

Small practices are more likely to be singled on charts while no mention is made of the aberrations caused by low list size and low number of doctors. Larger practices will always be nearer “average” because of the averaging effect between different practitioners. Only one referral per month extra would appear to cause a huge jump in referrals per 1000 patients in a small practice.

Chance also plays a role in skewing raw referral statistics.

Referral Rates need simple statistic analysis: This is taken from the Demand Management Wizard document:

“To calculate how much variability is due to chance we have attached a table which shows the variation that would be expected to occur by chance. The following example illustrates how the table works.

Dr Brown and her partners have 6,000 patients, of whom they referred 28 to neurology in one year. Their referral rate was thus $28/6,000 = 4.7$ referrals per 1,000 patients pa. The HA area have 1,400 referrals for a population of 500,000 per year The HA referral rate was thus $1,400/500,000 = 2.8$ referrals per 1,000 patients per year

To calculate the confidence intervals for Dr Brown's practice look down the left hand side of Table 1 until you reach 3 (closest to 2.8), and across until you reach 6,000 (practice list size).

This will give a figure of 2. Thus the confidence intervals for a Practice the size of Dr Brown's are +/- 2

Dr Brown's range is thus $2.8 +/- 2 = 0.8$ to 4.8 referrals per 1,000 patients pa Thus Dr. Brown's Practice at 4.7 comes within this range and should not be regarded as an outlier, even though their rate is well above the HA average.

Source: Roland and Coulter

pts/ year	Practice list size									
	250	500	1,000	2,000	4,000	6,000	8,000	10,000	12,000	16,000
1	4	3	2	2	1	1	1	1	1	1
3	6	4	3	3	2	2	1	1	1	1
5	9	5	4	3	3	2	2	1	1	1
10	14	9	7	5	3	3	2	2	2	2
15	17	12	8	6	4	3	3	3	3	2
20	19	14	9	6	4	4	3	3	3	2
25	21	16	10	7	5	4	4	3	3	2
30	23	17	11	8	5	4	4	3	3	3
40	26	19	12	9	6	5	4	4	4	3
50	29	21	14	10	7	6	5	4	4	3
60	31	23	15	11	8	7	5	5	4	4
70	33	25	16	12	8	7	6	5	5	4
80	37	26	18	13	9	7	6	6	5	4
90	39	27	19	13	9	8	7	6	5	5
100	41	29	20	14	10	8	7	6	6	5
120	44	30	21	15	11	9	8	7	6	5
140	48	33	23	17	12	10	8	7	7	6
160	50	37	25	18	13	10	9	8	7	6
180	53	39	26	19	13	11	9	8	8	7
200	56	41	28	20	14	11	10	9	8	7
220	58	43	29	21	15	12	10	9	8	7
240	61	44	30	22	15	12	11	10	9	8
270	65	47	32	23	16	13	11	10	9	8
300	68	49	34	24	17	14	12	11	10	9
400	80	56	41	28	20	17	14	12	11	10
500	88	62	44	30	22	18	15	13	12	12
600	104	68	49	34	24	20	17	15	14	13
800	112	80	56	41	28	24	20	18	17	14
1,000	124	88	62	44	30	26	22	20	18	15

“Below are rates which were derived from the average referral rates of a group of East Anglian doctors to a number of specialties. The referral rates have less than a 5% chance of being outside the expected range, as the range is analogous to a 95% confidence limit. It can be seen from the table that the expected range is very wide indeed. It becomes wider as the number of doctors and the time period studied decrease. Thus it is important to understand from the outset that variation is often to be expected.”

GP referral rates	Average No Of Referrals	Expected Range
Rheumatology 1GP 6 months	5	0-10
Rheumatology 5GP 1 year	50	36-64

Gynaecology 1GP 6 months	14	6-21
Gynaecology 5GP 1 year	137	114-160
Gen Surgery 1GP 6 months	21	11-30
Gen Surgery 5GP 1 year	209	180-238
All Specialities 1GP 6 months	165	139-191
All Specialities 5GP 1 year	1650	1577-1723

Source: Roland and Coulter