

# 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.

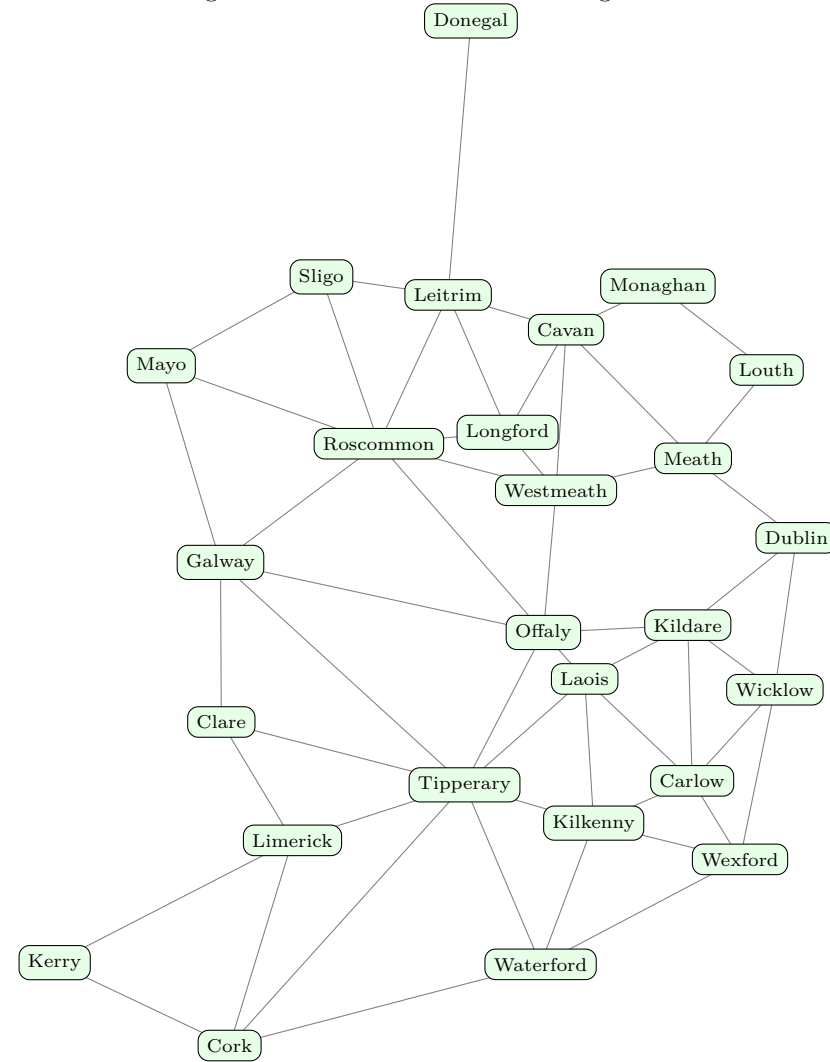
This scenario has 174 seats in total. It is the computational baseline, with balanced weights for alpha, beta, and gamma.

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

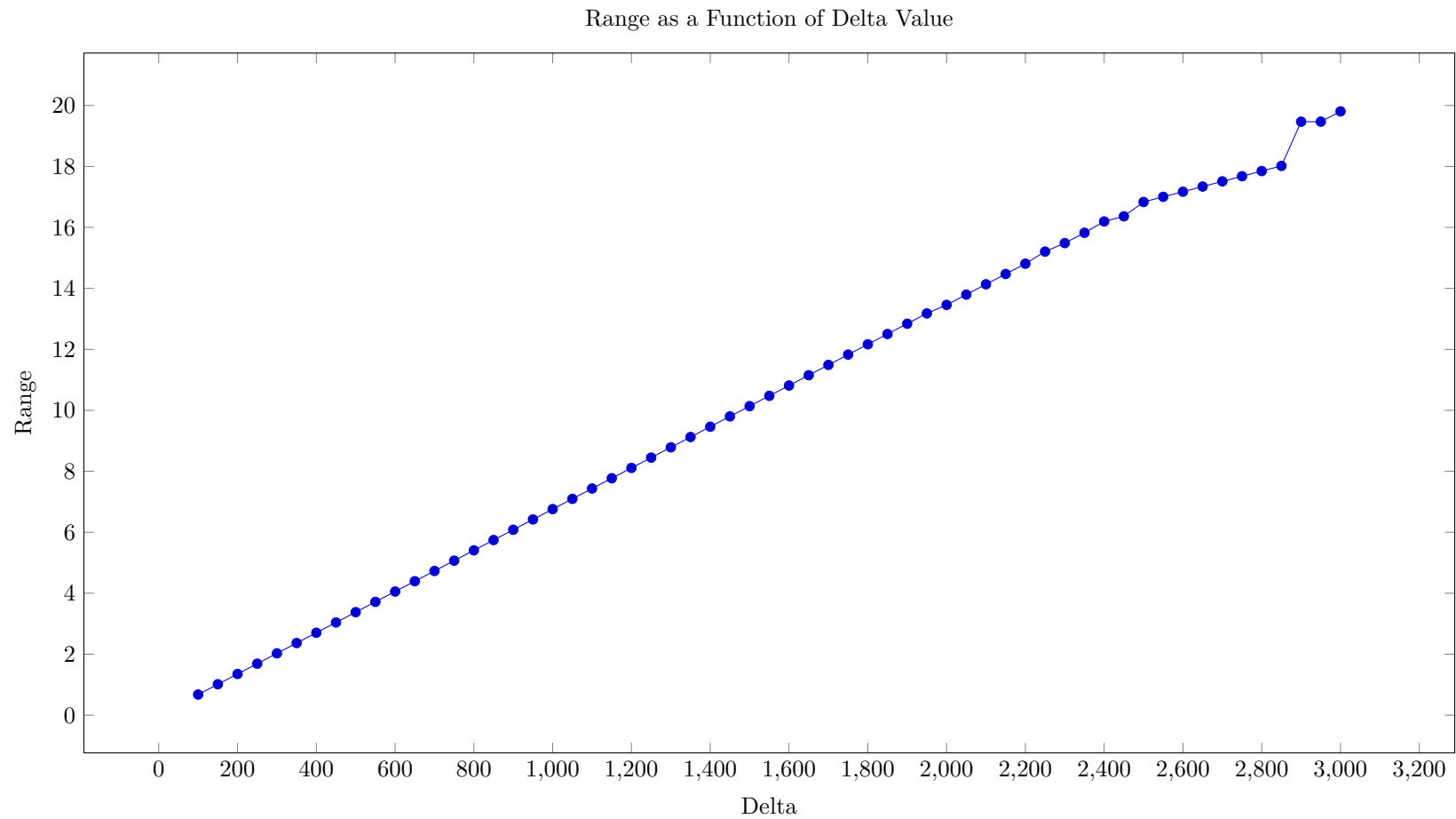


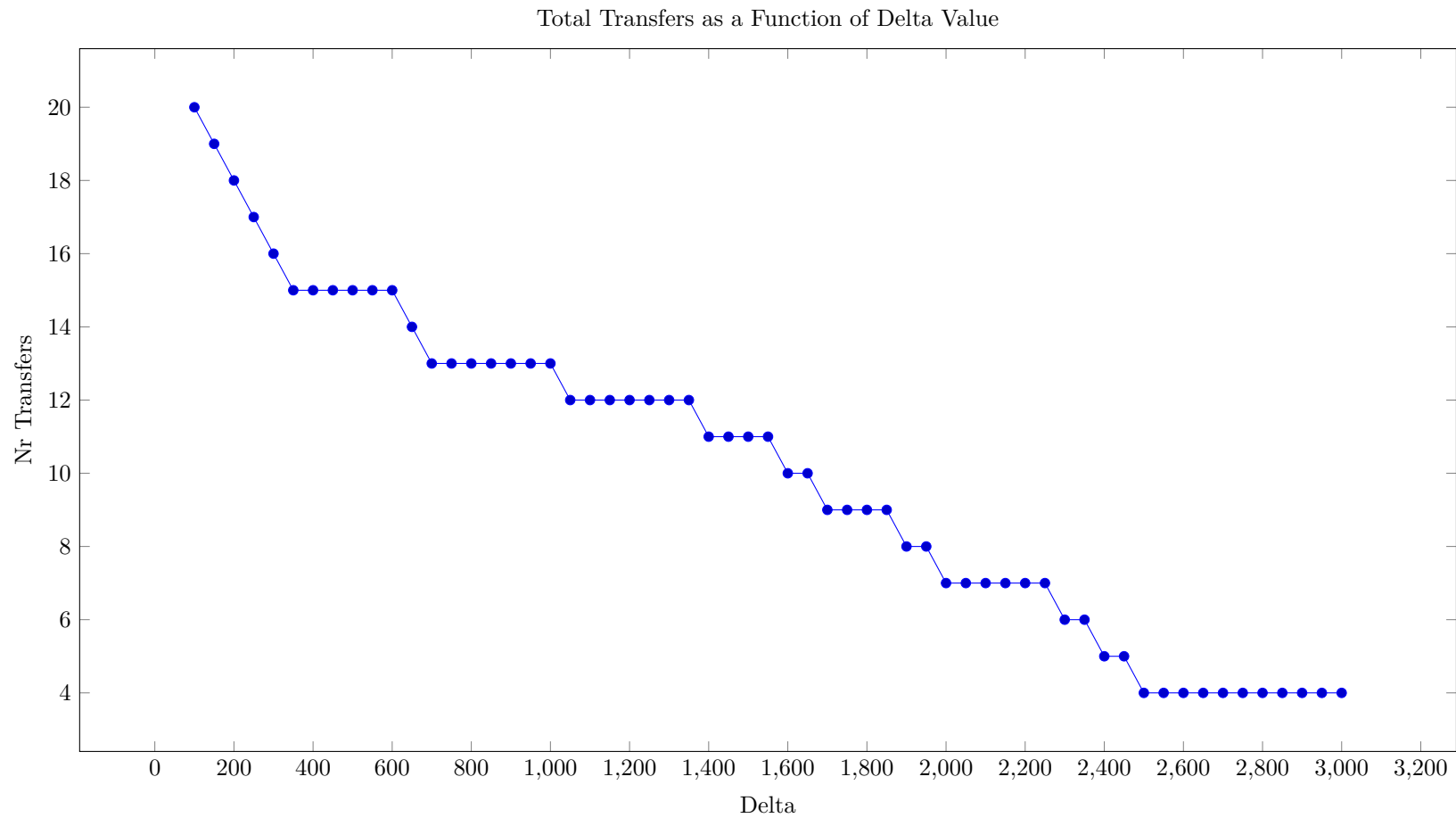
## Solution Overview

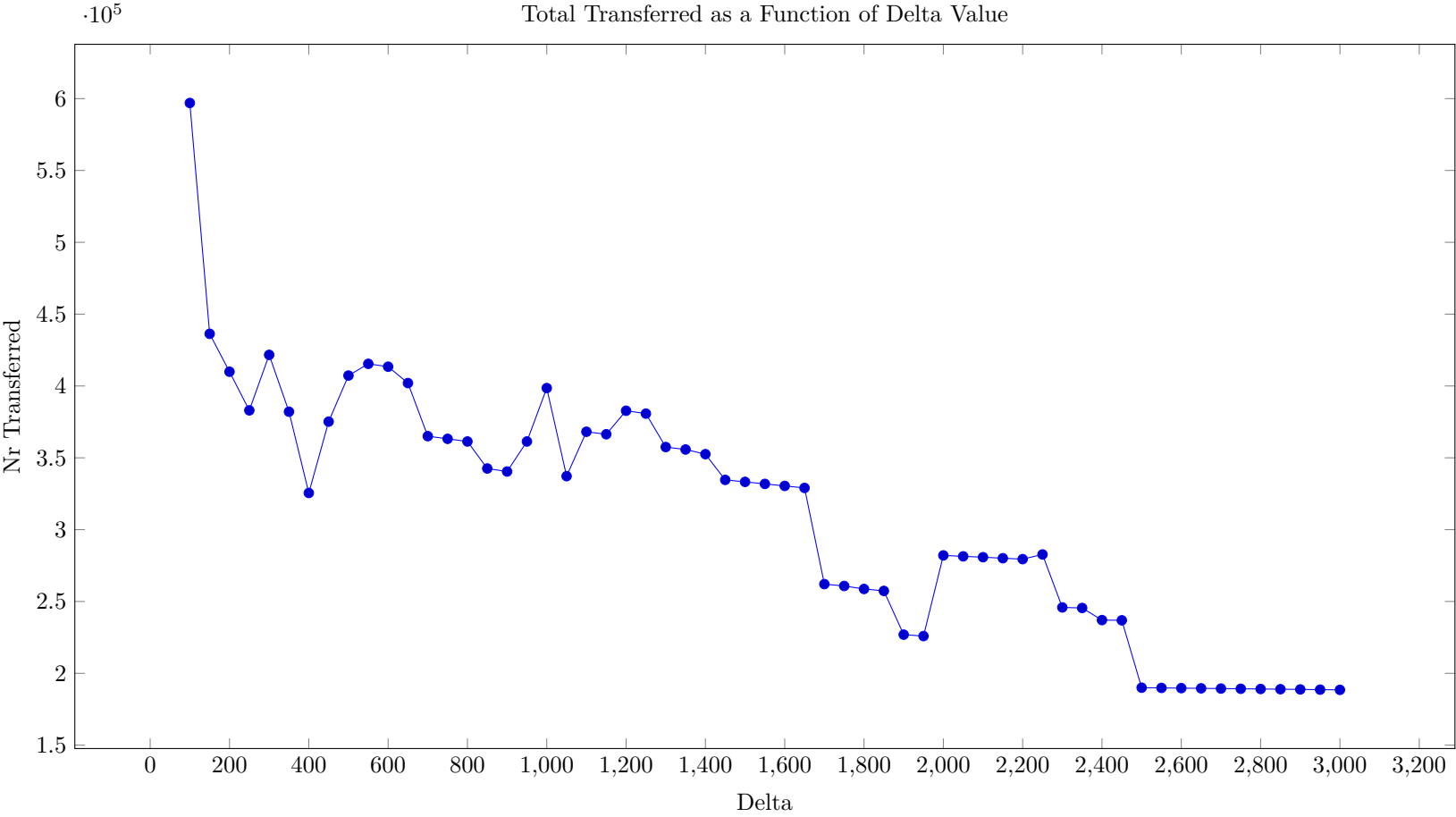
Table 1: Solutions

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	29,592.92	5,074.18	0.18	20	596,960	36	0/6/30	4.83	Solution	300.19	27.9682
Sol2	174	150	0.51	1.01	29,442.00	29,742.00	29,593.31	16,375.47	0.38	19	436,305	38	0/16/22	4.58	Solution	300.13	25.6102
Sol3	174	200	0.68	1.35	29,392.00	29,792.00	29,593.82	31,503.25	0.56	18	409,920	38	1/14/23	4.58	Solution	300.10	19.7632
Sol4	174	250	0.84	1.69	29,342.00	29,842.00	29,593.95	35,321.40	0.53	17	383,021	39	1/19/19	4.46	Solution	303.64	16.9349
Sol5	174	300	1.01	2.03	29,292.00	29,892.00	29,594.36	47,577.92	0.63	16	421,660	38	1/14/23	4.58	Solution	302.44	9.0573
Sol6	174	350	1.18	2.37	29,242.00	29,942.00	29,594.96	65,023.78	0.73	15	382,086	39	3/15/21	4.46	Solution	300.11	10.5600
Sol7	174	400	1.35	2.70	29,192.00	29,992.00	29,595.97	95,081.39	0.92	15	325,516	39	4/13/22	4.46	Solution	302.01	10.5460
Sol8	174	450	1.52	3.04	29,142.00	30,042.00	29,596.00	95,850.89	0.87	15	375,186	39	3/15/21	4.46	Solution	302.58	7.8420
Sol9	174	500	1.69	3.38	29,092.00	30,092.00	29,596.99	125,177.01	1.01	15	407,252	39	1/19/19	4.46	Solution	302.79	10.2862
Sol10	174	550	1.86	3.72	29,042.00	30,142.00	29,598.52	170,457.59	1.22	15	415,411	38	0/16/22	4.58	Solution	304.06	7.1269
Sol11	174	600	2.03	4.06	28,992.00	30,192.00	29,599.14	188,909.73	1.25	15	413,411	38	0/16/22	4.58	Solution	302.61	7.5096
Sol12	174	650	2.20	4.39	28,942.00	30,242.00	29,598.94	182,210.33	1.15	14	402,020	38	1/14/23	4.58	Optimal	194.44	0.0100
Sol13	174	700	2.37	4.73	28,892.00	30,292.00	29,599.85	209,450.48	1.24	13	365,062	39	3/15/21	4.46	Optimal	93.99	0.0100
Sol14	174	750	2.53	5.07	28,842.00	30,342.00	29,600.20	219,983.45	1.27	13	363,212	39	3/15/21	4.46	Optimal	73.80	0.0100
Sol15	174	800	2.70	5.41	28,792.00	30,392.00	29,600.99	243,210.12	1.30	13	361,362	39	3/15/21	4.46	Optimal	51.76	0.0099
Sol16	174	850	2.87	5.74	28,742.00	30,442.00	29,603.61	320,658.51	1.48	13	342,559	39	3/15/21	4.46	Optimal	53.21	0.0097
Sol17	174	900	3.04	6.08	28,692.00	30,492.00	29,604.57	349,030.15	1.54	13	340,459	39	3/15/21	4.46	Optimal	66.13	0.0100
Sol18	174	950	3.21	6.42	28,642.00	30,542.00	29,605.51	376,795.50	1.65	13	361,362	38	2/12/24	4.58	Optimal	106.40	0.0100
Sol19	174	1,000	3.38	6.76	28,592.00	30,592.00	29,607.74	443,246.72	1.78	13	398,530	38	1/14/23	4.58	Optimal	174.74	0.0100
Sol20	174	1,050	3.55	7.10	28,542.00	30,642.00	29,608.61	470,061.96	1.85	12	337,218	40	4/18/18	4.35	Optimal	34.95	0.0100
Sol21	174	1,100	3.72	7.43	28,492.00	30,692.00	29,610.03	510,172.59	1.88	12	368,139	39	3/15/21	4.46	Optimal	17.48	0.0099
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	19.68	0.0073
Sol23	174	1,200	4.06	8.11	28,392.00	30,792.00	29,613.42	610,308.96	2.00	12	382,761	38	2/12/24	4.58	Optimal	20.16	0.0086
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	19.51	0.0094
Sol25	174	1,300	4.39	8.79	28,292.00	30,892.00	29,617.27	725,671.33	2.17	12	357,488	38	2/12/24	4.58	Optimal	28.72	0.0100
Sol26	174	1,350	4.56	9.12	28,242.00	30,942.00	29,619.60	793,533.76	2.28	12	355,788	38	2/12/24	4.58	Optimal	130.68	0.0100
Sol27	174	1,400	4.73	9.46	28,192.00	30,992.00	29,620.14	818,999.24	2.52	11	352,530	39	3/15/21	4.46	Optimal	11.70	0.0095
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	11.50	0.0034
Sol29	174	1,500	5.07	10.14	28,092.00	31,092.00	29,622.51	879,808.89	2.41	11	333,240	39	3/15/21	4.46	Optimal	32.79	0.0100
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	33.63	0.0093
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	9.68	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	22.56	0.0078
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	11.19	0.0000
Sol34	174	1,750	5.91	11.83	27,842.00	31,342.00	29,640.25	1,388,275.08	3.52	9	260,787	40	4/18/18	4.35	Optimal	14.20	0.0079
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	11.25	0.0099
Sol36	174	1,850	6.25	12.50	27,742.00	31,442.00	29,643.38	1,477,222.74	3.60	9	257,361	40	4/18/18	4.35	Optimal	10.53	0.0092
Sol37	174	1,900	6.42	12.84	27,692.00	31,492.00	29,646.01	1,554,241.78	3.64	8	226,915	40	6/14/20	4.35	Optimal	18.49	0.0097
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	17.66	0.0000
Sol39	174	2,000	6.76	13.46	27,592.00	31,574.60	29,642.94	1,459,725.62	3.18	7	282,066	39	4/13/22	4.46	Optimal	14.67	0.0057
Sol40	174	2,050	6.93	13.80	27,542.00	31,624.60	29,644.82	1,512,788.48	3.50	7	281,416	39	4/13/22	4.46	Optimal	10.88	0.0000
Sol41	174	2,100	7.10	14.13	27,492.00	31,674.60	29,662.13	2,029,250.81	4.23	7	280,827	39	4/13/22	4.46	Optimal	26.35	0.0035
Sol42	174	2,150	7.27	14.47	27,442.00	31,724.60	29,662.89	2,050,670.77	4.24	7	280,116	39	4/13/22	4.46	Optimal	19.27	0.0022
Sol43	174	2,200	7.43	14.81	27,392.00	31,774.60	29,689.08	2,857,431.21	5.01	7	279,466	39	4/13/22	4.46	Optimal	34.58	0.0000
Sol44	174	2,250	7.60	15.21	27,342.00	31,824.60	29,659.50	1,940,927.05	4.08	7	282,721	39	3/15/21	4.46	Optimal	10.46	0.0054
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	11.03	0.0000
Sol46	174	2,350	7.94	15.82	27,242.00	31,924.60	29,671.05	2,291,689.23	4.54	6	245,466	40	8/10/22	4.35	Optimal	9.50	0.0094

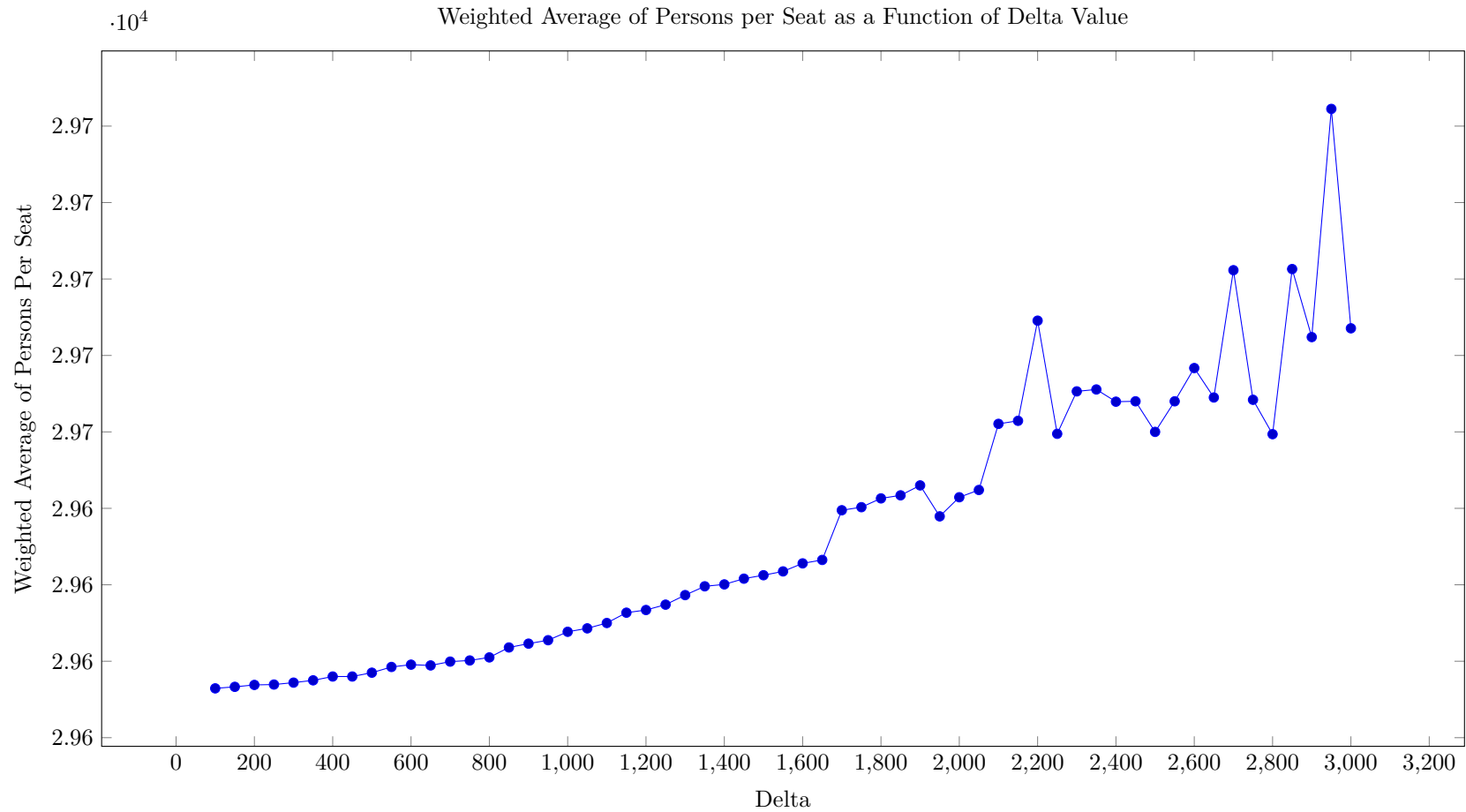
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol47	174	2,400	8.11	16.20	27,192.00	31,984.50	29,667.93	2,205,415.67	4.47	5	237,044	41	10/11/20	4.24	Optimal	12.53	0.0073
Sol48	174	2,450	8.28	16.36	27,142.00	31,984.50	29,667.99	2,206,856.19	4.46	5	236,894	41	10/11/20	4.24	Optimal	11.64	0.0042
Sol49	174	2,500	8.45	16.83	27,092.00	32,073.67	29,660.00	1,961,504.74	4.02	4	189,993	42	13/10/19	4.14	Optimal	9.35	0.0000
Sol50	174	2,550	8.62	17.00	27,042.00	32,073.67	29,668.02	2,187,818.23	4.42	4	189,843	42	13/10/19	4.14	Optimal	9.13	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	8.57	0.0000
Sol52	174	2,650	8.96	17.34	26,942.00	32,073.67	29,669.04	2,212,783.92	4.42	4	189,543	42	13/10/19	4.14	Optimal	9.61	0.0078
Sol53	174	2,700	9.12	17.51	26,892.00	32,073.67	29,702.30	3,248,404.09	5.49	4	189,393	42	13/10/19	4.14	Optimal	8.86	0.0017
Sol54	174	2,750	9.29	17.68	26,842.00	32,073.67	29,668.36	2,196,068.53	4.41	4	189,243	42	13/10/19	4.14	Optimal	10.47	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	9.13	0.0000
Sol56	174	2,850	9.63	18.02	26,742.00	32,073.67	29,702.61	3,255,607.76	5.49	4	188,943	42	13/10/19	4.14	Optimal	7.93	0.0044
Sol57	174	2,900	9.80	19.47	26,692.00	32,453.11	29,684.81	2,764,219.24	4.62	4	188,793	42	13/10/19	4.14	Optimal	10.03	0.0096
Sol58	174	2,950	9.97	19.47	26,642.00	32,403.42	29,744.53	4,571,954.20	6.69	4	188,643	42	13/10/19	4.14	Optimal	11.22	0.0089
Sol59	174	3,000	10.14	19.81	26,592.00	32,453.11	29,687.14	2,816,984.79	4.47	4	188,493	42	13/10/19	4.14	Optimal	10.38	0.0000

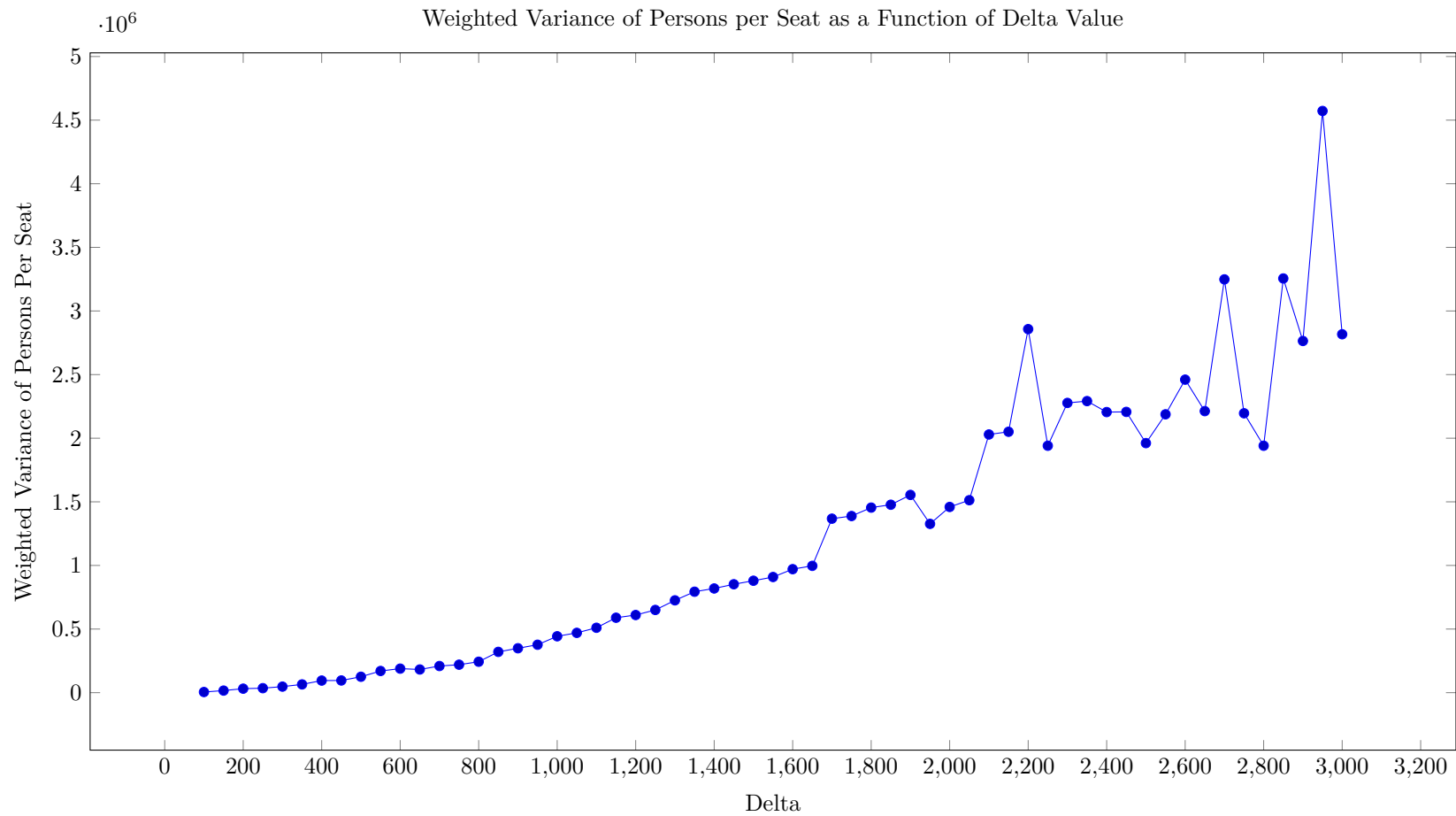


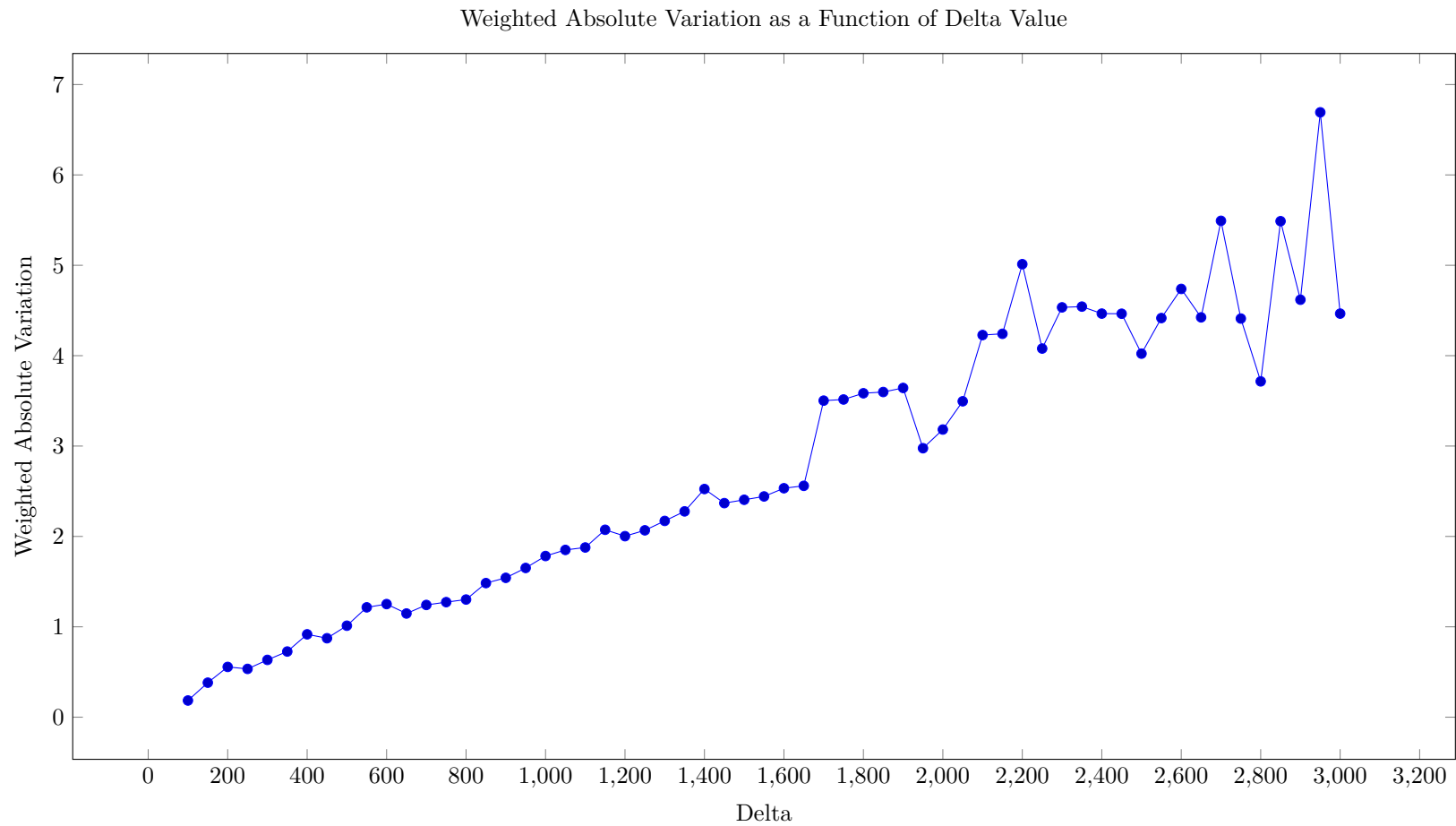












### 3 Details of Selected Solutions

### 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	29,592.92	5,074.18	0.18	20	596,960	36	0/6/30	4.83	Solution	300.19	27.9682

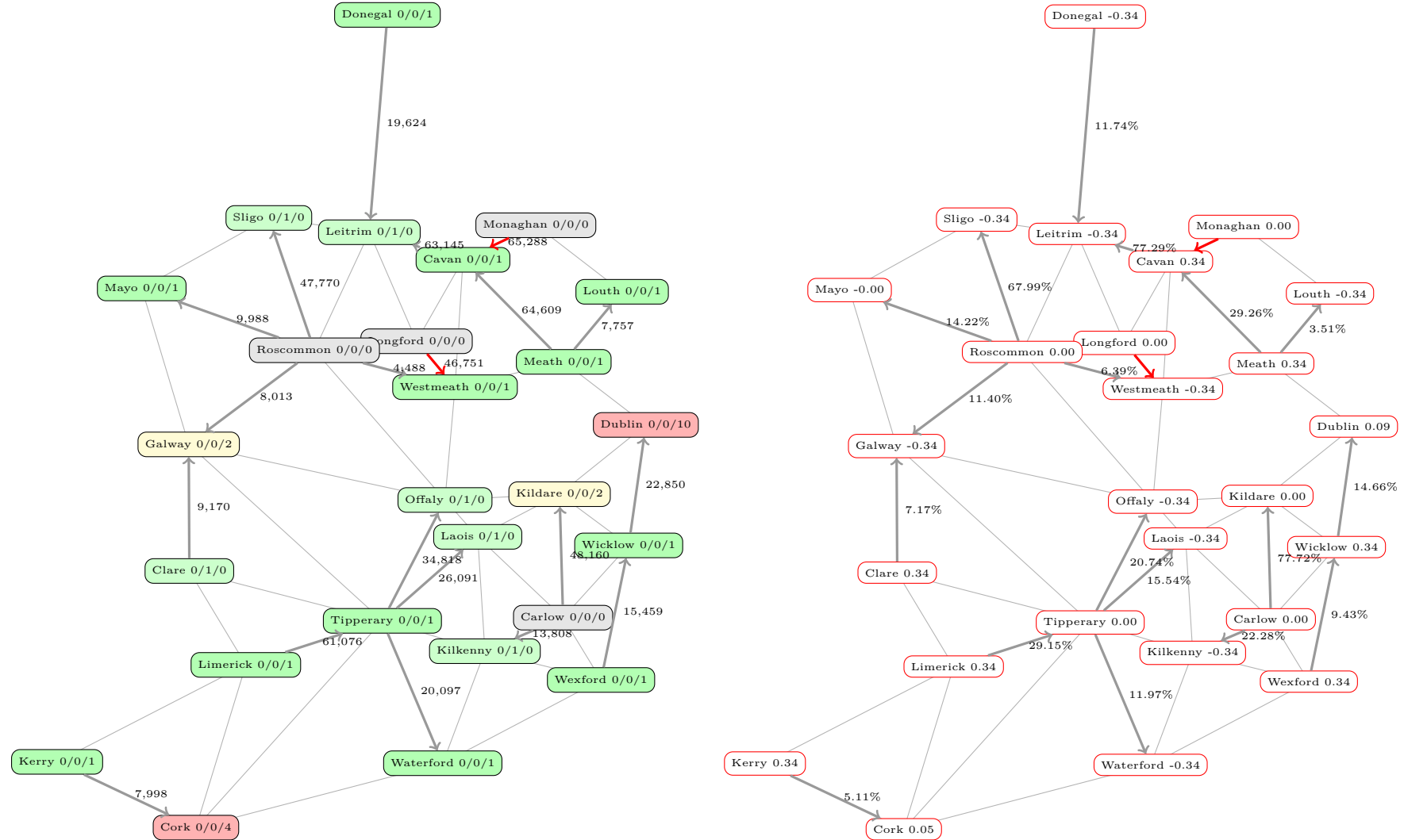
Table 3: Counties

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	61,968	0	0	0	0/0/0	0	0.00	0.00
Cavan	81,704	2.76	63,145	129,897	148,456	1	0/0/1	5	29,691.20	0.34
Clare	127,938	4.32	9,170	0	118,768	1	0/1/0	4	29,692.00	0.34
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	19,624	0	147,460	1	0/0/1	5	29,492.00	-0.34
Dublin	1,458,154	49.28	0	22,850	1,481,004	10	0/0/10	50	29,620.08	0.09
Galway	277,737	9.39	0	17,183	294,920	2	0/0/2	10	29,492.00	-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	0	48,160	295,934	2	0/0/2	10	29,593.40	0.00
Kilkenny	104,160	3.52	0	13,808	117,968	1	0/1/0	4	29,492.00	-0.34
Laois	91,877	3.10	0	26,091	117,968	1	0/1/0	4	29,492.00	-0.34
Leitrim	35,199	1.19	0	82,769	117,968	1	0/1/0	4	29,492.00	-0.34
Limerick	209,536	7.08	61,076	0	148,460	1	0/0/1	5	29,692.00	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	0	7,757	147,460	1	0/0/1	5	29,492.00	-0.34
Mayo	137,970	4.66	0	9,988	147,958	1	0/0/1	5	29,591.60	-0.00
Meath	220,826	7.46	72,366	0	148,460	1	0/0/1	5	29,692.00	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	34,818	117,968	1	0/1/0	4	29,492.00	-0.34
Roscommon	70,259	2.37	70,259	0	0	0	0/0/0	0	0.00	0.00
Sligo	70,198	2.37	0	47,770	117,968	1	0/1/0	4	29,492.00	-0.34
Tipperary	167,895	5.67	81,006	61,076	147,965	1	0/0/1	5	29,593.00	0.00
Waterford	127,363	4.30	0	20,097	147,460	1	0/0/1	5	29,492.00	-0.34

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	0	51,239	147,460	1	0/0/1	5	29,492.00	-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	22,850	15,459	148,460	1	0/0/1	5	29,692.00	0.34

Table 4: 20 Transfers (Total 596960)

From	To	Volume	Percent of From
Carlow	Kildare	48,160	77.72
Carlow	Kilkenny	13,808	22.28
Longford	Westmeath	46,751	100.00
Meath	Louth	7,757	3.51
Meath	Cavan	64,609	29.26
Wexford	Wicklow	15,459	9.43
Wicklow	Dublin	22,850	14.66
Clare	Galway	9,170	7.17
Kerry	Cork	7,998	5.11
Limerick	Tipperary	61,076	29.15
Tipperary	Laois	26,091	15.54
Tipperary	Offaly	34,818	20.74
Tipperary	Waterford	20,097	11.97
Roscommon	Westmeath	4,488	6.39
Roscommon	Galway	8,013	11.40
Roscommon	Mayo	9,988	14.22
Roscommon	Sligo	47,770	67.99
Cavan	Leitrim	63,145	77.29
Donegal	Leitrim	19,624	11.74
Monaghan	Cavan	65,288	100.00

Figure 2: Sol1 (174 seats, 36 constituencies, 20 transfers, 29,592.92 persons per TD,  $\Delta_{max}$  100 (0.34% of 29,592), weighted variation 0.18%)

### 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	29,593.31	16,375.47	0.38	19	436,305	38	0/16/22	4.58	Solution	300.13	25.6102

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	56,717	118,685	1	0/1/0	4	29,671.25	0.27
Cavan	81,704	2.76	21,547	57,781	117,938	1	0/1/0	4	29,484.50	-0.36
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	18,374	0	148,710	1	0/0/1	5	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	9,838	0	237,936	2	0/2/0	8	29,742.00	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	0	27,091	118,968	1	0/1/0	4	29,742.00	0.51
Leitrim	35,199	1.19	0	113,511	148,710	1	0/0/1	5	29,742.00	0.51
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	7,507	147,210	1	0/0/1	5	29,442.00	-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	83,150	0	0	0	0/0/0	0	0.00	0.00
Roscommon	70,259	2.37	0	77,871	148,130	1	0/0/1	5	29,626.00	0.11
Sligo	70,198	2.37	70,198	0	0	0	0/0/0	0	0.00	0.00
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

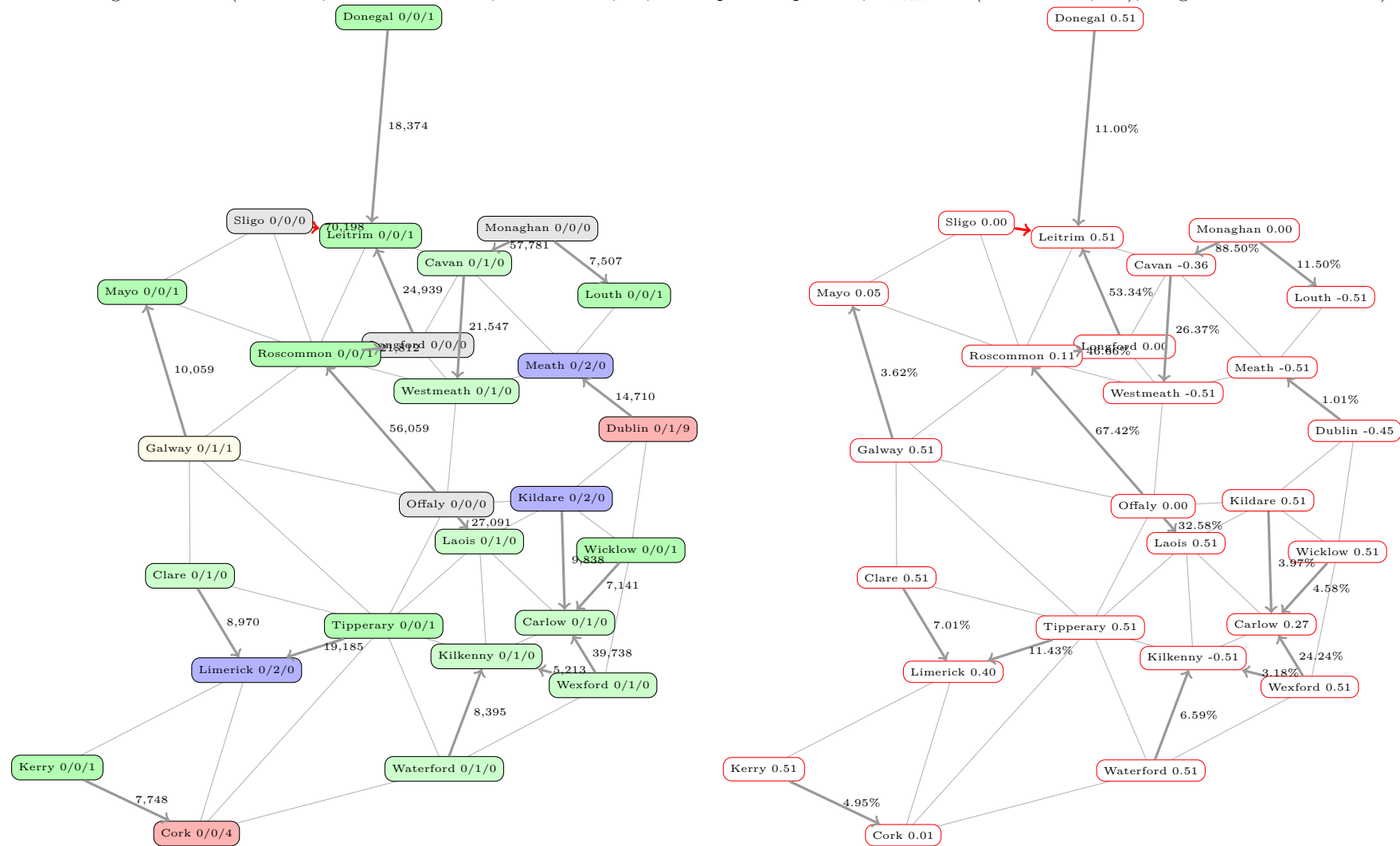
Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Westmeath	96,221	3.25	0	21,547	117,768	1	0/1/0	4	29,442.00	-0.51
Wexford	163,919	5.54	44,951	0	118,968	1	0/1/0	4	29,742.00	0.51
Wicklow	155,851	5.27	7,141	0	148,710	1	0/0/1	5	29,742.00	0.51

Table 7: 19 Transfers (Total 436305)

From	To	Volume	Percent of From
Dublin	Meath	14,710	1.01
Kildare	Carlow	9,838	3.97
Longford	Leitrim	24,939	53.34
Longford	Roscommon	21,812	46.66
Offaly	Laois	27,091	32.58
Offaly	Roscommon	56,059	67.42
Wexford	Carlow	39,738	24.24
Wexford	Kilkenny	5,213	3.18
Wicklow	Carlow	7,141	4.58
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
Sligo	Leitrim	70,198	100.00
Cavan	Westmeath	21,547	26.37
Donegal	Leitrim	18,374	11.00
Monaghan	Louth	7,507	11.50
Monaghan	Cavan	57,781	88.50



Figure 3: Sol2 (174 seats, 38 constituencies, 19 transfers, 29,593.31 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	29,593.82	31,503.25	0.56	18	409,920	38	1/14/23	4.58	Solution	300.10	19.7632

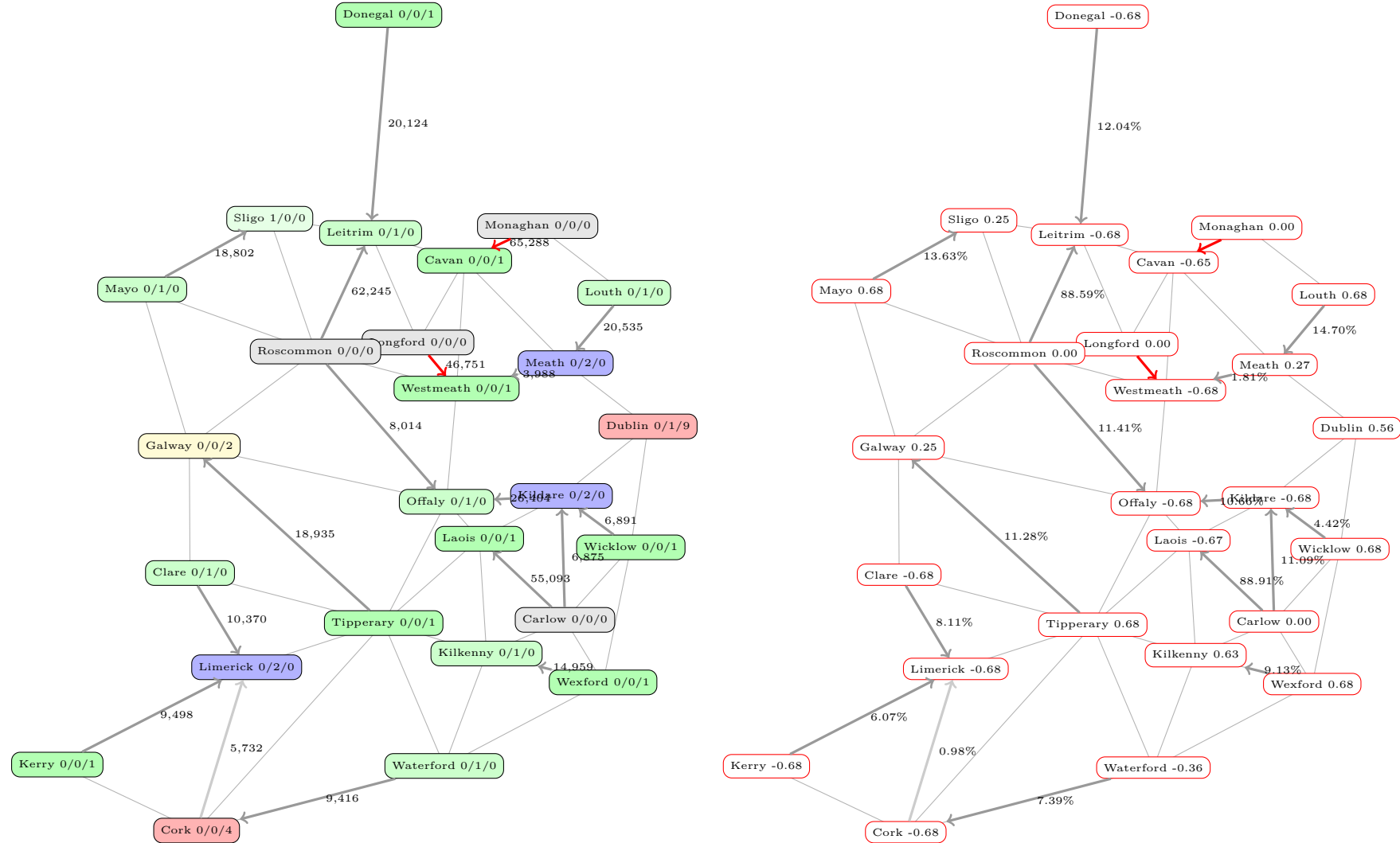
Table 9: Counties

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	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	10,370	0	117,568	1	0/1/0	4	29,392.00	-0.68
Cork	584,156	19.74	5,732	9,416	587,840	4	0/0/4	20	29,392.00	-0.68
Donegal	167,084	5.65	20,124	0	146,960	1	0/0/1	5	29,392.00	-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	0	18,935	296,672	2	0/0/2	10	29,667.20	0.25
Kerry	156,458	5.29	9,498	0	146,960	1	0/0/1	5	29,392.00	-0.68
Kildare	247,774	8.37	26,404	13,766	235,136	2	0/2/0	8	29,392.00	-0.68
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	55,093	146,970	1	0/0/1	5	29,394.00	-0.67
Leitrim	35,199	1.19	0	82,369	117,568	1	0/1/0	4	29,392.00	-0.68
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	46,751	0	0	0	0/0/0	0	0.00	0.00
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	18,802	0	119,168	1	0/1/0	4	29,792.00	0.68
Meath	220,826	7.46	3,988	20,535	237,373	2	0/2/0	8	29,671.63	0.27
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	34,418	117,568	1	0/1/0	4	29,392.00	-0.68
Roscommon	70,259	2.37	70,259	0	0	0	0/0/0	0	0.00	0.00
Sligo	70,198	2.37	0	18,802	89,000	1	1/0/0	3	29,666.67	0.25
Tipperary	167,895	5.67	18,935	0	148,960	1	0/0/1	5	29,792.00	0.68
Waterford	127,363	4.30	9,416	0	117,947	1	0/1/0	4	29,486.75	-0.36

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	50,739	146,960	1	0/0/1	5	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	6,891	0	148,960	1	0/0/1	5	29,792.00	0.68

Table 10: 18 Transfers (Total 409920)

From	To	Volume	Percent of From
Carlow	Kildare	6,875	11.09
Carlow	Laois	55,093	88.91
Kildare	Offaly	26,404	10.66
Longford	Westmeath	46,751	100.00
Louth	Meath	20,535	14.70
Meath	Westmeath	3,988	1.81
Wexford	Kilkenny	14,959	9.13
Wicklow	Kildare	6,891	4.42
Clare	Limerick	10,370	8.11
Cork	Limerick	5,732	0.98
Kerry	Limerick	9,498	6.07
Tipperary	Galway	18,935	11.28
Waterford	Cork	9,416	7.39
Mayo	Sligo	18,802	13.63
Roscommon	Offaly	8,014	11.41
Roscommon	Leitrim	62,245	88.59
Donegal	Leitrim	20,124	12.04
Monaghan	Cavan	65,288	100.00

Figure 4: Sol3 (174 seats, 38 constituencies, 18 transfers, 29,593.82 persons per TD,  $\Delta_{max}$  200 (0.68% of 29,592), weighted variation 0.56%)

### 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	29,593.95	35,321.40	0.53	17	383,021	39	1/19/19	4.46	Solution	303.64	16.9349

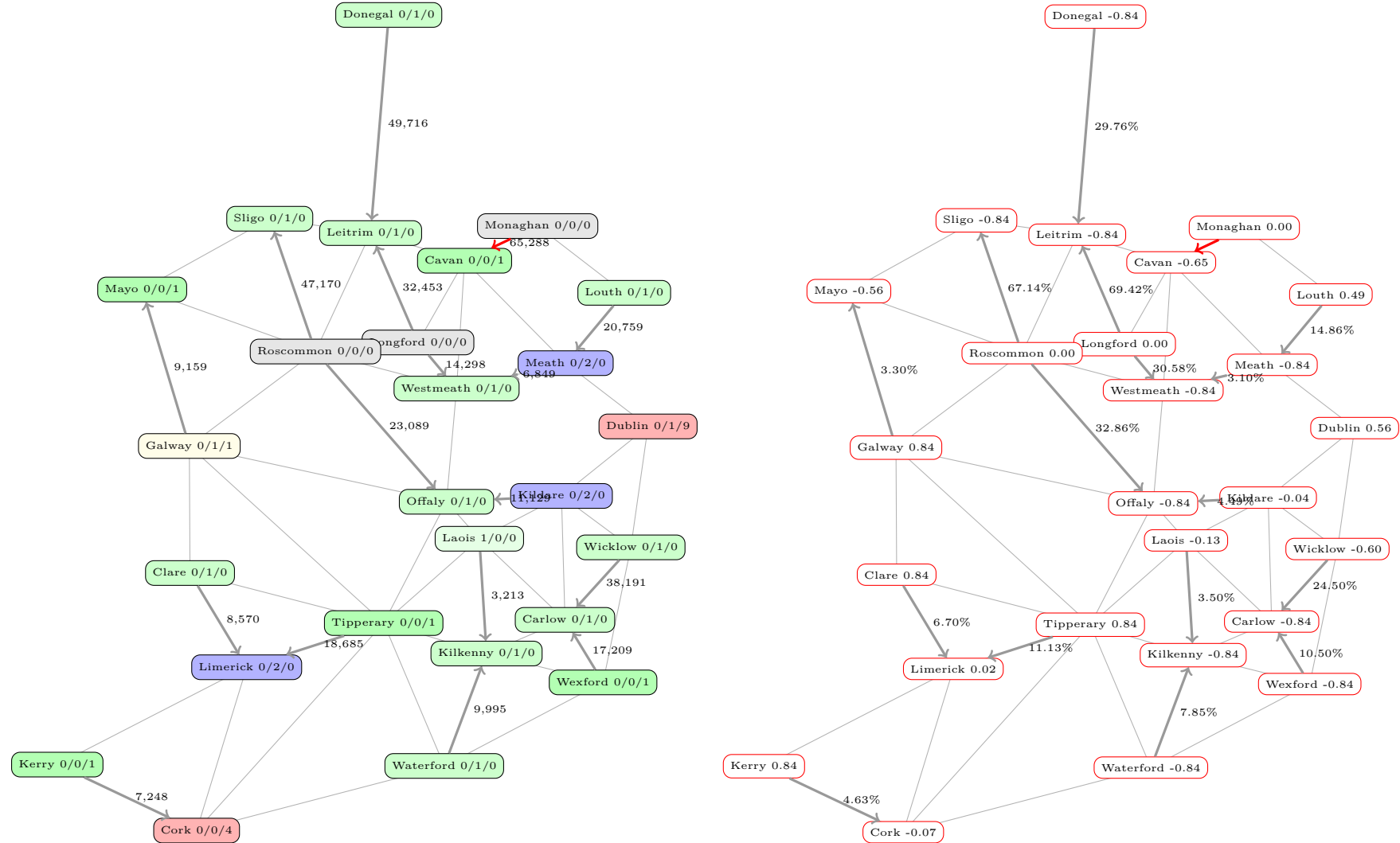
Table 12: Counties

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	8,570	0	119,368	1	0/1/0	4	29,842.00	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	49,716	0	117,368	1	0/1/0	4	29,342.00	-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	11,129	0	236,645	2	0/2/0	8	29,580.63	-0.04
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	3,213	0	88,664	1	1/0/0	3	29,554.67	-0.13
Leitrim	35,199	1.19	0	82,169	117,368	1	0/1/0	4	29,342.00	-0.84
Limerick	209,536	7.08	0	27,255	236,791	2	0/2/0	8	29,598.88	0.02
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	20,759	0	118,944	1	0/1/0	4	29,736.00	0.49
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	6,849	20,759	234,736	2	0/2/0	8	29,342.00	-0.84
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	34,218	117,368	1	0/1/0	4	29,342.00	-0.84
Roscommon	70,259	2.37	70,259	0	0	0	0/0/0	0	0.00	0.00
Sligo	70,198	2.37	0	47,170	117,368	1	0/1/0	4	29,342.00	-0.84
Tipperary	167,895	5.67	18,685	0	149,210	1	0/0/1	5	29,842.00	0.84
Waterford	127,363	4.30	9,995	0	117,368	1	0/1/0	4	29,342.00	-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	21,147	117,368	1	0/1/0	4	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 383021)

From	To	Volume	Percent of From
Kildare	Offaly	11,129	4.49
Laois	Kilkenny	3,213	3.50
Longford	Westmeath	14,298	30.58
Longford	Leitrim	32,453	69.42
Louth	Meath	20,759	14.86
Meath	Westmeath	6,849	3.10
Wexford	Carlow	17,209	10.50
Wicklow	Carlow	38,191	24.50
Clare	Limerick	8,570	6.70
Kerry	Cork	7,248	4.63
Tipperary	Limerick	18,685	11.13
Waterford	Kilkenny	9,995	7.85
Galway	Mayo	9,159	3.30
Roscommon	Offaly	23,089	32.86
Roscommon	Sligo	47,170	67.14
Donegal	Leitrim	49,716	29.76
Monaghan	Cavan	65,288	100.00

Figure 5: Sol4 (174 seats, 39 constituencies, 17 transfers, 29,593.95 persons per TD,  $\Delta_{max}$  250 (0.84% of 29,592), weighted variation 0.53%)

### 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	29,594.36	47,577.92	0.63	16	421,660	38	1/14/23	4.58	Solution	302.44	9.0573

Table 15: Counties

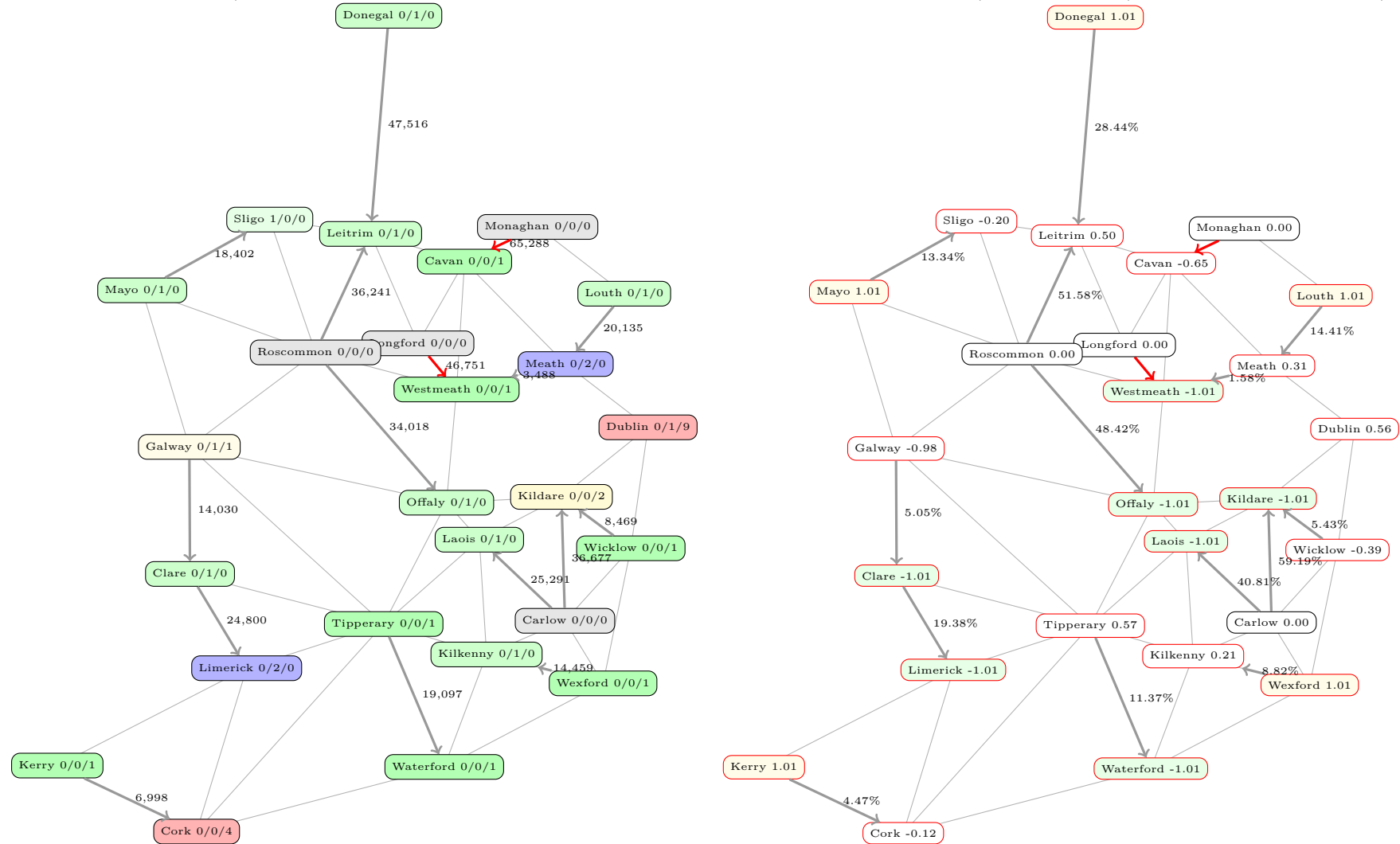
Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	61,968	0	0	0	0/0/0	0	0.00	0.00
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	24,800	14,030	117,168	1	0/1/0	4	29,292.00	-1.01
Cork	584,156	19.74	0	6,998	591,154	4	0/0/4	20	29,557.70	-0.12
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	14,030	0	263,707	2	0/1/1	9	29,300.78	-0.98
Kerry	156,458	5.29	6,998	0	149,460	1	0/0/1	5	29,892.00	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	0	83,757	118,956	1	0/1/0	4	29,739.00	0.50
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	18,402	0	119,568	1	0/1/0	4	29,892.00	1.01
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	70,259	0	0	0	0/0/0	0	0.00	0.00
Sligo	70,198	2.37	0	18,402	88,600	1	1/0/0	3	29,533.33	-0.20
Tipperary	167,895	5.67	19,097	0	148,798	1	0/0/1	5	29,759.60	0.57
Waterford	127,363	4.30	0	19,097	146,460	1	0/0/1	5	29,292.00	-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: 16 Transfers (Total 421660)

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	Limerick	24,800	19.38
Kerry	Cork	6,998	4.47
Tipperary	Waterford	19,097	11.37
Galway	Clare	14,030	5.05
Mayo	Sligo	18,402	13.34
Roscommon	Offaly	34,018	48.42
Roscommon	Leitrim	36,241	51.58
Donegal	Leitrim	47,516	28.44
Monaghan	Cavan	65,288	100.00

Figure 6: Sol5 (174 seats, 38 constituencies, 16 transfers, 29,594.36 persons per TD,  $\Delta_{max}$  300 (1.01% of 29,592), weighted variation 0.63%)

### 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	29,594.96	65,023.78	0.73	15	382,086	39	3/15/21	4.46	Solution	300.11	10.5600

Table 18: Counties

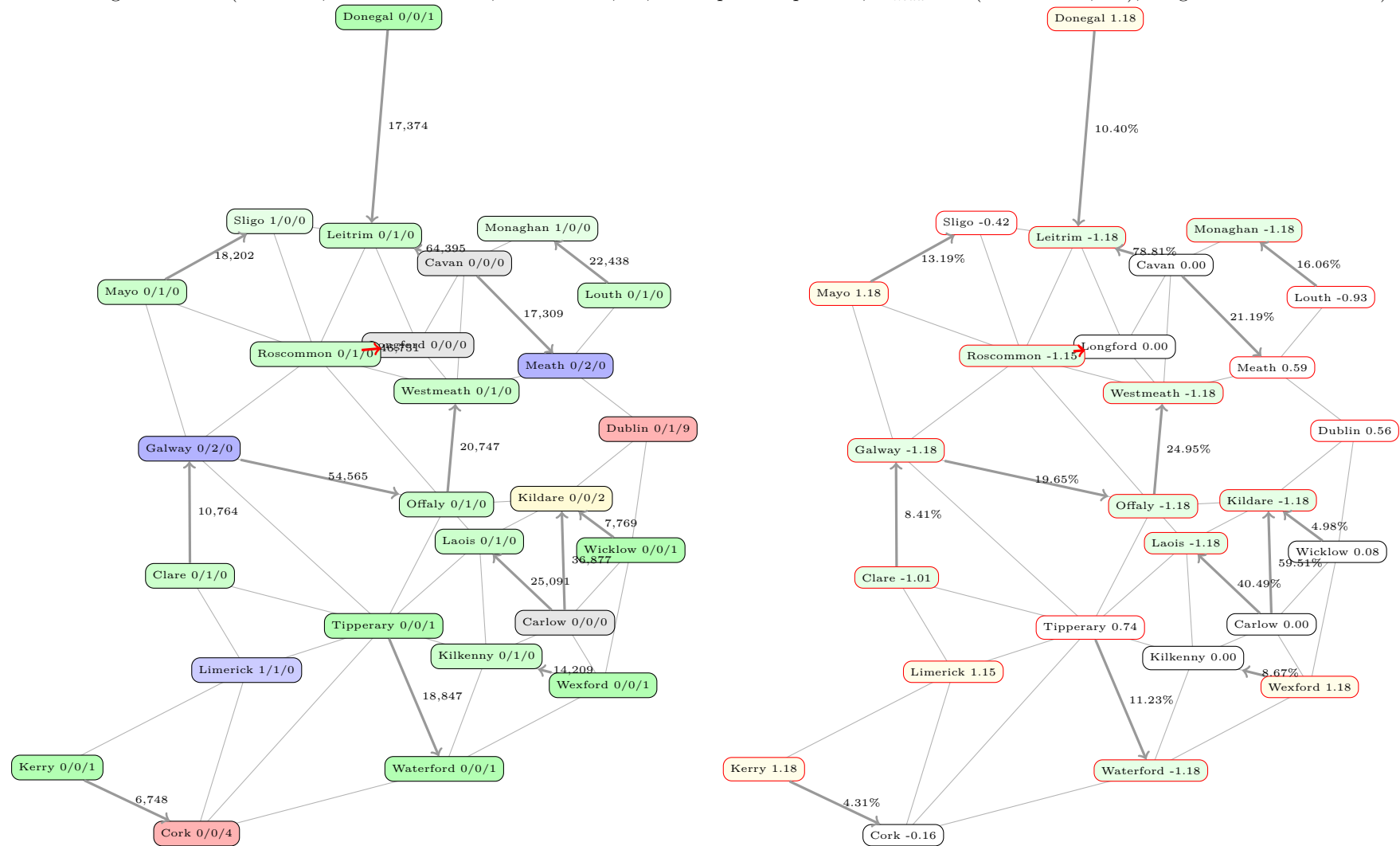
Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	61,968	0	0	0	0/0/0	0	0.00	0.00
Cavan	81,704	2.76	81,704	0	0	0	0/0/0	0	0.00	0.00
Clare	127,938	4.32	10,764	0	117,174	1	0/1/0	4	29,293.50	-1.01
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	17,374	0	149,710	1	0/0/1	5	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	54,565	10,764	233,936	2	0/2/0	8	29,242.00	-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	0	44,646	292,420	2	0/0/2	10	29,242.00	-1.18
Kilkenny	104,160	3.52	0	14,209	118,369	1	0/1/0	4	29,592.25	0.00
Laois	91,877	3.10	0	25,091	116,968	1	0/1/0	4	29,242.00	-1.18
Leitrim	35,199	1.19	0	81,769	116,968	1	0/1/0	4	29,242.00	-1.18
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	18,202	0	119,768	1	0/1/0	4	29,942.00	1.18
Meath	220,826	7.46	0	17,309	238,135	2	0/2/0	8	29,766.88	0.59
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	20,747	54,565	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	18,202	88,400	1	1/0/0	3	29,466.67	-0.42
Tipperary	167,895	5.67	18,847	0	149,048	1	0/0/1	5	29,809.60	0.74
Waterford	127,363	4.30	0	18,847	146,210	1	0/0/1	5	29,242.00	-1.18

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	20,747	116,968	1	0/1/0	4	29,242.00	-1.18
Wexford	163,919	5.54	14,209	0	149,710	1	0/0/1	5	29,942.00	1.18
Wicklow	155,851	5.27	7,769	0	148,082	1	0/0/1	5	29,616.40	0.08

Table 19: 15 Transfers (Total 382086)

From	To	Volume	Percent of From
Carlow	Kildare	36,877	59.51
Carlow	Laois	25,091	40.49
Longford	Roscommon	46,751	100.00
Louth	Monaghan	22,438	16.06
Offaly	Westmeath	20,747	24.95
Wexford	Kilkenny	14,209	8.67
Wicklow	Kildare	7,769	4.98
Clare	Galway	10,764	8.41
Kerry	Cork	6,748	4.31
Tipperary	Waterford	18,847	11.23
Galway	Offaly	54,565	19.65
Mayo	Sligo	18,202	13.19
Cavan	Meath	17,309	21.19
Cavan	Leitrim	64,395	78.81
Donegal	Leitrim	17,374	10.40

Figure 7: Sol6 (174 seats, 39 constituencies, 15 transfers, 29,594.96 persons per TD,  $\Delta_{max}$  350 (1.18% of 29,592), weighted variation 0.73%)



### 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	29,595.97	95,081.39	0.92	15	325,516	39	4/13/22	4.46	Solution	302.01	10.5460

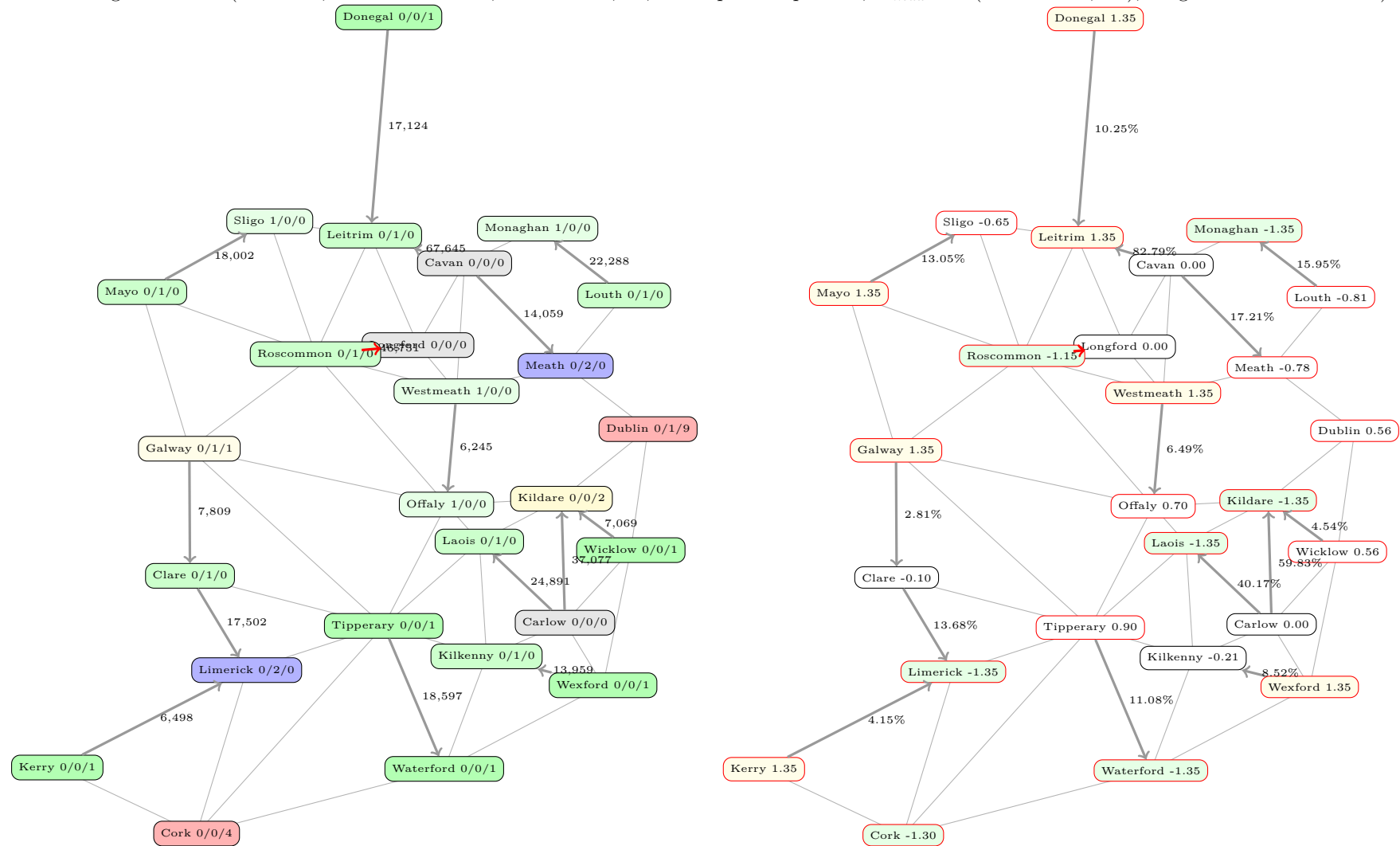
Table 21: Counties

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	61,968	0	0	0	0/0/0	0	0.00	0.00
Cavan	81,704	2.76	81,704	0	0	0	0/0/0	0	0.00	0.00
Clare	127,938	4.32	17,502	7,809	118,245	1	0/1/0	4	29,561.25	-0.10
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	17,124	0	149,960	1	0/0/1	5	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	7,809	0	269,928	2	0/1/1	9	29,992.00	1.35
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	0	44,146	291,920	2	0/0/2	10	29,192.00	-1.35
Kilkenny	104,160	3.52	0	13,959	118,119	1	0/1/0	4	29,529.75	-0.21
Laois	91,877	3.10	0	24,891	116,768	1	0/1/0	4	29,192.00	-1.35
Leitrim	35,199	1.19	0	84,769	119,968	1	0/1/0	4	29,992.00	1.35
Limerick	209,536	7.08	0	24,000	233,536	2	0/2/0	8	29,192.00	-1.35
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	18,002	0	119,968	1	0/1/0	4	29,992.00	1.35
Meath	220,826	7.46	0	14,059	234,885	2	0/2/0	8	29,360.63	-0.78
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	6,245	89,395	1	1/0/0	3	29,798.33	0.70
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	18,002	88,200	1	1/0/0	3	29,400.00	-0.65
Tipperary	167,895	5.67	18,597	0	149,298	1	0/0/1	5	29,859.60	0.90
Waterford	127,363	4.30	0	18,597	145,960	1	0/0/1	5	29,192.00	-1.35

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	6,245	0	89,976	1	1/0/0	3	29,992.00	1.35
Wexford	163,919	5.54	13,959	0	149,960	1	0/0/1	5	29,992.00	1.35
Wicklow	155,851	5.27	7,069	0	148,782	1	0/0/1	5	29,756.40	0.56

Table 22: 15 Transfers (Total 325516)

From	To	Volume	Percent of From
Carlow	Kildare	37,077	59.83
Carlow	Laois	24,891	40.17
Longford	Roscommon	46,751	100.00
Louth	Monaghan	22,288	15.95
Westmeath	Offaly	6,245	6.49
Wexford	Kilkenny	13,959	8.52
Wicklow	Kildare	7,069	4.54
Clare	Limerick	17,502	13.68
Kerry	Limerick	6,498	4.15
Tipperary	Waterford	18,597	11.08
Galway	Clare	7,809	2.81
Mayo	Sligo	18,002	13.05
Cavan	Meath	14,059	17.21
Cavan	Leitrim	67,645	82.79
Donegal	Leitrim	17,124	10.25

Figure 8: Sol7 (174 seats, 39 constituencies, 15 transfers, 29,595.97 persons per TD,  $\Delta_{max}$  400 (1.35% of 29,592), weighted variation 0.92%)



### 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	29,596.00	95,850.89	0.87	15	375,186	39	3/15/21	4.46	Solution	302.58	7.8420

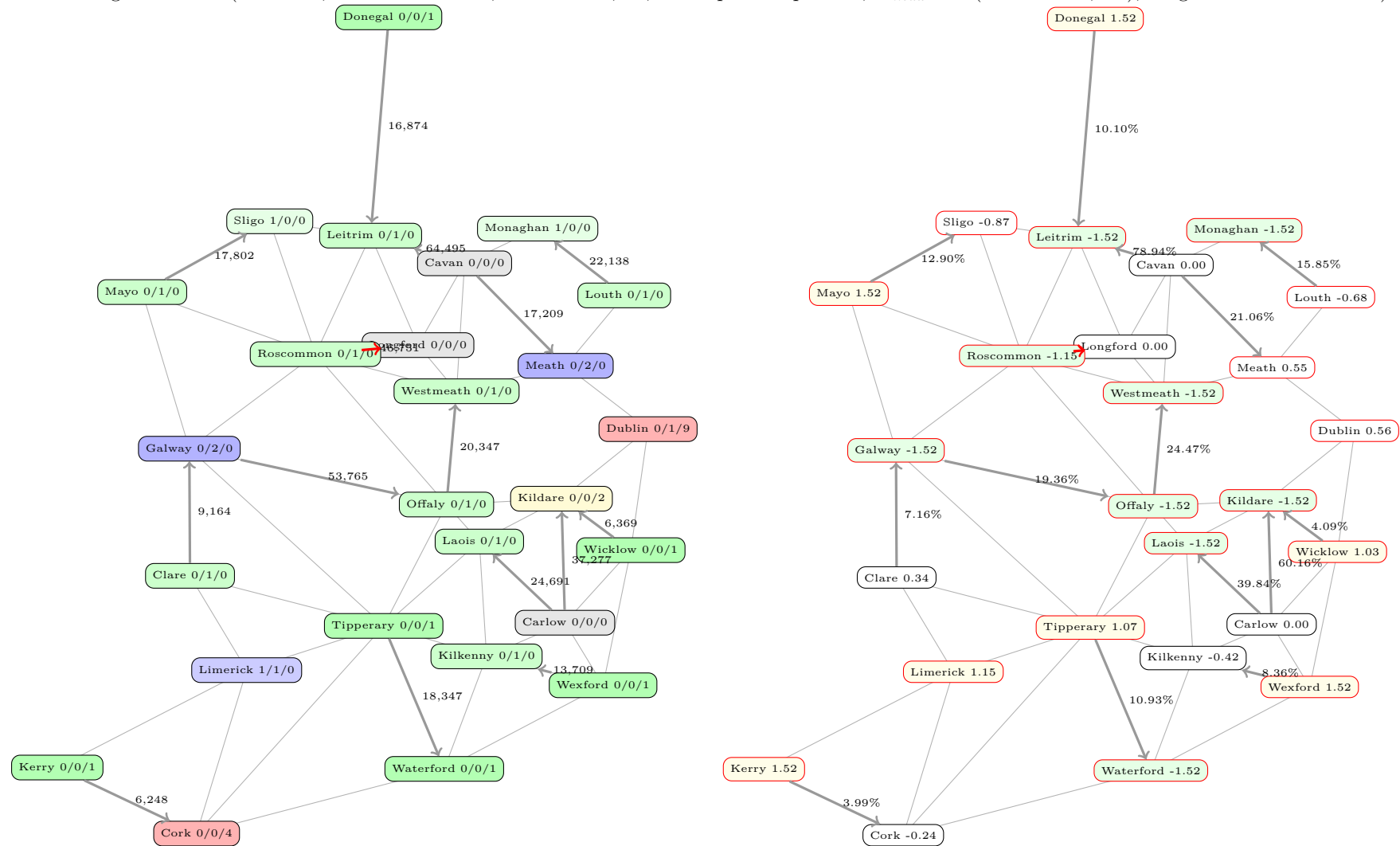
Table 24: Counties

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	61,968	0	0	0	0/0/0	0	0.00	0.00
Cavan	81,704	2.76	81,704	0	0	0	0/0/0	0	0.00	0.00
Clare	127,938	4.32	9,164	0	118,774	1	0/1/0	4	29,693.50	0.34
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	16,874	0	150,210	1	0/0/1	5	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	53,765	9,164	233,136	2	0/2/0	8	29,142.00	-1.52
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	43,646	291,420	2	0/0/2	10	29,142.00	-1.52
Kilkenny	104,160	3.52	0	13,709	117,869	1	0/1/0	4	29,467.25	-0.42
Laois	91,877	3.10	0	24,691	116,568	1	0/1/0	4	29,142.00	-1.52
Leitrim	35,199	1.19	0	81,369	116,568	1	0/1/0	4	29,142.00	-1.52
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	17,802	0	120,168	1	0/1/0	4	30,042.00	1.52
Meath	220,826	7.46	0	17,209	238,035	2	0/2/0	8	29,754.38	0.55
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	20,347	53,765	116,568	1	0/1/0	4	29,142.00	-1.52
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	17,802	88,000	1	1/0/0	3	29,333.33	-0.87
Tipperary	167,895	5.67	18,347	0	149,548	1	0/0/1	5	29,909.60	1.07
Waterford	127,363	4.30	0	18,347	145,710	1	0/0/1	5	29,142.00	-1.52

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	20,347	116,568	1	0/1/0	4	29,142.00	-1.52
Wexford	163,919	5.54	13,709	0	150,210	1	0/0/1	5	30,042.00	1.52
Wicklow	155,851	5.27	6,369	0	149,482	1	0/0/1	5	29,896.40	1.03

Table 25: 15 Transfers (Total 375186)

From	To	Volume	Percent of From
Carlow	Kildare	37,277	60.16
Carlow	Laois	24,691	39.84
Longford	Roscommon	46,751	100.00
Louth	Monaghan	22,138	15.85
Offaly	Westmeath	20,347	24.47
Wexford	Kilkenny	13,709	8.36
Wicklow	Kildare	6,369	4.09
Clare	Galway	9,164	7.16
Kerry	Cork	6,248	3.99
Tipperary	Waterford	18,347	10.93
Galway	Offaly	53,765	19.36
Mayo	Sligo	17,802	12.90
Cavan	Meath	17,209	21.06
Cavan	Leitrim	64,495	78.94
Donegal	Leitrim	16,874	10.10

Figure 9: Sol8 (174 seats, 39 constituencies, 15 transfers, 29,596.00 persons per TD,  $\Delta_{max}$  450 (1.52% of 29,592), weighted variation 0.87%)

### 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	29,596.99	125,177.01	1.01	15	407,252	39	1/19/19	4.46	Solution	302.79	10.2862

Table 27: Counties

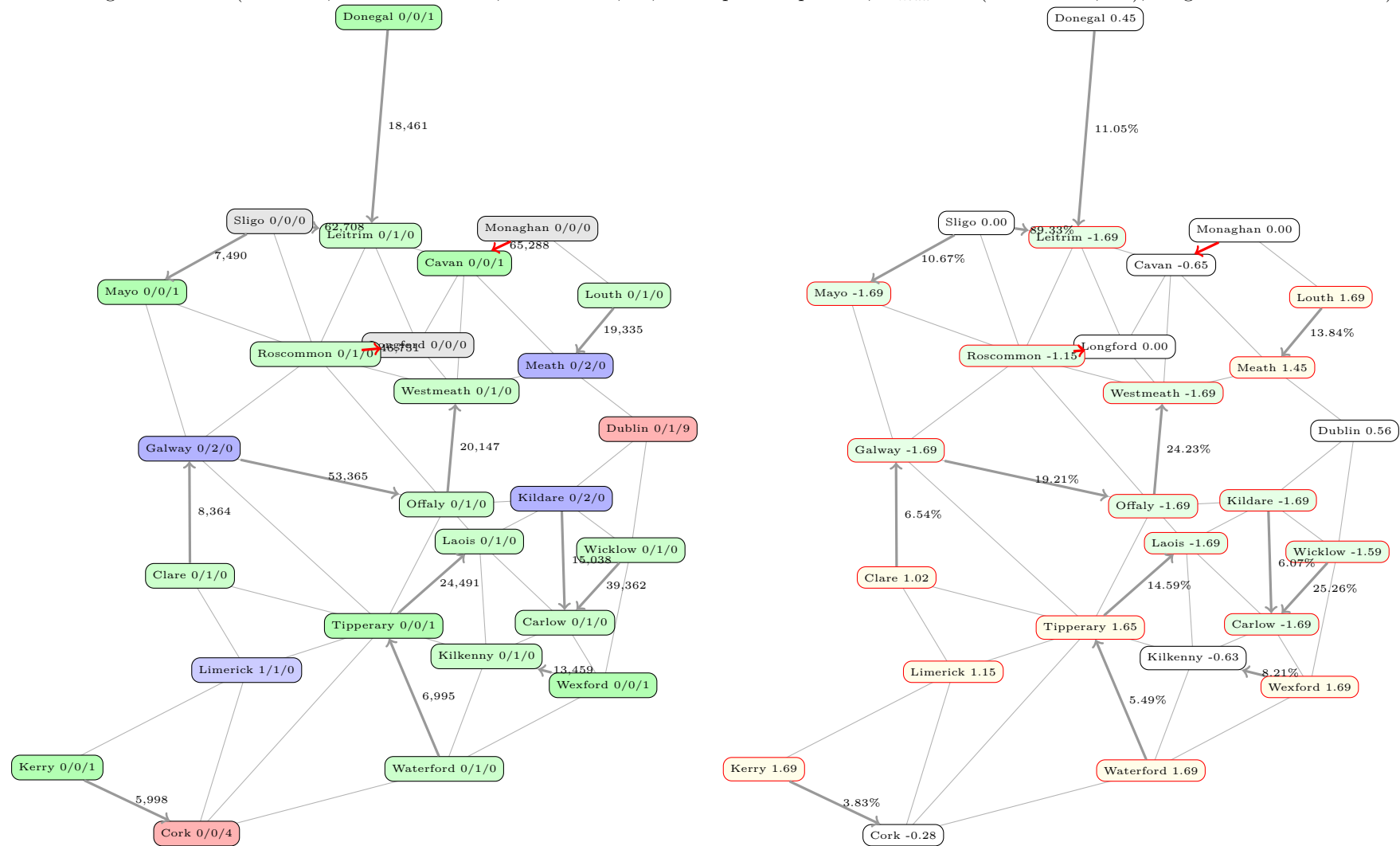
Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	54,400	116,368	1	0/1/0	4	29,092.00	-1.69
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	8,364	0	119,574	1	0/1/0	4	29,893.50	1.02
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	18,461	0	148,623	1	0/0/1	5	29,724.60	0.45
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	53,365	8,364	232,736	2	0/2/0	8	29,092.00	-1.69
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	15,038	0	232,736	2	0/2/0	8	29,092.00	-1.69
Kilkenny	104,160	3.52	0	13,459	117,619	1	0/1/0	4	29,404.75	-0.63
Laois	91,877	3.10	0	24,491	116,368	1	0/1/0	4	29,092.00	-1.69
Leitrim	35,199	1.19	0	81,169	116,368	1	0/1/0	4	29,092.00	-1.69
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	19,335	0	120,368	1	0/1/0	4	30,092.00	1.69
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	19,335	240,161	2	0/2/0	8	30,020.13	1.45
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	20,147	53,365	116,368	1	0/1/0	4	29,092.00	-1.69
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	70,198	0	0	0	0/0/0	0	0.00	0.00
Tipperary	167,895	5.67	24,491	6,995	150,399	1	0/0/1	5	30,079.80	1.65
Waterford	127,363	4.30	6,995	0	120,368	1	0/1/0	4	30,092.00	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	0	20,147	116,368	1	0/1/0	4	29,092.00	-1.69
Wexford	163,919	5.54	13,459	0	150,460	1	0/0/1	5	30,092.00	1.69
Wicklow	155,851	5.27	39,362	0	116,489	1	0/1/0	4	29,122.25	-1.59

Table 28: 15 Transfers (Total 407252)

From	To	Volume	Percent of From
Kildare	Carlow	15,038	6.07
Longford	Roscommon	46,751	100.00
Louth	Meath	19,335	13.84
Offaly	Westmeath	20,147	24.23
Wexford	Kilkenny	13,459	8.21
Wicklow	Carlow	39,362	25.26
Clare	Galway	8,364	6.54
Kerry	Cork	5,998	3.83
Tipperary	Laois	24,491	14.59
Waterford	Tipperary	6,995	5.49
Galway	Offaly	53,365	19.21
Sligo	Leitrim	62,708	89.33
Sligo	Mayo	7,490	10.67
Donegal	Leitrim	18,461	11.05
Monaghan	Cavan	65,288	100.00

Figure 10: Sol9 (174 seats, 39 constituencies, 15 transfers, 29,596.99 persons per TD,  $\Delta_{max}$  500 (1.69% of 29,592), weighted variation 1.01%)



### 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	29,598.52	170,457.59	1.22	15	415,411	38	0/16/22	4.58	Solution	304.06	7.1269

Table 30: Counties

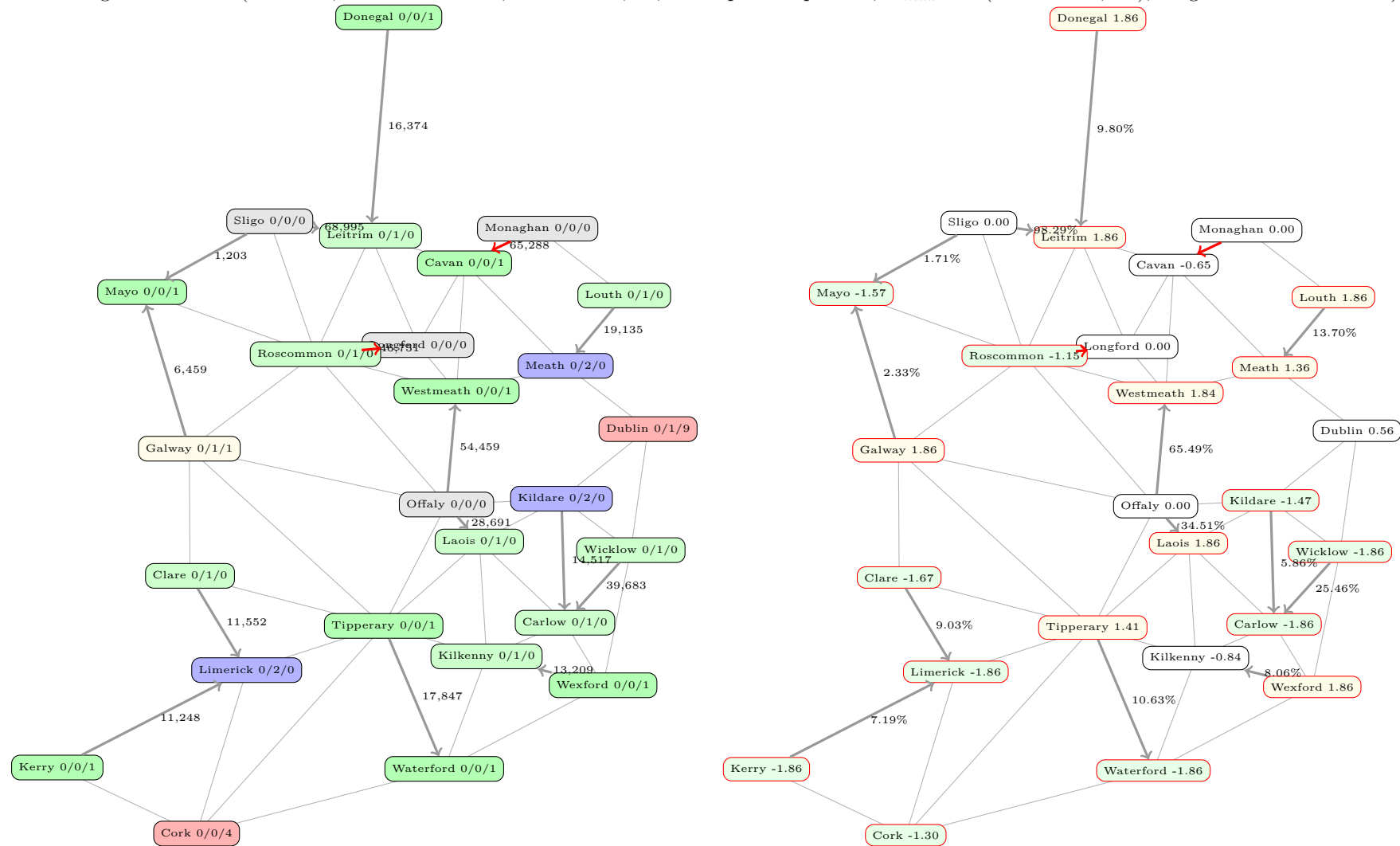
Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	54,200	116,168	1	0/1/0	4	29,042.00	-1.86
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	11,552	0	116,386	1	0/1/0	4	29,096.50	-1.67
Cork	584,156	19.74	0	0	584,156	4	0/0/4	20	29,207.80	-1.30
Donegal	167,084	5.65	16,374	0	150,710	1	0/0/1	5	30,142.00	1.86
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	6,459	0	271,278	2	0/1/1	9	30,142.00	1.86
Kerry	156,458	5.29	11,248	0	145,210	1	0/0/1	5	29,042.00	-1.86
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	28,691	120,568	1	0/1/0	4	30,142.00	1.86
Leitrim	35,199	1.19	0	85,369	120,568	1	0/1/0	4	30,142.00	1.86
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	19,135	0	120,568	1	0/1/0	4	30,142.00	1.86
Mayo	137,970	4.66	0	7,662	145,632	1	0/0/1	5	29,126.40	-1.57
Meath	220,826	7.46	0	19,135	239,961	2	0/2/0	8	29,995.13	1.36
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	70,198	0	0	0	0/0/0	0	0.00	0.00
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	54,459	150,680	1	0/0/1	5	30,136.00	1.84
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: 15 Transfers (Total 415411)

From	To	Volume	Percent of From
Kildare	Carlow	14,517	5.86
Longford	Roscommon	46,751	100.00
Louth	Meath	19,135	13.70
Offaly	Laois	28,691	34.51
Offaly	Westmeath	54,459	65.49
Wexford	Kilkenny	13,209	8.06
Wicklow	Carlow	39,683	25.46
Clare	Limerick	11,552	9.03
Kerry	Limerick	11,248	7.19
Tipperary	Waterford	17,847	10.63
Galway	Mayo	6,459	2.33
Sligo	Leitrim	68,995	98.29
Sligo	Mayo	1,203	1.71
Donegal	Leitrim	16,374	9.80
Monaghan	Cavan	65,288	100.00



Figure 11: Sol10 (174 seats, 38 constituencies, 15 transfers, 29,598.52 persons per TD,  $\Delta_{max}$  550 (1.86% of 29,592), weighted variation 1.22%)

### 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	29,599.14	188,909.73	1.25	15	413,411	38	0/16/22	4.58	Solution	302.61	7.5096

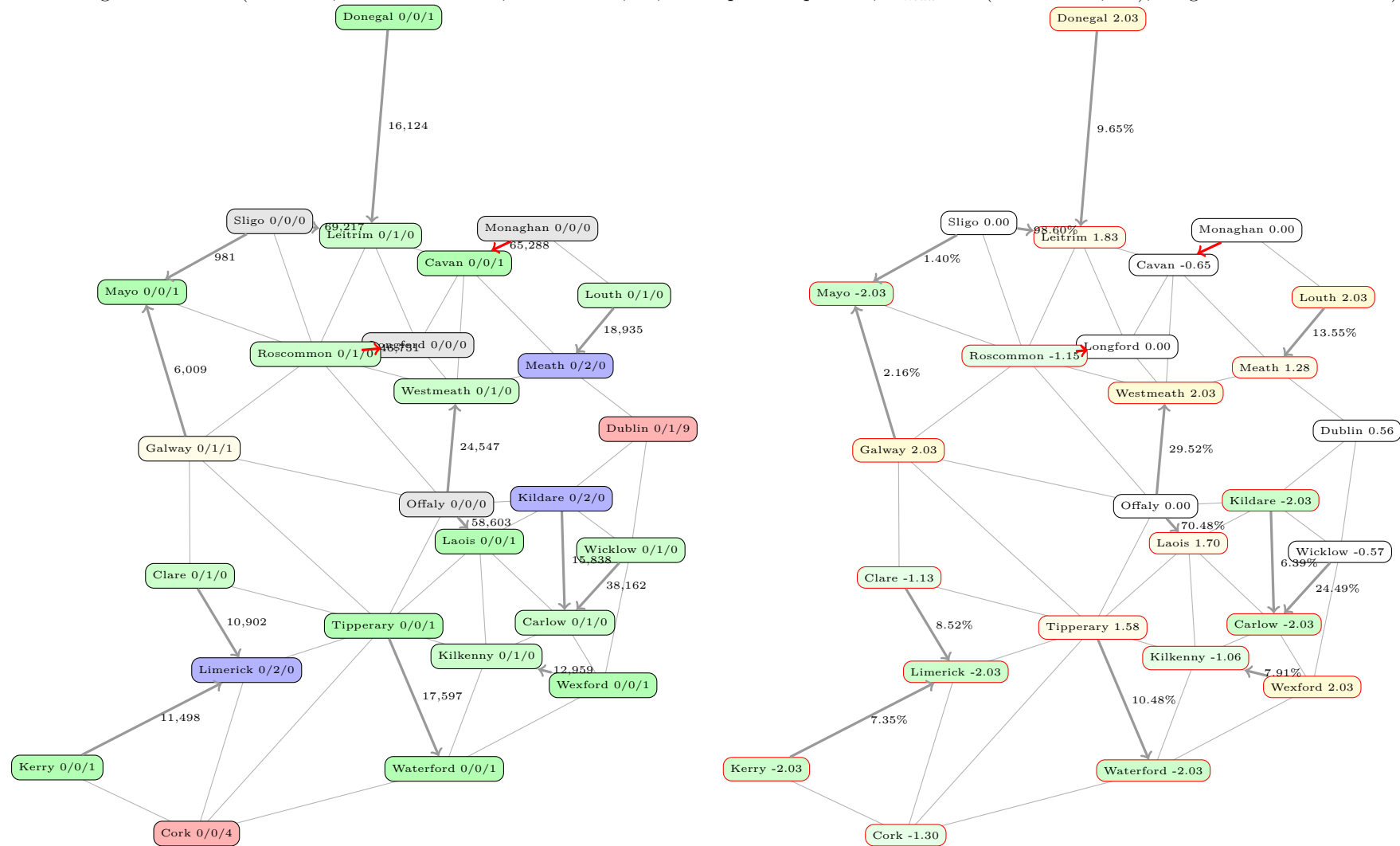
Table 33: Counties

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	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
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	16,124	0	150,960	1	0/0/1	5	30,192.00	2.03
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	6,009	0	271,728	2	0/1/1	9	30,192.00	2.03
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	58,603	150,480	1	0/0/1	5	30,096.00	1.70
Leitrim	35,199	1.19	0	85,341	120,540	1	0/1/0	4	30,135.00	1.83
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	18,935	0	120,768	1	0/1/0	4	30,192.00	2.03
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	18,935	239,761	2	0/2/0	8	29,970.13	1.28
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	70,198	0	0	0	0/0/0	0	0.00	0.00
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	24,547	120,768	1	0/1/0	4	30,192.00	2.03
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: 15 Transfers (Total 413411)

From	To	Volume	Percent of From
Kildare	Carlow	15,838	6.39
Longford	Roscommon	46,751	100.00
Louth	Meath	18,935	13.55
Offaly	Laois	58,603	70.48
Offaly	Westmeath	24,547	29.52
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	6,009	2.16
Sligo	Leitrim	69,217	98.60
Sligo	Mayo	981	1.40
Donegal	Leitrim	16,124	9.65
Monaghan	Cavan	65,288	100.00

Figure 12: Sol11 (174 seats, 38 constituencies, 15 transfers, 29,599.14 persons per TD,  $\Delta_{max}$  600 (2.03% of 29,592), weighted variation 1.25%)

### 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	29,598.94	182,210.33	1.15	14	402,020	38	1/14/23	4.58	Optimal	194.44	0.0100

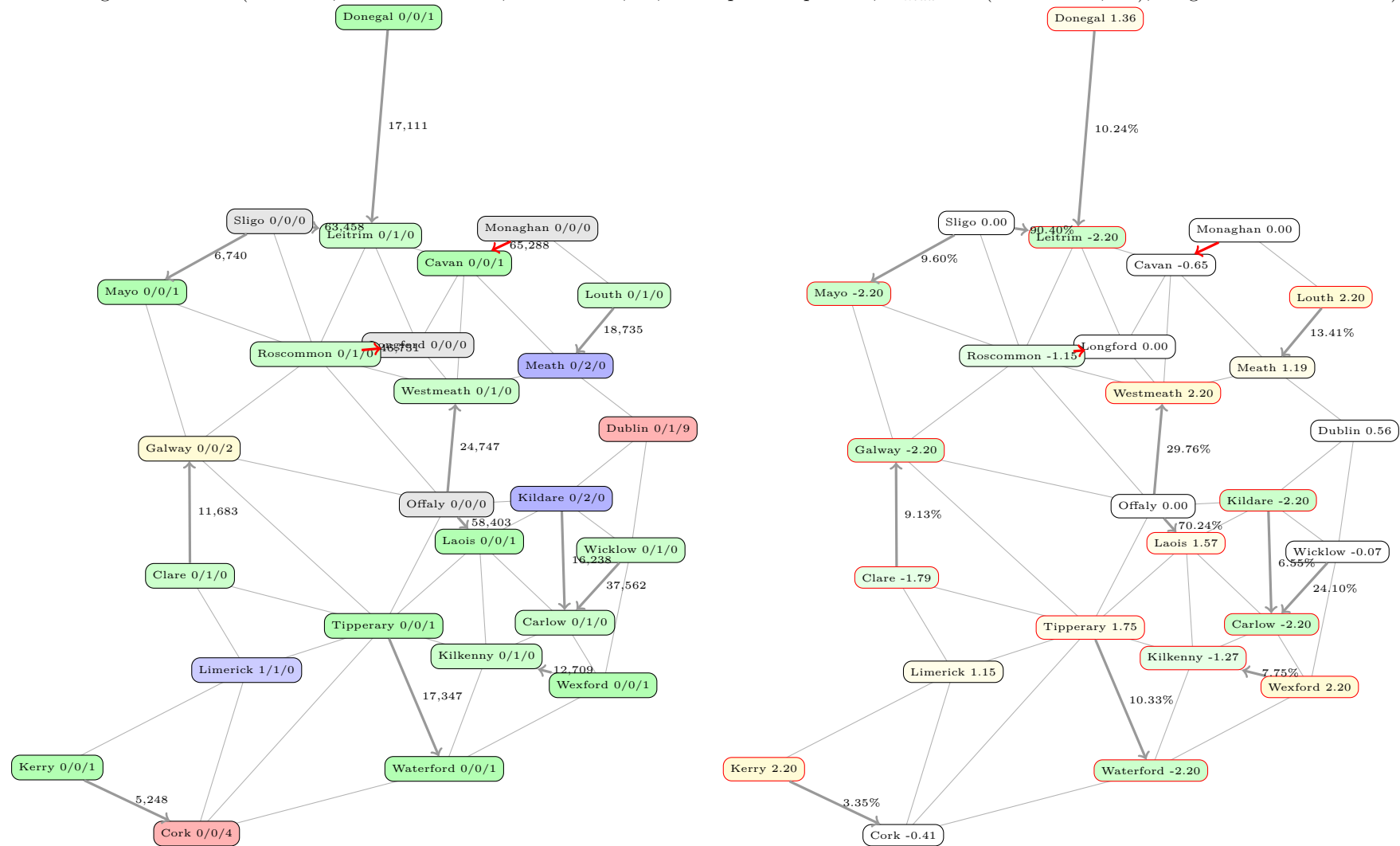
Table 36: Counties

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	17,111	0	149,973	1	0/0/1	5	29,994.60	1.36
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	16,238	0	231,536	2	0/2/0	8	28,942.00	-2.20
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	0	58,403	150,280	1	0/0/1	5	30,056.00	1.57
Leitrim	35,199	1.19	0	80,569	115,768	1	0/1/0	4	28,942.00	-2.20
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	18,735	0	120,968	1	0/1/0	4	30,242.00	2.20
Mayo	137,970	4.66	0	6,740	144,710	1	0/0/1	5	28,942.00	-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	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	70,198	0	0	0	0/0/0	0	0.00	0.00
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	0	24,747	120,968	1	0/1/0	4	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	37,562	0	118,289	1	0/1/0	4	29,572.25	-0.07

Table 37: 14 Transfers (Total 402020)

From	To	Volume	Percent of From
Kildare	Carlow	16,238	6.55
Longford	Roscommon	46,751	100.00
Louth	Meath	18,735	13.41
Offaly	Laois	58,403	70.24
Offaly	Westmeath	24,747	29.76
Wexford	Kilkenny	12,709	7.75
Wicklow	Carlow	37,562	24.10
Clare	Galway	11,683	9.13
Kerry	Cork	5,248	3.35
Tipperary	Waterford	17,347	10.33
Sligo	Leitrim	63,458	90.40
Sligo	Mayo	6,740	9.60
Donegal	Leitrim	17,111	10.24
Monaghan	Cavan	65,288	100.00

Figure 13: Sol12 (174 seats, 38 constituencies, 14 transfers, 29,598.94 persons per TD,  $\Delta_{max}$  650 (2.20% of 29,592), weighted variation 1.15%)

### 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	29,599.85	209,450.48	1.24	13	365,062	39	3/15/21	4.46	Optimal	93.99	0.0100

Table 39: Counties

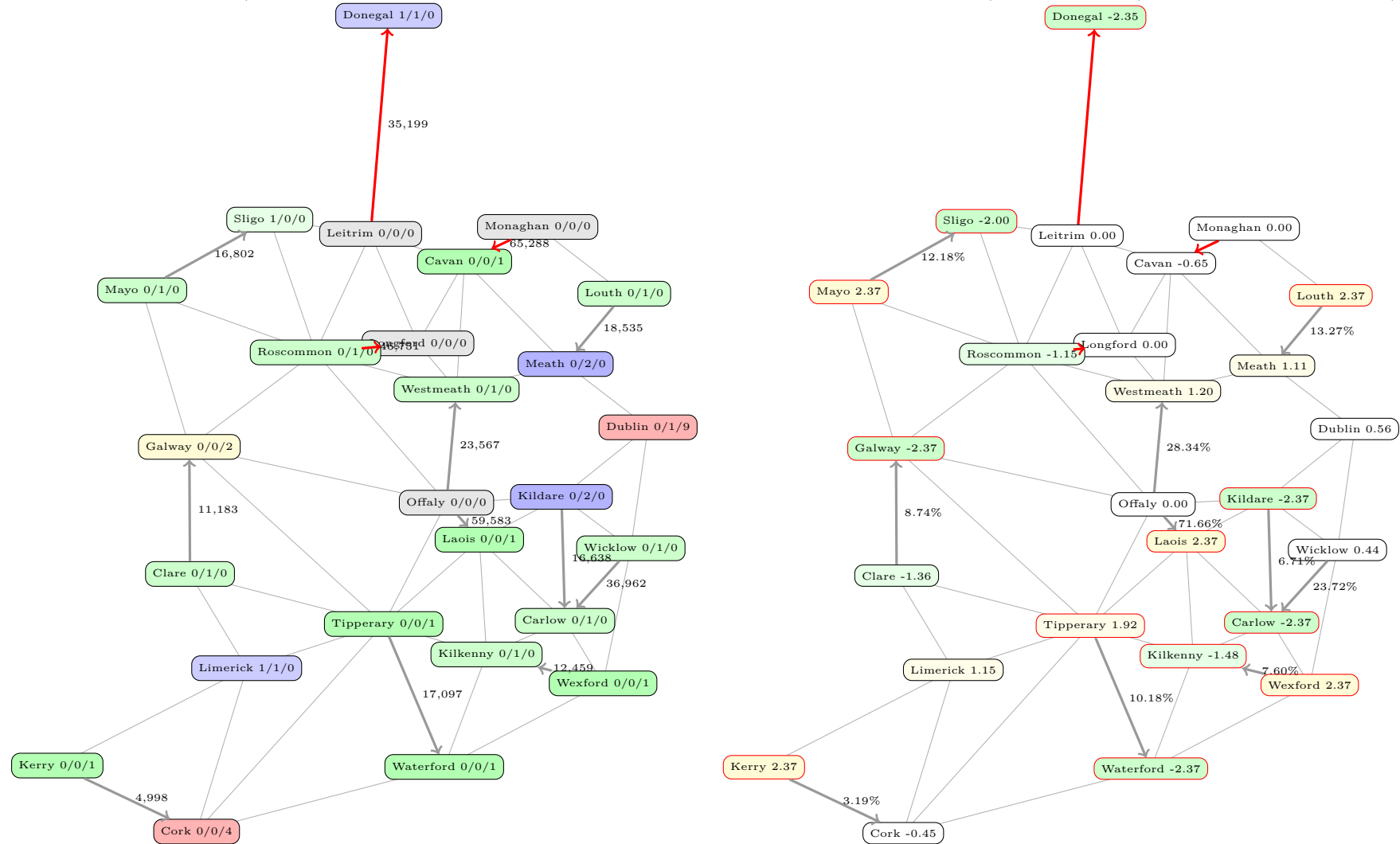
Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	53,600	115,568	1	0/1/0	4	28,892.00	-2.37
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	11,183	0	116,755	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	59,583	151,460	1	0/0/1	5	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	23,567	119,788	1	0/1/0	4	29,947.00	1.20
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	59,583	71.66
Offaly	Westmeath	23,567	28.34
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, 29,599.85 persons per TD,  $\Delta_{max}$  700 (2.37% of 29,592), weighted variation 1.24%)

### 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	29,600.20	219,983.45	1.27	13	363,212	39	3/15/21	4.46	Optimal	73.80	0.0100

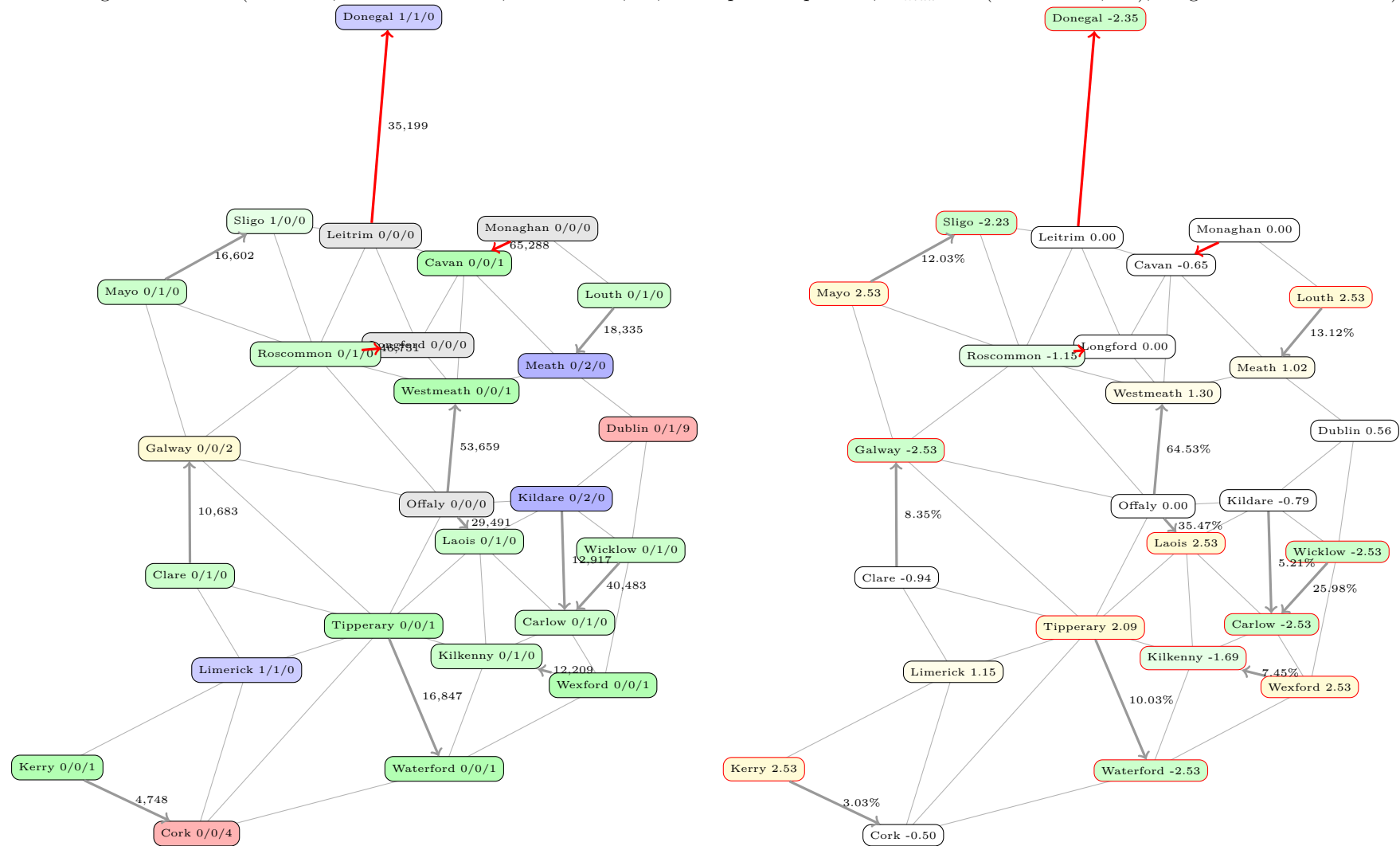
Table 42: Counties

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	29,491	121,368	1	0/1/0	4	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	53,659	149,880	1	0/0/1	5	29,976.00	1.30
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	29,491	35.47
Offaly	Westmeath	53,659	64.53
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, 29,600.20 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	29,600.99	243,210.12	1.30	13	361,362	39	3/15/21	4.46	Optimal	51.76	0.0099

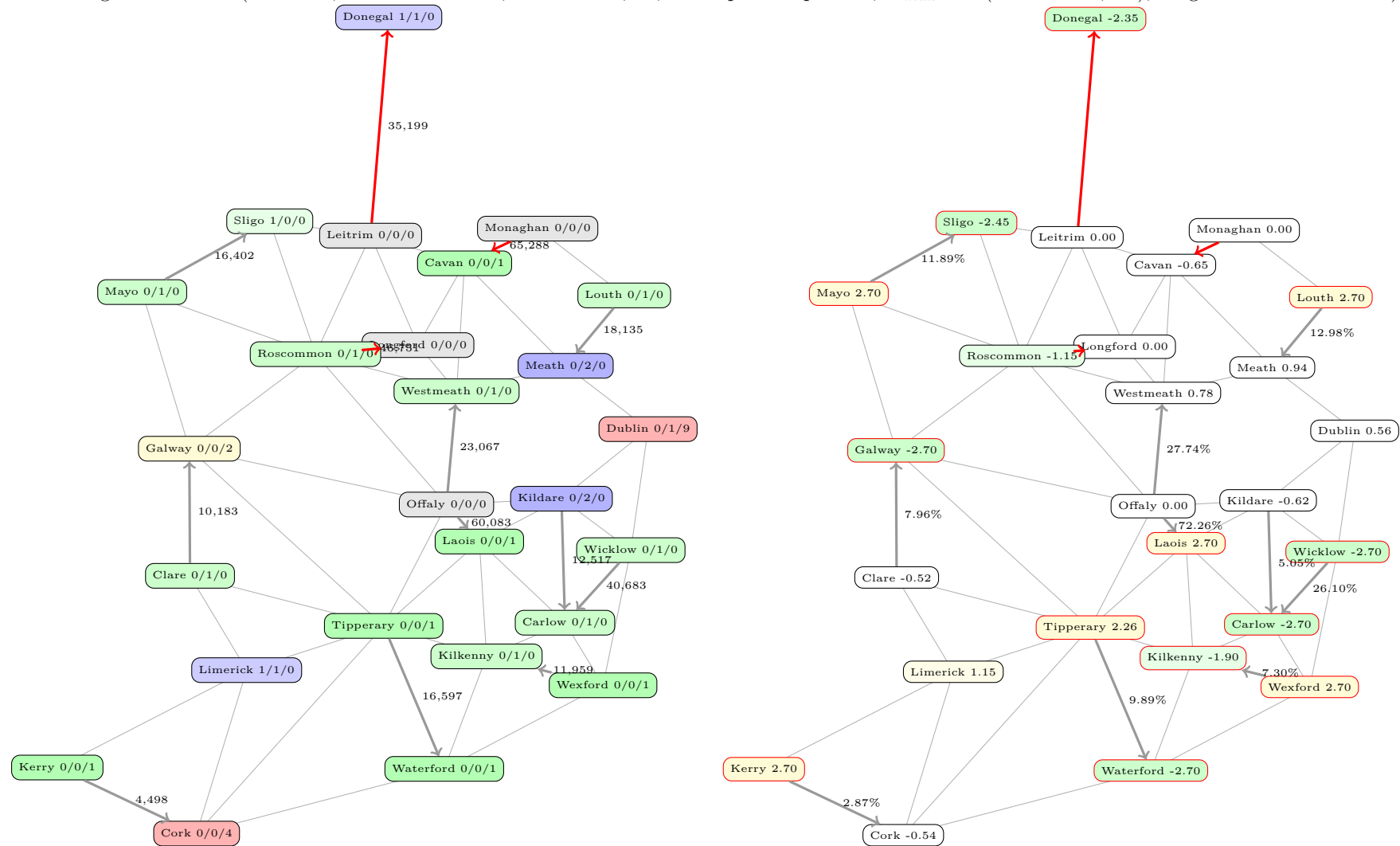
Table 45: Counties

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	53,200	115,168	1	0/1/0	4	28,792.00	-2.70
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	10,183	0	117,755	1	0/1/0	4	29,438.75	-0.52
Cork	584,156	19.74	0	4,498	588,654	4	0/0/4	20	29,432.70	-0.54
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	10,183	287,920	2	0/0/2	10	28,792.00	-2.70
Kerry	156,458	5.29	4,498	0	151,960	1	0/0/1	5	30,392.00	2.70
Kildare	247,774	8.37	12,517	0	235,257	2	0/2/0	8	29,407.13	-0.62
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	0	60,083	151,960	1	0/0/1	5	30,392.00	2.70
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	18,135	0	121,568	1	0/1/0	4	30,392.00	2.70
Mayo	137,970	4.66	16,402	0	121,568	1	0/1/0	4	30,392.00	2.70
Meath	220,826	7.46	0	18,135	238,961	2	0/2/0	8	29,870.13	0.94
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	16,402	86,600	1	1/0/0	3	28,866.67	-2.45
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	0	23,067	119,288	1	0/1/0	4	29,822.00	0.78
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	40,683	0	115,168	1	0/1/0	4	28,792.00	-2.70

Table 46: 13 Transfers (Total 361362)

From	To	Volume	Percent of From
Kildare	Carlow	12,517	5.05
Longford	Roscommon	46,751	100.00
Louth	Meath	18,135	12.98
Offaly	Laois	60,083	72.26
Offaly	Westmeath	23,067	27.74
Wexford	Kilkenny	11,959	7.30
Wicklow	Carlow	40,683	26.10
Clare	Galway	10,183	7.96
Kerry	Cork	4,498	2.87
Tipperary	Waterford	16,597	9.89
Leitrim	Donegal	35,199	100.00
Mayo	Sligo	16,402	11.89
Monaghan	Cavan	65,288	100.00

Figure 16: Sol15 (174 seats, 39 constituencies, 13 transfers, 29,600.99 persons per TD,  $\Delta_{max}$  800 (2.70% of 29,592), weighted variation 1.30%)



### 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	29,603.61	320,658.51	1.48	13	342,559	39	3/15/21	4.46	Optimal	53.21	0.0097

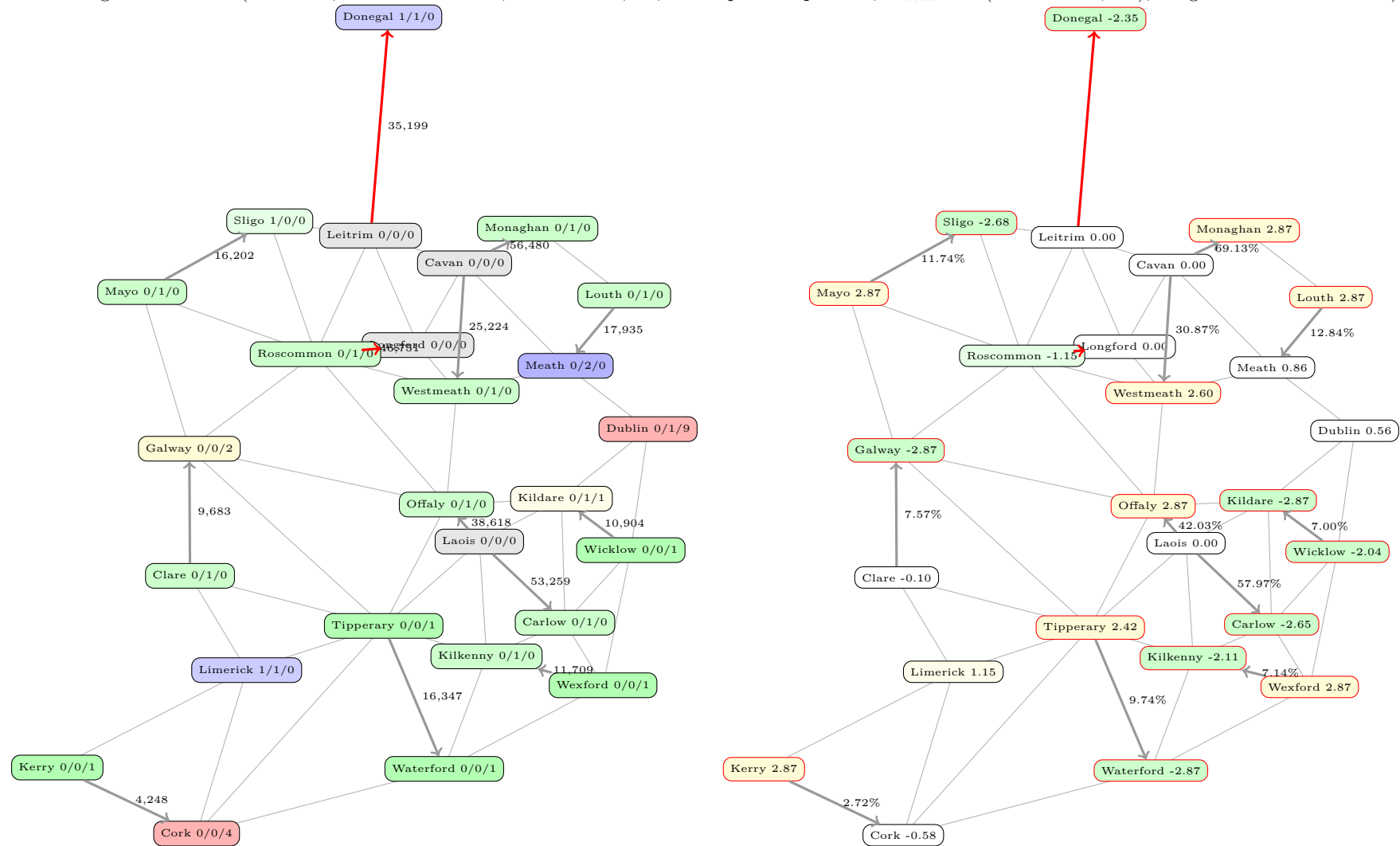
Table 48: Counties

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	53,259	115,227	1	0/1/0	4	28,806.75	-2.65
Cavan	81,704	2.76	81,704	0	0	0	0/0/0	0	0.00	0.00
Clare	127,938	4.32	9,683	0	118,255	1	0/1/0	4	29,563.75	-0.10
Cork	584,156	19.74	0	4,248	588,404	4	0/0/4	20	29,420.20	-0.58
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	9,683	287,420	2	0/0/2	10	28,742.00	-2.87
Kerry	156,458	5.29	4,248	0	152,210	1	0/0/1	5	30,442.00	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	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	17,935	0	121,768	1	0/1/0	4	30,442.00	2.87
Mayo	137,970	4.66	16,202	0	121,768	1	0/1/0	4	30,442.00	2.87
Meath	220,826	7.46	0	17,935	238,761	2	0/2/0	8	29,845.13	0.86
Monaghan	65,288	2.21	0	56,480	121,768	1	0/1/0	4	30,442.00	2.87
Offaly	83,150	2.81	0	38,618	121,768	1	0/1/0	4	30,442.00	2.87
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	16,202	86,400	1	1/0/0	3	28,800.00	-2.68
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	0	25,224	121,445	1	0/1/0	4	30,361.25	2.60
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 342559)

From	To	Volume	Percent of From
Laois	Carlow	53,259	57.97
Laois	Offaly	38,618	42.03
Longford	Roscommon	46,751	100.00
Louth	Meath	17,935	12.84
Wexford	Kilkenny	11,709	7.14
Wicklow	Kildare	10,904	7.00
Clare	Galway	9,683	7.57
Kerry	Cork	4,248	2.72
Tipperary	Waterford	16,347	9.74
Leitrim	Donegal	35,199	100.00
Mayo	Sligo	16,202	11.74
Cavan	Westmeath	25,224	30.87
Cavan	Monaghan	56,480	69.13

Figure 17: Sol16 (174 seats, 39 constituencies, 13 transfers, 29,603.61 persons per TD,  $\Delta_{max}$  850 (2.87% of 29,592), weighted variation 1.48%)

### 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	29,604.57	349,030.15	1.54	13	340,459	39	3/15/21	4.46	Optimal	66.13	0.0100

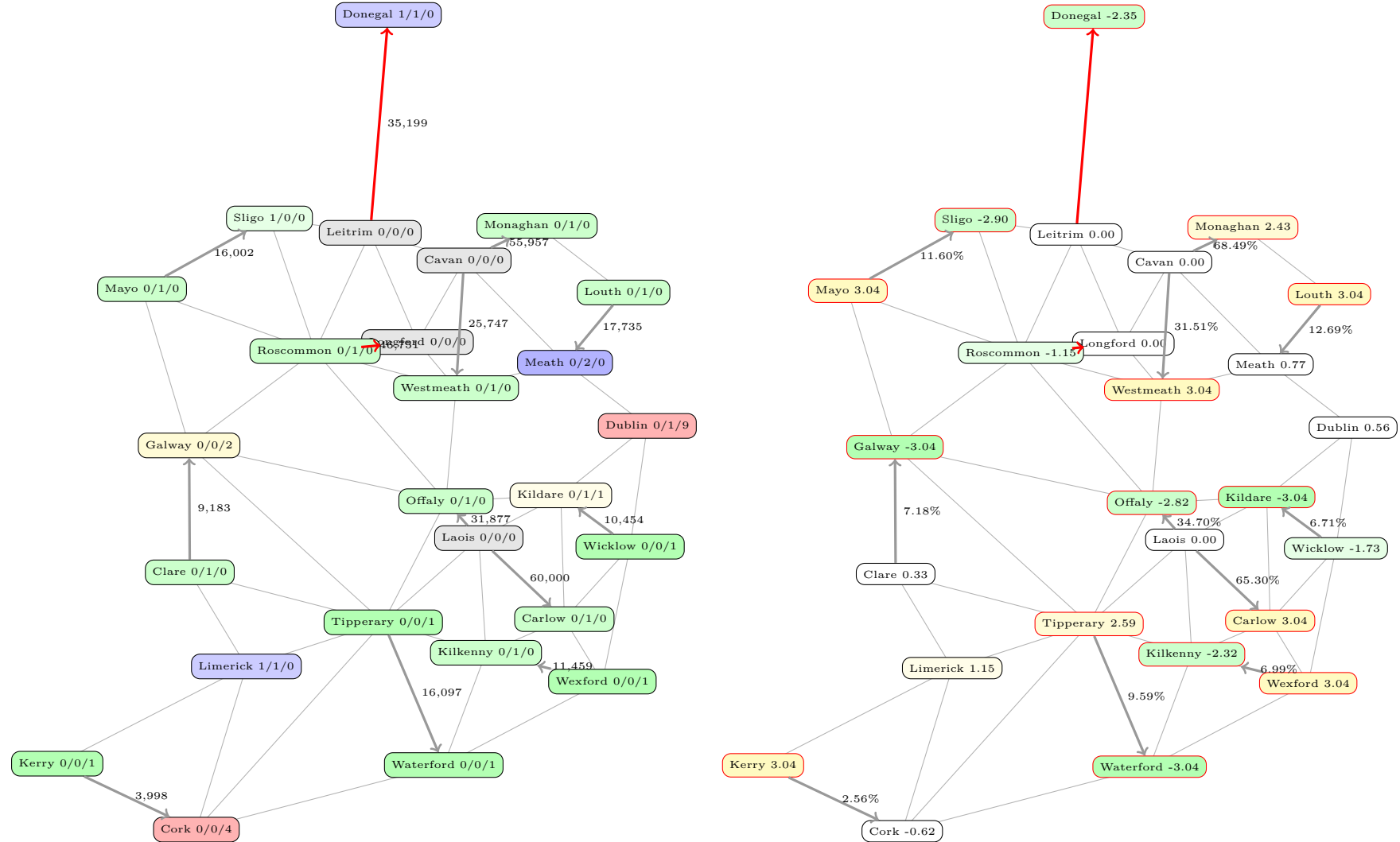
Table 51: Counties

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	81,704	0	0	0	0/0/0	0	0.00	0.00
Clare	127,938	4.32	9,183	0	118,755	1	0/1/0	4	29,688.75	0.33
Cork	584,156	19.74	0	3,998	588,154	4	0/0/4	20	29,407.70	-0.62
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	9,183	286,920	2	0/0/2	10	28,692.00	-3.04
Kerry	156,458	5.29	3,998	0	152,460	1	0/0/1	5	30,492.00	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	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	17,735	0	121,968	1	0/1/0	4	30,492.00	3.04
Mayo	137,970	4.66	16,002	0	121,968	1	0/1/0	4	30,492.00	3.04
Meath	220,826	7.46	0	17,735	238,561	2	0/2/0	8	29,820.13	0.77
Monaghan	65,288	2.21	0	55,957	121,245	1	0/1/0	4	30,311.25	2.43
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	16,002	86,200	1	1/0/0	3	28,733.33	-2.90
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	0	25,747	121,968	1	0/1/0	4	30,492.00	3.04
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 340459)

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	Meath	17,735	12.69
Wexford	Kilkenny	11,459	6.99
Wicklow	Kildare	10,454	6.71
Clare	Galway	9,183	7.18
Kerry	Cork	3,998	2.56
Tipperary	Waterford	16,097	9.59
Leitrim	Donegal	35,199	100.00
Mayo	Sligo	16,002	11.60
Cavan	Westmeath	25,747	31.51
Cavan	Monaghan	55,957	68.49

Figure 18: Sol17 (174 seats, 39 constituencies, 13 transfers, 29,604.57 persons per TD,  $\Delta_{max}$  900 (3.04% of 29,592), weighted variation 1.54%)

### 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	29,605.51	376,795.50	1.65	13	361,362	38	2/12/24	4.58	Optimal	106.40	0.0100

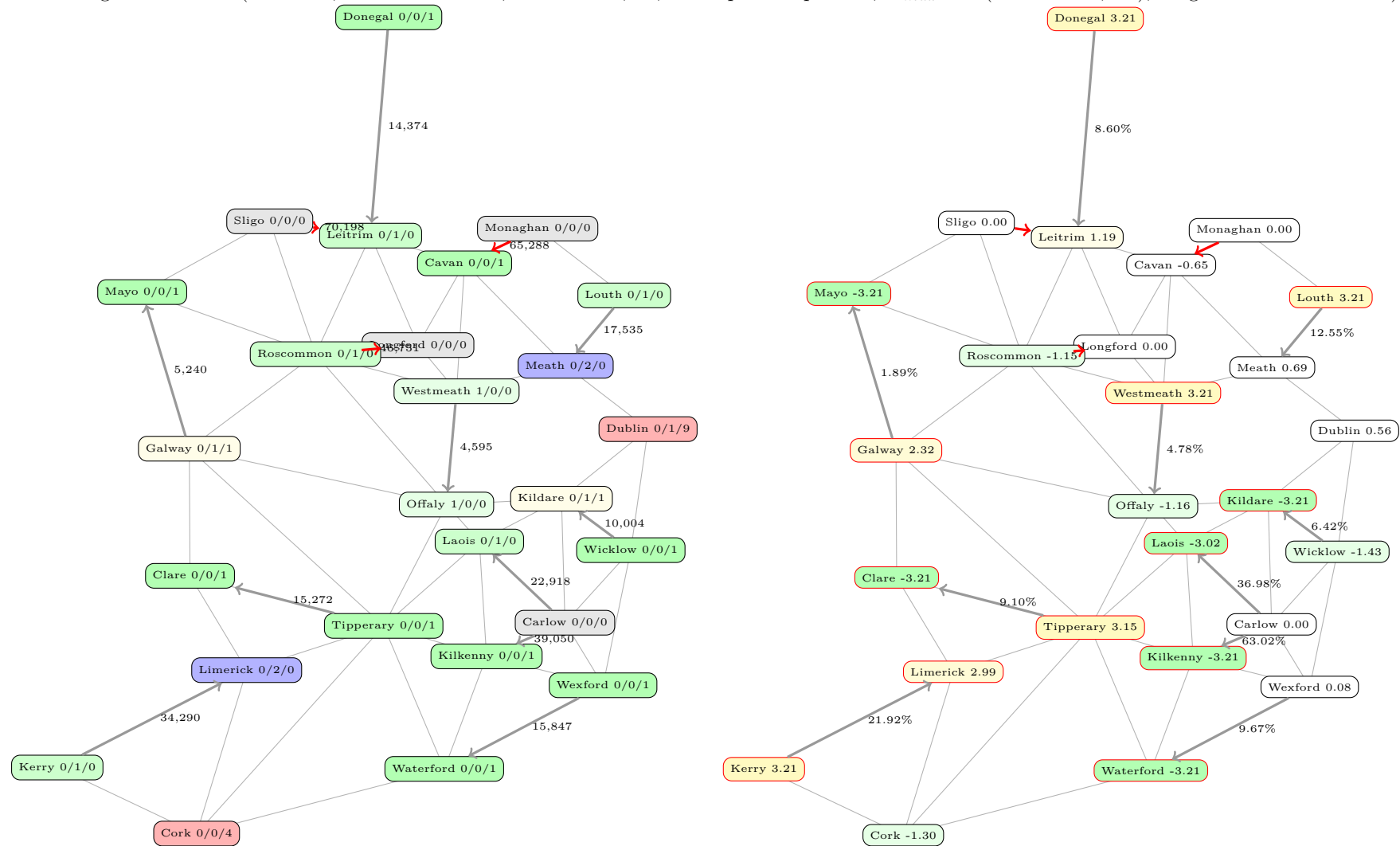
Table 54: Counties

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	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	15,272	143,210	1	0/0/1	5	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	14,374	0	152,710	1	0/0/1	5	30,542.00	3.21
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	5,240	0	272,497	2	0/1/1	9	30,277.44	2.32
Kerry	156,458	5.29	34,290	0	122,168	1	0/1/0	4	30,542.00	3.21
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	39,050	143,210	1	0/0/1	5	28,642.00	-3.21
Laois	91,877	3.10	0	22,918	114,795	1	0/1/0	4	28,698.75	-3.02
Leitrim	35,199	1.19	0	84,572	119,771	1	0/1/0	4	29,942.75	1.19
Limerick	209,536	7.08	0	34,290	243,826	2	0/2/0	8	30,478.25	2.99
Longford	46,751	1.58	46,751	0	0	0	0/0/0	0	0.00	0.00
Louth	139,703	4.72	17,535	0	122,168	1	0/1/0	4	30,542.00	3.21
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	17,535	238,361	2	0/2/0	8	29,795.13	0.69
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
Offaly	83,150	2.81	0	4,595	87,745	1	1/0/0	3	29,248.33	-1.16
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	70,198	0	0	0	0/0/0	0	0.00	0.00
Tipperary	167,895	5.67	15,272	0	152,623	1	0/0/1	5	30,524.60	3.15
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	4,595	0	91,626	1	1/0/0	3	30,542.00	3.21
Wexford	163,919	5.54	15,847	0	148,072	1	0/0/1	5	29,614.40	0.08
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 361362)			
From	To	Volume	Percent of From
Carlow	Kilkenny	39,050	63.02
Carlow	Laois	22,918	36.98
Longford	Roscommon	46,751	100.00
Louth	Meath	17,535	12.55
Westmeath	Offaly	4,595	4.78
Wexford	Waterford	15,847	9.67
Wicklow	Kildare	10,004	6.42
Kerry	Limerick	34,290	21.92
Tipperary	Clare	15,272	9.10
Galway	Mayo	5,240	1.89
Sligo	Leitrim	70,198	100.00
Donegal	Leitrim	14,374	8.60
Monaghan	Cavan	65,288	100.00



Figure 19: Sol18 (174 seats, 38 constituencies, 13 transfers, 29,605.51 persons per TD,  $\Delta_{max}$  950 (3.21% of 29,592), weighted variation 1.65%)

### 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	29,607.74	443,246.72	1.78	13	398,530	38	1/14/23	4.58	Optimal	174.74	0.0100

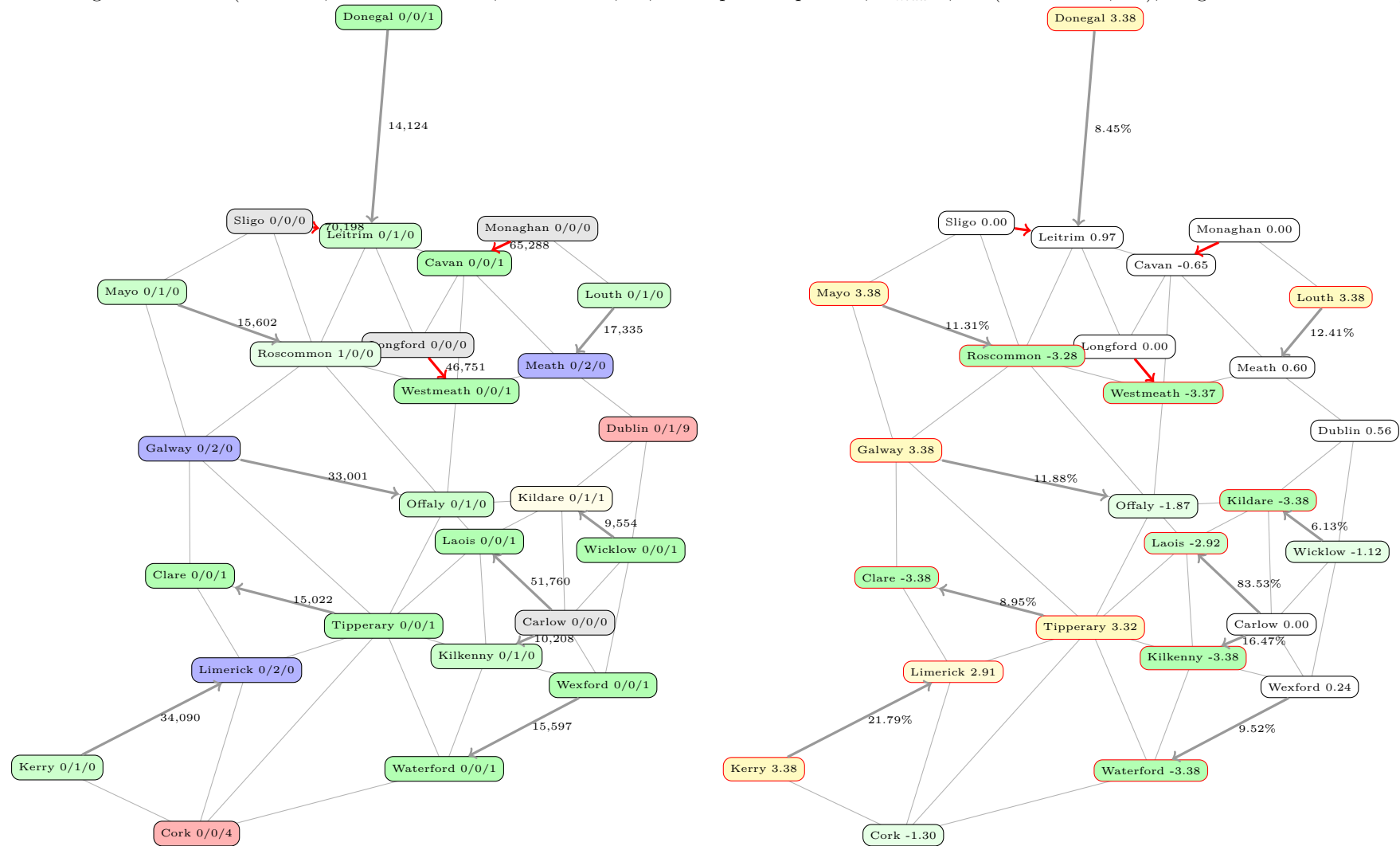
Table 57: Counties

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	14,124	0	152,960	1	0/0/1	5	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	10,208	114,368	1	0/1/0	4	28,592.00	-3.38
Laois	91,877	3.10	0	51,760	143,637	1	0/0/1	5	28,727.40	-2.92
Leitrim	35,199	1.19	0	84,322	119,521	1	0/1/0	4	29,880.25	0.97
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	15,602	85,861	1	1/0/0	3	28,620.33	-3.28
Sligo	70,198	2.37	70,198	0	0	0	0/0/0	0	0.00	0.00
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 398530)

From	To	Volume	Percent of From
Carlow	Kilkenny	10,208	16.47
Carlow	Laois	51,760	83.53
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
Mayo	Roscommon	15,602	11.31
Sligo	Leitrim	70,198	100.00
Donegal	Leitrim	14,124	8.45
Monaghan	Cavan	65,288	100.00

Figure 20: Sol19 (174 seats, 38 constituencies, 13 transfers, 29,607.74 persons per TD,  $\Delta_{max}$  1,000 (3.38% of 29,592), weighted variation 1.78%)

### 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	29,608.61	470,061.96	1.85	12	337,218	40	4/18/18	4.35	Optimal	34.95	0.0100

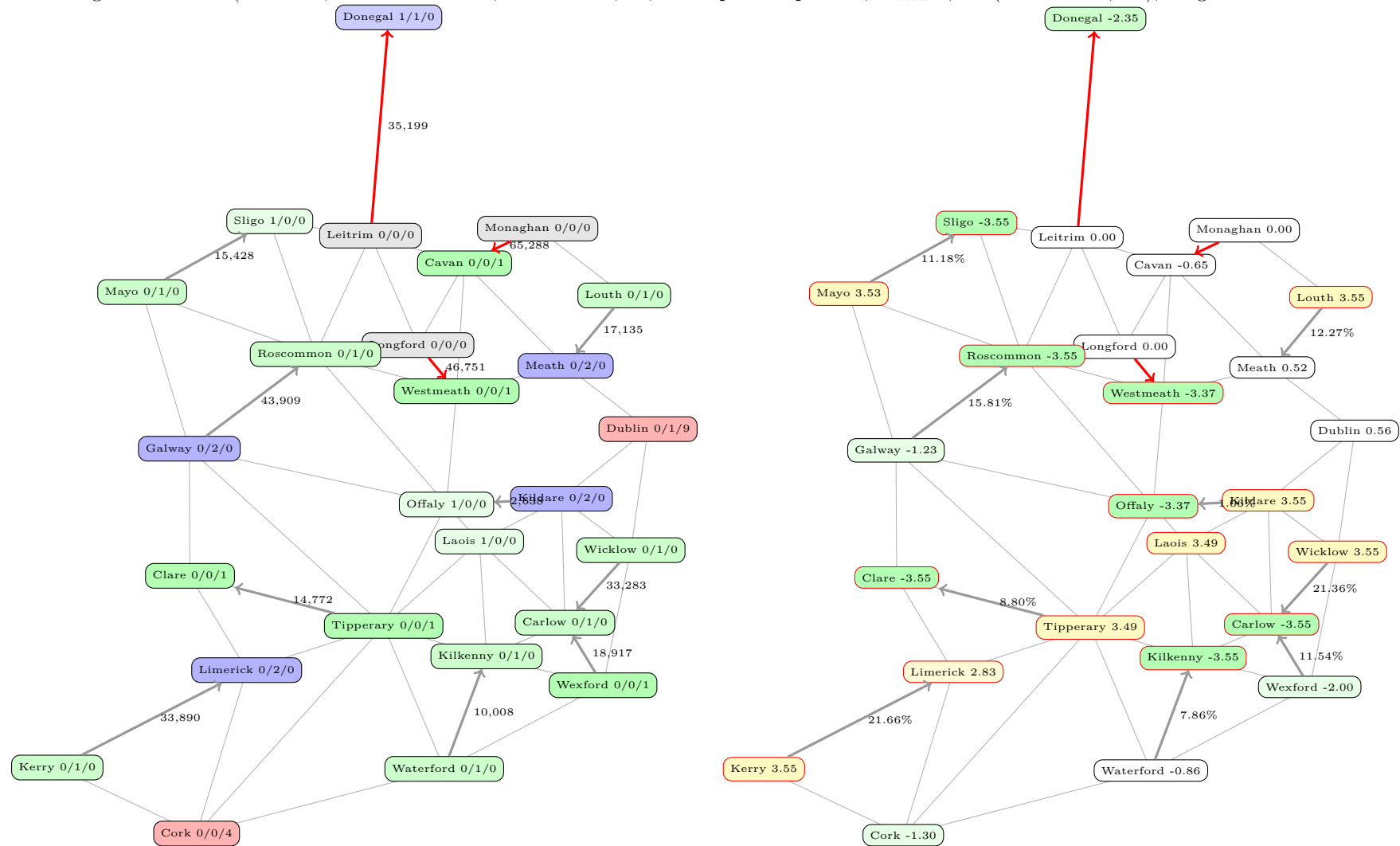
Table 60: Counties

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	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
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	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	43,909	0	233,828	2	0/2/0	8	29,228.50	-1.23
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	17,135	0	122,568	1	0/1/0	4	30,642.00	3.55
Mayo	137,970	4.66	15,428	0	122,542	1	0/1/0	4	30,635.50	3.53
Meath	220,826	7.46	0	17,135	237,961	2	0/2/0	8	29,745.13	0.52
Monaghan	65,288	2.21	65,288	0	0	0	0/0/0	0	0.00	0.00
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	43,909	114,168	1	0/1/0	4	28,542.00	-3.55
Sligo	70,198	2.37	0	15,428	85,626	1	1/0/0	3	28,542.00	-3.55
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	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	33,283	0	122,568	1	0/1/0	4	30,642.00	3.55

Table 61: 12 Transfers (Total 337218)

From	To	Volume	Percent of From
Kildare	Offaly	2,638	1.06
Longford	Westmeath	46,751	100.00
Louth	Meath	17,135	12.27
Wexford	Carlow	18,917	11.54
Wicklow	Carlow	33,283	21.36
Kerry	Limerick	33,890	21.66
Tipperary	Clare	14,772	8.80
Waterford	Kilkenny	10,008	7.86
Galway	Roscommon	43,909	15.81
Leitrim	Donegal	35,199	100.00
Mayo	Sligo	15,428	11.18
Monaghan	Cavan	65,288	100.00

Figure 21: Sol20 (174 seats, 40 constituencies, 12 transfers, 29,608.61 persons per TD,  $\Delta_{max}$  1,050 (3.55% of 29,592), weighted variation 1.85%)

### 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	29,610.03	510,172.59	1.88	12	368,139	39	3/15/21	4.46	Optimal	17.48	0.0099

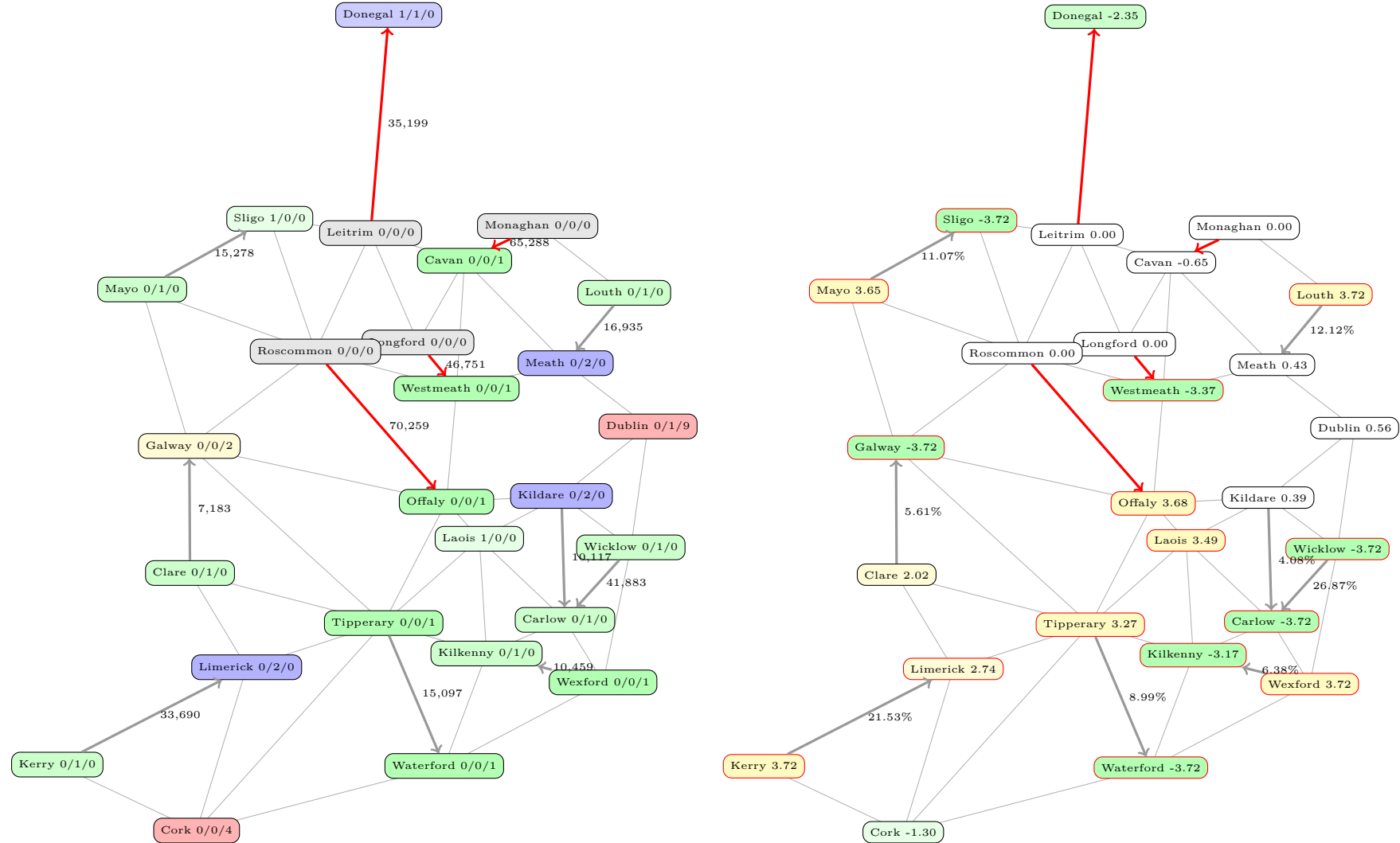
Table 63: Counties

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	10,117	0	237,657	2	0/2/0	8	29,707.13	0.39
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	41,883	0	113,968	1	0/1/0	4	28,492.00	-3.72

Table 64: 12 Transfers (Total 368139)			
From	To	Volume	Percent of From
Kildare	Carlow	10,117	4.08
Longford	Westmeath	46,751	100.00
Louth	Meath	16,935	12.12
Wexford	Kilkenny	10,459	6.38
Wicklow	Carlow	41,883	26.87
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, 29,610.03 persons per TD,  $\Delta_{max}$  1,100 (3.72% of 29,592), weighted variation 1.88%)

### 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	19.68	0.0073

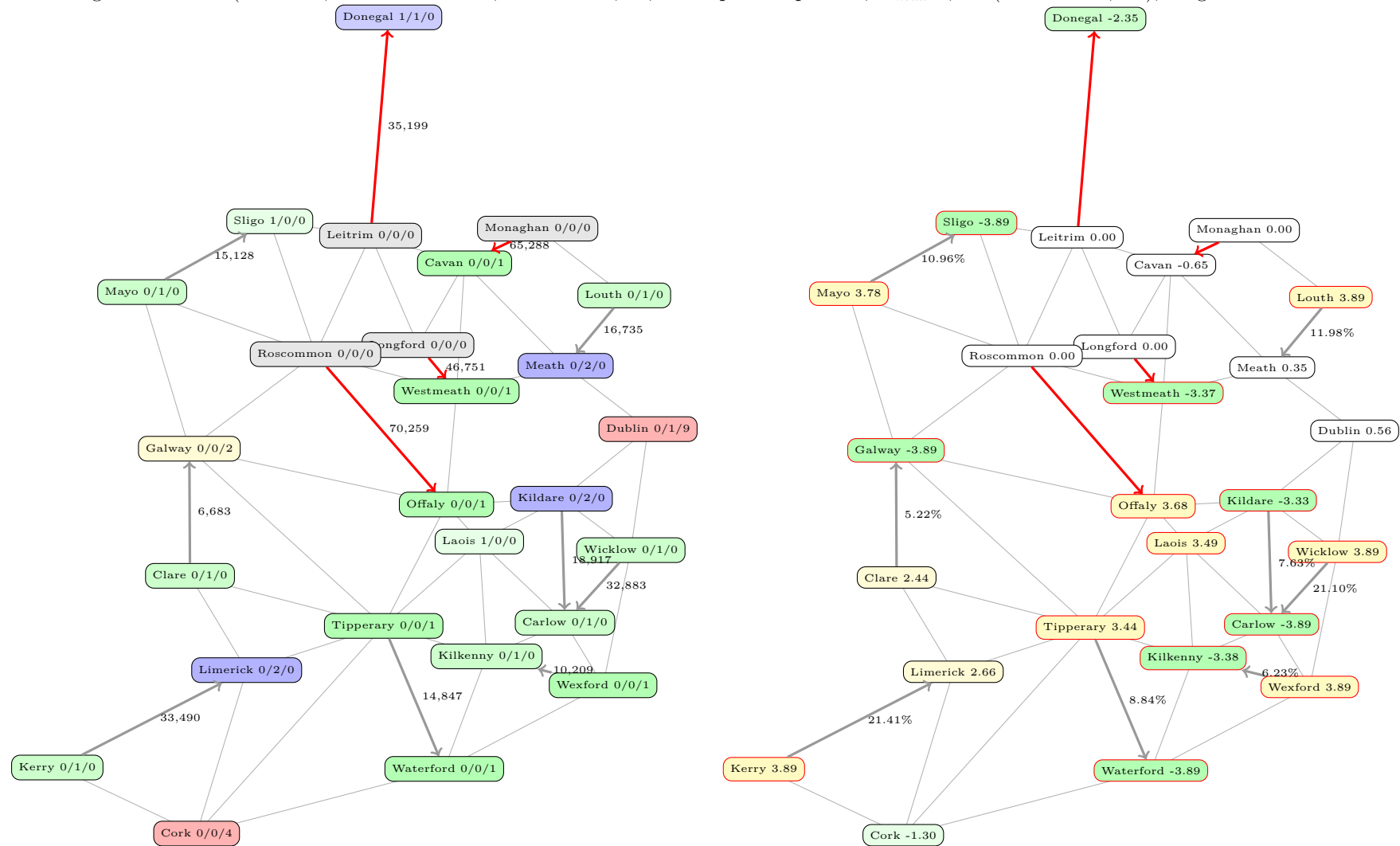
Table 66: Counties

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	29,613.42	610,308.96	2.00	12	382,761	38	2/12/24	4.58	Optimal	20.16	0.0086

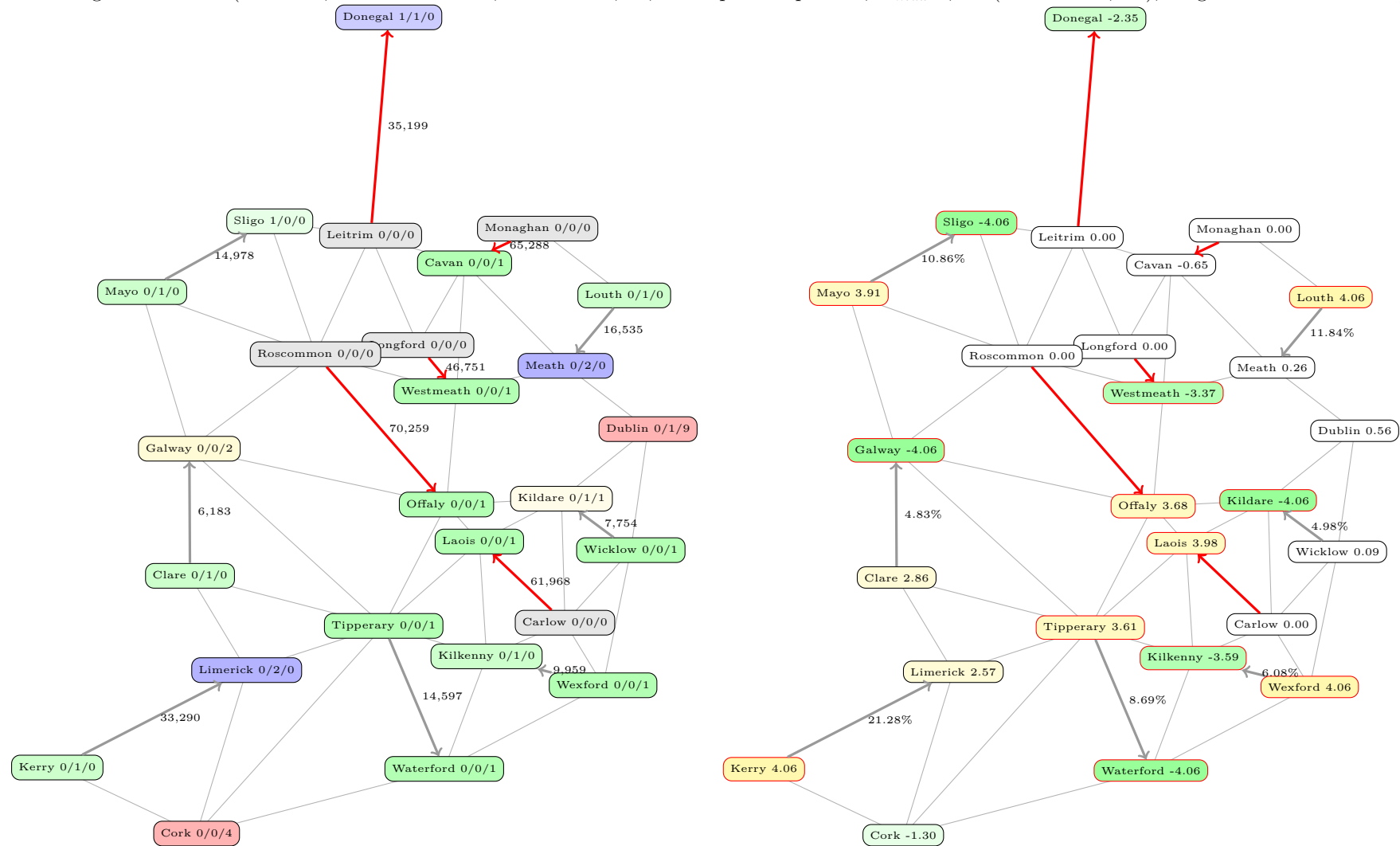
Table 69: Counties

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	0/0/4	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	6,183	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, 29,613.42 persons per TD,  $\Delta_{max}$  1,200 (4.06% of 29,592), weighted variation 2.00%)





### 3.24 Solution Sol24

Table 71: Solution 24

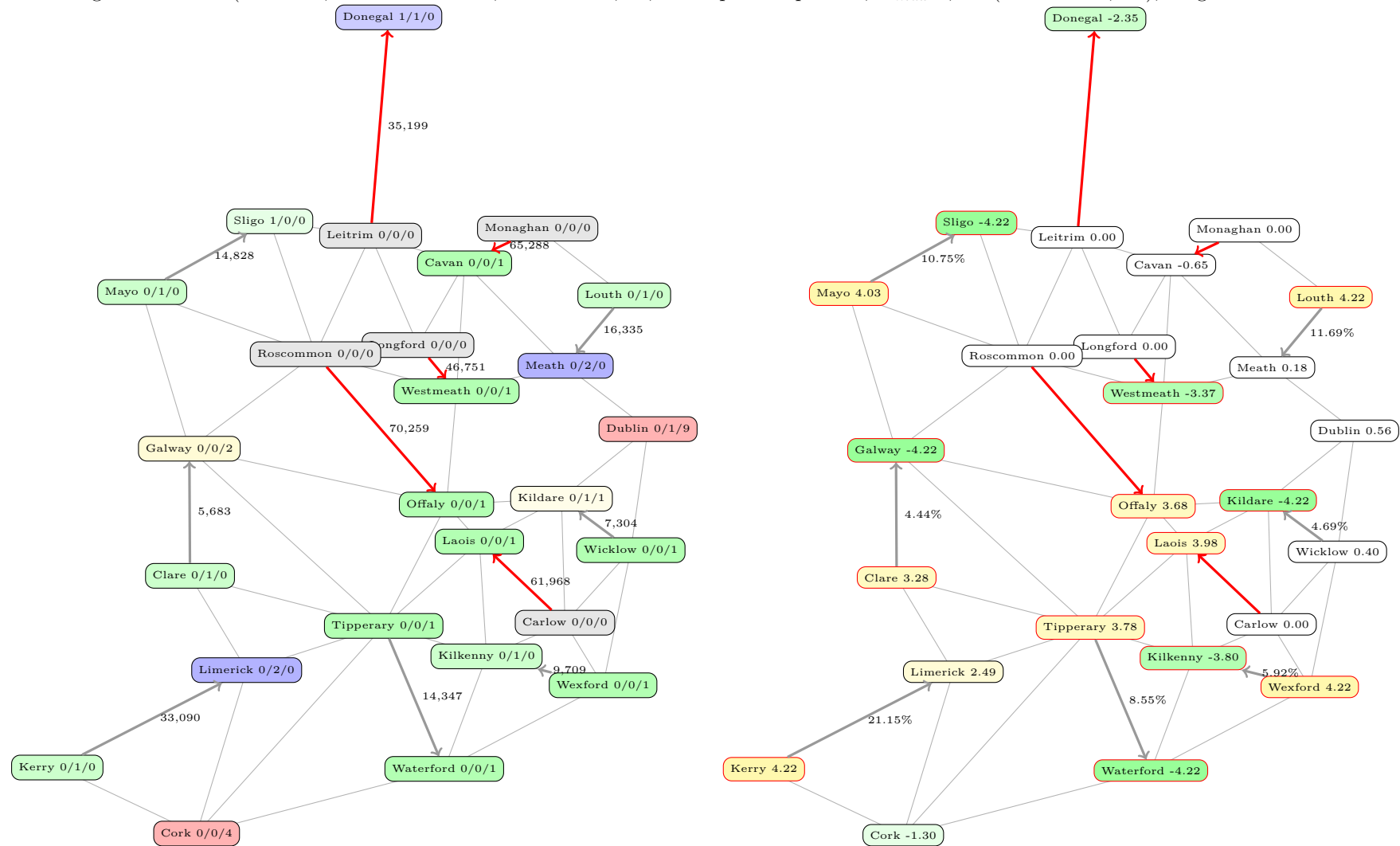
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol24	174	1,250	4.22	8.45	28,342.00	30,842.00	29,614.78	650,129.23	2.07	12	380,761	38	2/12/24	4.58	Optimal	19.51	0.0094

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

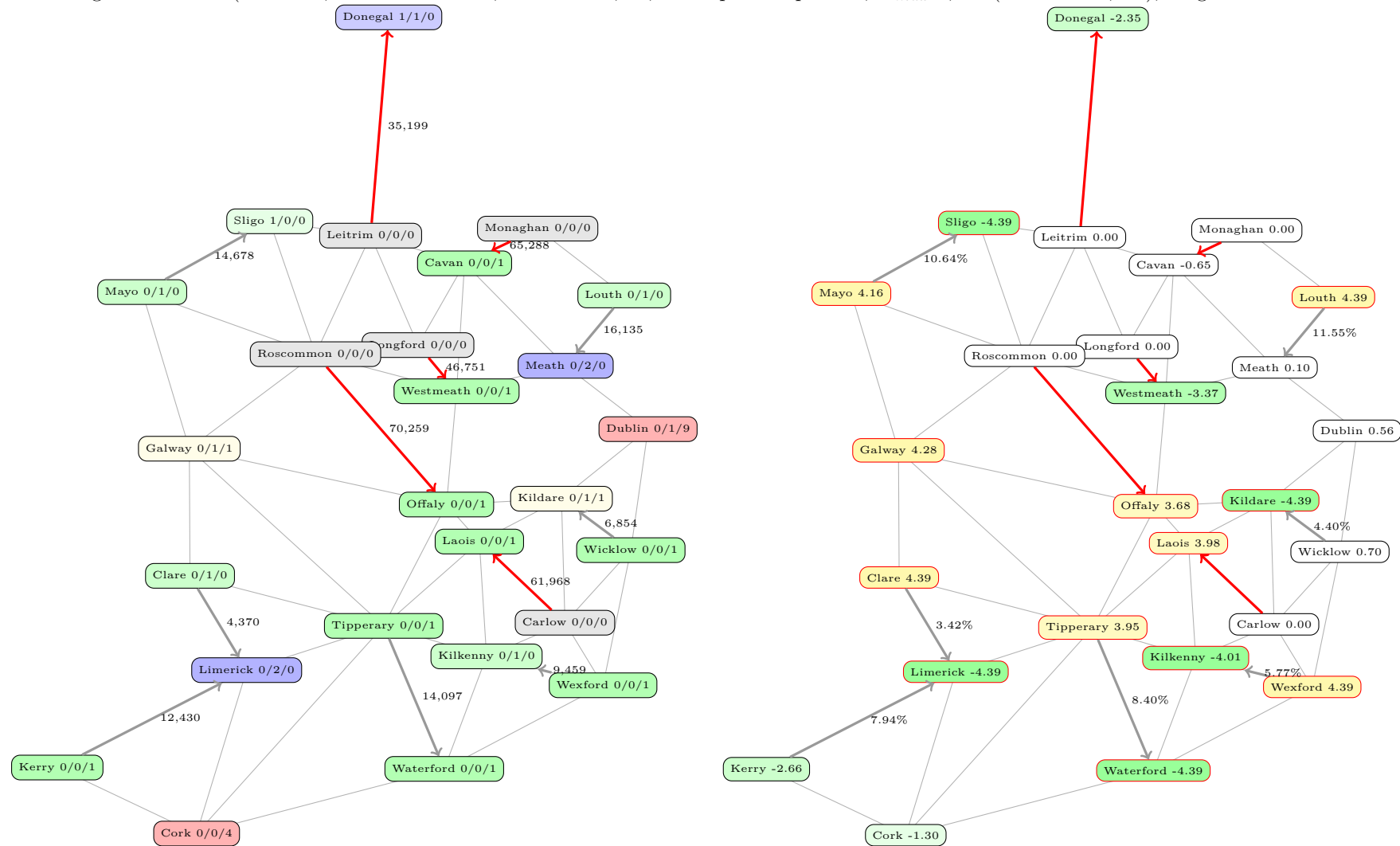
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol25	174	1,300	4.39	8.79	28,292.00	30,892.00	29,617.27	725,671.33	2.17	12	357,488	38	2/12/24	4.58	Optimal	28.72	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	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	4,370	0	123,568	1	0/1/0	4	30,892.00	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	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	12,430	0	144,028	1	0/0/1	5	28,805.60	-2.66
Kildare	247,774	8.37	0	6,854	254,628	2	0/1/1	9	28,292.00	-4.39
Kilkenny	104,160	3.52	0	9,459	113,619	1	0/1/0	4	28,404.75	-4.01
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	16,800	226,336	2	0/2/0	8	28,292.00	-4.39
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	14,678	0	123,292	1	0/1/0	4	30,823.00	4.16
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	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	14,678	84,876	1	1/0/0	3	28,292.00	-4.39
Tipperary	167,895	5.67	14,097	0	153,798	1	0/0/1	5	30,759.60	3.95
Waterford	127,363	4.30	0	14,097	141,460	1	0/0/1	5	28,292.00	-4.39

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	9,459	0	154,460	1	0/0/1	5	30,892.00	4.39
Wicklow	155,851	5.27	6,854	0	148,997	1	0/0/1	5	29,799.40	0.70

Table 76: 12 Transfers (Total 357488)			
From	To	Volume	Percent of From
Carlow	Laois	61,968	100.00
Longford	Westmeath	46,751	100.00
Louth	Meath	16,135	11.55
Wexford	Kilkenny	9,459	5.77
Wicklow	Kildare	6,854	4.40
Clare	Limerick	4,370	3.42
Kerry	Limerick	12,430	7.94
Tipperary	Waterford	14,097	8.40
Leitrim	Donegal	35,199	100.00
Mayo	Sligo	14,678	10.64
Roscommon	Offaly	70,259	100.00
Monaghan	Cavan	65,288	100.00

Figure 26: Sol25 (174 seats, 38 constituencies, 12 transfers, 29,617.27 persons per TD,  $\Delta_{max}$  1,300 (4.39% of 29,592), weighted variation 2.17%)

### 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	29,619.60	793,533.76	2.28	12	355,788	38	2/12/24	4.58	Optimal	130.68	0.0100

Table 78: Counties

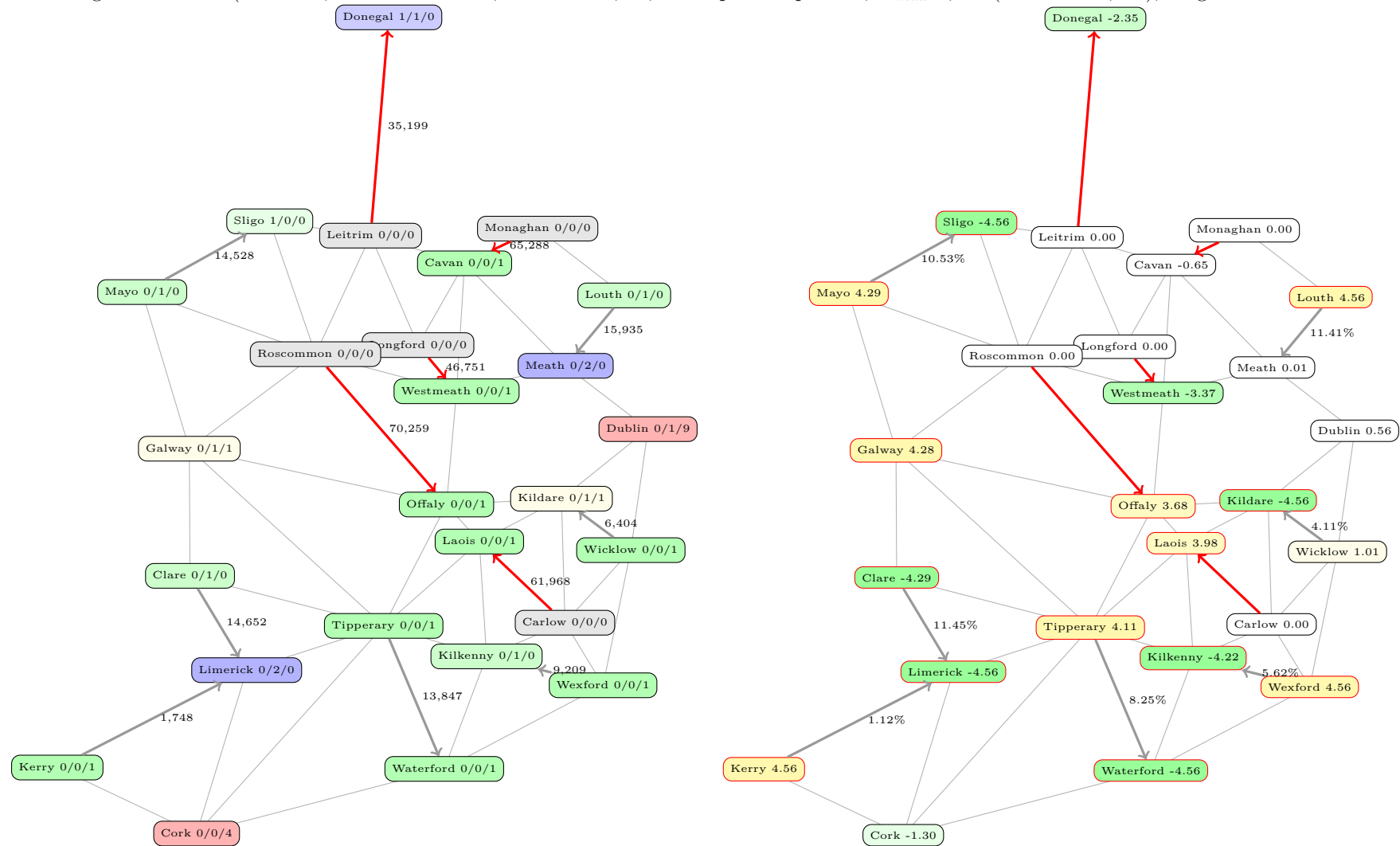
Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	61,968	0	0	0	0/0/0	0	0.00	0.00
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	14,652	0	113,286	1	0/1/0	4	28,321.50	-4.29
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	1,748	0	154,710	1	0/0/1	5	30,942.00	4.56
Kildare	247,774	8.37	0	6,404	254,178	2	0/1/1	9	28,242.00	-4.56
Kilkenny	104,160	3.52	0	9,209	113,369	1	0/1/0	4	28,342.25	-4.22
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	16,400	225,936	2	0/2/0	8	28,242.00	-4.56
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	14,528	0	123,442	1	0/1/0	4	30,860.50	4.29
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	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	14,528	84,726	1	1/0/0	3	28,242.00	-4.56
Tipperary	167,895	5.67	13,847	0	154,048	1	0/0/1	5	30,809.60	4.11
Waterford	127,363	4.30	0	13,847	141,210	1	0/0/1	5	28,242.00	-4.56

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	9,209	0	154,710	1	0/0/1	5	30,942.00	4.56
Wicklow	155,851	5.27	6,404	0	149,447	1	0/0/1	5	29,889.40	1.01

Table 79: 12 Transfers (Total 355788)

From	To	Volume	Percent of From
Carlow	Laois	61,968	100.00
Longford	Westmeath	46,751	100.00
Louth	Meath	15,935	11.41
Wexford	Kilkenny	9,209	5.62
Wicklow	Kildare	6,404	4.11
Clare	Limerick	14,652	11.45
Kerry	Limerick	1,748	1.12
Tipperary	Waterford	13,847	8.25
Leitrim	Donegal	35,199	100.00
Mayo	Sligo	14,528	10.53
Roscommon	Offaly	70,259	100.00
Monaghan	Cavan	65,288	100.00



Figure 27: Sol26 (174 seats, 38 constituencies, 12 transfers, 29,619.60 persons per TD,  $\Delta_{max}$  1,350 (4.56% of 29,592), weighted variation 2.28%)

### 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	2.52	11	352,530	39	3/15/21	4.46	Optimal	11.70	0.0095

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	49,909	0	114,010	1	0/1/0	4	28,502.50	-3.68
Wicklow	155,851	5.27	891	0	154,960	1	0/0/1	5	30,992.00	4.73

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	49,909	30.45
Wicklow	Carlow	891	0.57
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



### 3.28 Solution Sol28

Table 83: Solution 28

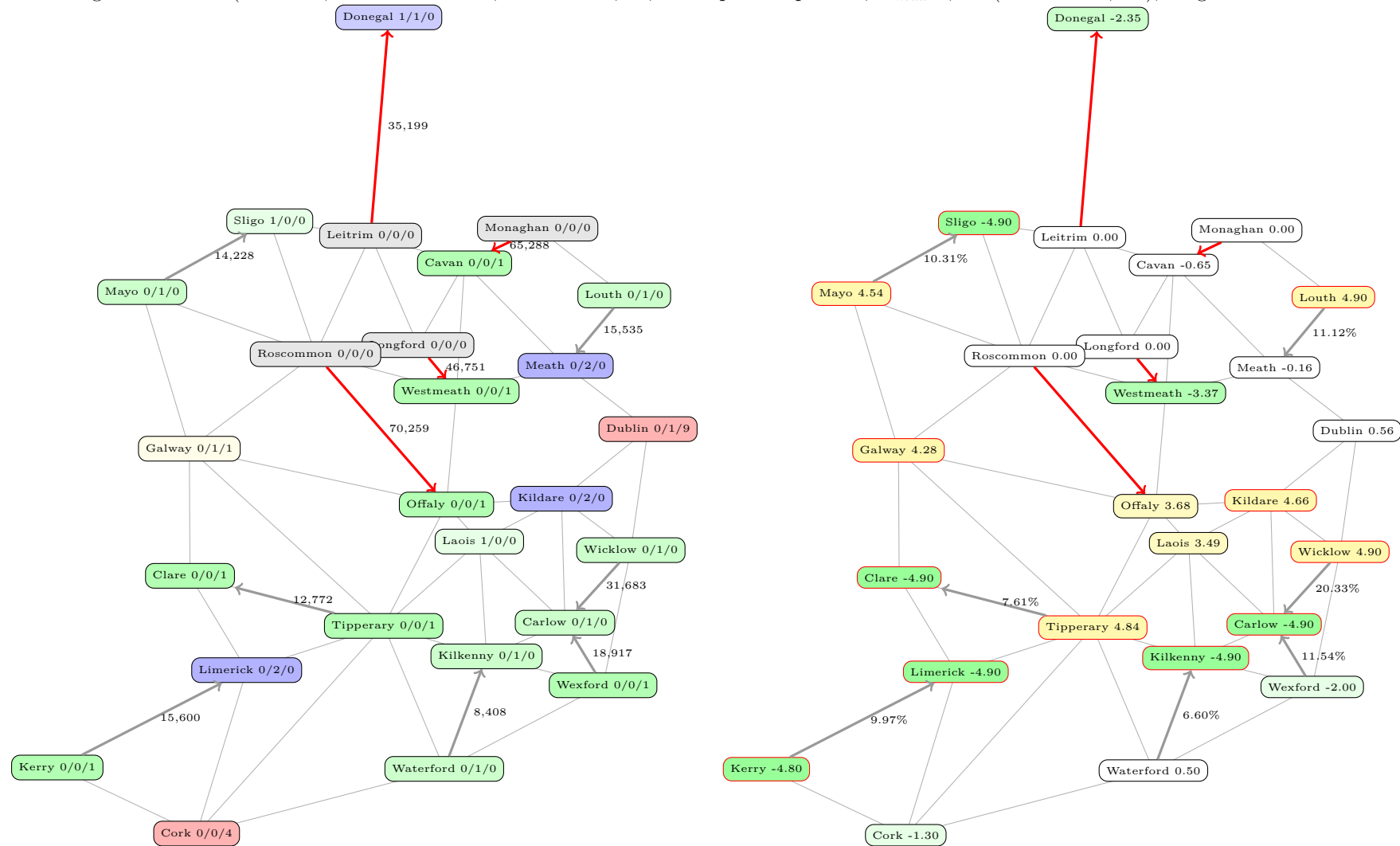
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol28	174	1,450	4.90	9.80	28,142.00	31,042.00	29,621.57	852,113.06	2.37	11	334,640	39	3/15/21	4.46	Optimal	11.50	0.0034

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	18,917	0	145,002	1	0/0/1	5	29,000.40	-2.00
Wicklow	155,851	5.27	31,683	0	124,168	1	0/1/0	4	31,042.00	4.90

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	18,917	11.54
Wicklow	Carlow	31,683	20.33
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	29,622.51	879,808.89	2.41	11	333,240	39	3/15/21	4.46	Optimal	32.79	0.0100

Table 87: Counties

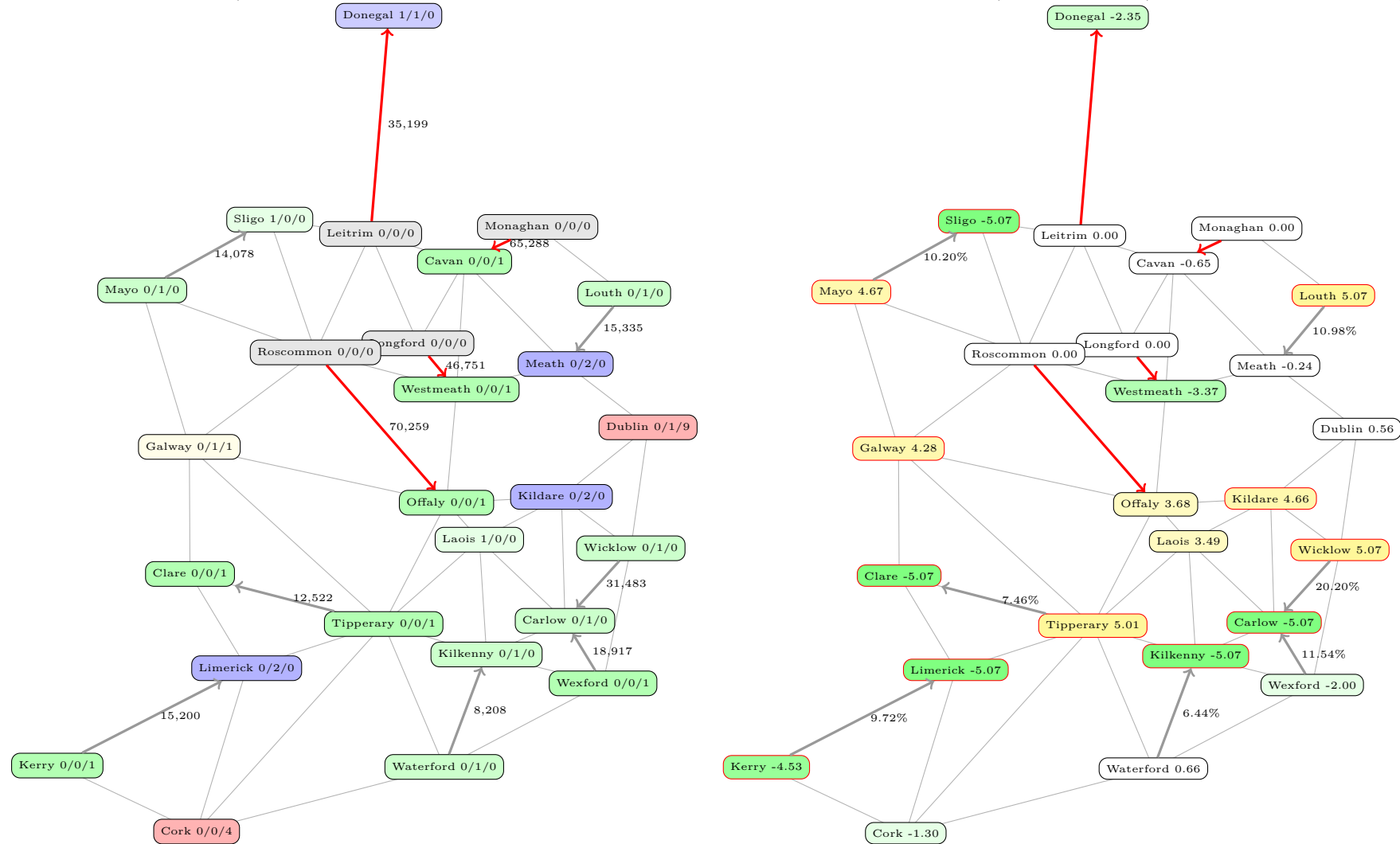
Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	50,400	112,368	1	0/1/0	4	28,092.00	-5.07
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	0	12,522	140,460	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	18,917	0	145,002	1	0/0/1	5	29,000.40	-2.00
Wicklow	155,851	5.27	31,483	0	124,368	1	0/1/0	4	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	18,917	11.54
Wicklow	Carlow	31,483	20.20
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, 29,622.51 persons per TD,  $\Delta_{max}$  1,500 (5.07% of 29,592), weighted variation 2.41%)

### 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	33.63	0.0093

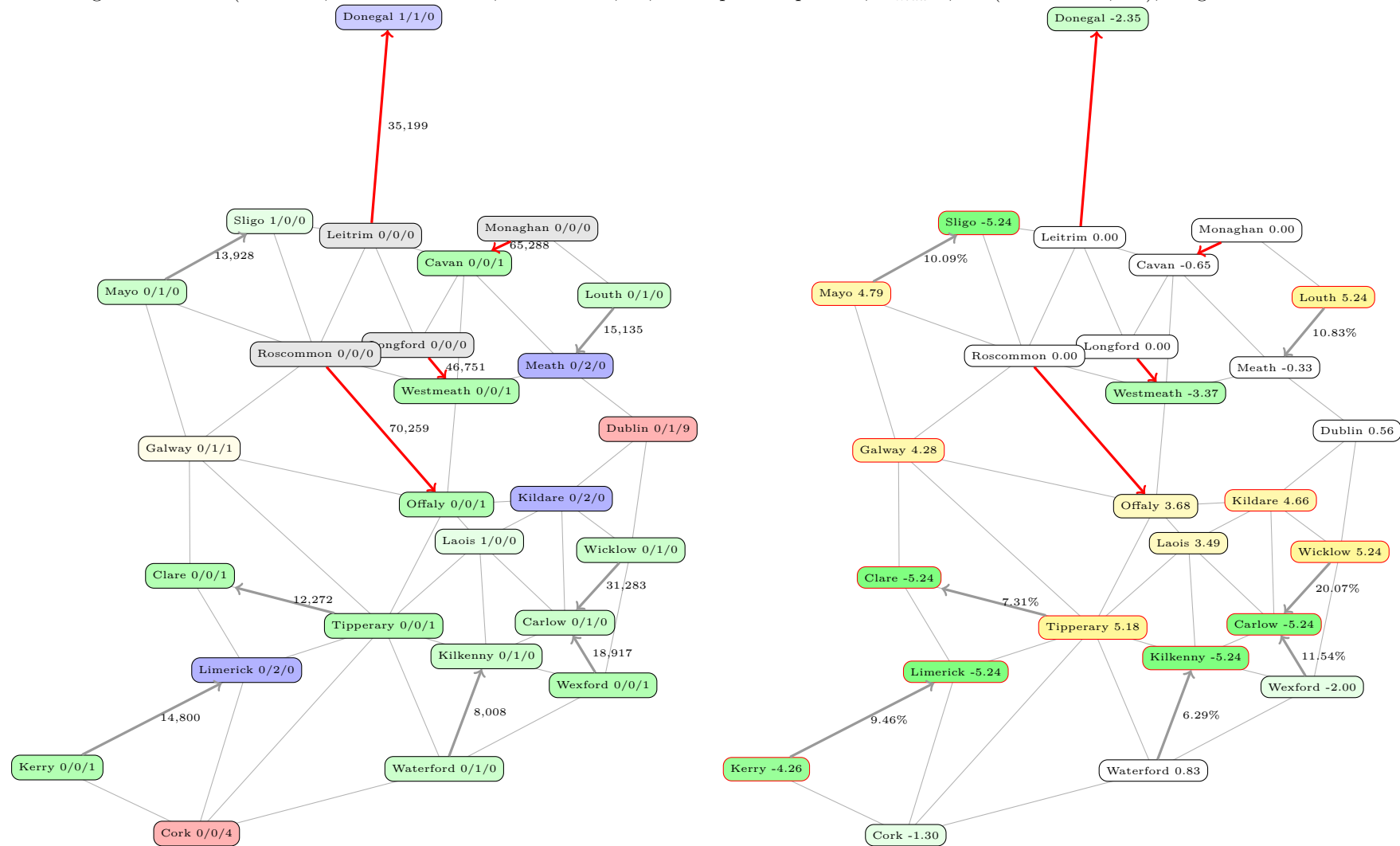
Table 90: Counties

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

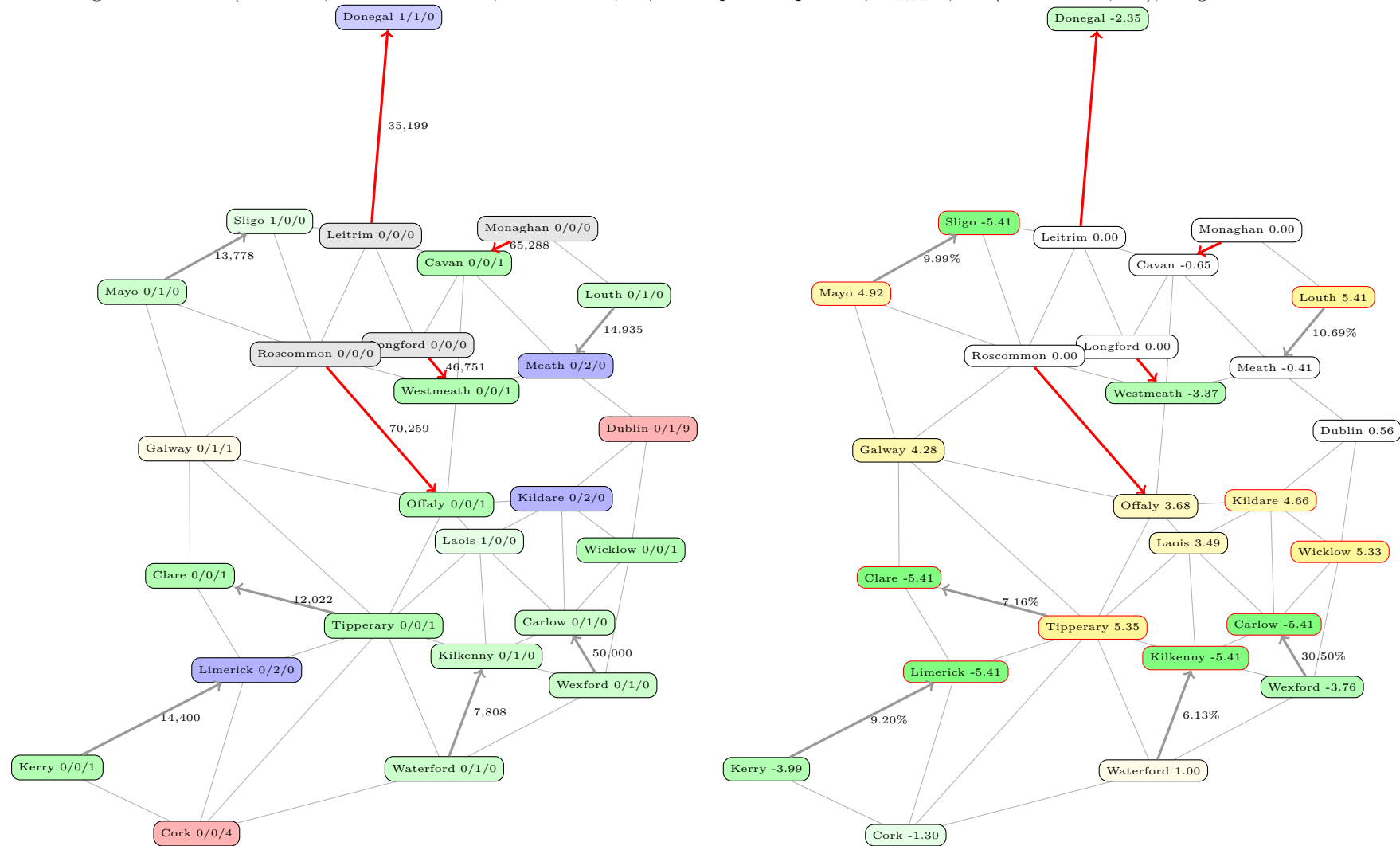
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol31	174	1,600	5.41	10.81	27,992.00	31,192.00	29,625.61	970,728.90	2.53	10	330,440	39	3/15/21	4.46	Optimal	9.68	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	22.56	0.0078

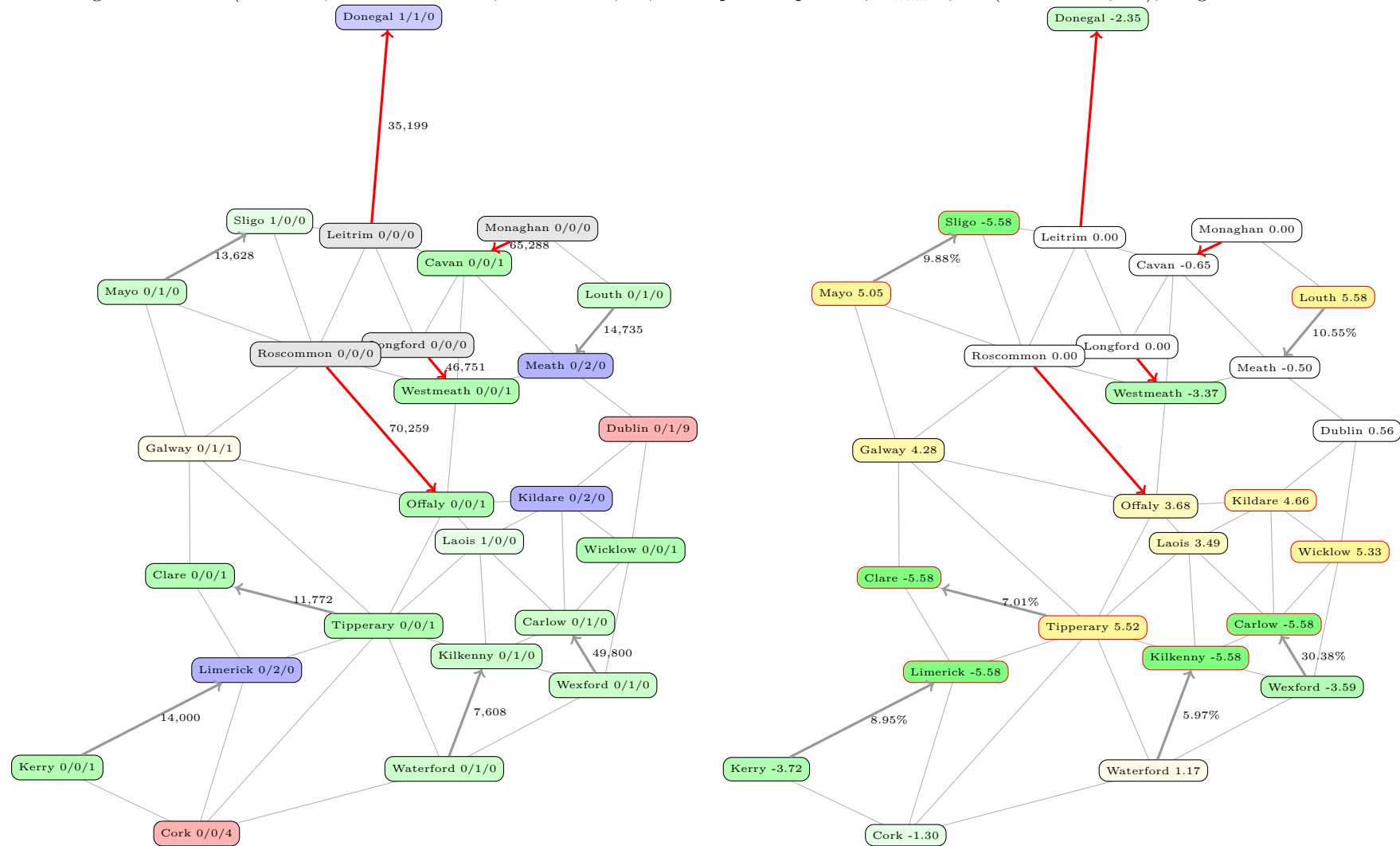
Table 96: Counties

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	11.19	0.0000

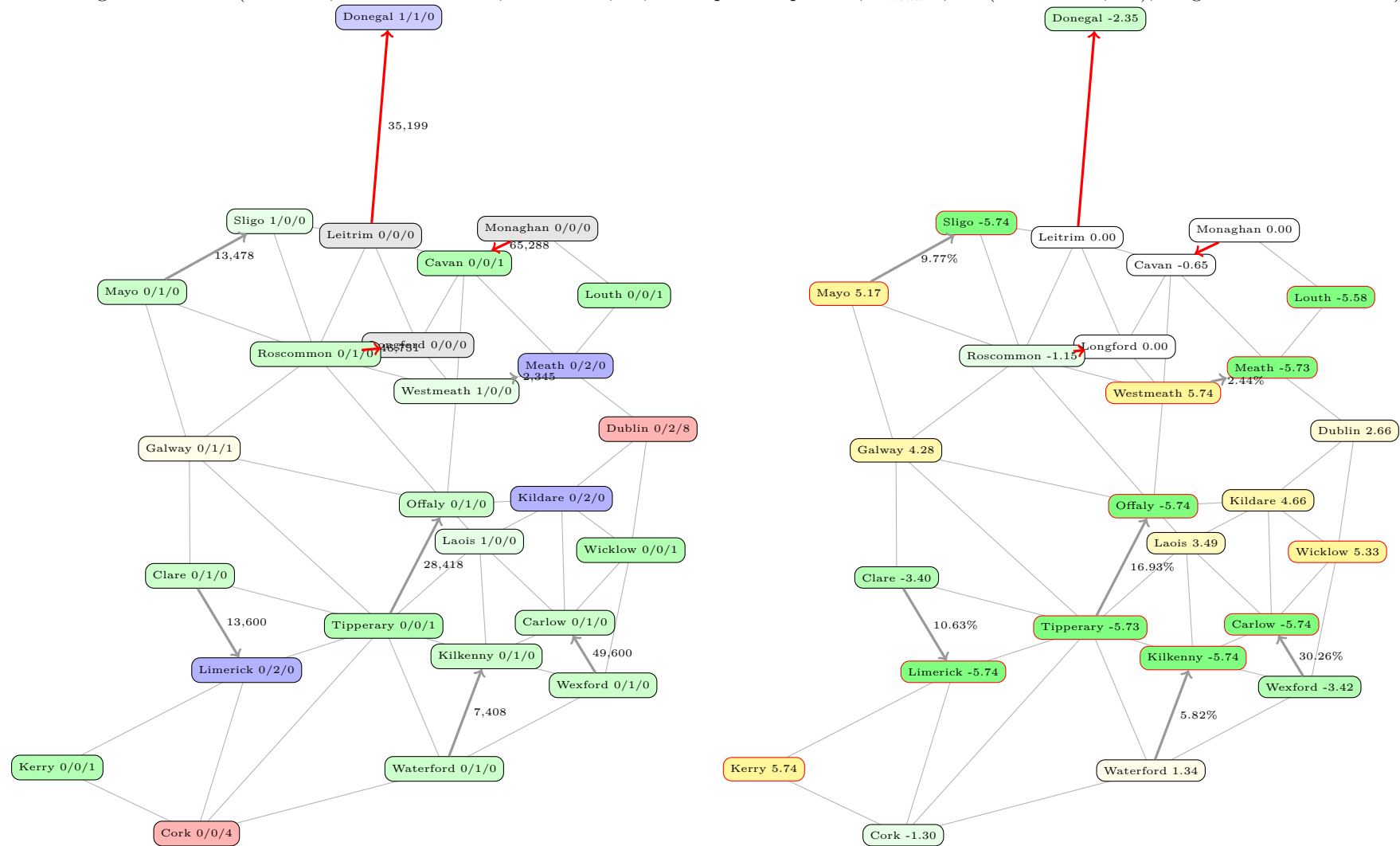
Table 99: Counties

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	29,640.25	1,388,275.08	3.52	9	260,787	40	4/18/18	4.35	Optimal	14.20	0.0079

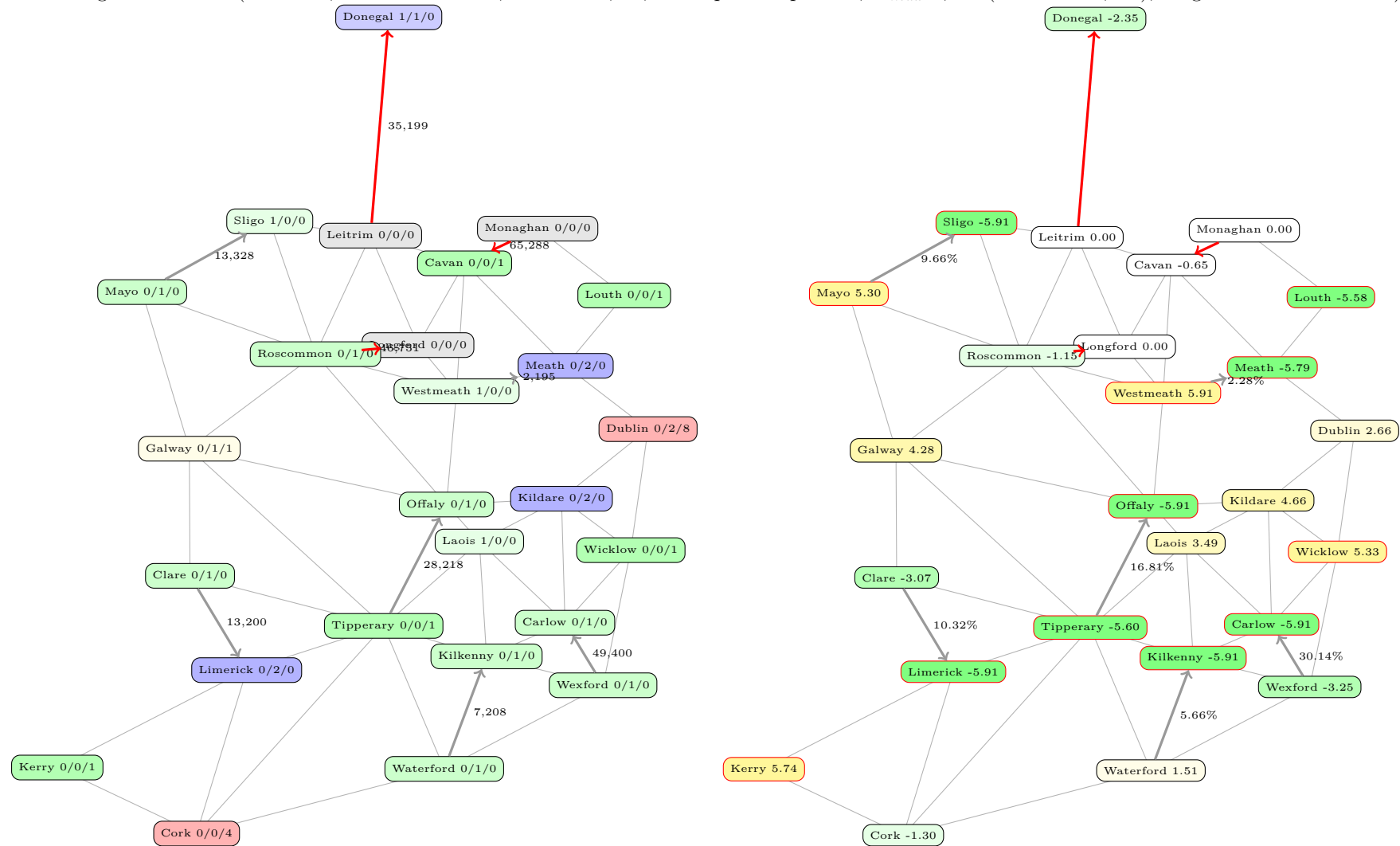
Table 102: Counties

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	0/0/4	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	7,208	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	13,328	0	124,642	1	0/1/0	4	31,160.50	5.30
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	13,328	83,526	1	1/0/0	3	27,842.00	-5.91
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 260787)			
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	Donegal	35,199	100.00
Mayo	Sligo	13,328	9.66
Monaghan	Cavan	65,288	100.00



Figure 35: Sol34 (174 seats, 40 constituencies, 9 transfers, 29,640.25 persons per TD,  $\Delta_{max}$  1,750 (5.91% of 29,592), weighted variation 3.52%)

### 3.35 Solution Sol35

Table 104: Solution 35

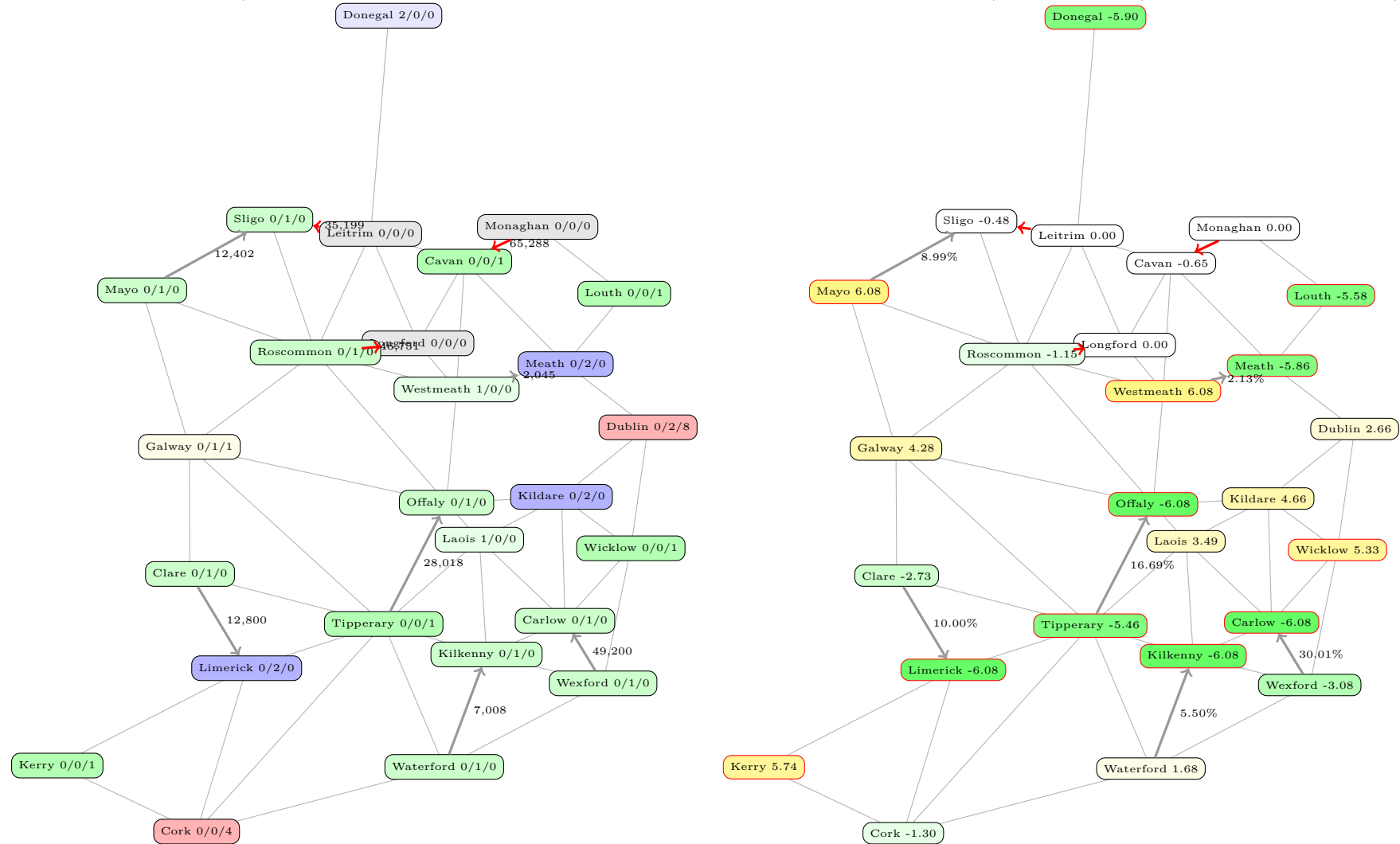
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol35	174	1,800	6.08	12.17	27,792.00	31,392.00	29,642.58	1,454,566.18	3.58	9	258,711	40	4/18/18	4.35	Optimal	11.25	0.0099

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	29,643.38	1,477,222.74	3.60	9	257,361	40	4/18/18	4.35	Optimal	10.53	0.0092

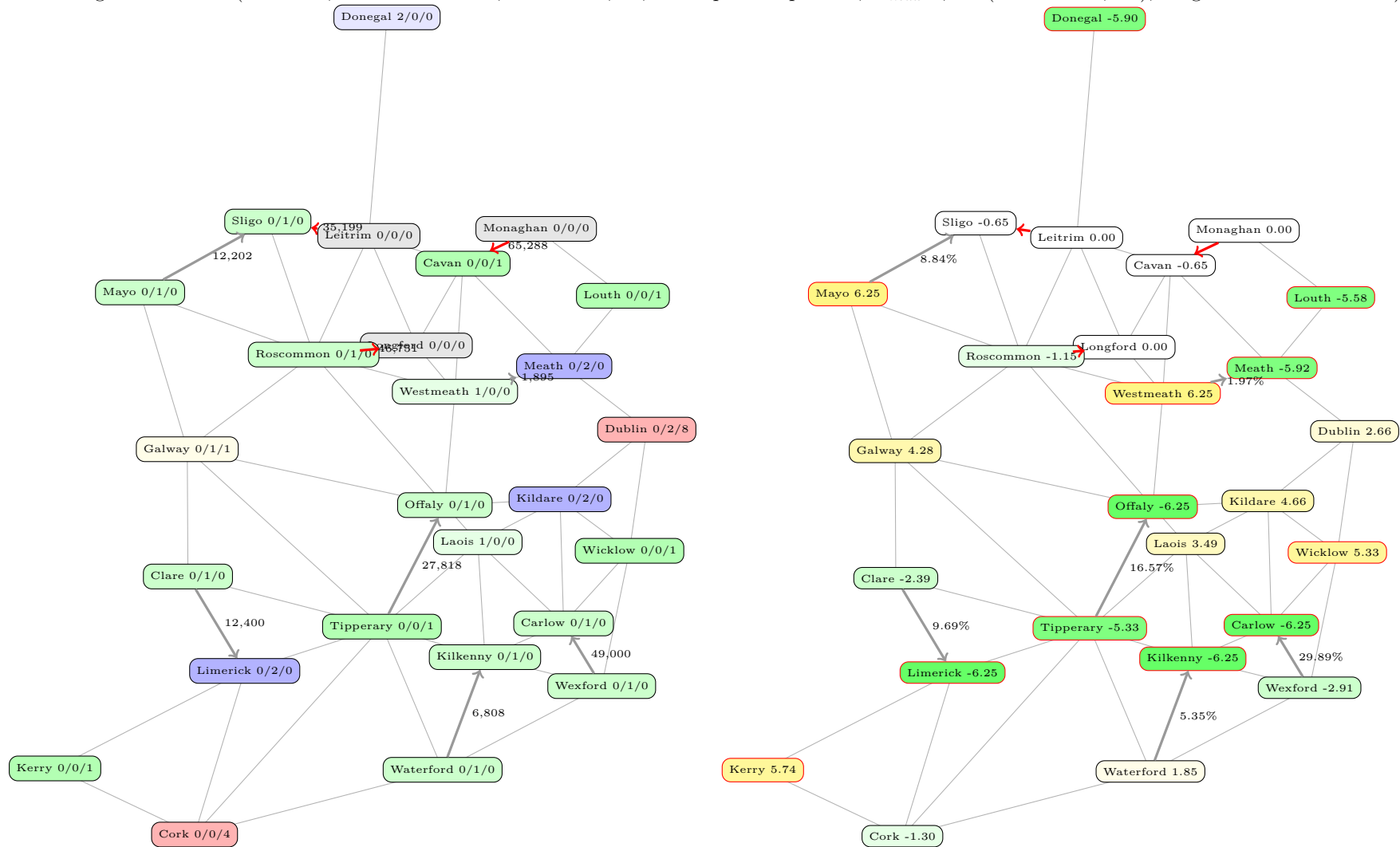
Table 108: Counties

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	0/0/4	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	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, 29,643.38 persons per TD,  $\Delta_{max}$  1,850 (6.25% of 29,592), weighted variation 3.60%)



### 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	29,646.01	1,554,241.78	3.64	8	226,915	40	6/14/20	4.35	Optimal	18.49	0.0097

Table 111: Counties

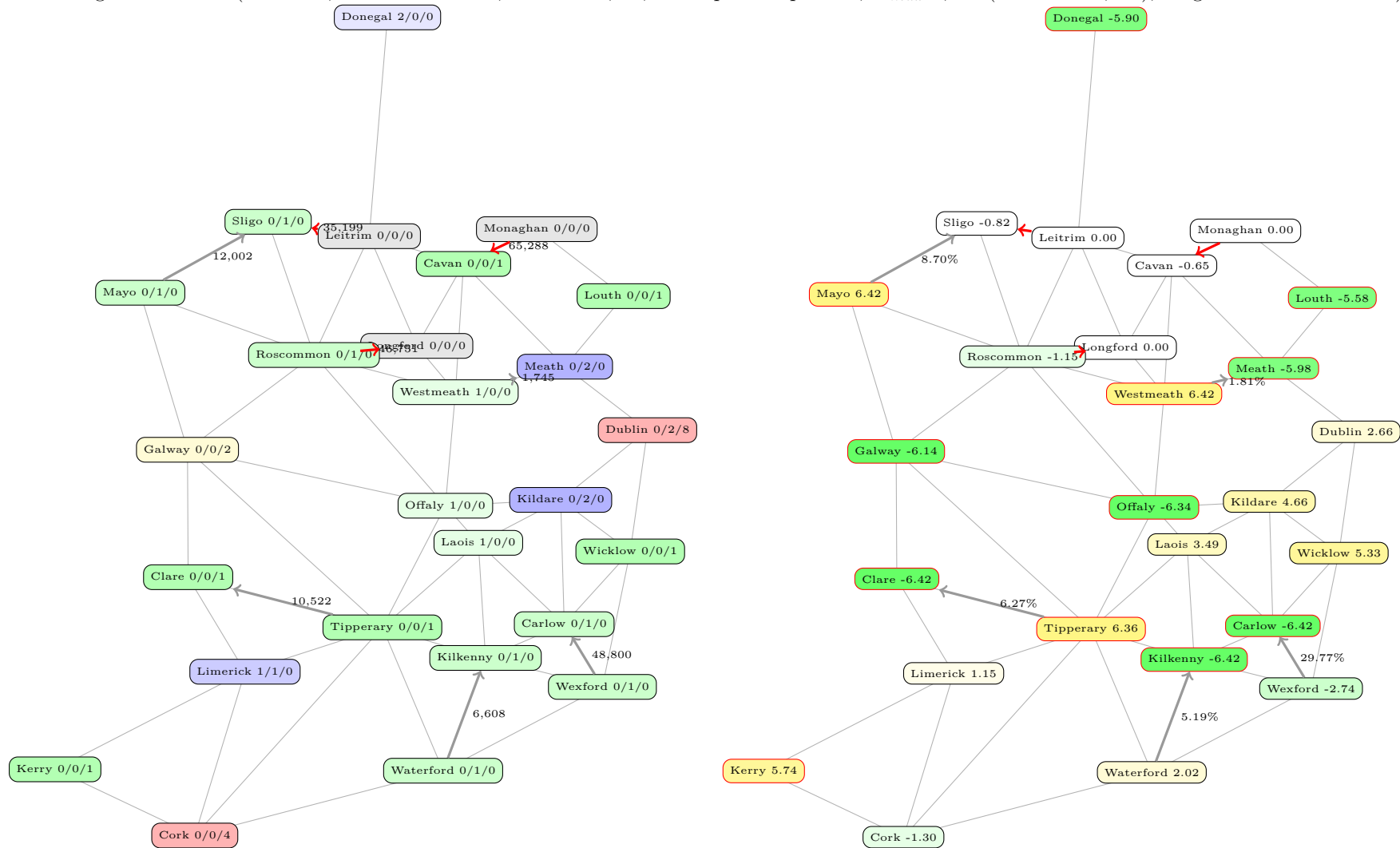
Name	Population	Fractional Seat	Transfer Out	Transfer In	Effective Population	Const. Assigned	Const. Types	Seats Assigned	Persons Per Seat	Variation
Carlow	61,968	2.09	0	48,800	110,768	1	0/1/0	4	27,692.00	-6.42
Cavan	81,704	2.76	0	65,288	146,992	1	0/0/1	5	29,398.40	-0.65
Clare	127,938	4.32	0	10,522	138,460	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	0/2/8	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	6,608	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, 29,646.01 persons per TD,  $\Delta_{max}$  1,900 (6.42% of 29,592), weighted variation 3.64%)



### 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	17.66	0.0000

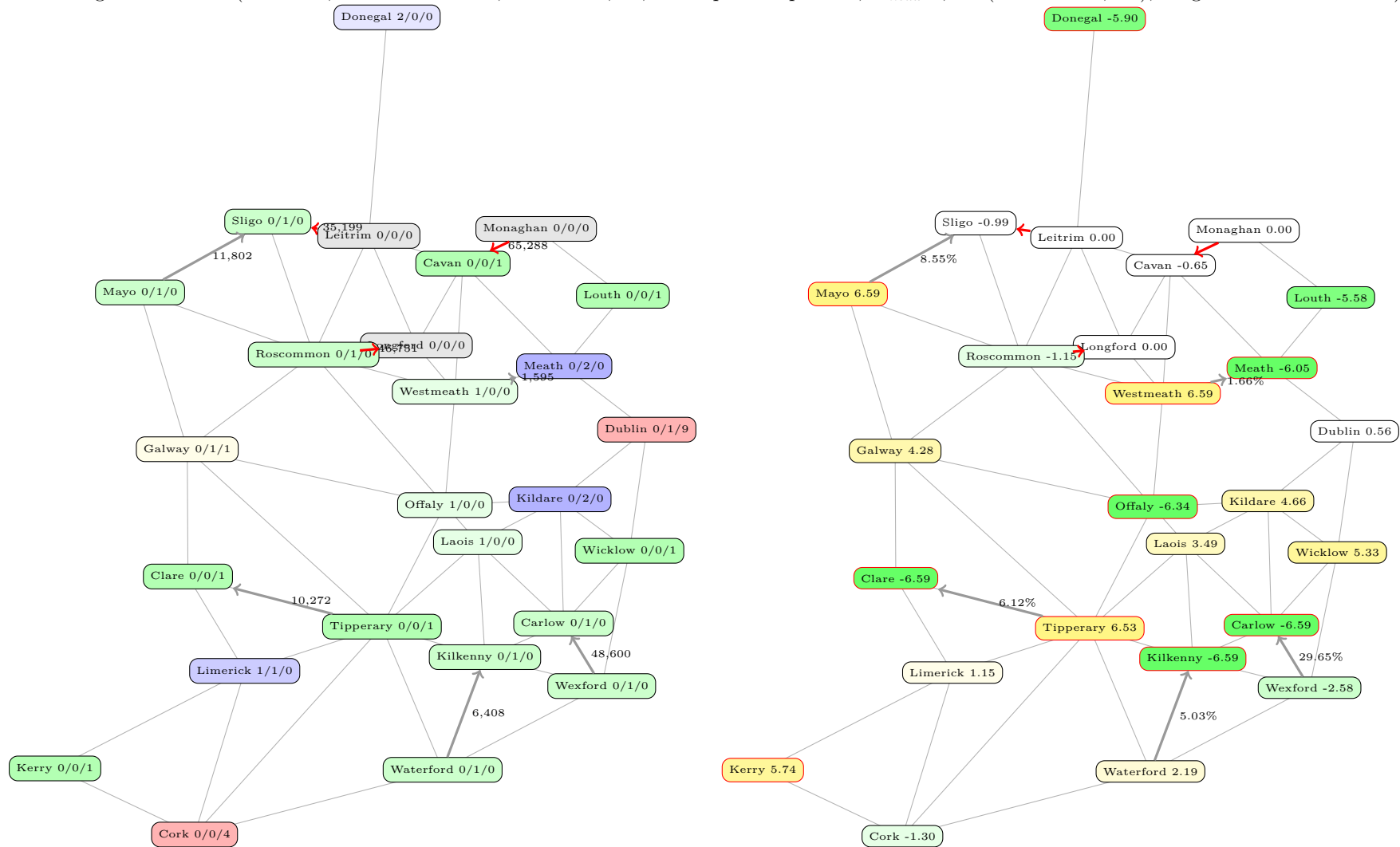
Table 114: Counties

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

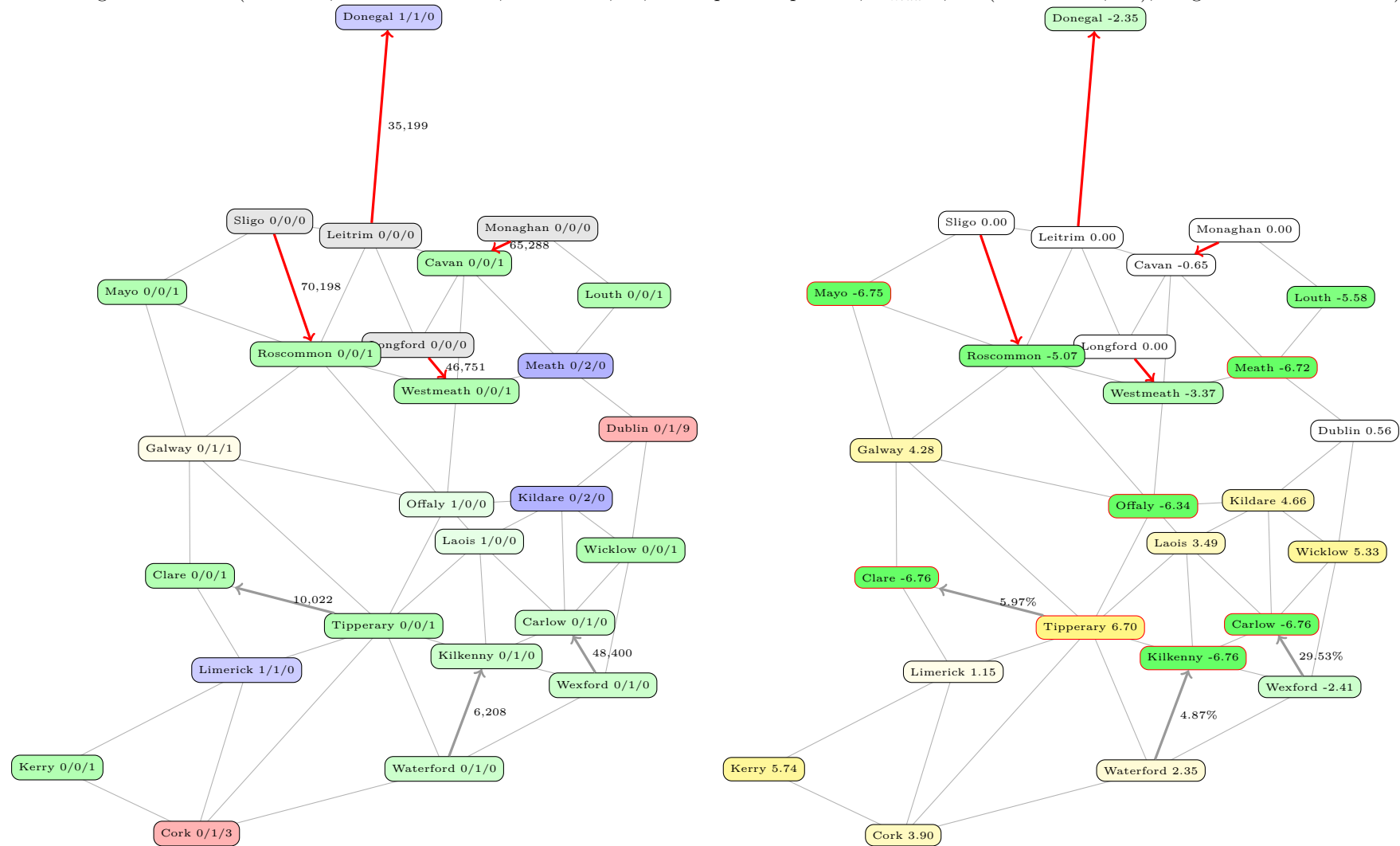
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol39	174	2,000	6.76	13.46	27,592.00	31,574.60	29,642.94	1,459,725.62	3.18	7	282,066	39	4/13/22	4.46	Optimal	14.67	0.0057

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	0/1/3	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	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, 29,642.94 persons per TD,  $\Delta_{max}$  2,000 (6.76% of 29,592), weighted variation 3.18%)



### 3.40 Solution Sol40

Table 119: Solution 40

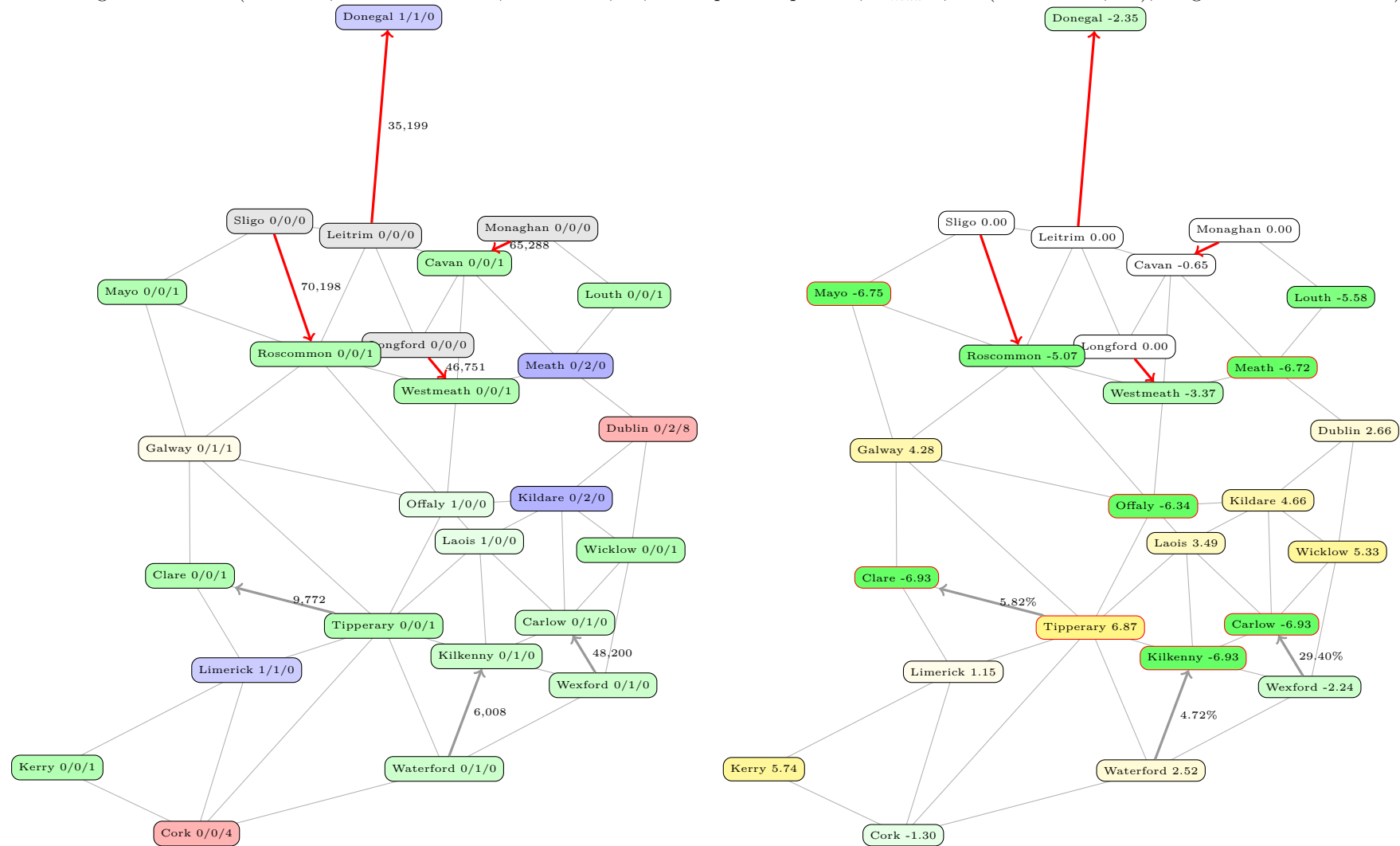
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol40	174	2,050	6.93	13.80	27,542.00	31,624.60	29,644.82	1,512,788.48	3.50	7	281,416	39	4/13/22	4.46	Optimal	10.88	0.0000

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	0/2/8	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	6,008	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	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	9,772	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 281416)			
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
Sligo	Roscommon	70,198	100.00
Monaghan	Cavan	65,288	100.00

Figure 41: Sol40 (174 seats, 39 constituencies, 7 transfers, 29,644.82 persons per TD,  $\Delta_{max}$  2,050 (6.93% of 29,592), weighted variation 3.50%)

### 3.41 Solution Sol41

Table 122: Solution 41

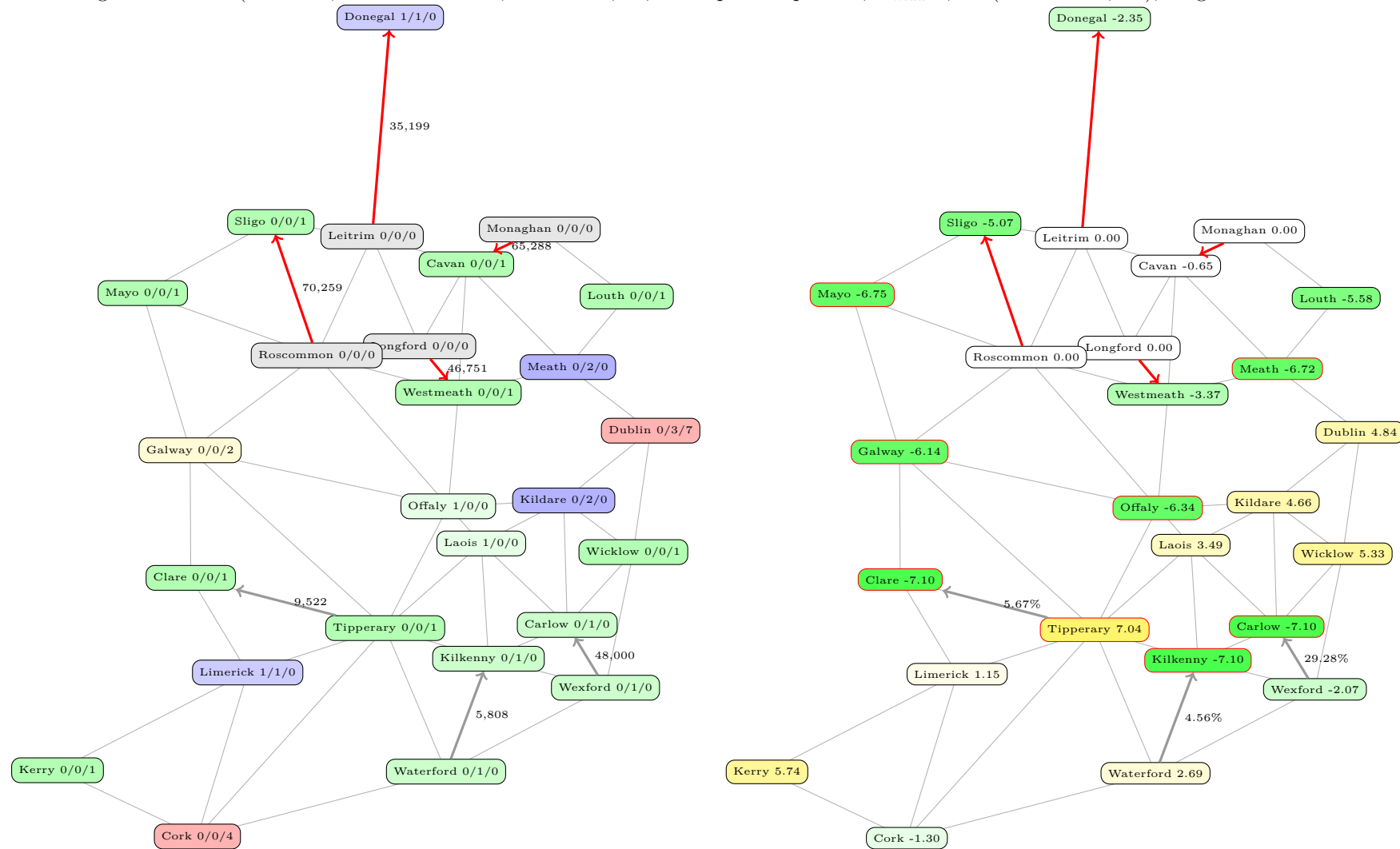
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol41	174	2,100	7.10	14.13	27,492.00	31,674.60	29,662.13	2,029,250.81	4.23	7	280,827	39	4/13/22	4.46	Optimal	26.35	0.0035

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	0/0/4	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	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	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	9,522	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 280827)			
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
Roscommon	Sligo	70,259	100.00
Monaghan	Cavan	65,288	100.00

Figure 42: Sol41 (174 seats, 39 constituencies, 7 transfers, 29,662.13 persons per TD,  $\Delta_{max}$  2,100 (7.10% of 29,592), weighted variation 4.23%)

### 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	29,662.89	2,050,670.77	4.24	7	280,116	39	4/13/22	4.46	Optimal	19.27	0.0022

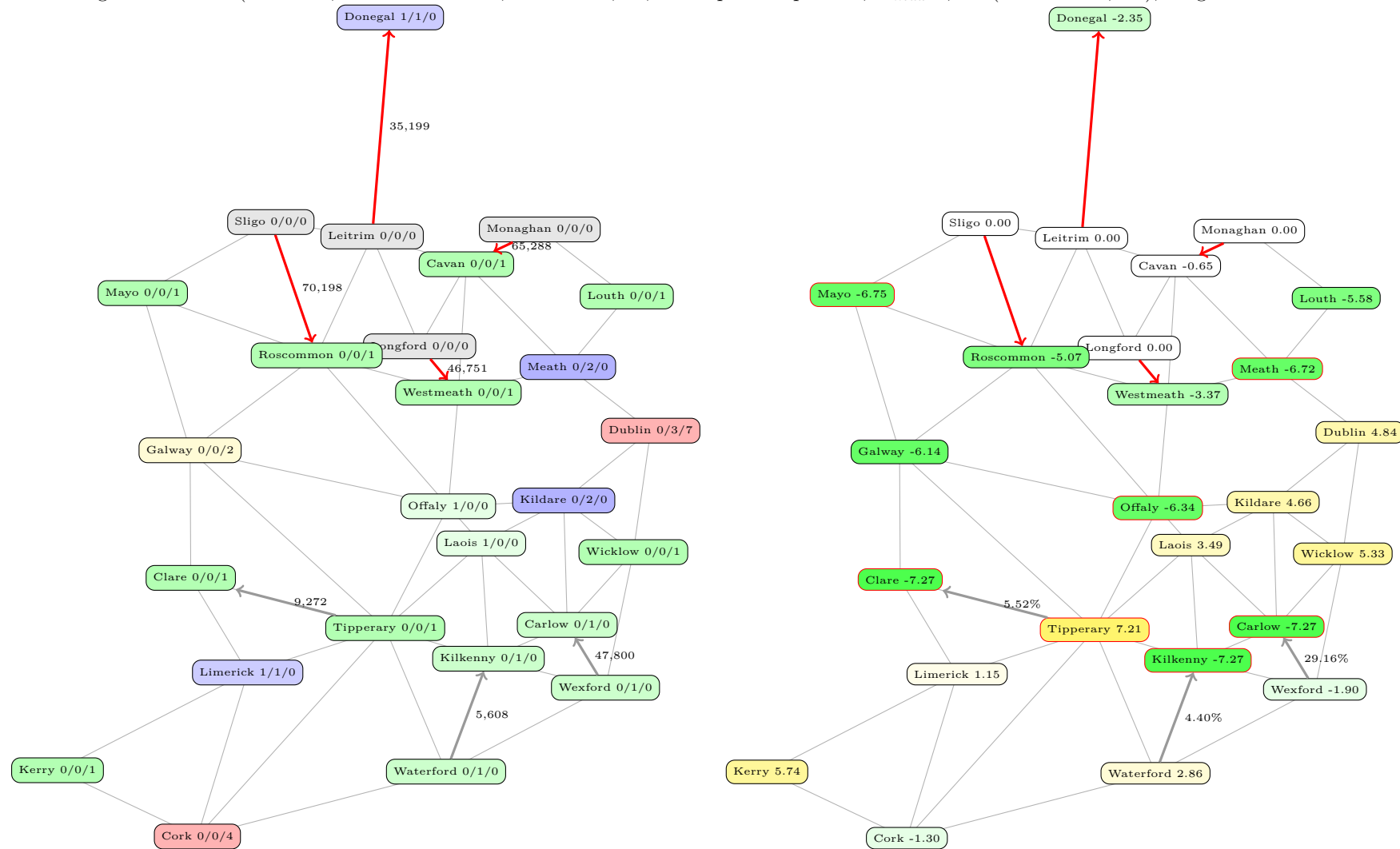
Table 126: Counties

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	0/0/4	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	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, 29,662.89 persons per TD,  $\Delta_{max}$  2,150 (7.27% of 29,592), weighted variation 4.24%)

### 3.43 Solution Sol43

Table 128: Solution 43

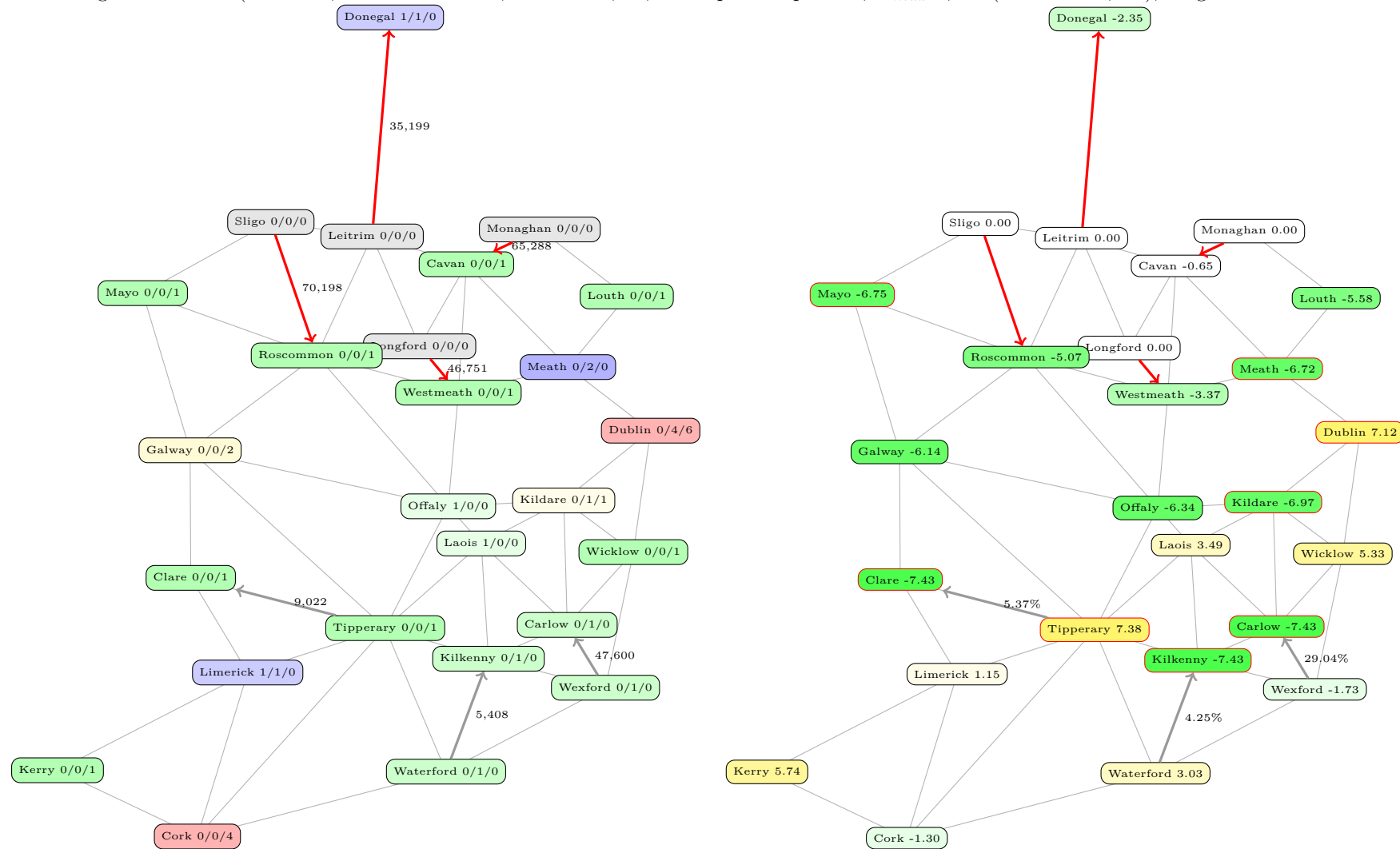
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol43	174	2,200	7.43	14.81	27,392.00	31,774.60	29,689.08	2,857,431.21	5.01	7	279,466	39	4/13/22	4.46	Optimal	34.58	0.0000

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	0/4/6	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	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, 29,689.08 persons per TD,  $\Delta_{max}$  2,200 (7.43% of 29,592), weighted variation 5.01%)

### 3.44 Solution Sol44

Table 131: Solution 44

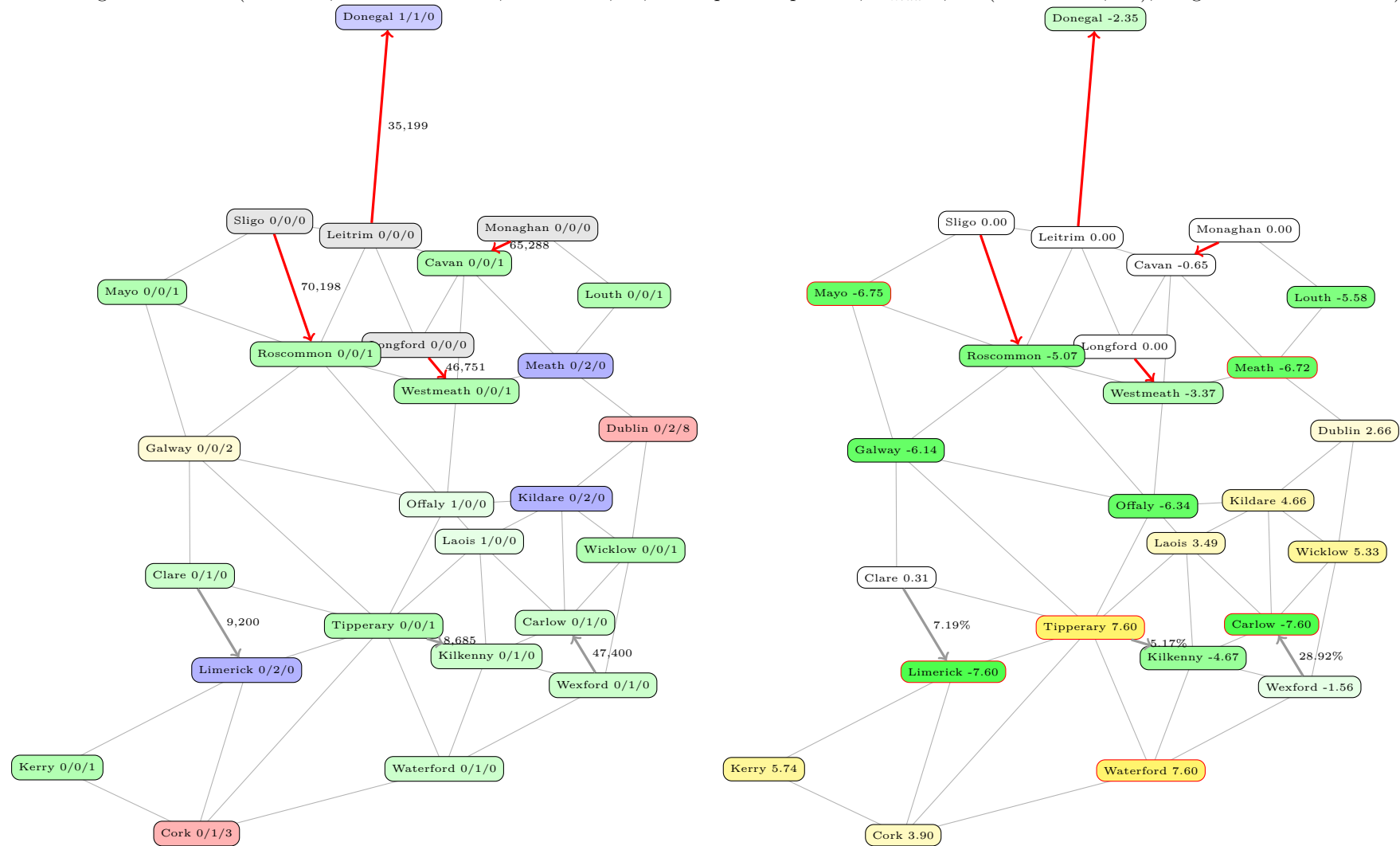
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol44	174	2,250	7.60	15.21	27,342.00	31,842.00	29,659.50	1,940,927.05	4.08	7	282,721	39	3/15/21	4.46	Optimal	10.46	0.0054

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	0/1/3	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	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, 29,659.50 persons per TD,  $\Delta_{max}$  2,250 (7.60% of 29,592), weighted variation 4.08%)

### 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	11.03	0.0000

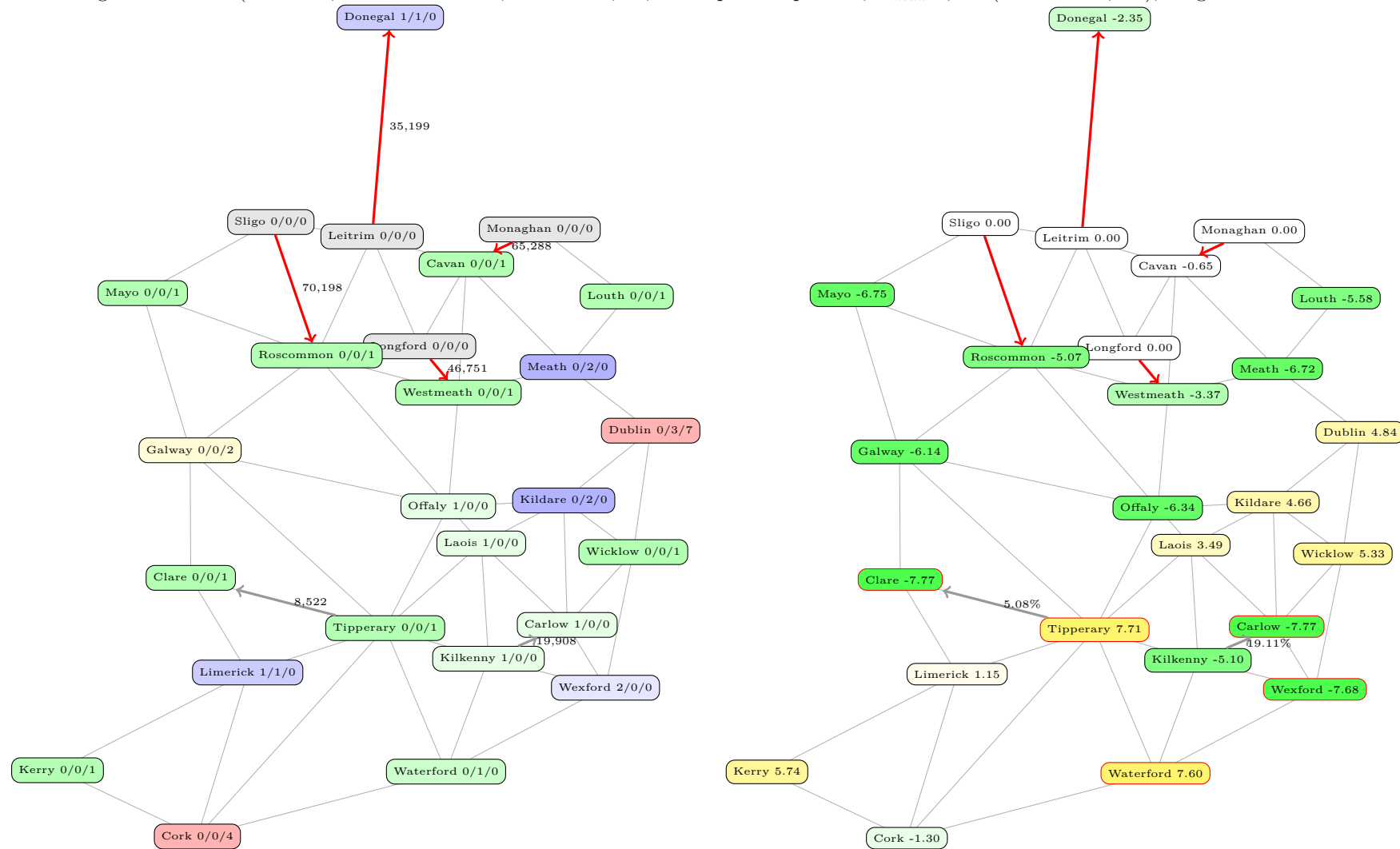
Table 135: Counties

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

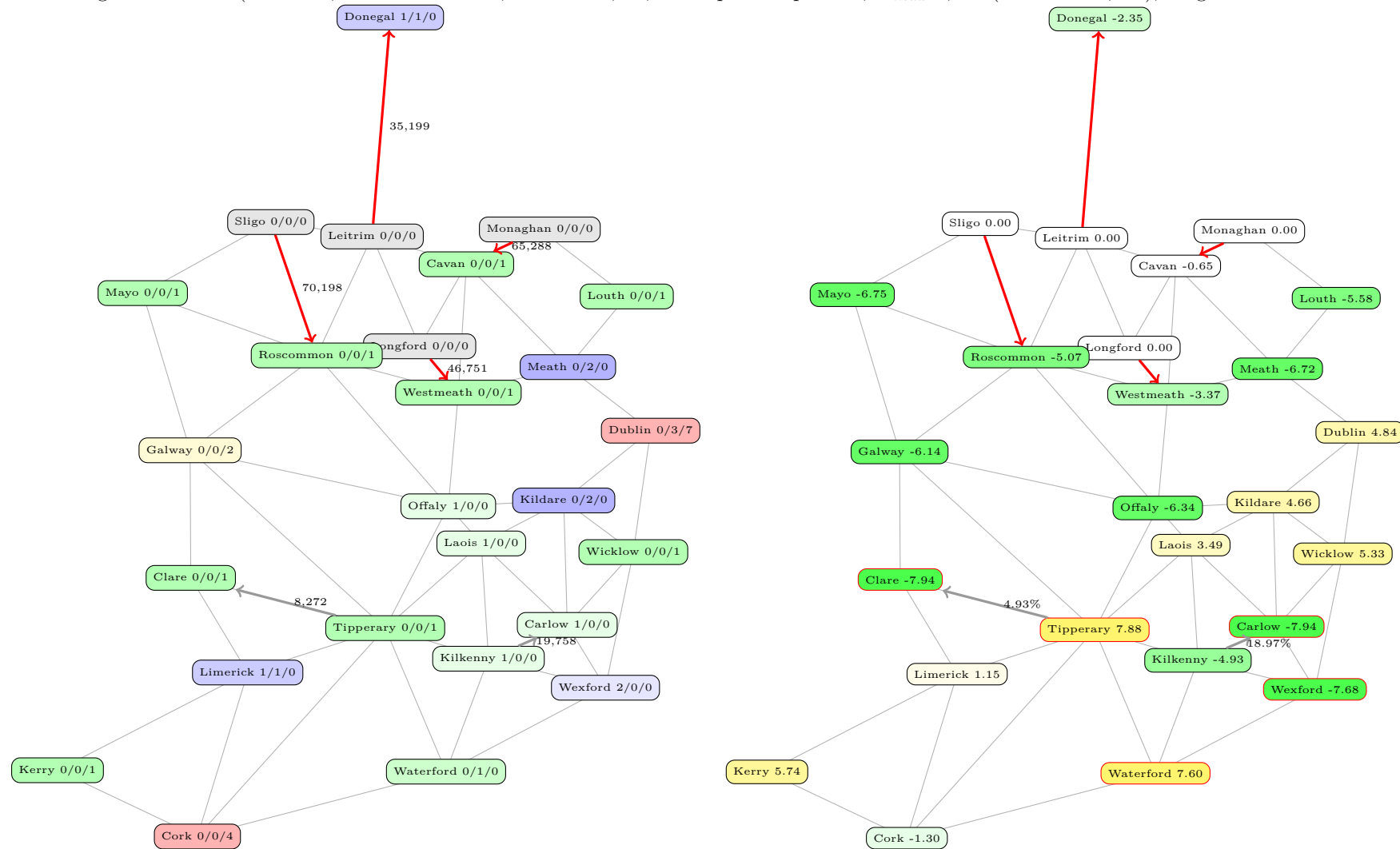
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol46	174	2,350	7.94	15.82	27,242.00	31,924.60	29,671.05	2,291,689.23	4.54	6	245,466	40	8/10/22	4.35	Optimal	9.50	0.0094

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	0/3/7	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	19,758	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, 29,671.05 persons per TD,  $\Delta_{max}$  2,350 (7.94% of 29,592), weighted variation 4.54%)

### 3.47 Solution Sol47

Table 140: Solution 47

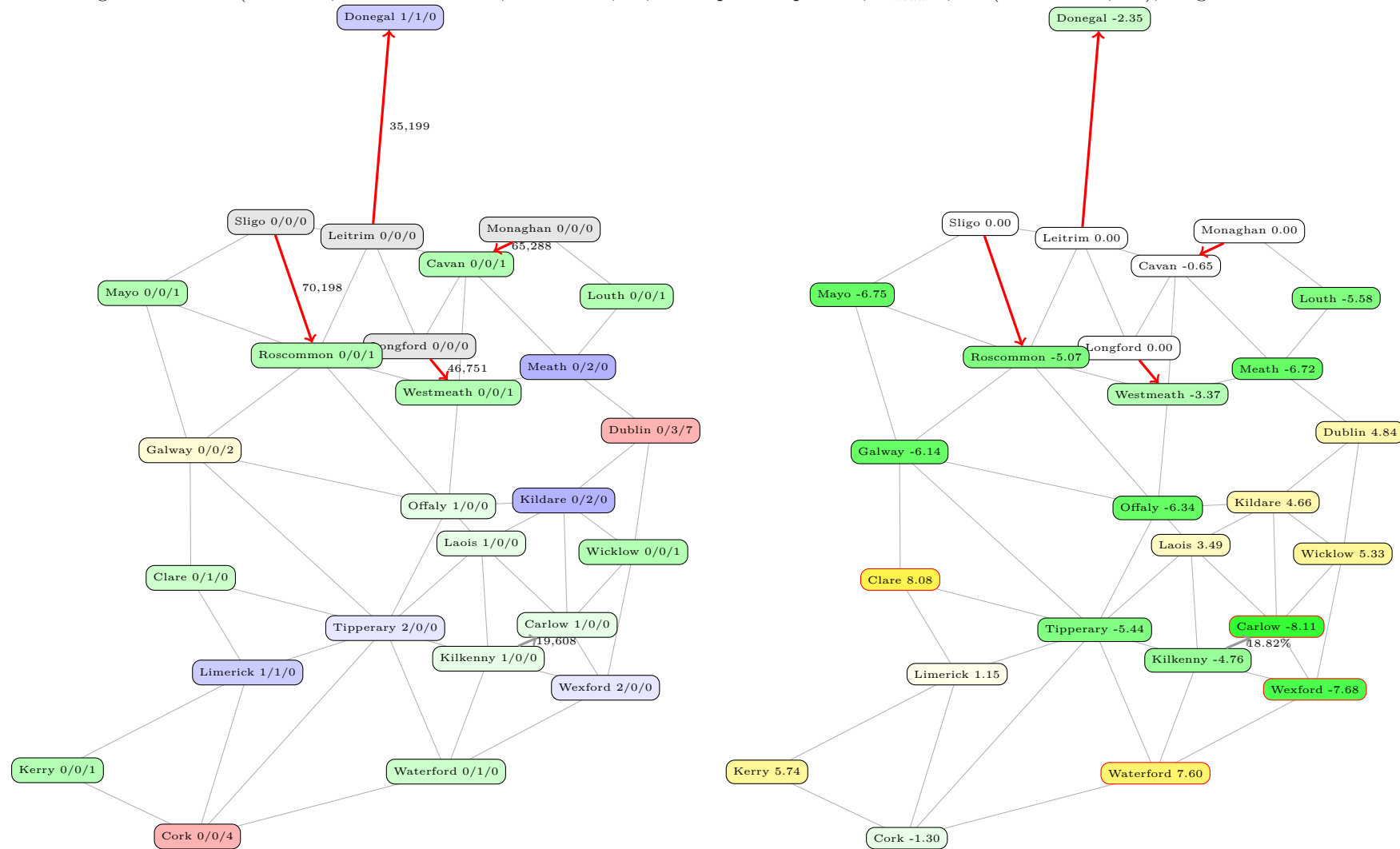
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol47	174	2,400	8.11	16.20	27,192.00	31,984.50	29,667.93	2,205,415.67	4.47	5	237,044	41	10/11/20	4.24	Optimal	12.53	0.0073

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

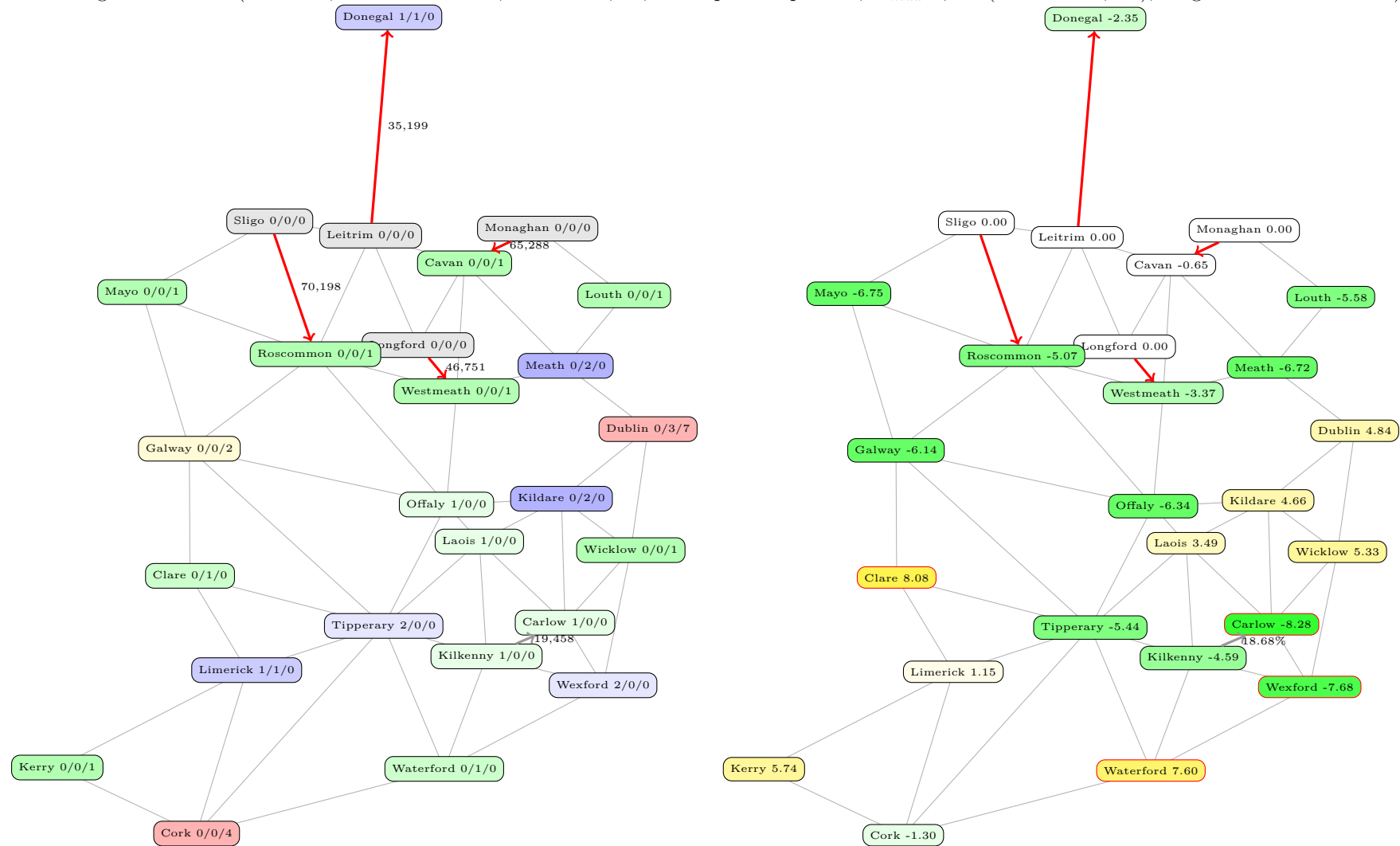
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol48	174	2,450	8.28	16.36	27,142.00	31,984.50	29,667.99	2,206,856.19	4.46	5	236,894	41	10/11/20	4.24	Optimal	11.64	0.0042

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	0/0/4	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	19,458	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, 29,667.99 persons per TD,  $\Delta_{max}$  2,450 (8.28% of 29,592), weighted variation 4.46%)

### 3.49 Solution Sol49

Table 146: Solution 49

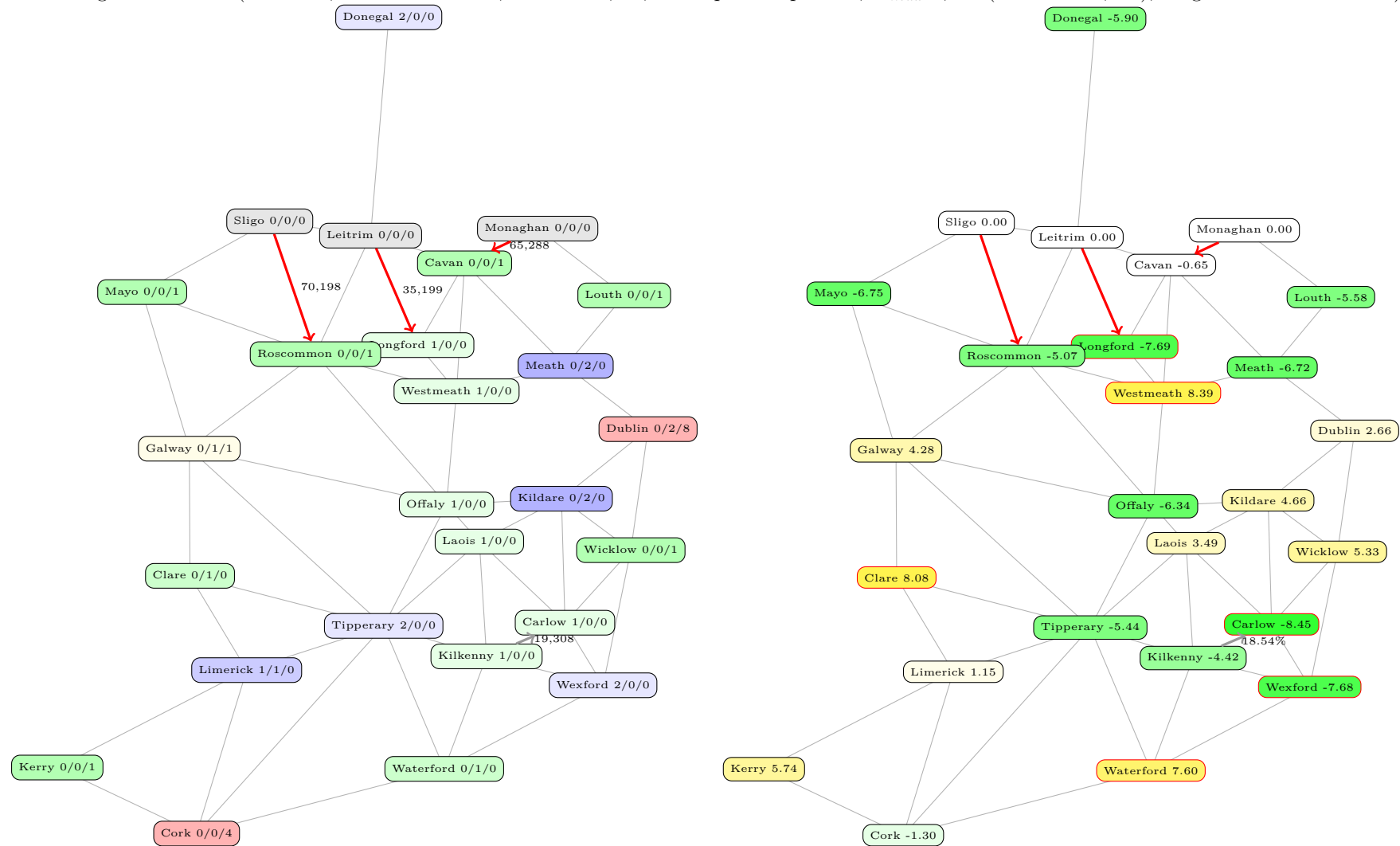
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol49	174	2,500	8.45	16.83	27,092.00	32,073.67	29,660.00	1,961,504.74	4.02	4	189,993	42	13/10/19	4.14	Optimal	9.35	0.0000

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	0/2/8	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	19,308	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, 29,660.00 persons per TD,  $\Delta_{max}$  2,500 (8.45% of 29,592), weighted variation 4.02%)

### 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	29,668.02	2,187,818.23	4.42	4	189,843	42	13/10/19	4.14	Optimal	9.13	0.0000

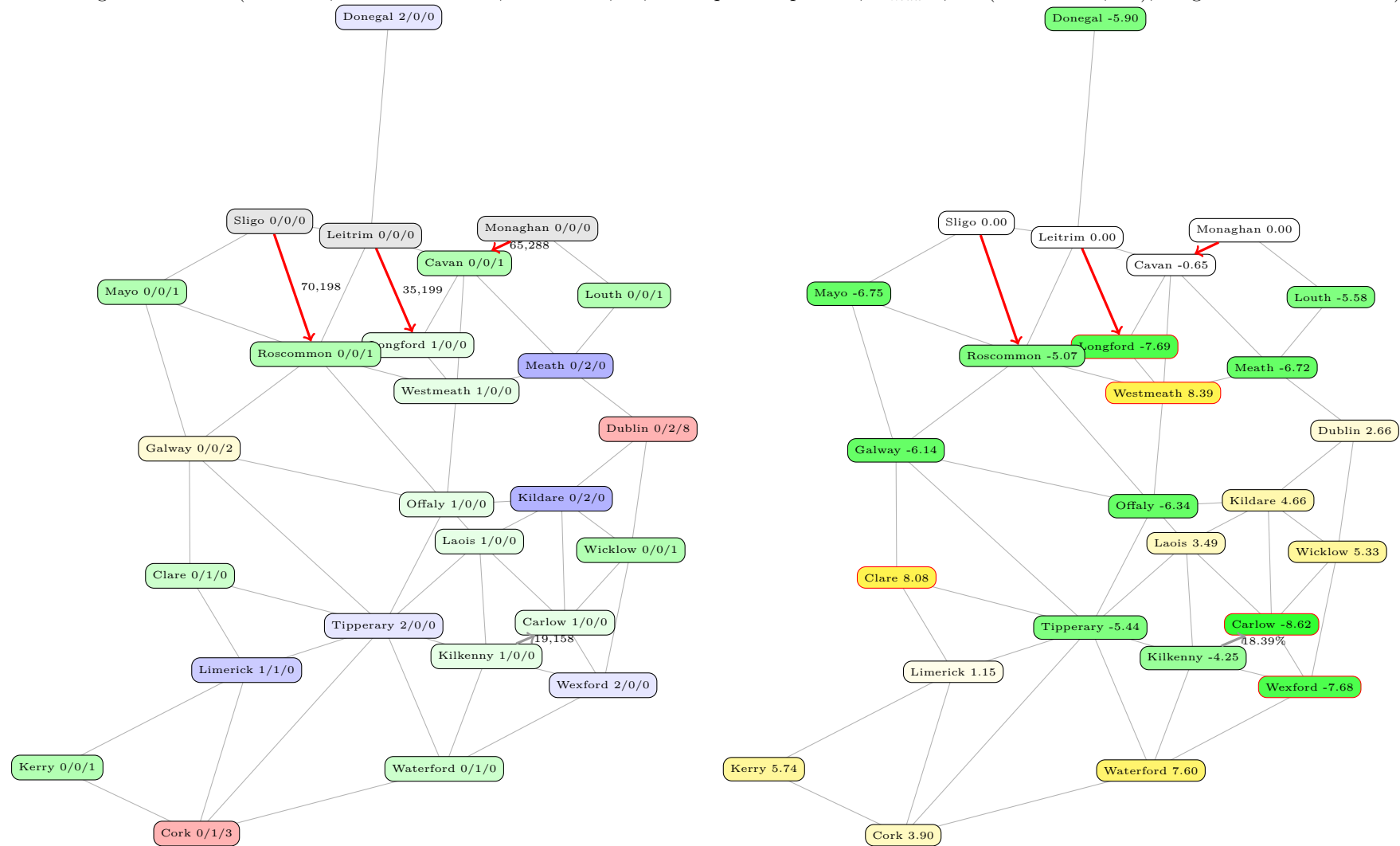
Table 150: Counties

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	0/1/3	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	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, 29,668.02 persons per TD,  $\Delta_{max}$  2,550 (8.62% of 29,592), weighted variation 4.42%)

### 3.51 Solution Sol51

Table 152: Solution 51

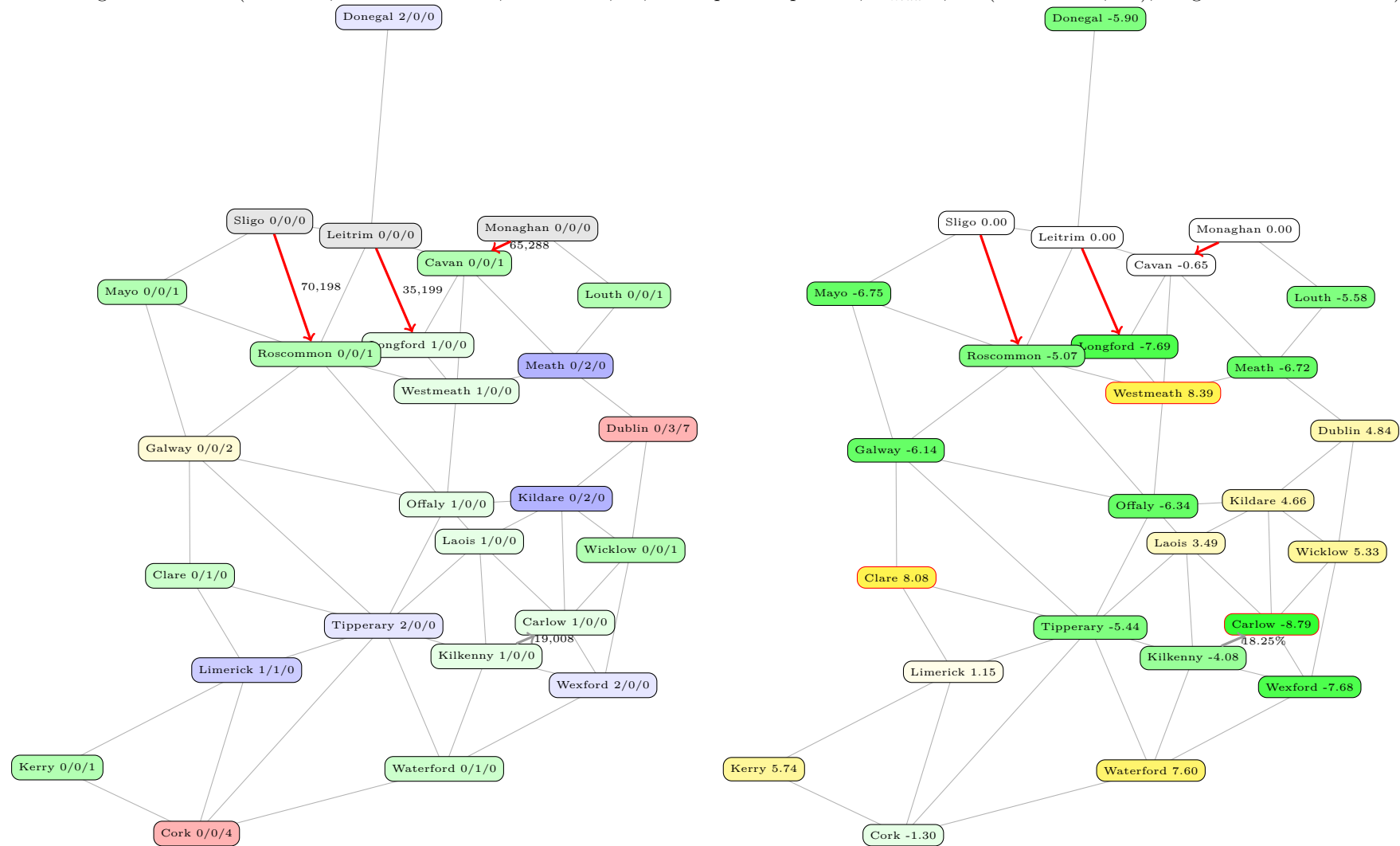
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol51	174	2,600	8.79	17.17	26,992.00	32,073.67	29,676.73	2,460,308.67	4.74	4	189,693	42	13/10/19	4.14	Optimal	8.57	0.0000

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

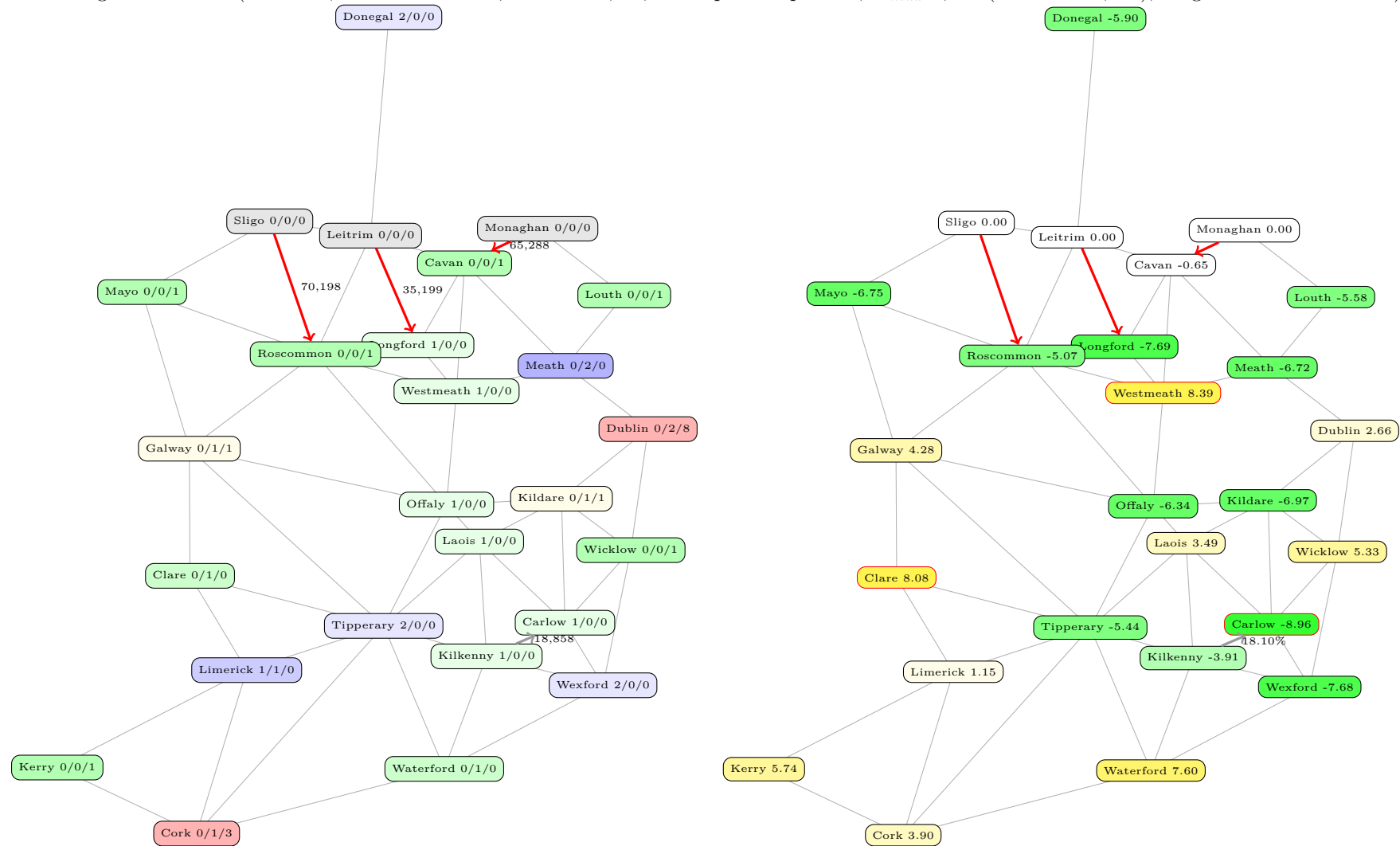
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol52	174	2,650	8.96	17.34	26,942.00	32,073.67	29,669.04	2,212,783.92	4.42	4	189,543	42	13/10/19	4.14	Optimal	9.61	0.0078

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	0/2/8	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	0/1/1	9	27,530.44	-6.97
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	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 157: 4 Transfers (Total 189543)			
From	To	Volume	Percent of From
Kilkenny	Carlow	18,858	18.10
Leitrim	Longford	35,199	100.00
Sligo	Roscommon	70,198	100.00
Monaghan	Cavan	65,288	100.00

Figure 53: Sol52 (174 seats, 42 constituencies, 4 transfers, 29,669.04 persons per TD,  $\Delta_{max}$  2,650 (8.96% of 29,592), weighted variation 4.42%)

### 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	29,702.30	3,248,404.09	5.49	4	189,393	42	13/10/19	4.14	Optimal	8.86	0.0017

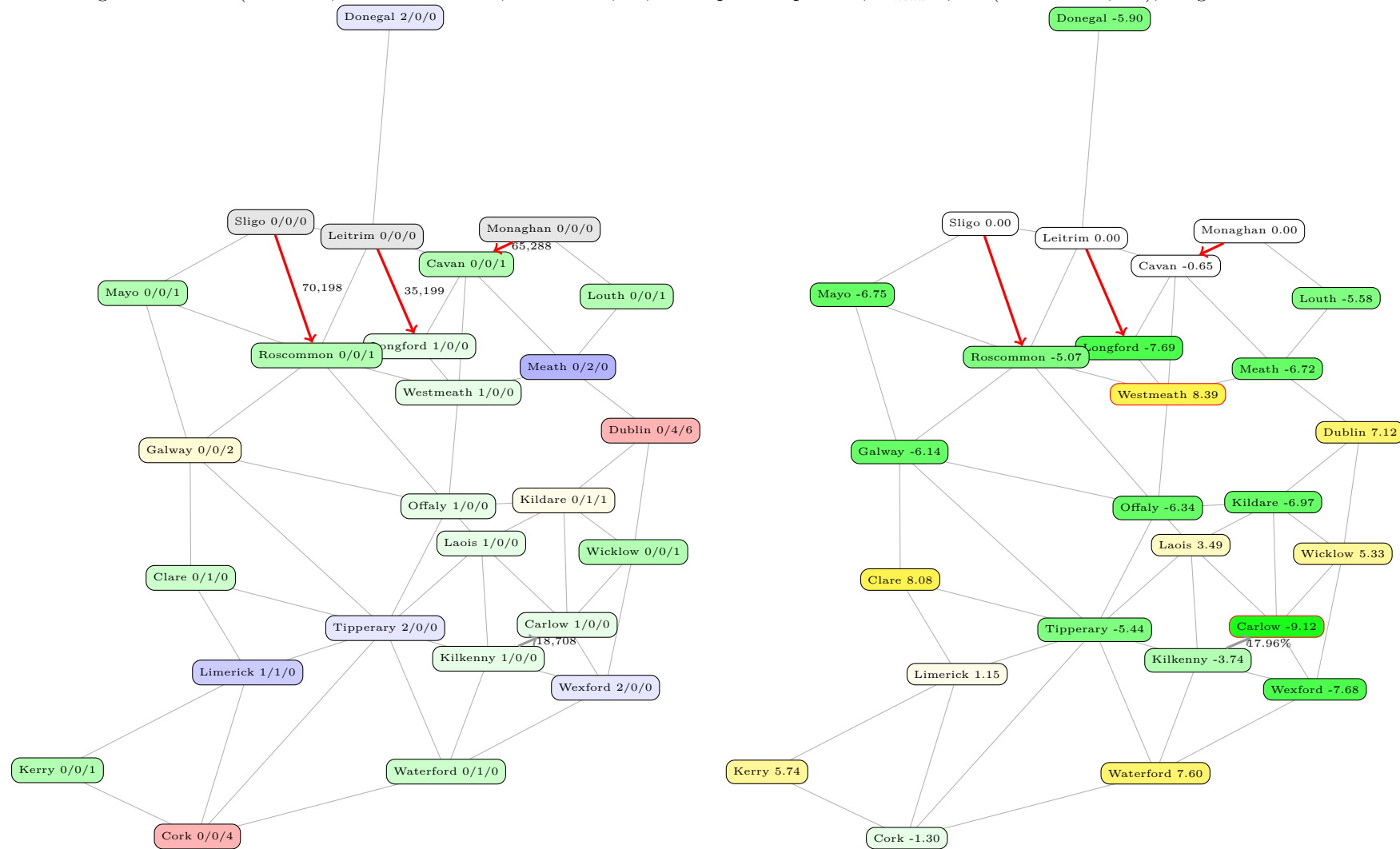
Table 159: Counties

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	0/4/6	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	18,708	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, 29,702.30 persons per TD,  $\Delta_{max}$  2,700 (9.12% of 29,592), weighted variation 5.49%)

### 3.54 Solution Sol54

Table 161: Solution 54

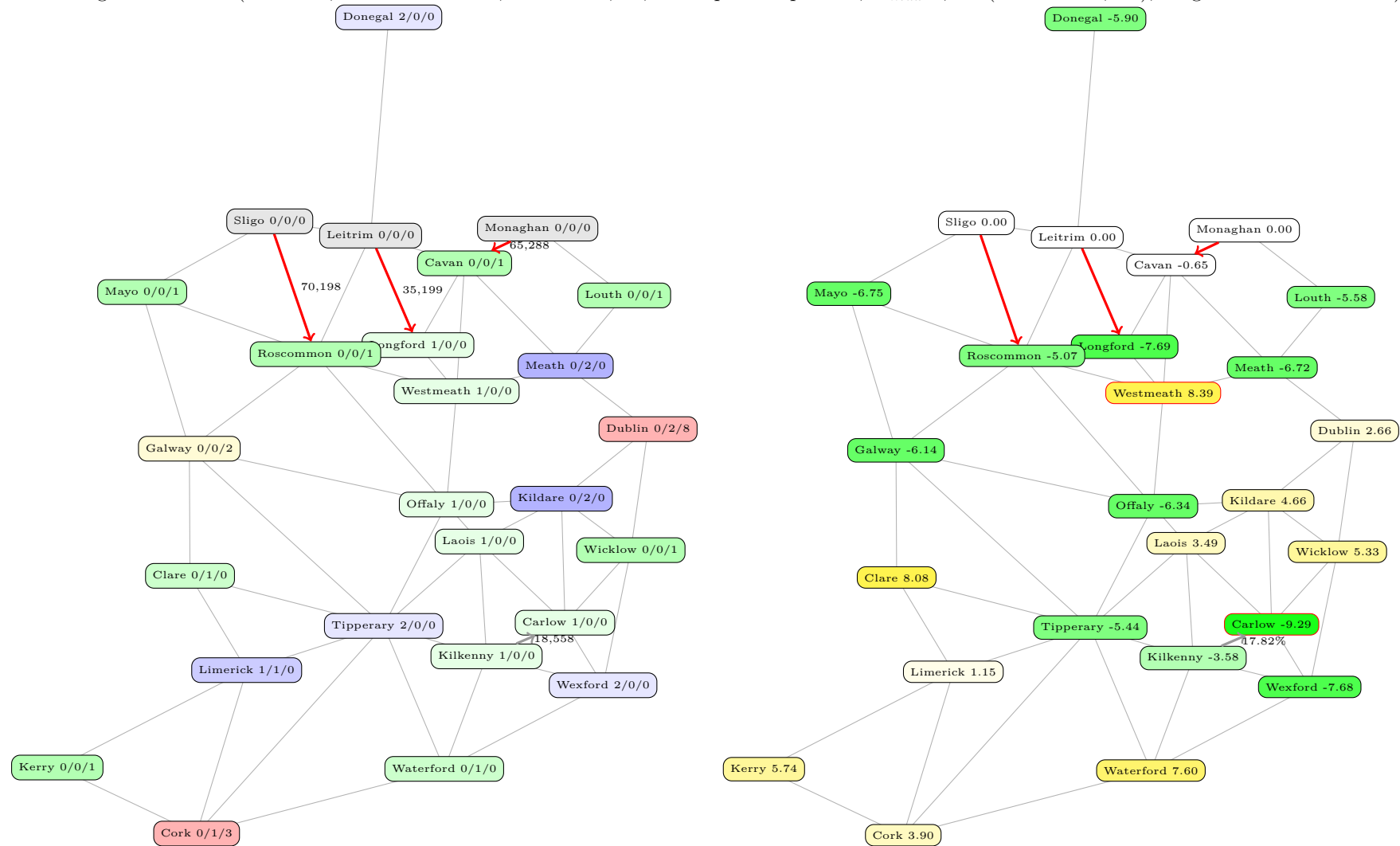
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol54	174	2,750	9.29	17.68	26,842.00	32,073.67	29,668.36	2,196,068.53	4.41	4	189,243	42	13/10/19	4.14	Optimal	10.47	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	0/1/3	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	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, 29,668.36 persons per TD,  $\Delta_{max}$  2,750 (9.29% of 29,592), weighted variation 4.41%)

### 3.55 Solution Sol55

Table 164: Solution 55

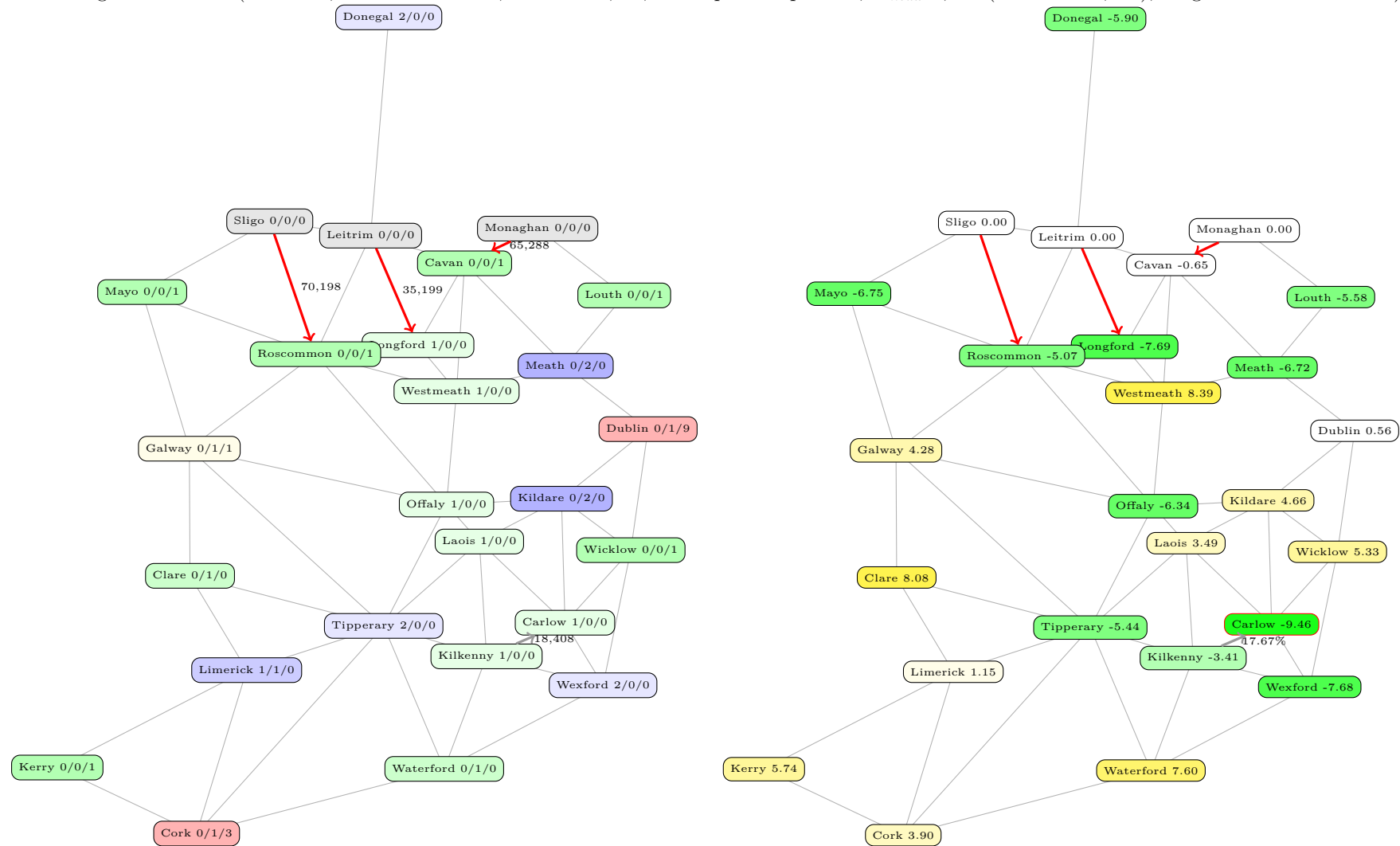
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol55	174	2,800	9.46	17.85	26,792.00	32,073.67	29,659.35	1,940,916.44	3.72	4	189,093	42	13/10/19	4.14	Optimal	9.13	0.0000

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

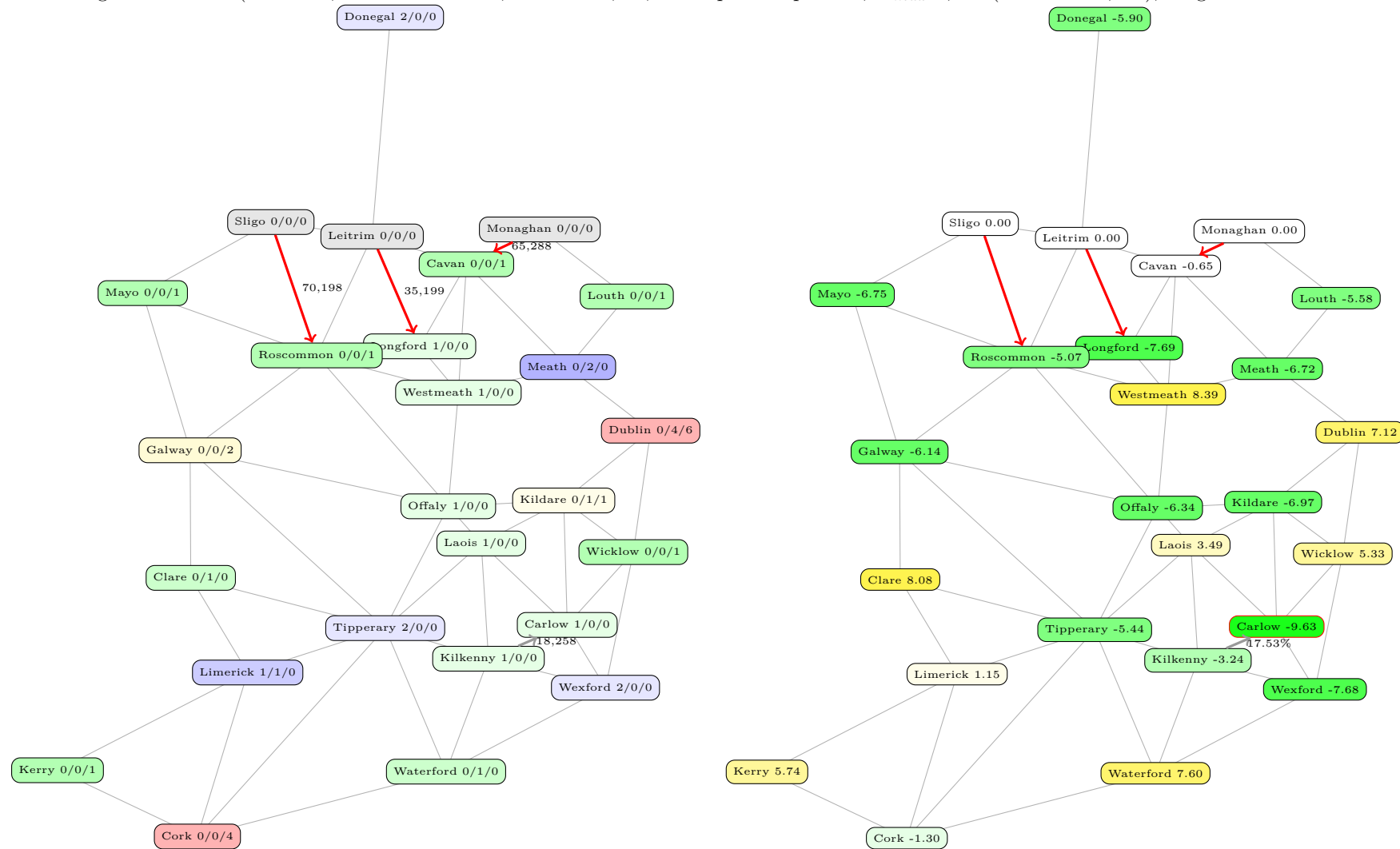
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol56	174	2,850	9.63	18.02	26,742.00	32,073.67	29,702.61	3,255,607.76	5.49	4	188,943	42	13/10/19	4.14	Optimal	7.93	0.0044

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	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	18,258	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, 29,702.61 persons per TD,  $\Delta_{max}$  2,850 (9.63% of 29,592), weighted variation 5.49%)

### 3.57 Solution Sol57

Table 170: Solution 57

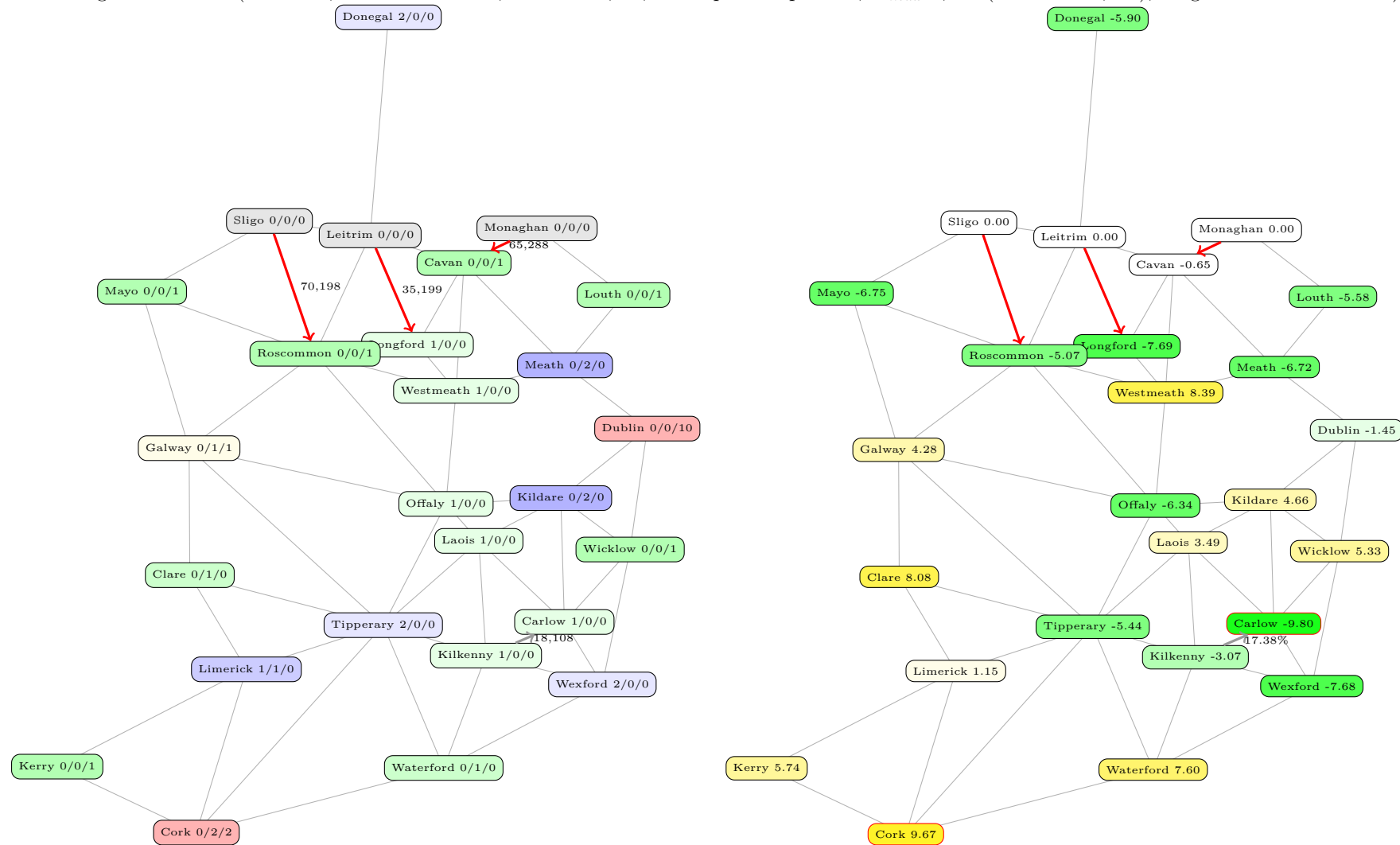
Name	K	Delta	Delta Percent	Range Percent	Min E	Max E	Weighted Average	Weighted Variance	Weighted Absolute Variation	Nr Trans	Transferred	Nr Const.	3/4/5	Seats Per Const.	Solution Status	Time (s)	Gap Percent
Sol57	174	2,900	9.80	19.47	26,692.00	32,453.11	29,684.81	2,764,219.24	4.62	4	188,793	42	13/10/19	4.14	Optimal	10.03	0.0096

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	0/2/2	18	32,453.11	9.67
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	0/0/10	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	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	18,108	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, 29,684.81 persons per TD,  $\Delta_{max}$  2,900 (9.80% of 29,592), weighted variation 4.62%)

### 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	19.47	26,642.00	32,403.42	29,744.53	4,571,954.20	6.69	4	188,643	42	13/10/19	4.14	Optimal	11.22	0.0089

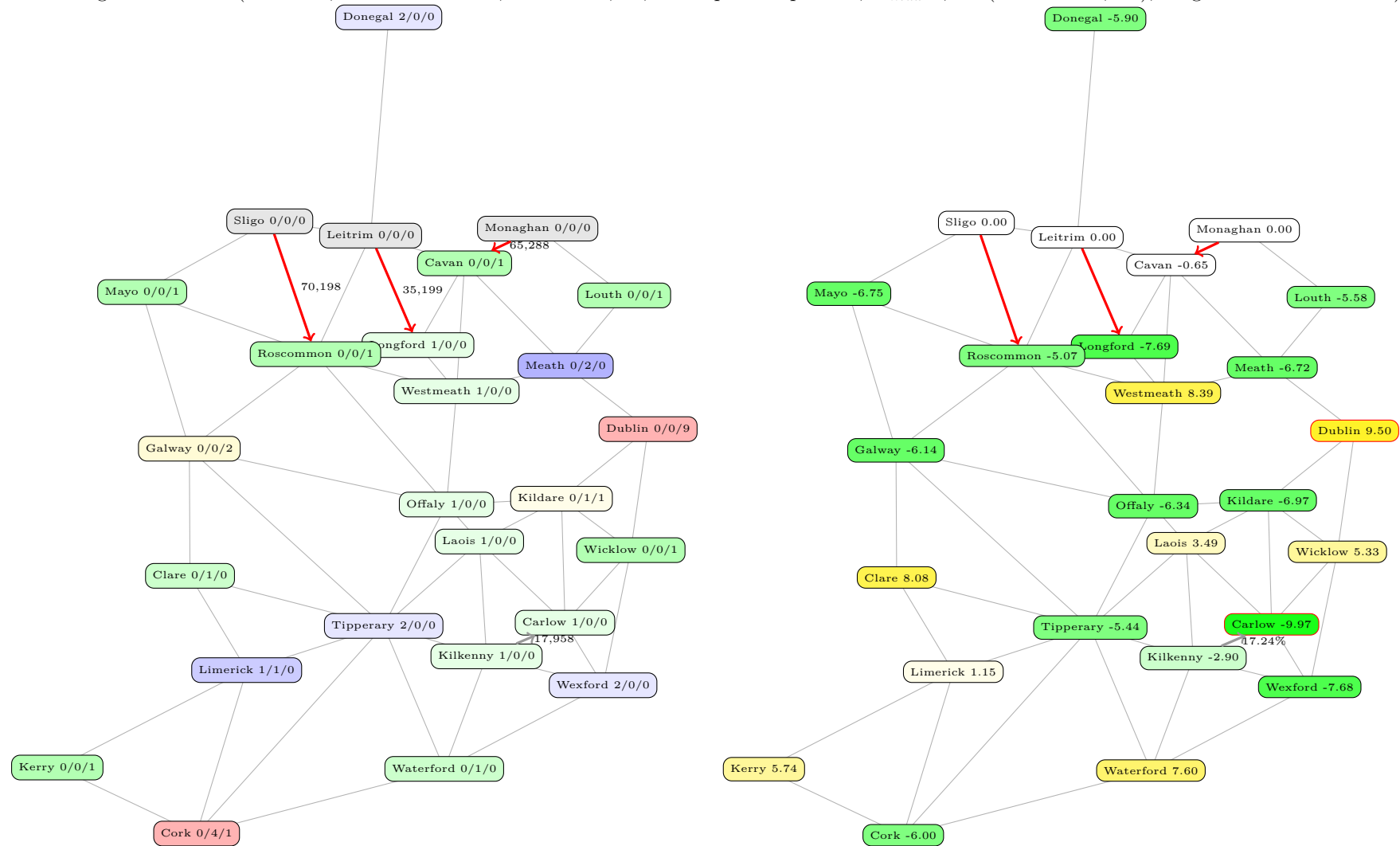
Table 174: Counties

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	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	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, 29,744.53 persons per TD,  $\Delta_{max}$  2,950 (9.97% of 29,592), weighted variation 6.69%)

### 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	19.81	26,592.00	32,453.11	29,687.14	2,816,984.79	4.47	4	188,493	42	13/10/19	4.14	Optimal	10.38	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	0/2/2	18	32,453.11	9.67
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	0/0/2	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, 29,687.14 persons per TD,  $\Delta_{max}$  3,000 (10.14% of 29,592), weighted variation 4.47%)