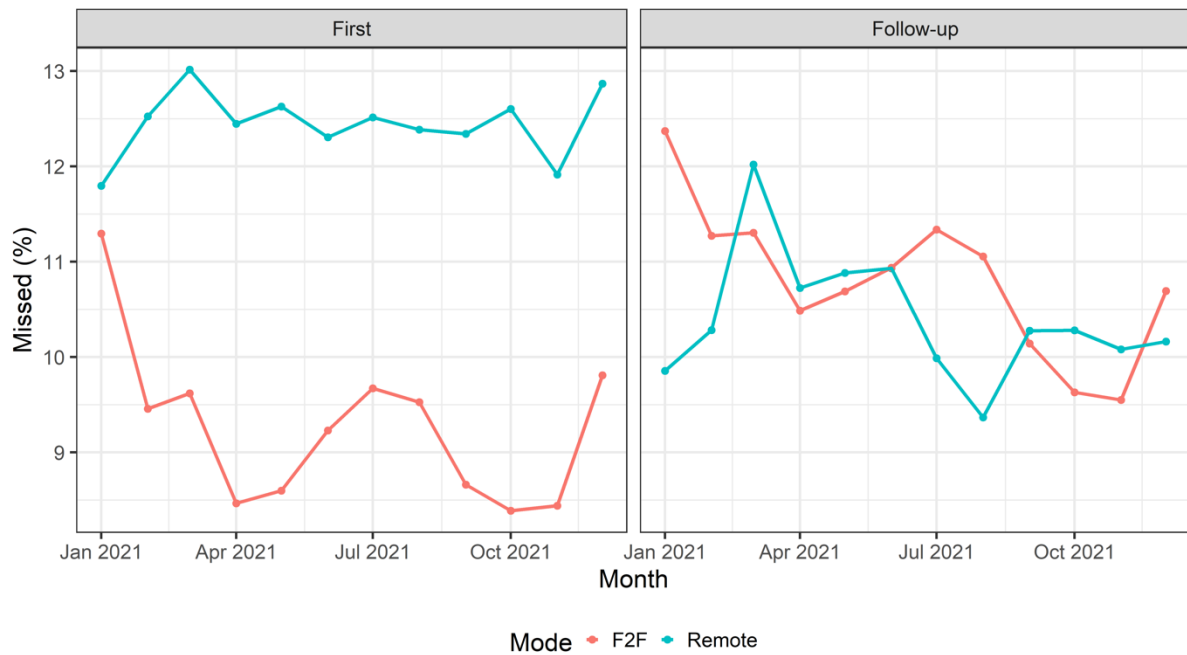
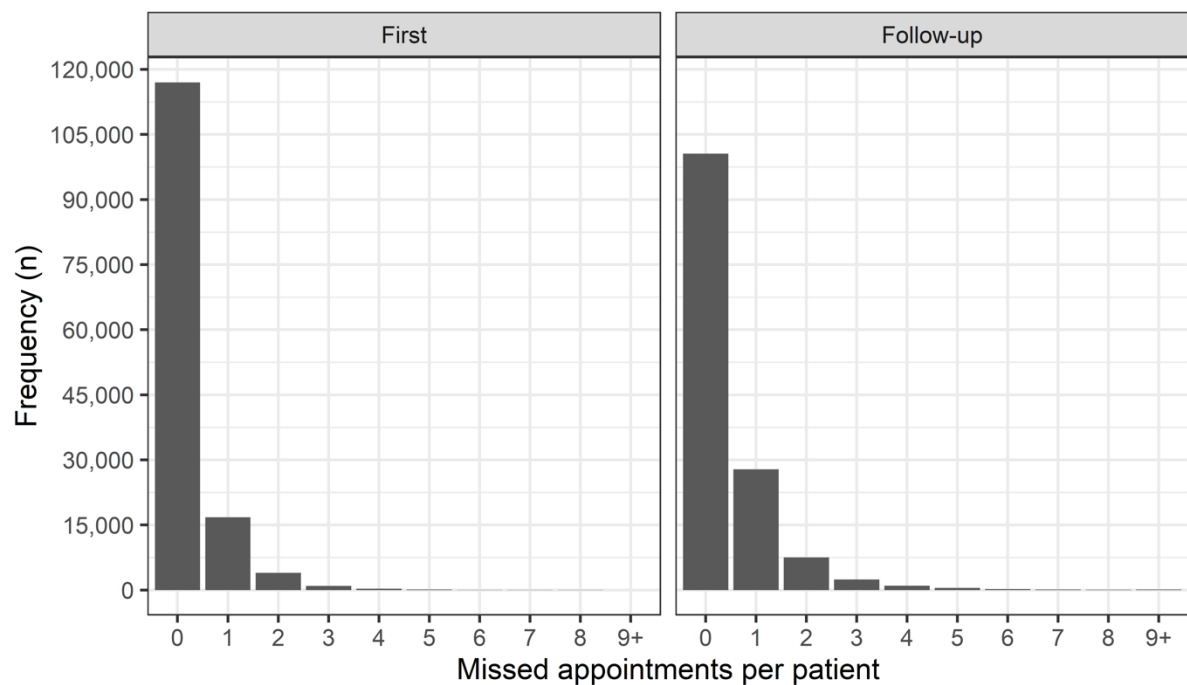


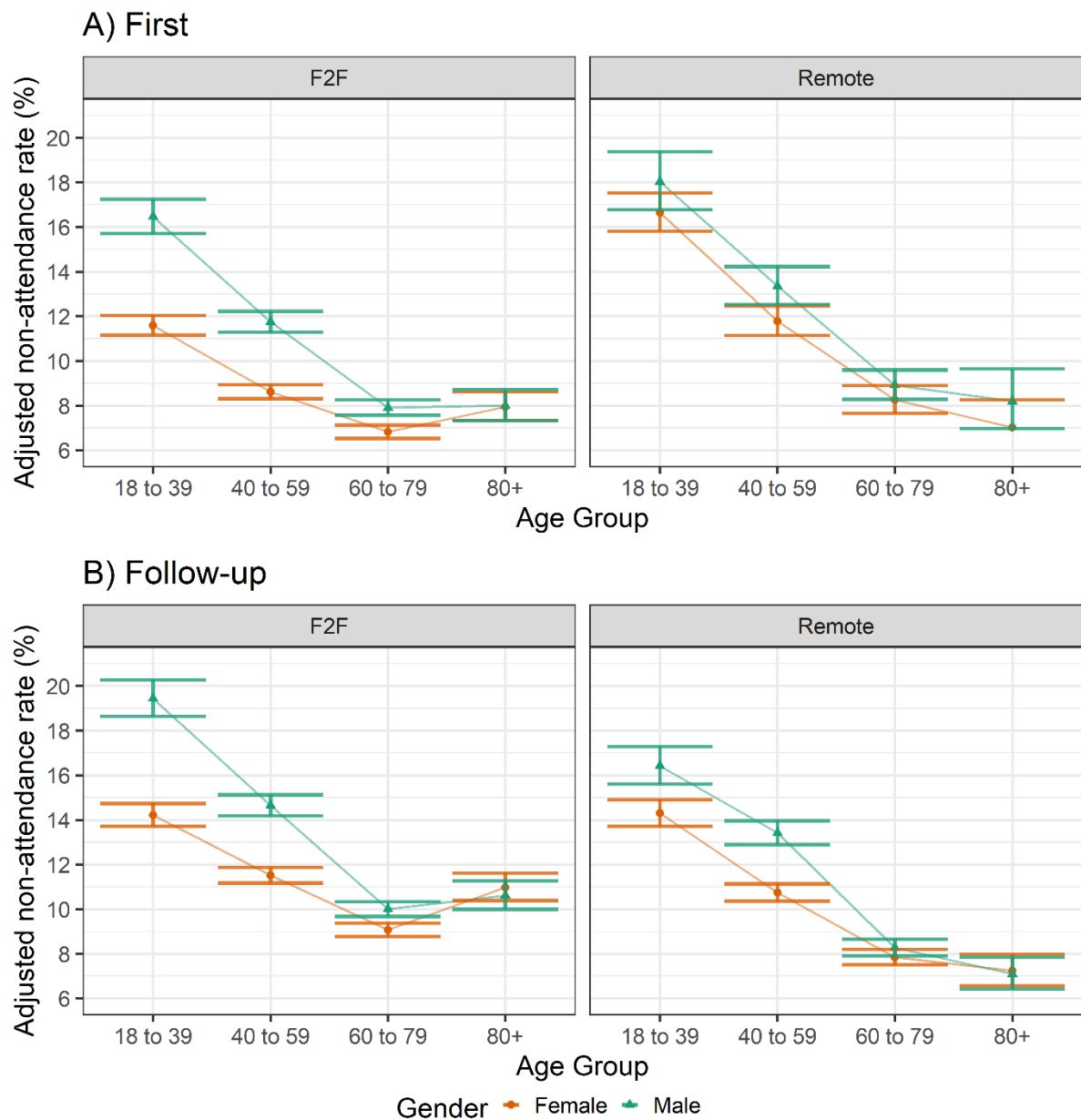
Supplementary Files



Supplementary Figure S1 – Percentage of outpatient appointments which were missed at Imperial Healthcare NHS Trust by mode and appointment type in 2021.



Supplementary Figure S2 – Missed appointments per patient at Imperial Healthcare NHS Trust in 2021, by appointment type.



Supplementary Figure S3 – Adjusted non-attendance rate across age groups and genders for A) first and B) follow-up appointments, with appointments for Midwife Episode and Obstetrics specialties removed. Derived from a negative binomial regression model adjusted for ethnicity, IMD Quintile and number of LTCs, and offset for total appointments made per patient.

Supplementary Table S1 - Patient characteristics, appointment attendance, and appointment mode for first outpatient appointments.

	Number of Patients (N = 139,146)	Total Appointments (N = 303,631)	Missed Appointments (N = 29,710)	Missed Rate (%)	Remote Rate (%)
Age Group					
18 to 39	46,661 (33.5)	82,645 (27.2)	10,357 (34.9)	12.5	20.1
40 to 59	45,689 (32.8)	99,520 (32.8)	10,356 (34.9)	10.4	20.1
60 to 79	37,150 (26.7)	98,597 (32.5)	7,223 (24.3)	7.3	17.8
80+	9,646 (6.9)	22,869 (7.5)	1,774 (6.0)	7.7	17.5
Gender					
Female	88,362 (63.5)	183,331 (60.4)	16,792 (56.5)	9.2	19.1
Male	50,784 (36.5)	120,300 (39.6)	12,918 (43.5)	10.7	19.3
Ethnicity					
White	72,385 (52.0)	158,852 (52.3)	14,144 (47.6)	8.9	19.2
Asian	24,050 (17.3)	50,756 (16.7)	2,278 (7.7)	4.5	18.7
Black	18,040 (13.0)	41,925 (13.8)	5,050 (17.0)	12.0	19.1
Mixed	5,629 (4.0)	12,011 (4.0)	1,448 (4.9)	12.1	20.3
Not Stated	4,432 (3.2)	9,265 (3.1)	1,026 (3.5)	11.1	20.2
Other	14,610 (10.5)	30,822 (10.2)	3,564 (12.0)	11.6	19.7
IMD Quintile					
1 (most deprived)	34,227 (24.6)	78,725 (25.9)	9,048 (30.5)	11.5	19.5
2	42,432 (30.5)	92,113 (30.3)	9,170 (30.9)	10.0	19.2
3	31,847 (22.9)	68,968 (22.7)	6,020 (20.3)	8.7	18.6
4	17,319 (12.4)	35,503 (11.7)	2,820 (9.5)	7.9	19.2
5 (least deprived)	5,804 (4.2)	12,128 (4.0)	720 (2.4)	5.	19.3
Unknown	7,517 (5.4)	16,194 (5.3)	1,932 (6.5)	11.9	19.6
Number of LTCs					
0	51,110 (36.7)	90,462 (29.8)	9,540 (32.1)	10.5	19.7
1	32,465 (23.3)	72,132 (23.8)	6,764 (22.8)	9.4	19.2
2	22,692 (16.3)	52,961 (17.4)	5,251 (17.7)	9.9	19.5
3+	32,879 (23.6)	88,076 (29.0)	8,155 (27.4)	9.3	18.4

Data are shown as n, (% of N) unless specified as a rate.

Supplementary Table S2 - Patient characteristics, appointment attendance, and appointment mode for follow-up OP appointments.

	Number of Patients (N = 140,322)	Total Appointments (N = 571,028)	Missed Appointments (N = 60,588)	Missed Rate (%)	Remote Rate (%)
Age Group					
18 to 39	39,964 (28.5)	185,346 (32.5)	21,942 (36.2)	11.8	19.3
40 to 59	44,909 (32.0)	165,508 (29.0)	19,631 (32.4)	11.7	36.5
60 to 79	43,237 (30.8)	174,714 (30.6)	14,858 (24.5)	8.5	35.9
80+	12,212 (8.7)	45,460 (8.0)	4,157 (6.9)	9.1	29.4
Gender					
Female	85,299 (60.8)	365,346 (64.0)	36,322 (59.9)	9.9	27.3
Male	55,023 (39.2)	205,682 (36.0)	24,266 (40.1)	11.8	35.1
Ethnicity					
White	72,336 (51.5)	285,577 (50.0)	26,462 (43.7)	9.4	31.6
Asian	25,615 (18.3)	107,347 (18.8)	10,684 (17.6)	10.0	28.3
Black	18,914 (13.5)	82,881 (14.5)	11,707 (19.3)	14.1	28.4
Mixed	5,321 (3.8)	21,992 (3.9)	2,713 (4.5)	12.3	29.2
Not Stated	4,264 (3.0)	16,153 (2.8)	1,921 (3.2)	11.9	31.1
Other	13,872 (9.9)	57,078 (10.0)	7,101 (11.7)	12.4	28.8
IMD Quintile					
1 (most deprived)	33,835 (24.1)	144,696 (25.3)	17,962 (29.6)	12.4	29.4
2	42,257 (30.1)	171,531 (30.0)	18,579 (30.7)	10.8	30.1
3	32,775 (23.4)	131,450 (23.0)	12,752 (21.0)	9.7	30.5
4	17,605 (12.5)	66,911 (11.7)	5,806 (9.6)	8.7	31.5
5 (least deprived)	6,481 (4.6)	25,527 (4.5)	1,769 (2.9)	6.9	30.6
Unknown	7,369 (5.3)	30,913 (5.4)	3,720 (6.1)	12.0	28.7
Number of LTCs					
0	44,379 (31.6)	171,659 (30.1)	18,826 (31.1)	11.0	22.2
1	33,657 (24.0)	132,991 (23.3)	14,314 (23.6)	10.8	32.6
2	24,260 (17.3)	95,515 (16.7)	10,269 (16.9)	10.8	34.1
3+	38,026 (27.1)	170,863 (29.9)	17,179 (28.4)	10.1	34.0

Data are shown as n, (% of N) unless specified as a rate.

Supplementary Table S3 – Outpatient appointment numbers and non-attendance rates by specialty for first appointments (NB: specialties with 10 or fewer total appointments are not shown).

Specialty	Total appointments	Number Remote	Percentage of total appointments remote (%)	Number missed	Percentage of total appointments missed (%)	Percentage of remote appointments missed (%)	Percentage of F2F appointments missed (%)
Accident & Emergency	4,306.00	152	3.5	190	4.4	0	4.6
Allied Health Professional Episode	30,144	9,445	31.3	3,101	10.3	20.3	5.7
Anaesthetics	18,255	8,189	44.9	1,313	7.2	6.3	7.9
Audiological Medicine	299	203	67.9	52	17.4	11.3	30.2
Cardiology	19,135	3,413	17.8	1,870	9.8	10	9.7
Cardiothoracic Surgery	1,336	10	0.7	66	4.9	0	5
Chemical Pathology	68	0	0	0	0	-	-
Clinical Haematology	2,982	15	0.5	321	10.8	13.3	10.8
Clinical Immunology & Allergy	444	332	74.8	81	18.2	19	16.1
Clinical Neuro-physiology	2,408	0	0	269	11.2	-	11.2
Clinical Oncology (previously Radiotherapy)	4,486	133	3	13	0.3	0.8	0.3
Clinical Pharmacology	1,422	461	32.4	161	11.3	14.3	9.9
Critical Care Medicine	25	0	0	4	16	-	16
Dermatology	6,110	284	4.6	704	11.5	5.3	11.8
Endocrinology	5,649	957	16.9	793	14	30.4	10.7
ENT	12,022	1,939	16.1	1,588	13.2	15.4	12.8
Gastroenterology	18,660	421	2.3	3,021	16.2	14.3	16.2
General Medicine	983	169	17.2	97	9.9	6.5	10.6
General Surgery	28,162	2,366	8.4	3,148	11.2	12.1	11.1
Geriatric Medicine	2,554	1,365	53.4	234	9.2	6.4	12.4
Gynaecology	18,050	4,385	24.3	1,664	9.2	12.2	8.3
Haematology	1,203	0	0	269	22.4	-	22.4

Specialty	Total appointments	Number Remote	Percentage of total appointments remote (%)	Number missed	Percentage of total appointments missed (%)	Percentage of remote appointments missed (%)	Percentage of F2F appointments missed (%)
Infectious Diseases	272	71	26.1	35	12.9	18.3	10.9
Medical Microbiology and Virology	107	0	0	2	1.9	-	1.9
Medical Oncology	12,236	347	2.8	76	0.6	0.9	0.6
Midwife Episode	14,779	10	0.1	701	4.7	10	4.7
Nephrology	6,453	87	1.3	588	9.1	8	9.1
Neurology	7,475	1,748	23.4	1,126	15.1	18.8	13.9
Neurosurgery	3,525	1,836	52.1	430	12.2	17.9	6
Nursing Episode	9,956	4,569	45.9	713	7.2	5.6	8.5
Obstetrics	6,704	2,049	30.6	642	9.6	12.6	8.2
Ophthalmology	12,011	38	0.3	1,479	12.3	10.5	12.3
Oral Surgery	99	0	0	10	10.1	-	10.1
Paediatric Neurology	56	0	0	7	12.5	-	12.5
Paediatrics	10,465	21	0.2	858	8.2	38.1	8.1
Plastic Surgery	5,560	1,442	25.9	789	14.2	17.1	13.2
Radiology	4,562	172	3.8	58	1.3	12.2	0.8
Rehabilitation	15	1	6.7	1	6.7	100	0
Respiratory Medicine (aka Thoracic Medicine)	8,073	3,545	43.9	795	9.8	11.5	8.5
Rheumatology	2,498	6	0.2	206	8.2	16.7	8.2
Trauma & Orthopaedics	11,367	4,628	40.7	1,432	12.6	11.2	13.5
Urology	8,697	3,349	38.5	800	9.2	9.9	8.8

Supplementary Table S4 – Outpatient appointment numbers and non-attendance rates by specialty for follow-up appointments (NB: specialties with 10 or fewer total appointments are not shown).

Specialty	Total appointments	Number Remote	Percentage of total appointments remote (%)	Number missed	Percentage of total appointments missed (%)	Percentage of remote appointments missed (%)	Percentage of F2F appointments missed (%)
Accident & Emergency	989	28	2.8	62	6.3	3.6	6.3
Allied Health Professional Episode	44,199	19,560	44.3	4,802	10.9	12.3	9.8
Anaesthetics	3,243	2,089	64.4	339	10.5	11.8	8
Audiological Medicine	557	234	42	75	13.5	15	12.4
Cardiology	17,833	7,031	39.4	1,945	10.9	7.7	13
Cardiothoracic Surgery	1,981	410	20.7	134	6.8	5.9	7
Chemical Pathology	442	234	52.9	13	2.9	1.7	4.3
Clinical Haematology	26,604	2,271	8.5	2,324	8.7	0.3	9.5
Clinical Immunology & Allergy	571	337	59	84	14.7	16.6	12
Clinical Neuro-physiology	12	0	0	4	33.3	-	33.3
Clinical Oncology (previously Radiotherapy)	3,661	1,732	47.3	99	2.7	2.9	2.5
Clinical Pharmacology	1,765	887	50.3	162	9.2	8.9	9.5
Dermatology	14,705	2,223	15.1	1,582	10.8	12.7	10.4
Endocrinology	25,137	10,093	40.2	3,730	14.8	17.3	13.2
ENT	13,726	4,363	31.8	1,991	14.5	16.3	13.7
Gastroenterology	25,298	17,983	71.1	3,208	12.7	12.3	13.5
General Medicine	3,285	1,327	40.4	354	10.8	11.8	10.1
General Surgery	35,823	16,922	47.2	3,904	10.9	8.5	13
Geriatric Medicine	3,011	557	18.5	390	13	11.5	13.3
Gynaecology	20,866	6,792	32.6	2,091	10	7.4	11.3
Haematology	3,222	109	3.4	417	12.9	0.9	13.4
Infectious Diseases	433	206	47.6	50	11.5	14.6	8.8

Specialty	Total appointments	Number Remote	Percentage of total appointments remote (%)	Number missed	Percentage of total appointments missed (%)	Percentage of remote appointments missed (%)	Percentage of F2F appointments missed (%)
Medical Microbiology and Virology	387	2	0.5	5	1.3	0	1.3
Medical Oncology	22,611	12,310	54.4	957	4.2	4	4.5
Midwife Episode	103,366	1,373	1.3	8,647	8.4	14.8	8.3
Nephrology	29,645	4,043	13.6	2,748	9.3	7.4	9.6
Neurology	14,827	7,827	52.8	2,040	13.8	13.3	14.2
Neurosurgery	5,303	3,553	67	620	11.7	12	11.1
Nursing Episode	13,456	5,629	41.8	978	7.3	4.3	9.4
Obstetrics	6,509	2,142	32.9	808	12.4	10.2	13.5
Ophthalmology	48,930	3,372	6.9	7,354	15	13.3	15.2
Oral Surgery	81	20	24.7	9	11.1	15	9.8
Paediatric Neurology	29	4	13.8	4	13.8	0	16
Paediatrics	1,565	202	12.9	148	9.5	11.9	9.1
Plastic Surgery	9,713	2,143	22.1	992	10.2	10.4	10.2
Radiology	214	23	10.7	10	4.7	4.3	4.7
Rehabilitation	483	89	18.4	38	7.9	2.2	9.1
Respiratory Medicine (aka Thoracic Medicine)	17,777	10,425	58.6	1,884	10.6	10	11.4
Rheumatology	13,477	9,055	67.2	1,722	12.8	13.5	11.4
Trauma & Orthopaedics	18,745	3,801	20.3	2,716	14.5	16.2	14.1
Urology	16,537	10,703	64.7	1,146	6.9	7.6	5.6

Supplementary Table S5 – Incidence risk ratios (IRR) and associated 95% confidence intervals (CI) of missed first appointments.

	Remote		F2F	
	IRR (95% CI)	p-value	IRR (95% CI)	p-value
Age and Gender				
18 to 39, Female	1.39 (1.29 to 1.5)	<0.0001	1.11 (1.06 to 1.16)	<0.0001
40 to 59, Female	1 (REF)		1 (REF)	
60 to 79, Female	0.70 (0.63 to 0.76)	<0.0001	0.79 (0.74 to 0.83)	<0.0001
80+, Female	0.57 (0.48 to 0.68)	<0.0001	0.92 (0.84 to 1)	0.063
18 to 39, Male	0.98 (0.87 to 1.1)	0.727	1.28 (1.19 to 1.39)	<0.0001
40 to 59, Male	1.12 (1.03 to 1.22)	0.007	1.37 (1.3 to 1.44)	<0.0001
60 to 79, Male	0.97 (0.85 to 1.11)	0.645	0.85 (0.79 to 0.93)	<0.001
80+, Male	1.07 (0.84 to 1.37)	0.567	0.73 (0.64 to 0.83)	<0.0001
Ethnicity				
White	1 (REF)			
Asian or Asian British	1.03 (0.96 to 1.1)	0.477	0.94 (0.9 to 0.98)	0.007
Black or Black British	1.14 (1.06 to 1.23)	<0.001	1.28 (1.23 to 1.34)	<0.0001
Mixed	1.17 (1.04 to 1.31)	0.007	1.22 (1.13 to 1.31)	<0.0001
Not Stated	1.10 (0.96 to 1.25)	0.176	1.13 (1.03 to 1.23)	0.008
Other ethnic groups	1.15 (1.06 to 1.24)	<0.001	1.17 (1.12 to 1.23)	<0.0001
Number of LTCs				
0	1 (REF)			
1	1.08 (1.01 to 1.15)	0.030	1.06 (1.02 to 1.11)	0.006
2	1.08 (1 to 1.16)	0.042	1.19 (1.13 to 1.25)	<0.0001
3+	1.15 (1.07 to 1.24)	<0.001	1.22 (1.16 to 1.27)	<0.0001
IMD Quintile				
Q1 (most deprived)	1 (REF)			
Q2	0.88 (0.82 to 0.93)	<0.0001	0.91 (0.87 to 0.95)	<0.0001
Q3	0.85 (0.8 to 0.91)	<0.0001	0.83 (0.79 to 0.87)	<0.0001
Q4	0.83 (0.76 to 0.91)	<0.0001	0.74 (0.7 to 0.79)	<0.0001
Q5 (least deprived)	0.70 (0.61 to 0.81)	<0.0001	0.56 (0.51 to 0.62)	<0.0001
Unknown	0.99 (0.89 to 1.1)	0.846	1.03 (0.962 to 1.1)	0.410

Supplementary Table S6 – Incidence risk ratios (IRR) and associated 95% confidence intervals (CI) of missed follow-up appointments.

	Remote		F2F	
	IRR (95% CI)	p-value	IRR (95% CI)	p-value
Age and Gender				
18 to 39, Female	1.34 (1.27 to 1.41)	<0.0001	0.92 (0.88 to 0.95)	<0.0001
40 to 59, Female	1 (REF)		1 (REF)	
60 to 79, Female	0.74 (0.7 to 0.78)	<0.0001	0.80 (0.77 to 0.84)	<0.0001
80+, Female	0.67 (0.6 to 0.74)	<0.0001	0.96 (0.9 to 1.02)	0.191
18 to 39, Male	0.91 (0.84 to 0.99)	0.028	1.47 (1.38 to 1.57)	<0.0001
40 to 59, Male	1.26 (1.2 to 1.33)	<0.0001	1.32 (1.26 to 1.38)	<0.0001
60 to 79, Male	0.83 (0.77 to 0.9)	<0.0001	0.83 (0.78 to 0.89)	<0.0001
80+, Male	0.78 (0.67 to 0.9)	<0.001	0.74 (0.67 to 0.81)	<0.0001
Ethnicity				
White	1 (REF)			
Asian or asian british	1.04 (0.99 to 1.09)	0.131	1.05 (1.02 to 1.09)	0.002
Black or black british	1.27 (1.21 to 1.33)	<0.0001	1.47 (1.42 to 1.52)	<0.0001
Mixed	1.14 (1.05 to 1.24)	0.002	1.27 (1.19 to 1.35)	<0.0001
Not Stated	1.14 (1.04 to 1.25)	0.004	1.23 (1.15 to 1.32)	<0.0001
Other ethnic groups	1.24 (1.17 to 1.31)	<0.0001	1.26 (1.21 to 1.31)	<0.0001
Number of LTCs				
0	1 (REF)			
1	0.93 (0.88 to 0.97)	<0.001	1.09 (1.05 to 1.13)	<0.0001
2	0.93 (0.88 to 0.97)	0.003	1.14 (1.09 to 1.18)	<0.0001
3+	0.91 (0.87 to 0.96)	<0.001	1.13 (1.09 to 1.18)	<0.0001
IMD Quintile				
Q1 (most deprived)	1 (REF)			
Q2	0.89 (0.85 to 0.93)	<0.0001	0.91 (0.88 to 0.94)	0.004
Q3	0.86 (0.82 to 0.91)	<0.0001	0.82 (0.79 to 0.85)	<0.0001
Q4	0.79 (0.74 to 0.83)	<0.0001	0.76 (0.72 to 0.79)	<0.0001
Q5 (least deprived)	0.63 (0.57 to 0.7)	<0.0001	0.63 (0.59 to 0.68)	<0.0001
Unknown	0.90 (0.83 to 0.97)	0.006	1.00 (0.95 to 1.06)	0.916