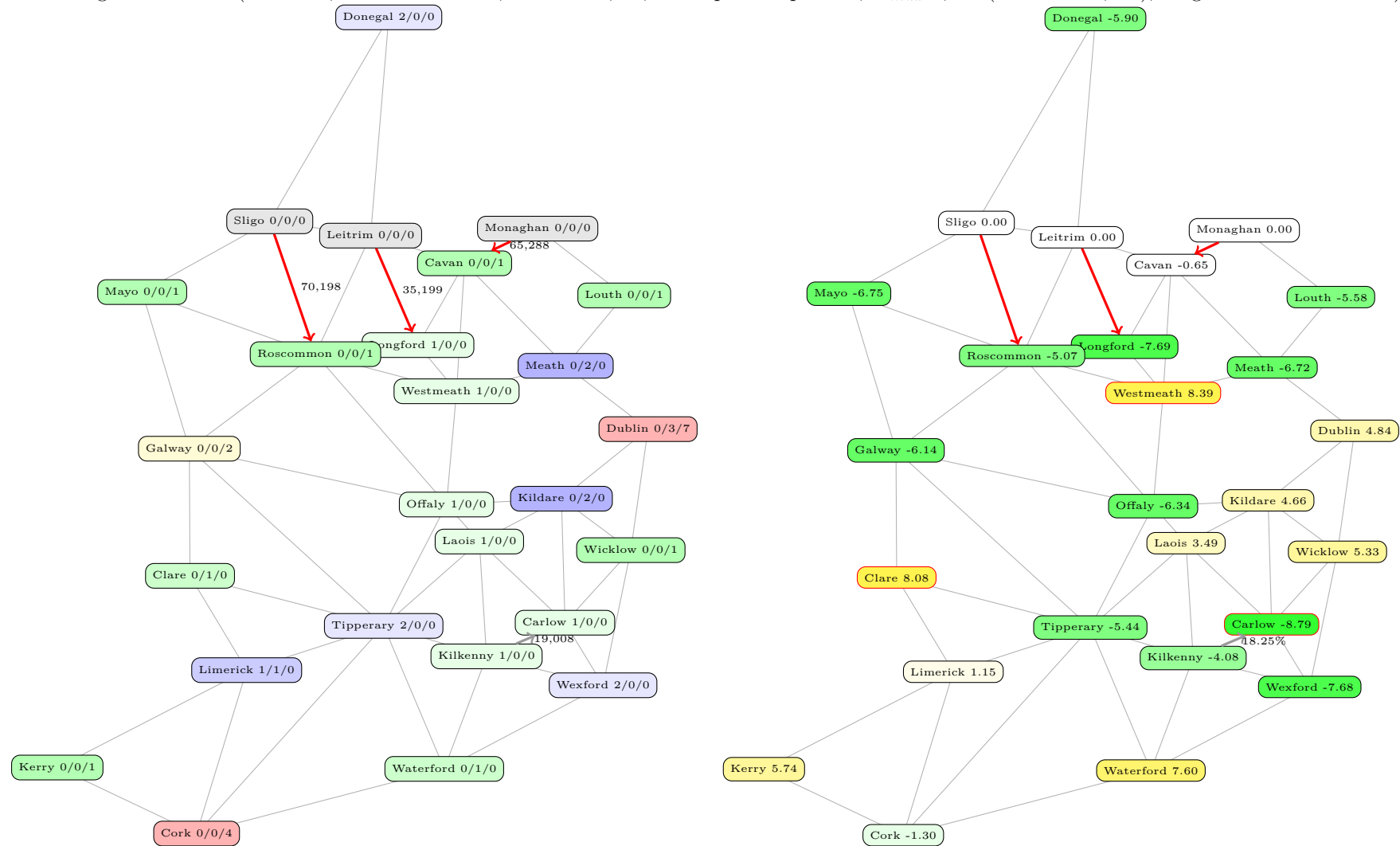
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol51	174	2,600	8.79	17.17	26,992.00	32,073.67	29,676.73	2,460,308.67	4.74	4	189,693	42	13/10/19	4.14	Optimal	0.48	0.0057

Table 153: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	19,008	80,976	1	1/0/0	3	26,992.00	-8.79
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	0	0	127,938	1	0/1/0	4	31,984.50	8.08
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	0	0	167,084	2	2/0/0	6	27,847.33	-5.90
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/3/7	47	31,024.55	4.84
Galway	277,737	9.39	0	0	277,737	2	0/0/2	10	27,773.70	-6.14
Kerry	156,458	5.29	0	0	156,458	1	0/0/1	5	31,291.60	5.74
Kildare	247,774	8.37	0	0	247,774	2	0/2/0	8	30,971.75	4.66
Kilkenny	104,160	3.52	19,008	0	85,152	1	1/0/0	3	28,384.00	-4.08
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	0	209,536	2	1/1/0	7	29,933.71	1.15
Longford	46,751	1.58	0	35,199	81,950	1	1/0/0	3	27,316.67	-7.69
Louth	139,703	4.72	0	0	139,703	1	0/0/1	5	27,940.60	-5.58
Mayo	137,970	4.66	0	0	137,970	1	0/0/1	5	27,594.00	-6.75
Meath	220,826	7.46	0	0	220,826	2	0/2/0	8	27,603.25	-6.72
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	0	83,150	1	1/0/0	3	27,716.67	-6.34
Roscommon	70,259	2.37	0	70,198	140,457	1	0/0/1	5	28,091.40	-5.07
Sligo	70,198	2.37	70,198	0	0	0	0/0/0	0	0.00	0.00
Tipperary	167,895	5.67	0	0	167,895	2	2/0/0	6	27,982.50	-5.44
Waterford	127,363	4.30	0	0	127,363	1	0/1/0	4	31,840.75	7.60

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	0	96,221	1	1/0/0	3	32,073.67	8.39
Wexford	163,919	5.54	0	0	163,919	2	2/0/0	6	27,319.83	-7.68
Wicklow	155,851	5.27	0	0	155,851	1	0/0/1	5	31,170.20	5.33

Table 154: 4 Transfers (Total 189693)			
From	To	Volume	Percent of From
Kilkenny	Carlow	19,008	18.25
Leitrim	Longford	35,199	100.00
Sligo	Roscommon	70,198	100.00
Monaghan	Cavan	65,288	100.00

Figure 52: Sol51 (174 seats, 42 constituencies, 4 transfers, 29,676.73 persons per TD,  $\Delta_{max}$  2,600 (8.79% of 29,592), weighted variation 4.74%)

### 3.52 Solution Sol52

Table 155: Solution 52

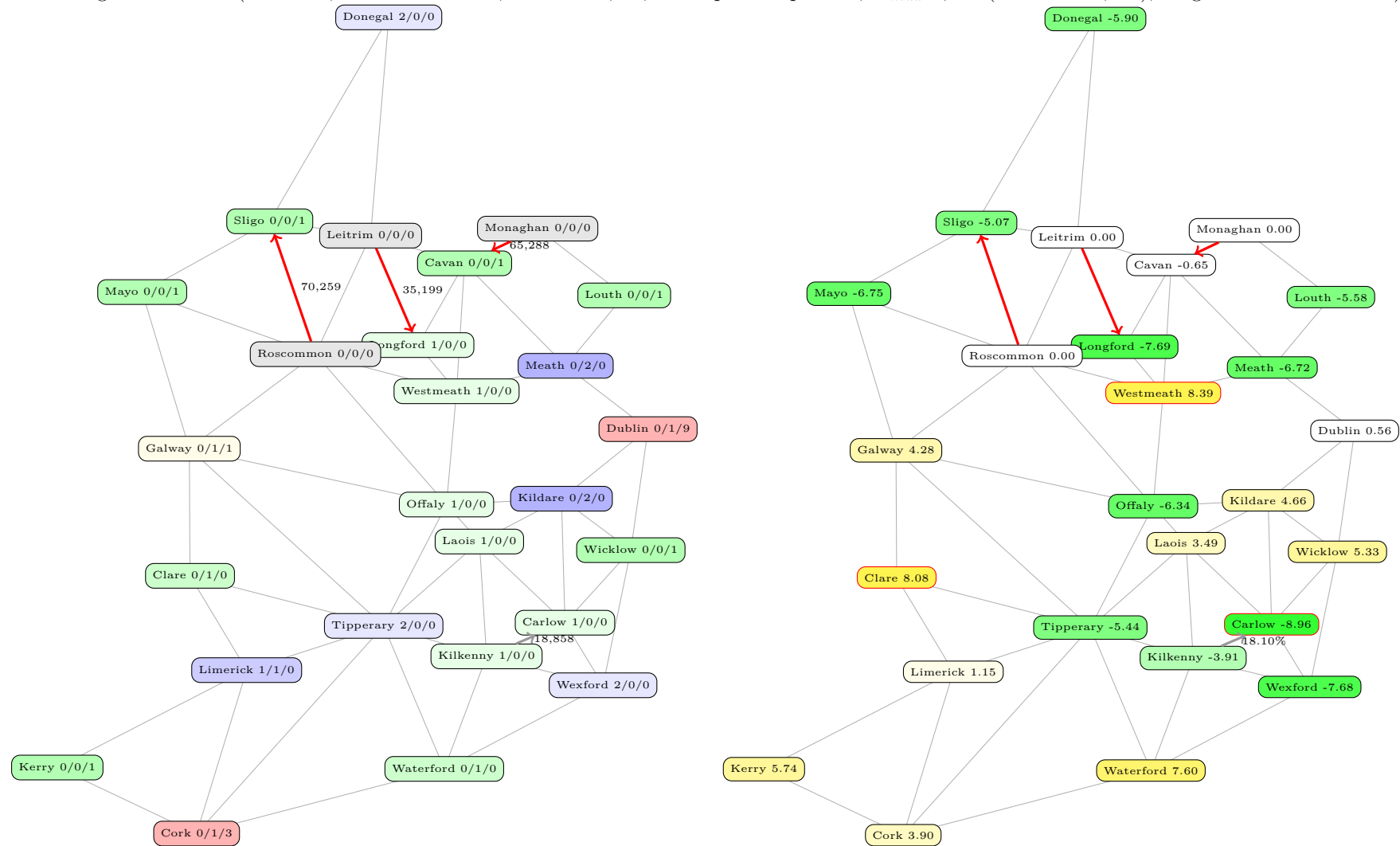
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol52	174	2,650	8.96	17.34	26,942.00	32,073.67	29,659.07	1,934,101.47	3.72	4	189,604	42	13/10/19	4.14	Optimal	0.48	0.0063

Table 156: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	18,858	80,826	1	1/0/0	3	26,942.00	-8.96
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	0	0	127,938	1	0/1/0	4	31,984.50	8.08
Cork	584,156	19.74	0	0	584,156	4	0/1/3	19	30,745.05	3.90
Donegal	167,084	5.65	0	0	167,084	2	2/0/0	6	27,847.33	-5.90
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/1/9	49	29,758.24	0.56
Galway	277,737	9.39	0	0	277,737	2	0/1/1	9	30,859.67	4.28
Kerry	156,458	5.29	0	0	156,458	1	0/0/1	5	31,291.60	5.74
Kildare	247,774	8.37	0	0	247,774	2	0/2/0	8	30,971.75	4.66
Kilkenny	104,160	3.52	18,858	0	85,302	1	1/0/0	3	28,434.00	-3.91
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	0	209,536	2	1/1/0	7	29,933.71	1.15
Longford	46,751	1.58	0	35,199	81,950	1	1/0/0	3	27,316.67	-7.69
Louth	139,703	4.72	0	0	139,703	1	0/0/1	5	27,940.60	-5.58
Mayo	137,970	4.66	0	0	137,970	1	0/0/1	5	27,594.00	-6.75
Meath	220,826	7.46	0	0	220,826	2	0/2/0	8	27,603.25	-6.72
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	0	83,150	1	1/0/0	3	27,716.67	-6.34
Roscommon	70,259	2.37	70,259	0	0	0	0/0/0	0	0.00	0.00
Sligo	70,198	2.37	0	70,259	140,457	1	0/0/1	5	28,091.40	-5.07
Tipperary	167,895	5.67	0	0	167,895	2	2/0/0	6	27,982.50	-5.44
Waterford	127,363	4.30	0	0	127,363	1	0/1/0	4	31,840.75	7.60

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	0	96,221	1	1/0/0	3	32,073.67	8.39
Wexford	163,919	5.54	0	0	163,919	2	2/0/0	6	27,319.83	-7.68
Wicklow	155,851	5.27	0	0	155,851	1	0/0/1	5	31,170.20	5.33

Table 157: 4 Transfers (Total 189604)			
From	To	Volume	Percent of From
Kilkenny	Carlow	18,858	18.10
Leitrim	Longford	35,199	100.00
Roscommon	Sligo	70,259	100.00
Monaghan	Cavan	65,288	100.00

Figure 53: Sol52 (174 seats, 42 constituencies, 4 transfers, 29,659.07 persons per TD,  $\Delta_{max}$  2,650 (8.96% of 29,592), weighted variation 3.72%)

### 3.53 Solution Sol53

Table 158: Solution 53

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol53	174	2,700	9.12	17.51	26,892.00	32,073.67	29,676.91	2,464,430.82	4.74	4	189,393	42	13/10/19	4.14	Optimal	0.49	0.0000

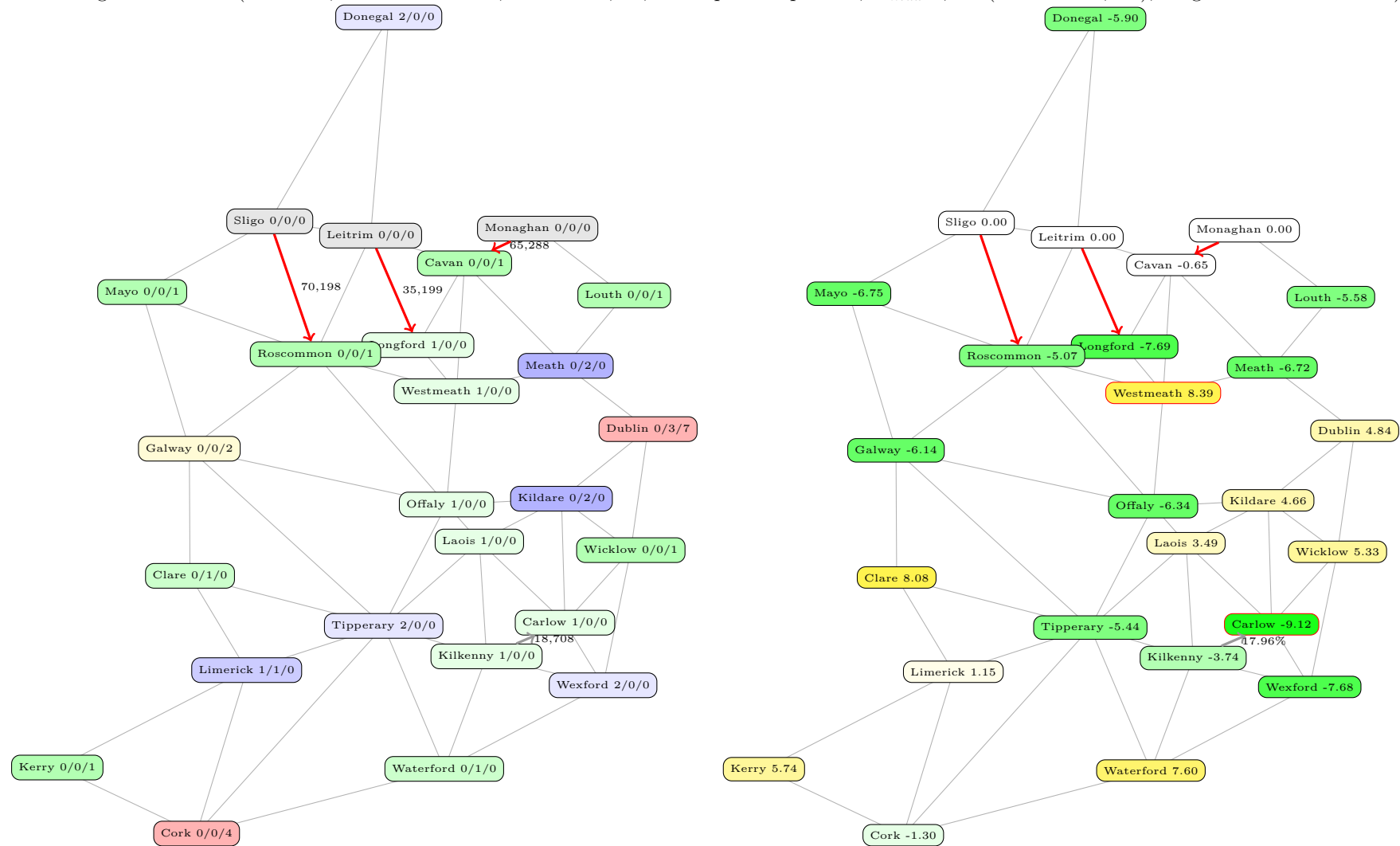
Table 159: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	18,708	80,676	1	1/0/0	3	26,892.00	-9.12
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	0	0	127,938	1	0/1/0	4	31,984.50	8.08
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	0	0	167,084	2	2/0/0	6	27,847.33	-5.90
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/3/7	47	31,024.55	4.84
Galway	277,737	9.39	0	0	277,737	2	0/0/2	10	27,773.70	-6.14
Kerry	156,458	5.29	0	0	156,458	1	0/0/1	5	31,291.60	5.74
Kildare	247,774	8.37	0	0	247,774	2	0/2/0	8	30,971.75	4.66
Kilkenny	104,160	3.52	18,708	0	85,452	1	1/0/0	3	28,484.00	-3.74
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	0	209,536	2	1/1/0	7	29,933.71	1.15
Longford	46,751	1.58	0	35,199	81,950	1	1/0/0	3	27,316.67	-7.69
Louth	139,703	4.72	0	0	139,703	1	0/0/1	5	27,940.60	-5.58
Mayo	137,970	4.66	0	0	137,970	1	0/0/1	5	27,594.00	-6.75
Meath	220,826	7.46	0	0	220,826	2	0/2/0	8	27,603.25	-6.72
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	0	83,150	1	1/0/0	3	27,716.67	-6.34
Roscommon	70,259	2.37	0	70,198	140,457	1	0/0/1	5	28,091.40	-5.07
Sligo	70,198	2.37	70,198	0	0	0	0/0/0	0	0.00	0.00
Tipperary	167,895	5.67	0	0	167,895	2	2/0/0	6	27,982.50	-5.44
Waterford	127,363	4.30	0	0	127,363	1	0/1/0	4	31,840.75	7.60



Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	0	96,221	1	1/0/0	3	32,073.67	8.39
Wexford	163,919	5.54	0	0	163,919	2	2/0/0	6	27,319.83	-7.68
Wicklow	155,851	5.27	0	0	155,851	1	0/0/1	5	31,170.20	5.33

Table 160: 4 Transfers (Total 189393)			
From	To	Volume	Percent of From
Kilkenny	Carlow	18,708	17.96
Leitrim	Longford	35,199	100.00
Sligo	Roscommon	70,198	100.00
Monaghan	Cavan	65,288	100.00

Figure 54: Sol53 (174 seats, 42 constituencies, 4 transfers, 29,676.91 persons per TD,  $\Delta_{max}$  2,700 (9.12% of 29,592), weighted variation 4.74%)

### 3.54 Solution Sol54

Table 161: Solution 54

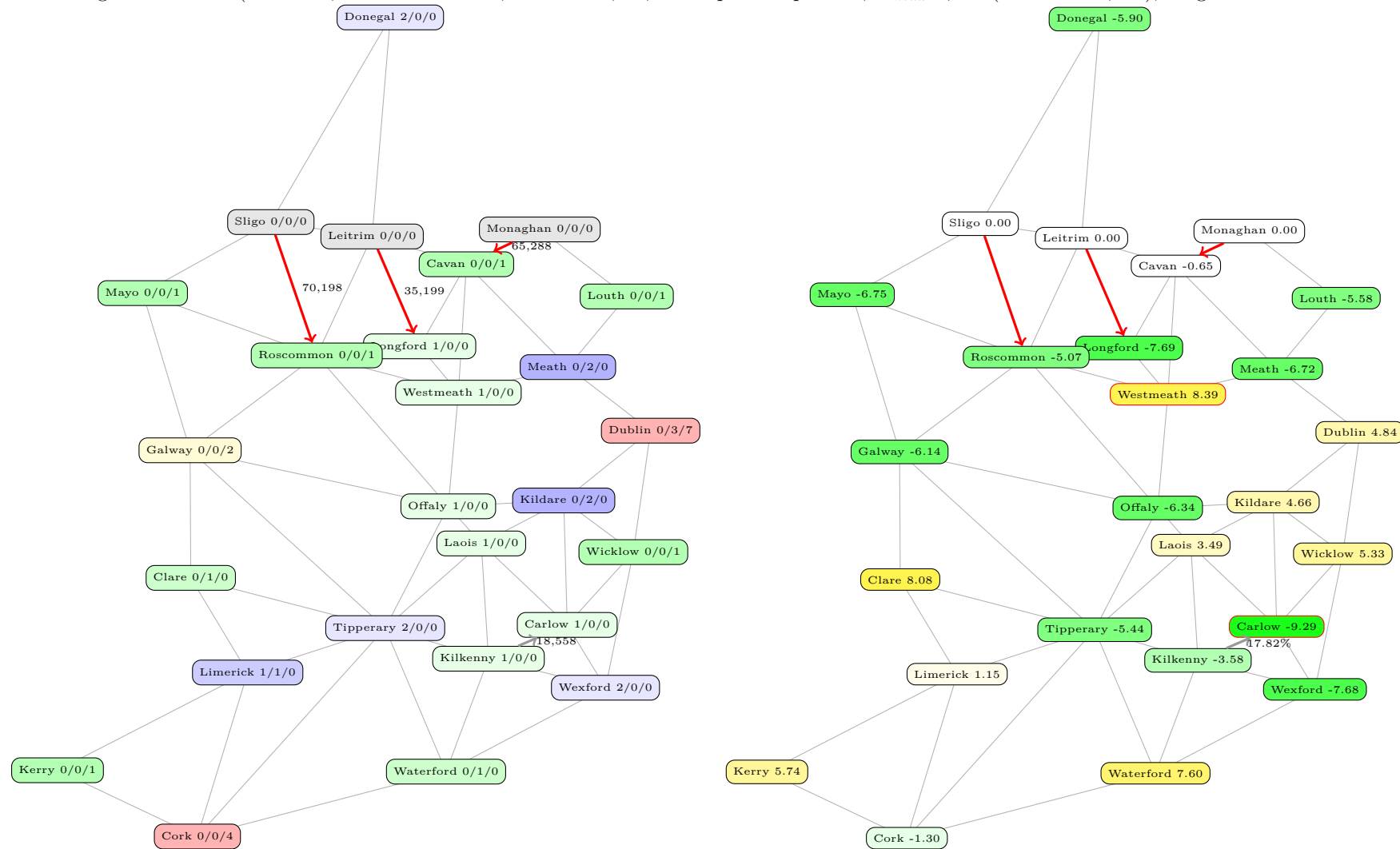
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol54	174	2,750	9.29	17.68	26,842.00	32,073.67	29,677.00	2,466,699.08	4.73	4	189,243	42	13/10/19	4.14	Optimal	0.44	0.0000

Table 162: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	18,558	80,526	1	1/0/0	3	26,842.00	-9.29
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	0	0	127,938	1	0/1/0	4	31,984.50	8.08
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	0	0	167,084	2	2/0/0	6	27,847.33	-5.90
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/3/7	47	31,024.55	4.84
Galway	277,737	9.39	0	0	277,737	2	0/0/2	10	27,773.70	-6.14
Kerry	156,458	5.29	0	0	156,458	1	0/0/1	5	31,291.60	5.74
Kildare	247,774	8.37	0	0	247,774	2	0/2/0	8	30,971.75	4.66
Kilkenny	104,160	3.52	18,558	0	85,602	1	1/0/0	3	28,534.00	-3.58
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	0	209,536	2	1/1/0	7	29,933.71	1.15
Longford	46,751	1.58	0	35,199	81,950	1	1/0/0	3	27,316.67	-7.69
Louth	139,703	4.72	0	0	139,703	1	0/0/1	5	27,940.60	-5.58
Mayo	137,970	4.66	0	0	137,970	1	0/0/1	5	27,594.00	-6.75
Meath	220,826	7.46	0	0	220,826	2	0/2/0	8	27,603.25	-6.72
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	0	83,150	1	1/0/0	3	27,716.67	-6.34
Roscommon	70,259	2.37	0	70,198	140,457	1	0/0/1	5	28,091.40	-5.07
Sligo	70,198	2.37	70,198	0	0	0	0/0/0	0	0.00	0.00
Tipperary	167,895	5.67	0	0	167,895	2	2/0/0	6	27,982.50	-5.44
Waterford	127,363	4.30	0	0	127,363	1	0/1/0	4	31,840.75	7.60

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	0	96,221	1	1/0/0	3	32,073.67	8.39
Wexford	163,919	5.54	0	0	163,919	2	2/0/0	6	27,319.83	-7.68
Wicklow	155,851	5.27	0	0	155,851	1	0/0/1	5	31,170.20	5.33

Table 163: 4 Transfers (Total 189243)			
From	To	Volume	Percent of From
Kilkenny	Carlow	18,558	17.82
Leitrim	Longford	35,199	100.00
Sligo	Roscommon	70,198	100.00
Monaghan	Cavan	65,288	100.00

Figure 55: Sol54 (174 seats, 42 constituencies, 4 transfers, 29,677.00 persons per TD,  $\Delta_{max}$  2,750 (9.29% of 29,592), weighted variation 4.73%)

### 3.55 Solution Sol55

Table 164: Solution 55

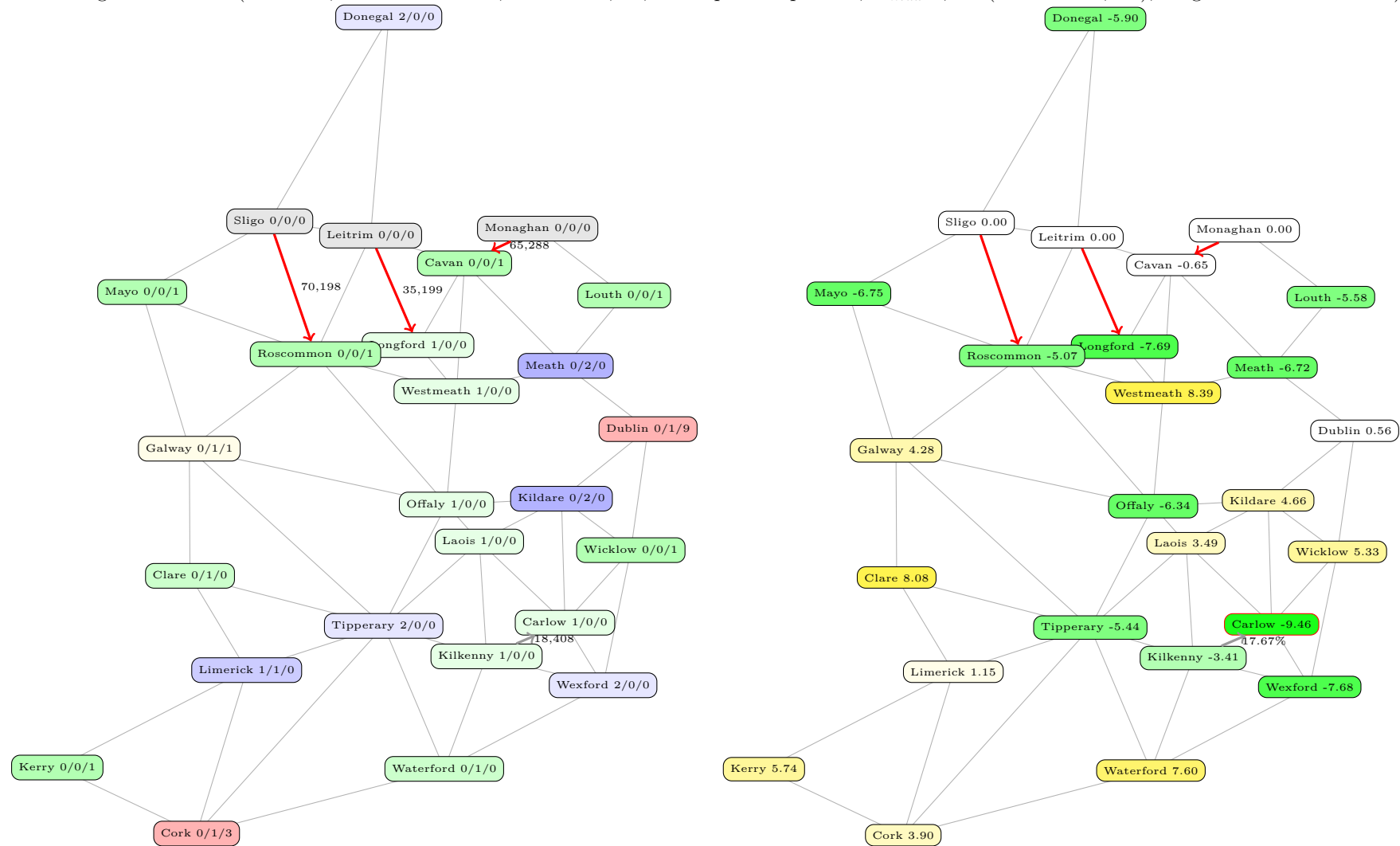
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol55	174	2,800	9.46	17.85	26,792.00	32,073.67	29,659.35	1,940,916.44	3.72	4	189,093	42	13/10/19	4.14	Optimal	0.41	0.0034

Table 165: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	18,408	80,376	1	1/0/0	3	26,792.00	-9.46
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	0	0	127,938	1	0/1/0	4	31,984.50	8.08
Cork	584,156	19.74	0	0	584,156	4	0/1/3	19	30,745.05	3.90
Donegal	167,084	5.65	0	0	167,084	2	2/0/0	6	27,847.33	-5.90
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/1/9	49	29,758.24	0.56
Galway	277,737	9.39	0	0	277,737	2	0/1/1	9	30,859.67	4.28
Kerry	156,458	5.29	0	0	156,458	1	0/0/1	5	31,291.60	5.74
Kildare	247,774	8.37	0	0	247,774	2	0/2/0	8	30,971.75	4.66
Kilkenny	104,160	3.52	18,408	0	85,752	1	1/0/0	3	28,584.00	-3.41
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	0	209,536	2	1/1/0	7	29,933.71	1.15
Longford	46,751	1.58	0	35,199	81,950	1	1/0/0	3	27,316.67	-7.69
Louth	139,703	4.72	0	0	139,703	1	0/0/1	5	27,940.60	-5.58
Mayo	137,970	4.66	0	0	137,970	1	0/0/1	5	27,594.00	-6.75
Meath	220,826	7.46	0	0	220,826	2	0/2/0	8	27,603.25	-6.72
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	0	83,150	1	1/0/0	3	27,716.67	-6.34
Roscommon	70,259	2.37	0	70,198	140,457	1	0/0/1	5	28,091.40	-5.07
Sligo	70,198	2.37	70,198	0	0	0	0/0/0	0	0.00	0.00
Tipperary	167,895	5.67	0	0	167,895	2	2/0/0	6	27,982.50	-5.44
Waterford	127,363	4.30	0	0	127,363	1	0/1/0	4	31,840.75	7.60

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	0	96,221	1	1/0/0	3	32,073.67	8.39
Wexford	163,919	5.54	0	0	163,919	2	2/0/0	6	27,319.83	-7.68
Wicklow	155,851	5.27	0	0	155,851	1	0/0/1	5	31,170.20	5.33

Table 166: 4 Transfers (Total 189093)			
From	To	Volume	Percent of From
Kilkenny	Carlow	18,408	17.67
Leitrim	Longford	35,199	100.00
Sligo	Roscommon	70,198	100.00
Monaghan	Cavan	65,288	100.00

Figure 56: Sol55 (174 seats, 42 constituencies, 4 transfers, 29,659.35 persons per TD,  $\Delta_{max}$  2,800 (9.46% of 29,592), weighted variation 3.72%)



### 3.56 Solution Sol56

Table 167: Solution 56

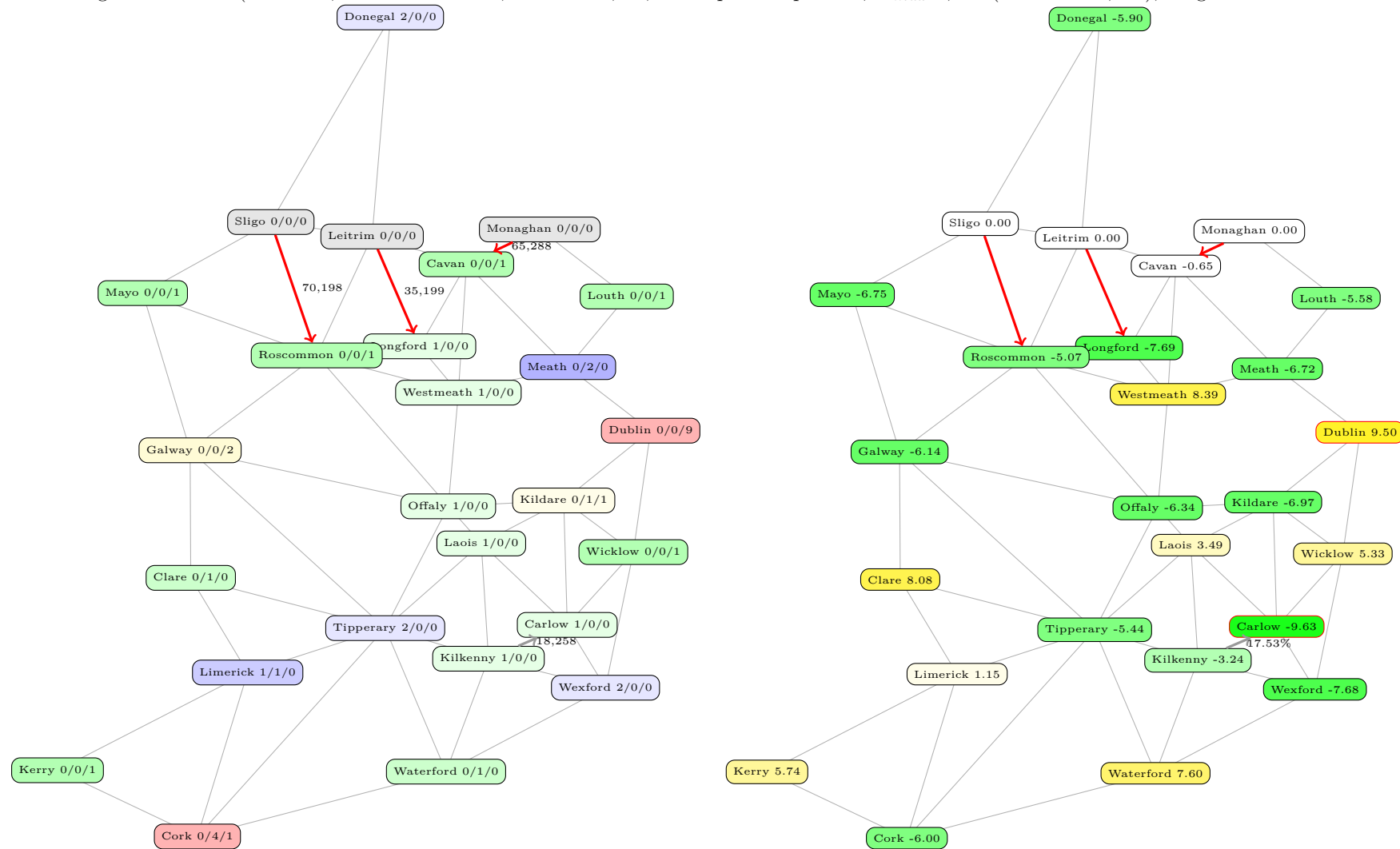
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol56	174	2,850	9.63	19.13	26,742.00	32,403.42	29,744.30	4,566,482.02	6.70	4	188,943	42	13/10/19	4.14	Optimal	0.48	0.0032

Table 168: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	18,258	80,226	1	1/0/0	3	26,742.00	-9.63
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	0	0	127,938	1	0/1/0	4	31,984.50	8.08
Cork	584,156	19.74	0	0	584,156	5	0/4/1	21	27,816.95	-6.00
Donegal	167,084	5.65	0	0	167,084	2	2/0/0	6	27,847.33	-5.90
Dublin	1,458,154	49.28	0	0	1,458,154	9	0/0/9	45	32,403.42	9.50
Galway	277,737	9.39	0	0	277,737	2	0/0/2	10	27,773.70	-6.14
Kerry	156,458	5.29	0	0	156,458	1	0/0/1	5	31,291.60	5.74
Kildare	247,774	8.37	0	0	247,774	2	0/1/1	9	27,530.44	-6.97
Kilkenny	104,160	3.52	18,258	0	85,902	1	1/0/0	3	28,634.00	-3.24
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	0	209,536	2	1/1/0	7	29,933.71	1.15
Longford	46,751	1.58	0	35,199	81,950	1	1/0/0	3	27,316.67	-7.69
Louth	139,703	4.72	0	0	139,703	1	0/0/1	5	27,940.60	-5.58
Mayo	137,970	4.66	0	0	137,970	1	0/0/1	5	27,594.00	-6.75
Meath	220,826	7.46	0	0	220,826	2	0/2/0	8	27,603.25	-6.72
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	0	83,150	1	1/0/0	3	27,716.67	-6.34
Roscommon	70,259	2.37	0	70,198	140,457	1	0/0/1	5	28,091.40	-5.07
Sligo	70,198	2.37	70,198	0	0	0	0/0/0	0	0.00	0.00
Tipperary	167,895	5.67	0	0	167,895	2	2/0/0	6	27,982.50	-5.44
Waterford	127,363	4.30	0	0	127,363	1	0/1/0	4	31,840.75	7.60

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	0	96,221	1	1/0/0	3	32,073.67	8.39
Wexford	163,919	5.54	0	0	163,919	2	2/0/0	6	27,319.83	-7.68
Wicklow	155,851	5.27	0	0	155,851	1	0/0/1	5	31,170.20	5.33

Table 169: 4 Transfers (Total 188943)			
From	To	Volume	Percent of From
Kilkenny	Carlow	18,258	17.53
Leitrim	Longford	35,199	100.00
Sligo	Roscommon	70,198	100.00
Monaghan	Cavan	65,288	100.00

Figure 57: Sol56 (174 seats, 42 constituencies, 4 transfers, 29,744.30 persons per TD,  $\Delta_{max}$  2,850 (9.63% of 29,592), weighted variation 6.70%)

### 3.57 Solution Sol57

Table 170: Solution 57

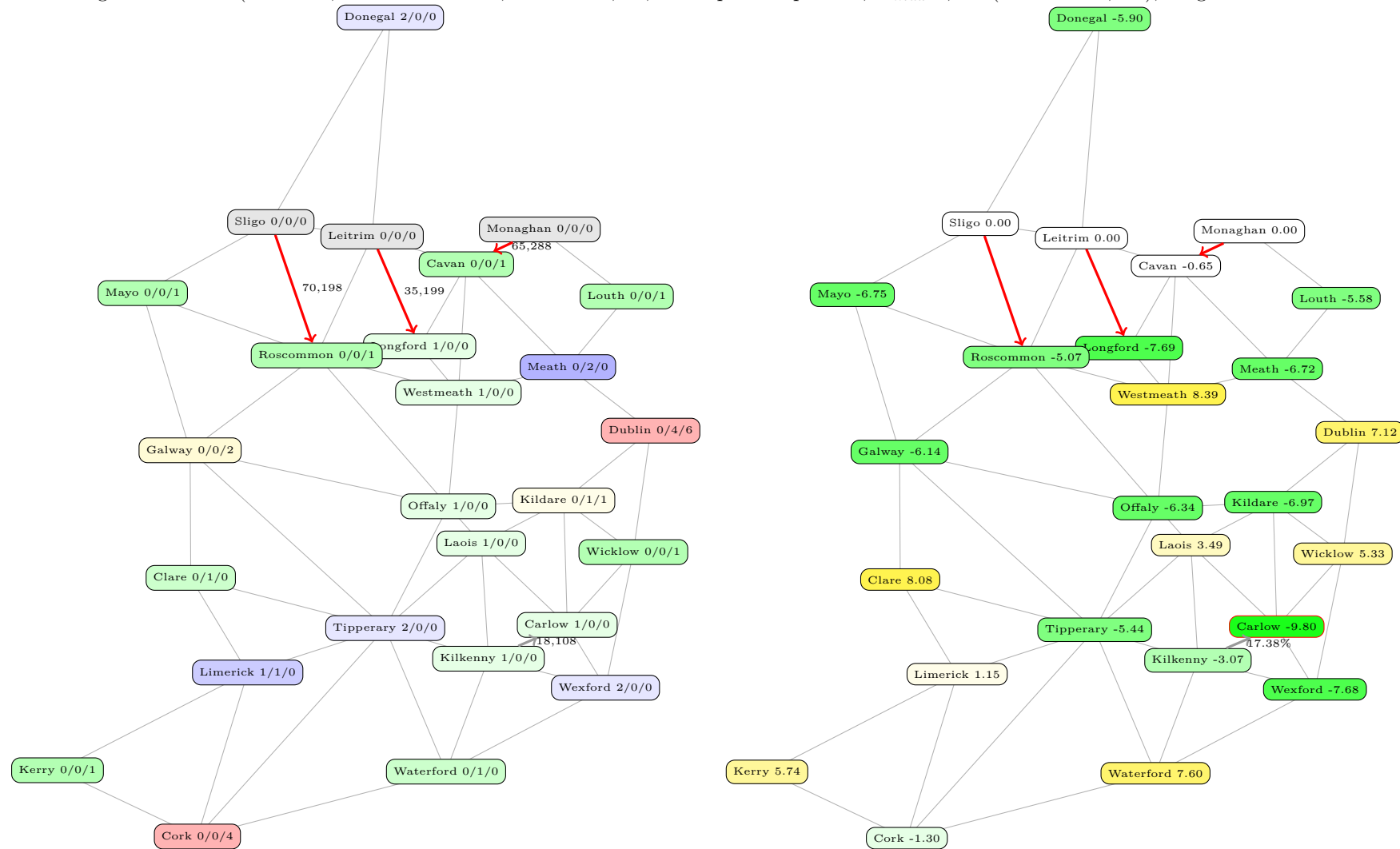
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol57	174	2,900	9.80	18.19	26,692.00	32,073.67	29,702.72	3,258,284.63	5.49	4	188,793	42	13/10/19	4.14	Optimal	0.59	0.0073

Table 171: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	18,108	80,076	1	1/0/0	3	26,692.00	-9.80
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	0	0	127,938	1	0/1/0	4	31,984.50	8.08
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	0	0	167,084	2	2/0/0	6	27,847.33	-5.90
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/4/6	46	31,699.00	7.12
Galway	277,737	9.39	0	0	277,737	2	0/0/2	10	27,773.70	-6.14
Kerry	156,458	5.29	0	0	156,458	1	0/0/1	5	31,291.60	5.74
Kildare	247,774	8.37	0	0	247,774	2	0/1/1	9	27,530.44	-6.97
Kilkenny	104,160	3.52	18,108	0	86,052	1	1/0/0	3	28,684.00	-3.07
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	0	209,536	2	1/1/0	7	29,933.71	1.15
Longford	46,751	1.58	0	35,199	81,950	1	1/0/0	3	27,316.67	-7.69
Louth	139,703	4.72	0	0	139,703	1	0/0/1	5	27,940.60	-5.58
Mayo	137,970	4.66	0	0	137,970	1	0/0/1	5	27,594.00	-6.75
Meath	220,826	7.46	0	0	220,826	2	0/2/0	8	27,603.25	-6.72
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	0	83,150	1	1/0/0	3	27,716.67	-6.34
Roscommon	70,259	2.37	0	70,198	140,457	1	0/0/1	5	28,091.40	-5.07
Sligo	70,198	2.37	70,198	0	0	0	0/0/0	0	0.00	0.00
Tipperary	167,895	5.67	0	0	167,895	2	2/0/0	6	27,982.50	-5.44
Waterford	127,363	4.30	0	0	127,363	1	0/1/0	4	31,840.75	7.60

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	0	96,221	1	1/0/0	3	32,073.67	8.39
Wexford	163,919	5.54	0	0	163,919	2	2/0/0	6	27,319.83	-7.68
Wicklow	155,851	5.27	0	0	155,851	1	0/0/1	5	31,170.20	5.33

Table 172: 4 Transfers (Total 188793)			
From	To	Volume	Percent of From
Kilkenny	Carlow	18,108	17.38
Leitrim	Longford	35,199	100.00
Sligo	Roscommon	70,198	100.00
Monaghan	Cavan	65,288	100.00

Figure 58: Sol57 (174 seats, 42 constituencies, 4 transfers, 29,702.72 persons per TD,  $\Delta_{max}$  2,900 (9.80% of 29,592), weighted variation 5.49%)

### 3.58 Solution Sol58

Table 173: Solution 58

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol58	174	2,950	9.97	18.36	26,642.00	32,073.67	29,660.86	1,981,947.55	4.01	4	188,643	42	13/10/19	4.14	Optimal	0.49	0.0092

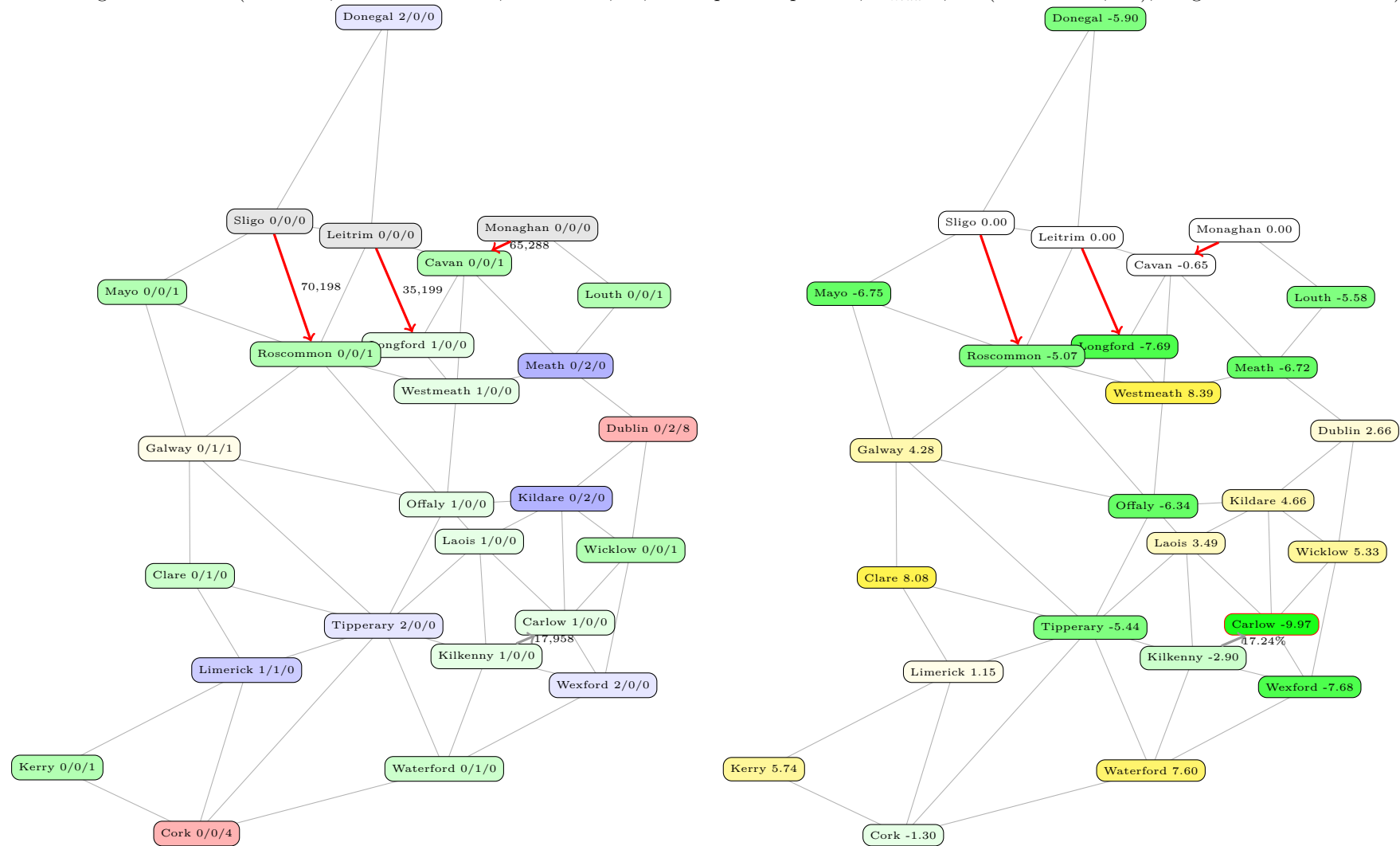
Table 174: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	17,958	79,926	1	1/0/0	3	26,642.00	-9.97
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	0	0	127,938	1	0/1/0	4	31,984.50	8.08
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	0	0	167,084	2	2/0/0	6	27,847.33	-5.90
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/2/8	48	30,378.21	2.66
Galway	277,737	9.39	0	0	277,737	2	0/1/1	9	30,859.67	4.28
Kerry	156,458	5.29	0	0	156,458	1	0/0/1	5	31,291.60	5.74
Kildare	247,774	8.37	0	0	247,774	2	0/2/0	8	30,971.75	4.66
Kilkenny	104,160	3.52	17,958	0	86,202	1	1/0/0	3	28,734.00	-2.90
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	0	209,536	2	1/1/0	7	29,933.71	1.15
Longford	46,751	1.58	0	35,199	81,950	1	1/0/0	3	27,316.67	-7.69
Louth	139,703	4.72	0	0	139,703	1	0/0/1	5	27,940.60	-5.58
Mayo	137,970	4.66	0	0	137,970	1	0/0/1	5	27,594.00	-6.75
Meath	220,826	7.46	0	0	220,826	2	0/2/0	8	27,603.25	-6.72
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	0	83,150	1	1/0/0	3	27,716.67	-6.34
Roscommon	70,259	2.37	0	70,198	140,457	1	0/0/1	5	28,091.40	-5.07
Sligo	70,198	2.37	70,198	0	0	0	0/0/0	0	0.00	0.00
Tipperary	167,895	5.67	0	0	167,895	2	2/0/0	6	27,982.50	-5.44
Waterford	127,363	4.30	0	0	127,363	1	0/1/0	4	31,840.75	7.60

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	0	96,221	1	1/0/0	3	32,073.67	8.39
Wexford	163,919	5.54	0	0	163,919	2	2/0/0	6	27,319.83	-7.68
Wicklow	155,851	5.27	0	0	155,851	1	0/0/1	5	31,170.20	5.33

Table 175: 4 Transfers (Total 188643)			
From	To	Volume	Percent of From
Kilkenny	Carlow	17,958	17.24
Leitrim	Longford	35,199	100.00
Sligo	Roscommon	70,198	100.00
Monaghan	Cavan	65,288	100.00



Figure 59: Sol58 (174 seats, 42 constituencies, 4 transfers, 29,660.86 persons per TD,  $\Delta_{max}$  2,950 (9.97% of 29,592), weighted variation 4.01%)

### 3.59 Solution Sol59

Table 176: Solution 59

Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol59	174	3,000	10.14	18.52	26,592.00	32,073.67	29,677.57	2,480,112.12	4.73	4	188,493	42	13/10/19	4.14	Optimal	0.66	0.0000

Table 177: Counties

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	17,808	79,776	1	1/0/0	3	26,592.00	-10.14
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	0	0	127,938	1	0/1/0	4	31,984.50	8.08
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	0	0	167,084	2	2/0/0	6	27,847.33	-5.90
Dublin	1,458,154	49.28	0	0	1,458,154	10	0/3/7	47	31,024.55	4.84
Galway	277,737	9.39	0	0	277,737	2	0/0/2	10	27,773.70	-6.14
Kerry	156,458	5.29	0	0	156,458	1	0/0/1	5	31,291.60	5.74
Kildare	247,774	8.37	0	0	247,774	2	0/2/0	8	30,971.75	4.66
Kilkenny	104,160	3.52	17,808	0	86,352	1	1/0/0	3	28,784.00	-2.73
Laois	91,877	3.10	0	0	91,877	1	1/0/0	3	30,625.67	3.49
Leitrim	35,199	1.19	35,199	0	0	0	0/0/0	0	0.00	0.00
Limerick	209,536	7.08	0	0	209,536	2	1/1/0	7	29,933.71	1.15
Longford	46,751	1.58	0	35,199	81,950	1	1/0/0	3	27,316.67	-7.69
Louth	139,703	4.72	0	0	139,703	1	0/0/1	5	27,940.60	-5.58
Mayo	137,970	4.66	0	0	137,970	1	0/0/1	5	27,594.00	-6.75
Meath	220,826	7.46	0	0	220,826	2	0/2/0	8	27,603.25	-6.72
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	0	83,150	1	1/0/0	3	27,716.67	-6.34
Roscommon	70,259	2.37	0	70,198	140,457	1	0/0/1	5	28,091.40	-5.07
Sligo	70,198	2.37	70,198	0	0	0	0/0/0	0	0.00	0.00
Tipperary	167,895	5.67	0	0	167,895	2	2/0/0	6	27,982.50	-5.44
Waterford	127,363	4.30	0	0	127,363	1	0/1/0	4	31,840.75	7.60

Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	0	96,221	1	1/0/0	3	32,073.67	8.39
Wexford	163,919	5.54	0	0	163,919	2	2/0/0	6	27,319.83	-7.68
Wicklow	155,851	5.27	0	0	155,851	1	0/0/1	5	31,170.20	5.33

Table 178: 4 Transfers (Total 188493)			
From	To	Volume	Percent of From
Kilkenny	Carlow	17,808	17.10
Leitrim	Longford	35,199	100.00
Sligo	Roscommon	70,198	100.00
Monaghan	Cavan	65,288	100.00

Figure 60: Sol59 (174 seats, 42 constituencies, 4 transfers, 29,677.57 persons per TD,  $\Delta_{max}$  3,000 (10.14% of 29,592), weighted variation 4.73%)