

Table S1. Definitions of diseases of interest, in CPRD.

Patients were determined to have a diagnosis for the respective disease if they had a Clinical or Referral event with at least one of the diagnosis codes indicated below.

Condition	Diagnosis Codes (READ Codes)
Chronic Obstructive Pulmonary Disease	H3...00, H3...11, H31..00, H310.00, H310000, H310z00, H311.00, H311000, H311100, H311z00, H312.00, H312000, H312011, H312100, H312300, H312z00, H313.00, H31y.00, H31y100, H31yz00, H31z.00, H32..00, H320.00, H320000, H320100, H320200, H320300, H320311, H320z00, H321.00, H322.00, H32y.00, H32y000, H32y100, H32y111, H32y200, H32yz00, H32z.00, H36..00, H37..00, H38..00, H39..00, H3A..00, H3B..00, H3y..00, H3y..11, H464000, H464100, H583200, Hyu3000, Hyu3100
Cystic Fibrosis	C10N100, C370.00, C370.12, C370000, C370100, C370111, C370200, C370300, C370400, C370500, C370700, C370800, C370900, C370y00, C370z00
Inflammatory Bowel Disease	14C4.11, 8Cc5.00, 8Cc5.11, J08z900, J40..00, J40..11, J40..12, J400.00, J400000, J400100, J400200, J400300, J400400, J400500, J400z00, J401.00, J401000, J401100, J401200, J401z00, J401z11, J402.00, J40z.00, J40z.11, J41..00, J41..11, J41..12, J410.00, J410000, J410100, J410200, J410300, J410400, J410z00, J411.00, J412.00, J41y.00, J41yz00, J41z.00, J574C00, Jyu4.00, Jyu4000, Jyu4100, N031000, N031100, N045300, N045400, ZR3S.00, ZR3S.11, J4...00, J4...12
Psoriasis	M16..00, M161.00, M161000, M161100, M161200, M161300, M161400, M161500, M161600, M161700, M161800, M161900, M161A00, M161B00, M161C00, M161E00, M161F00, M161F11, M161H00, M161z00, M16y.00, M16y000, M16z.00, Myu3000, M160000, M161D00, M161J00, M166.00
Schizophrenia	1464.00, 212T.00, E10..00, E100.00, E100.11, E100000, E100100, E100200, E100300, E100400, E100500, E100z00, E101.00, E101000, E101400, E101500, E101z00, E102.00, E102000, E102100, E102400, E102500, E102z00, E103.00, E103000, E103100, E103200, E103300, E103400, E103500, E103z00, E104.00, E105.00, E105000, E105200, E105500, E105z00, E106.00, E107.00, E107.11, E107000, E107100, E107200, E107300, E107400, E107500, E107z00, E10y.00, E10y.11, E10y000, E10y100, E10yz00, E10z.00, E14z.11, Eu05200, Eu05212, Eu2..00, Eu20.00, Eu20000, Eu20011, Eu20100, Eu20111, Eu20200, Eu20212, Eu20213, Eu20214, Eu20300, Eu20311, Eu20400, Eu20500, Eu20511, Eu20600, Eu20y00, Eu20z00, Eu21.11, Eu21.12, Eu21.13, Eu21.14, Eu21.15, Eu21.16, Eu21.17, Eu23112, Eu23200, Eu23214, Eu25.00, Eu25000, Eu25011, Eu25100, Eu25111, Eu25200, Eu25211, Eu25212, Eu25y00, Eu25z00, Eu25z11, ZV11000

Table S2. Disease diagnosis definition, in MarketScan.

Patients were determined to have a diagnosis for the respective disease if they had an Inpatient, Inpatient Service, or Outpatient event with at least one of the diagnosis codes indicated below.

Condition	Diagnosis Codes (ICD-9 Diagnosis Codes)
Chronic Obstructive Pulmonary Disease	491, 491.0, 491.1, 491.2, 491.20, 491.21, 491.22, 491.8, 491.9, 492, 492.0, 492.8, 496
Cystic Fibrosis	277.0, 277.00, 277.01, 277.02, 277.03, 277.09
Inflammatory Bowel Disease	555, 555.0, 555.1, 555.2, 555.9, 556, 556.0, 556.1, 556.2, 556.3, 556.4, 556.5, 556.6, 556.8, 556.9
Psoriasis	696, 696.1, 696.8
Schizophrenia	295, 295.0, 295.00, 295.01, 295.02, 295.03, 295.04, 295.05, 295.1, 295.10, 295.11, 295.12, 295.13, 295.14, 295.15, 295.2, 295.20, 295.21, 295.22, 295.23, 295.24, 295.25, 295.3, 295.30, 295.31, 295.32, 295.33, 295.34, 295.35, 295.4, 295.40, 295.41, 295.42, 295.43, 295.44, 295.45, 295.5, 295.50, 295.51, 295.52, 295.53, 295.54, 295.55, 295.6, 295.60, 295.61, 295.62, 295.63, 295.64, 295.65, 295.7, 295.70, 295.71, 295.72, 295.73, 295.74, 295.75, 295.8, 295.80, 295.81, 295.82, 295.83, 295.84, 295.85, 295.9, 295.90, 295.91, 295.92, 295.93, 295.94, 295.95

Table S3. Median length of observable look-back time available, in years.

Database	2011	2012	2013	2014
CPRD	8.22	8.61	9.13	9.74
MarketScan	2.00	2.00	2.25	2.75

Table S4. Prevalence and incidence estimates, from CPRD.

Disease	Parameter	Case	Estimate (95% Confidence Interval)			
			2011	2012	2013	2014
COPD	Incidence	1	0.370 (0.364, 0.375)	0.352 (0.346, 0.357)	0.325 (0.320, 0.330)	0.298 (0.293, 0.304)
COPD	Incidence	2	0.295 (0.290, 0.300)	0.270 (0.265, 0.274)	0.250 (0.245, 0.254)	0.234 (0.229, 0.238)
COPD	Incidence	3	0.176 (0.173, 0.180)	0.174 (0.170, 0.177)	0.167 (0.163, 0.171)	0.158 (0.154, 0.161)
COPD	Incidence	4	0.184 (0.180, 0.188)	0.180 (0.176, 0.184)	0.178 (0.174, 0.183)	0.174 (0.169, 0.178)
COPD	Prevalence	1	0.406 (0.400, 0.412)	0.434 (0.428, 0.440)	0.405 (0.399, 0.411)	0.388 (0.382, 0.394)
COPD	Prevalence	2	0.658 (0.650, 0.665)	0.701 (0.693, 0.708)	0.693 (0.686, 0.701)	0.653 (0.645, 0.660)
COPD	Prevalence	3	1.560 (1.549, 1.572)	1.610 (1.599, 1.622)	1.653 (1.642, 1.665)	1.683 (1.671, 1.695)
COPD	Prevalence	4	1.511 (1.500, 1.523)	1.563 (1.552, 1.575)	1.591 (1.579, 1.604)	1.627 (1.614, 1.641)
Psoriasis	Incidence	1	0.349 (0.343, 0.354)	0.345 (0.340, 0.350)	0.328 (0.323, 0.334)	0.306 (0.301, 0.311)
Psoriasis	Incidence	2	0.288 (0.283, 0.293)	0.284 (0.279, 0.289)	0.270 (0.265, 0.275)	0.252 (0.247, 0.257)
Psoriasis	Incidence	3	0.154 (0.151, 0.158)	0.147 (0.143, 0.150)	0.143 (0.139, 0.146)	0.133 (0.129, 0.136)
Psoriasis	Incidence	4	0.164 (0.160, 0.168)	0.155 (0.151, 0.159)	0.155 (0.151, 0.159)	0.149 (0.145, 0.153)
Psoriasis	Prevalence	1	0.440 (0.434, 0.446)	0.450 (0.444, 0.456)	0.443 (0.437, 0.449)	0.434 (0.428, 0.440)
Psoriasis	Prevalence	2	0.770 (0.762, 0.778)	0.761 (0.753, 0.768)	0.764 (0.756, 0.772)	0.756 (0.747, 0.764)
Psoriasis	Prevalence	3	2.972 (2.956, 2.987)	3.046 (3.030, 3.061)	3.101 (3.086, 3.117)	3.180 (3.164, 3.197)
Psoriasis	Prevalence	4	3.004 (2.988, 3.020)	3.078 (3.062, 3.094)	3.157 (3.140, 3.174)	3.228 (3.209, 3.246)
IBD	Incidence	1	0.0907 (0.0880, 0.0934)	0.0956 (0.0929, 0.0985)	0.0891 (0.0864, 0.0918)	0.0879 (0.0851, 0.0907)
IBD	Incidence	2	0.0742 (0.0718, 0.0766)	0.0801 (0.0776, 0.0827)	0.0735 (0.0711, 0.0760)	0.0735 (0.0710, 0.0761)
IBD	Incidence	3	0.0383 (0.0366, 0.0401)	0.0412 (0.0394, 0.0431)	0.0376 (0.0358, 0.0394)	0.0390 (0.0372, 0.0410)
IBD	Incidence	4	0.0403 (0.0385, 0.0423)	0.0431 (0.0412, 0.0452)	0.0400 (0.0381, 0.0421)	0.0436 (0.0415, 0.0459)
IBD	Prevalence	1	0.123 (0.120, 0.126)	0.121 (0.118, 0.125)	0.126 (0.123, 0.129)	0.123 (0.120, 0.126)
IBD	Prevalence	2	0.212 (0.208, 0.216)	0.208 (0.204, 0.212)	0.212 (0.207, 0.216)	0.212 (0.207, 0.216)
IBD	Prevalence	3	0.866 (0.858, 0.874)	0.885 (0.876, 0.893)	0.903 (0.895, 0.912)	0.923 (0.914, 0.932)
IBD	Prevalence	4	0.879 (0.870, 0.888)	0.894 (0.885, 0.903)	0.920 (0.911, 0.930)	0.938 (0.928, 0.948)
Schizophrenia	Incidence	1	0.0283 (0.0268, 0.0299)	0.0291 (0.0276, 0.0306)	0.0315 (0.0300, 0.0332)	0.0292 (0.0276, 0.0308)
Schizophrenia	Incidence	2	0.0253 (0.0239, 0.0268)	0.0258 (0.0243, 0.0272)	0.0278 (0.0263, 0.0294)	0.0259 (0.0244, 0.0275)
Schizophrenia	Incidence	3	0.0108 (0.0099, 0.0118)	0.0106 (0.0097, 0.0116)	0.0112 (0.0103, 0.0122)	0.0112 (0.0102, 0.0122)
Schizophrenia	Incidence	4	0.0111 (0.0101, 0.0121)	0.0109 (0.0099, 0.0119)	0.0114 (0.0104, 0.0125)	0.0120 (0.0109, 0.0132)
Schizophrenia	Prevalence	1	0.0352 (0.0336, 0.0370)	0.0400 (0.0383, 0.0419)	0.0399 (0.0381, 0.0418)	0.0446 (0.0427, 0.0467)
Schizophrenia	Prevalence	2	0.0630 (0.0608, 0.0653)	0.0663 (0.0640, 0.0686)	0.0704 (0.0680, 0.0728)	0.0755 (0.0730, 0.0782)
Schizophrenia	Prevalence	3	0.362 (0.356, 0.367)	0.365 (0.360, 0.371)	0.366 (0.360, 0.371)	0.368 (0.362, 0.374)
Schizophrenia	Prevalence	4	0.352 (0.347, 0.358)	0.354 (0.348, 0.360)	0.351 (0.345, 0.356)	0.351 (0.345, 0.357)
Cystic Fibrosis	Incidence	1	0.00173 (0.00139, 0.00214)	0.00177 (0.00142, 0.00219)	0.00147 (0.00116, 0.00187)	0.00169 (0.00134, 0.00213)
Cystic Fibrosis	Incidence	2	0.00133 (0.00104, 0.00170)	0.00134 (0.00105, 0.00172)	0.00123 (0.00095, 0.00160)	0.00137 (0.00106, 0.00177)
Cystic Fibrosis	Incidence	3	0.000374 (0.000232, 0.000596)	0.000213 (0.000110, 0.000398)	0.000325 (0.000192, 0.000541)	0.000510 (0.000333, 0.000777)
Cystic Fibrosis	Incidence	4	0.000394 (0.000241, 0.000636)	0.000236 (0.000122, 0.000441)	0.000255 (0.000131, 0.000476)	0.000461 (0.000277, 0.000755)
Cystic Fibrosis	Prevalence	1	0.00333 (0.00285, 0.00388)	0.00330 (0.00282, 0.00386)	0.00346 (0.00297, 0.00405)	0.00318 (0.00269, 0.00376)
Cystic Fibrosis	Prevalence	2	0.00530 (0.00469, 0.00599)	0.00513 (0.00452, 0.00582)	0.00550 (0.00486, 0.00622)	0.00559 (0.00493, 0.00634)
Cystic Fibrosis	Prevalence	3	0.0217 (0.0205, 0.0231)	0.0223 (0.0210, 0.0237)	0.0226 (0.0212, 0.0240)	0.0231 (0.0218, 0.0246)
Cystic Fibrosis	Prevalence	4	0.0221 (0.0207, 0.0235)	0.0225 (0.0212, 0.0240)	0.0229 (0.0214, 0.0244)	0.0229 (0.0214, 0.0246)

COPD: Chronic obstructive pulmonary disease. IBD: Inflammatory bowel disease. Incidence: cumulative incidence in the indicated year. Prevalence: point prevalence on the first day of the indicated year.

Table S5. Prevalence and incidence estimates, from MarketScan.

Disease	Parameter	Case	Estimate (95% Confidence Interval)			
			2011	2012	2013	2014
COPD	Incidence	1	1.341 (1.338, 1.344)	1.131 (1.128, 1.134)	1.153 (1.150, 1.156)	1.113 (1.110, 1.116)
COPD	Incidence	2	1.147 (1.144, 1.150)	0.945 (0.942, 0.947)	0.957 (0.954, 0.960)	0.905 (0.902, 0.907)
COPD	Incidence	3	1.078 (1.075, 1.080)	0.848 (0.845, 0.850)	0.834 (0.831, 0.837)	0.771 (0.768, 0.774)
COPD	Incidence	4	1.143 (1.140, 1.146)	0.892 (0.889, 0.895)	0.848 (0.845, 0.851)	0.810 (0.807, 0.813)
COPD	Prevalence	1	1.388 (1.384, 1.391)	1.536 (1.532, 1.539)	1.512 (1.508, 1.516)	1.362 (1.359, 1.366)
COPD	Prevalence	2	1.927 (1.923, 1.931)	2.027 (2.023, 2.030)	2.055 (2.051, 2.059)	1.899 (1.895, 1.903)
COPD	Prevalence	3	2.195 (2.191, 2.199)	2.543 (2.539, 2.547)	2.778 (2.773, 2.783)	2.733 (2.728, 2.737)
COPD	Prevalence	4	2.215 (2.210, 2.219)	2.552 (2.548, 2.557)	2.841 (2.835, 2.846)	2.773 (2.767, 2.778)
Psoriasis	Incidence	1	0.397 (0.396, 0.399)	0.391 (0.389, 0.392)	0.412 (0.410, 0.413)	0.444 (0.442, 0.446)
Psoriasis	Incidence	2	0.337 (0.336, 0.339)	0.324 (0.323, 0.326)	0.340 (0.338, 0.342)	0.362 (0.360, 0.364)
Psoriasis	Incidence	3	0.315 (0.313, 0.316)	0.293 (0.291, 0.294)	0.300 (0.298, 0.301)	0.310 (0.309, 0.312)
Psoriasis	Incidence	4	0.343 (0.341, 0.345)	0.318 (0.316, 0.319)	0.319 (0.317, 0.320)	0.339 (0.337, 0.341)
Psoriasis	Prevalence	1	0.394 (0.392, 0.396)	0.472 (0.470, 0.474)	0.471 (0.469, 0.473)	0.460 (0.458, 0.462)
Psoriasis	Prevalence	2	0.566 (0.564, 0.568)	0.645 (0.642, 0.647)	0.671 (0.668, 0.673)	0.679 (0.676, 0.681)
Psoriasis	Prevalence	3	0.653 (0.651, 0.655)	0.820 (0.817, 0.822)	0.922 (0.919, 0.925)	0.993 (0.990, 0.996)
Psoriasis	Prevalence	4	0.677 (0.674, 0.679)	0.849 (0.847, 0.852)	0.964 (0.961, 0.968)	1.039 (1.035, 1.042)
IBD	Incidence	1	0.276 (0.274, 0.277)	0.254 (0.252, 0.255)	0.268 (0.266, 0.270)	0.283 (0.281, 0.284)
IBD	Incidence	2	0.224 (0.222, 0.225)	0.201 (0.200, 0.202)	0.211 (0.210, 0.213)	0.214 (0.212, 0.215)
IBD	Incidence	3	0.208 (0.207, 0.210)	0.181 (0.180, 0.183)	0.186 (0.185, 0.188)	0.184 (0.182, 0.185)
IBD	Incidence	4	0.224 (0.223, 0.225)	0.193 (0.192, 0.194)	0.194 (0.192, 0.195)	0.196 (0.194, 0.197)
IBD	Prevalence	1	0.342 (0.340, 0.343)	0.394 (0.392, 0.396)	0.391 (0.389, 0.393)	0.379 (0.377, 0.381)
IBD	Prevalence	2	0.445 (0.443, 0.447)	0.496 (0.494, 0.498)	0.506 (0.504, 0.508)	0.511 (0.509, 0.513)
IBD	Prevalence	3	0.497 (0.495, 0.499)	0.594 (0.592, 0.596)	0.647 (0.644, 0.649)	0.685 (0.682, 0.687)
IBD	Prevalence	4	0.509 (0.507, 0.511)	0.610 (0.608, 0.613)	0.669 (0.667, 0.672)	0.710 (0.707, 0.713)
Schizophrenia	Incidence	1	0.0490 (0.0484, 0.0496)	0.0435 (0.0430, 0.0441)	0.0502 (0.0495, 0.0509)	0.0503 (0.0496, 0.0509)
Schizophrenia	Incidence	2	0.0439 (0.0433, 0.0445)	0.0388 (0.0383, 0.0394)	0.0449 (0.0442, 0.0455)	0.0424 (0.0418, 0.0430)
Schizophrenia	Incidence	3	0.0422 (0.0417, 0.0428)	0.0366 (0.0361, 0.0371)	0.0420 (0.0414, 0.0427)	0.0391 (0.0385, 0.0397)
Schizophrenia	Incidence	4	0.0437 (0.0431, 0.0443)	0.0376 (0.0370, 0.0382)	0.0417 (0.0410, 0.0424)	0.0400 (0.0394, 0.0407)
Schizophrenia	Prevalence	1	0.0597 (0.0590, 0.0603)	0.0684 (0.0677, 0.0691)	0.0697 (0.0689, 0.0705)	0.0669 (0.0661, 0.0677)
Schizophrenia	Prevalence	2	0.0755 (0.0747, 0.0762)	0.0838 (0.0830, 0.0846)	0.0882 (0.0873, 0.0891)	0.0888 (0.0879, 0.0897)
Schizophrenia	Prevalence	3	0.0840 (0.0832, 0.0848)	0.0998 (0.0990, 0.1007)	0.112 (0.111, 0.113)	0.118 (0.117, 0.119)
Schizophrenia	Prevalence	4	0.0839 (0.0831, 0.0848)	0.0994 (0.0985, 0.1003)	0.113 (0.111, 0.114)	0.117 (0.115, 0.118)
Cystic Fibrosis	Incidence	1	0.0114 (0.0112, 0.0117)	0.00929 (0.00903, 0.00955)	0.00941 (0.00912, 0.00971)	0.00925 (0.00897, 0.00954)
Cystic Fibrosis	Incidence	2	0.0106 (0.0103, 0.0109)	0.00877 (0.00852, 0.00903)	0.00887 (0.00858, 0.00916)	0.00817 (0.00791, 0.00845)
Cystic Fibrosis	Incidence	3	0.0104 (0.0102, 0.0107)	0.00861 (0.00836, 0.00887)	0.00864 (0.00836, 0.00893)	0.00791 (0.00765, 0.00818)
Cystic Fibrosis	Incidence	4	0.0110 (0.0107, 0.0114)	0.00910 (0.00882, 0.00939)	0.00905 (0.00874, 0.00938)	0.00851 (0.00821, 0.00881)
Cystic Fibrosis	Prevalence	1	0.0159 (0.0156, 0.0163)	0.0175 (0.0171, 0.0178)	0.0164 (0.0160, 0.0168)	0.0151 (0.0148, 0.0155)
Cystic Fibrosis	Prevalence	2	0.0226 (0.0222, 0.0231)	0.0231 (0.0227, 0.0236)	0.0224 (0.0219, 0.0228)	0.0212 (0.0207, 0.0216)
Cystic Fibrosis	Prevalence	3	0.0280 (0.0276, 0.0285)	0.0326 (0.0321, 0.0331)	0.0350 (0.0344, 0.0356)	0.0363 (0.0358, 0.0369)
Cystic Fibrosis	Prevalence	4	0.0284 (0.0279, 0.0289)	0.0332 (0.0327, 0.0338)	0.0362 (0.0355, 0.0368)	0.0378 (0.0372, 0.0384)

COPD: Chronic obstructive pulmonary disease. IBD: Inflammatory bowel disease. Incidence: cumulative incidence in the indicated year. Prevalence: point prevalence on the first day of the indicated year.

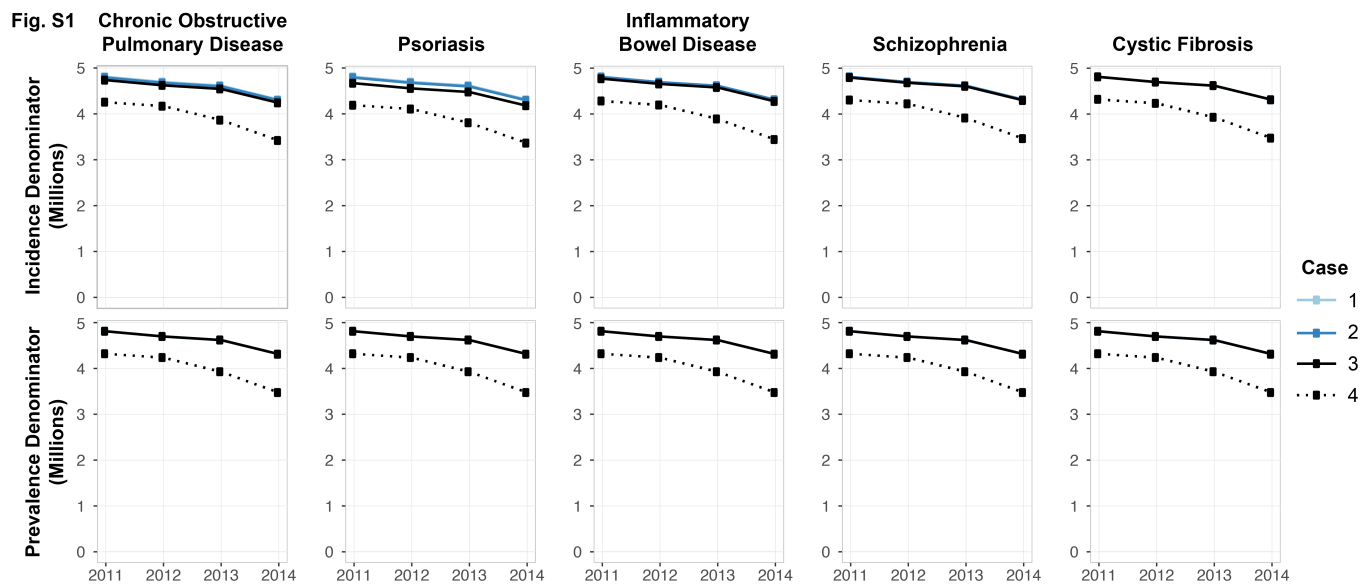


Figure S1. Denominators for incidence and prevalence, in CPRD. Numbers for case 1 and 2 generally overlap with those of case 3, which is why they may not be visible.

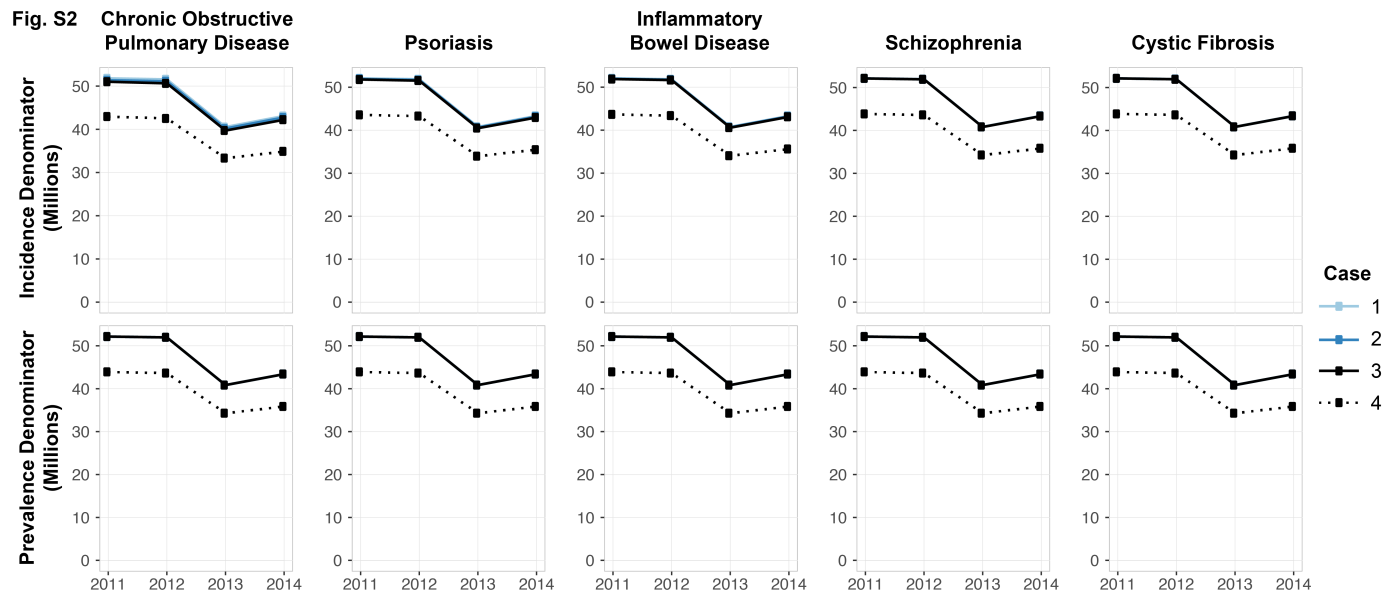


Figure S2. Denominators for incidence and prevalence, in MarketScan. Numbers for case 1 and 2 generally overlap with those of case 3, which is why they may not be visible.