



Adjustments report

HIV Estimates Accuracy tool

14 October 2019, 22:44:29

Contents

1	Introduction	1
2	Comparison of data by Gender	2
2.1	Number of diagnoses per year	2
2.2	Median CD4 cell count (cells/ μ L)	3
3	Comparison of data by Transmission	5
3.1	Number of diagnoses per year	5
3.2	Median CD4 cell count (cells/ μ L)	7
4	Comparison of data by Migration	9
4.1	Number of diagnoses per year	9
4.2	Median CD4 cell count (cells/ μ L)	10
5	Comparison of the reported and estimated number of diagnoses per year	12

1 Introduction

Input data:

- File name: ~/share/anastasiaHIVTest/anastasia.csv
- Filter on diagnosis year applied: [2000, 2010]

Adjustments:

- Multiple Imputation using Chained Equations - MICE
 - Number of imputations: 2
 - Number of mice iterations: 5
 - Number of degrees of freedom for spline of diagnosis calendar year: 4
 - Impute reporting delays inputs: TRUE
- Reporting Delays
 - Diagnosis start year: 2008
 - Notification end year: 2018
 - Notification end quarter (integer between 1 and 4): 1
 - Gender: FALSE
 - Transmission: FALSE
 - Migration: FALSE

Report options:

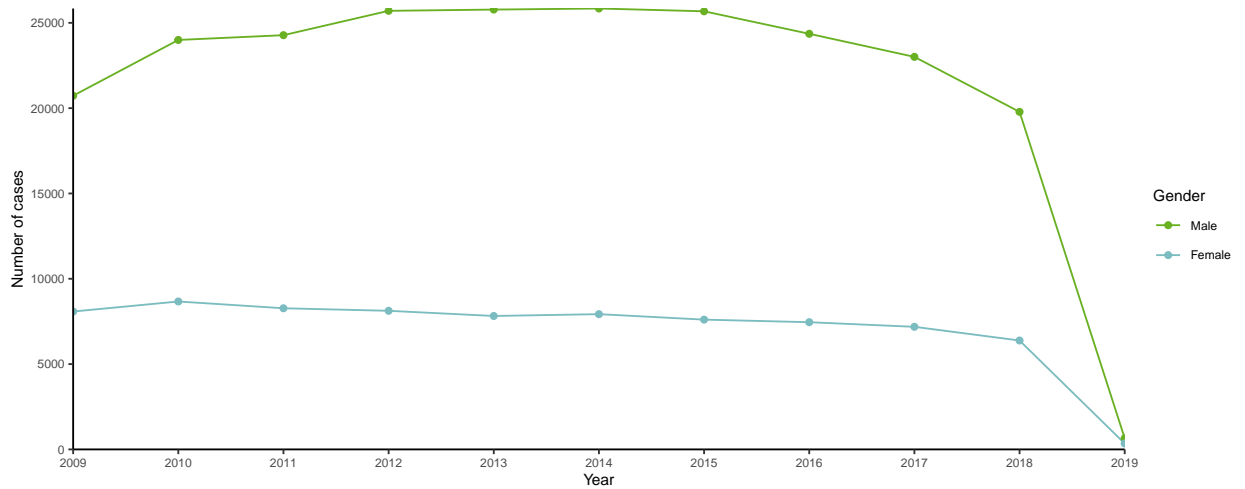
- Correction of count of cases for reporting delay.
- Original calendar time.
- CD4 plots with inter-quartile range.

2 Comparison of data by Gender

2.1 Number of diagnoses per year

Data stratified by *gender* is shown only for unadjusted data since there were no missing data on *gender* after pre-processing, which takes place before adjustments.

2.1.1 Before and after adjustments

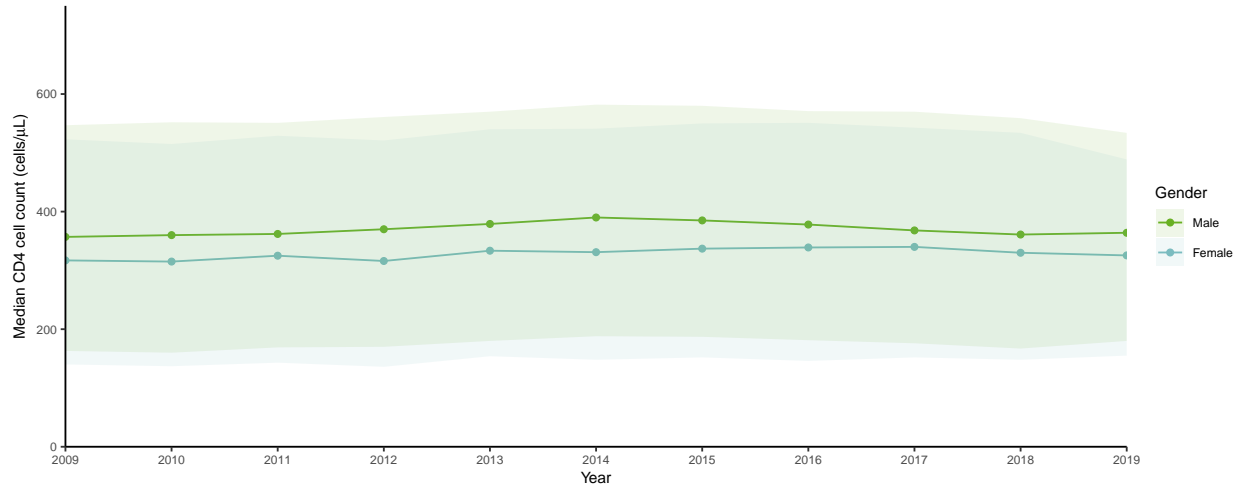


Year of diagnosis	Male [N (%)]	Female [N (%)]	Total [N (%)]
2009	20728 (72)	8080 (28)	28808 (100)

Year of diagnosis	Male [N (%)]	Female [N (%)]	Total [N (%)]
2010	23997 (73)	8669 (27)	32666 (100)
2011	24277 (75)	8272 (25)	32549 (100)
2012	25704 (76)	8123 (24)	33827 (100)
2013	25777 (77)	7820 (23)	33597 (100)
2014	25840 (77)	7926 (23)	33766 (100)
2015	25676 (77)	7606 (23)	33282 (100)
2016	24358 (77)	7455 (23)	31813 (100)
2017	23006 (76)	7184 (24)	30190 (100)
2018	19782 (76)	6382 (24)	26164 (100)
2019	651 (65)	345 (35)	996 (100)
Total	239796 (75)	77862 (25)	317658 (100)

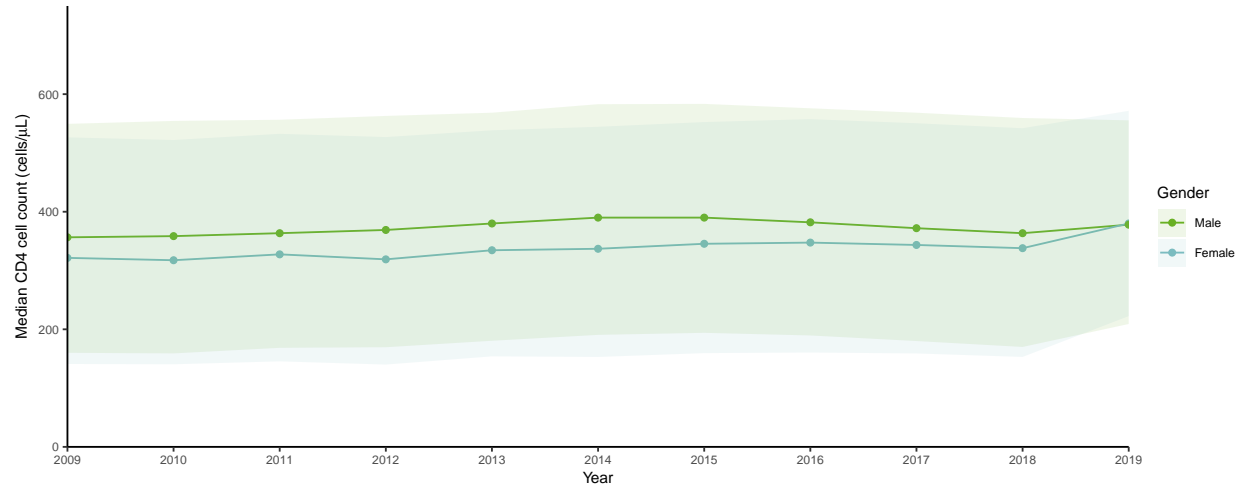
2.2 Median CD4 cell count (cells/ μ L)

2.2.1 Before adjustments



Year of diagnosis	Male [Median (IQR)]	Female [Median (IQR)]	Overall [Median (IQR)]
2009	357 (163, 547)	317 (140, 523)	347 (156, 540)
2010	360 (160, 552)	315 (137, 515)	350 (153, 544)
2011	362 (169, 551)	325 (143, 529)	353 (160, 546)
2012	370 (170, 561)	316 (136, 521)	357 (160, 553)
2013	379 (180, 570)	334 (154, 540)	368 (173, 564)
2014	390 (188, 582)	331 (148, 541)	376 (178, 575)
2015	385 (187, 580)	337 (152, 550)	376 (178, 575)
2016	378 (181, 571)	339 (146, 551)	370 (173, 568)
2017	368 (176, 570)	340 (152, 543)	360 (170, 563)
2018	361 (167, 559)	330 (148, 534)	354 (162, 553)
2019	364 (180, 534)	326 (155, 489)	353 (174, 529)
Overall	371 (175, 565)	328 (146, 535)	361 (167, 560)

2.2.2 After adjustments

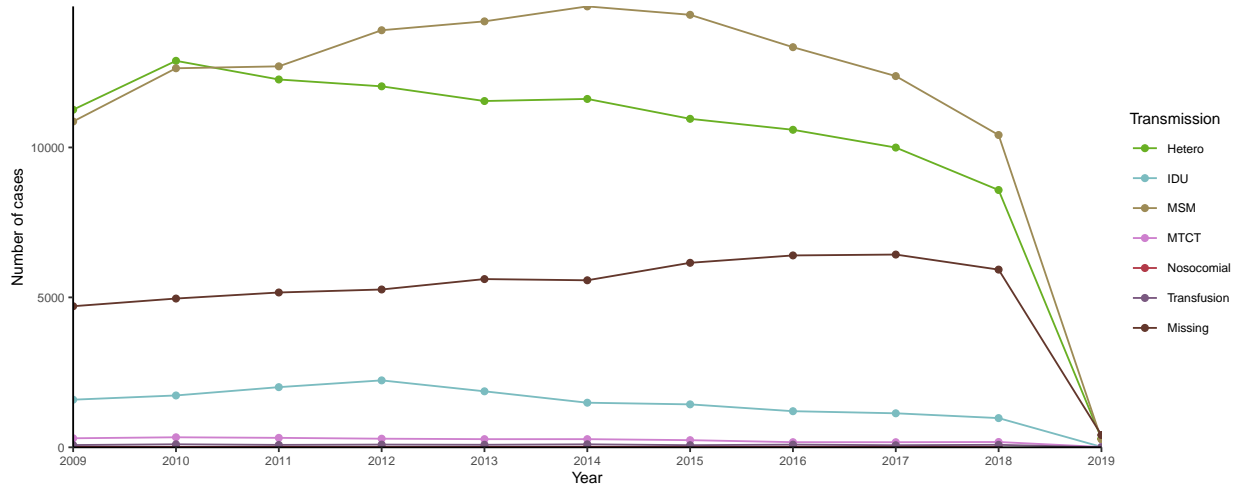


Year of diagnosis	Male [Median (IQR)]	Female [Median (IQR)]
2009	356 (160, 549)	321 (141, 526)
2010	358 (159, 554)	317 (140, 522)
2011	363 (168, 556)	327 (145, 532)
2012	369 (169, 563)	319 (140, 527)
2013	380 (180, 568)	334 (154, 538)
2014	390 (190, 583)	337 (153, 544)
2015	390 (194, 583)	345 (159, 552)
2016	382 (189, 576)	347 (160, 557)
2017	372 (180, 568)	343 (159, 550)
2018	363 (170, 559)	338 (153, 542)
2019	378 (209, 555)	380 (222, 572)

3 Comparison of data by Transmission

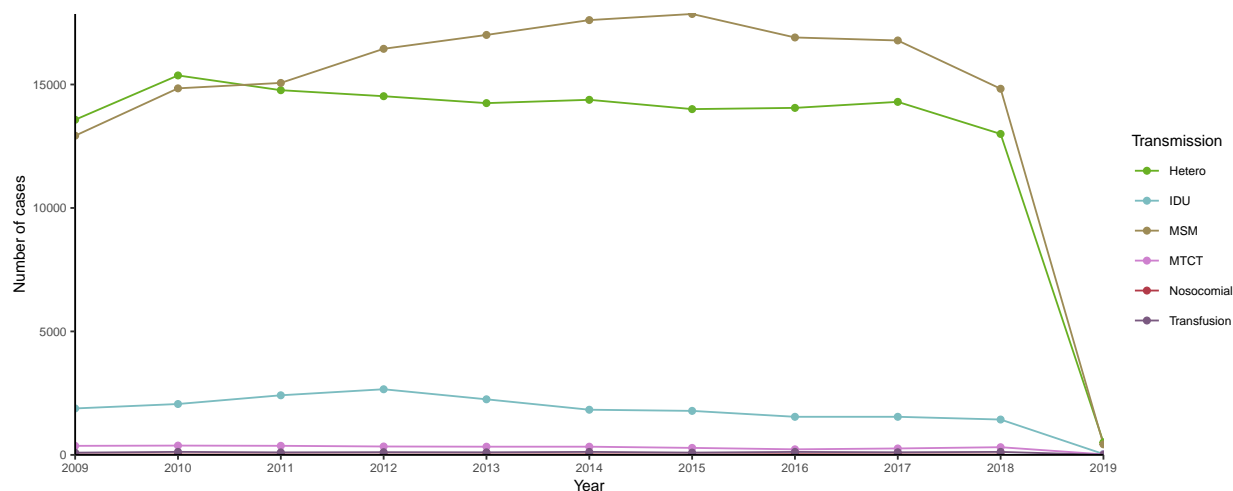
3.1 Number of diagnoses per year

3.1.1 Before adjustments



Year of diagnosis	Hetero [N (%)]	IDU [N (%)]	MSM [N (%)]	MTCT [N (%)]	Nosocomial [N (%)]	Transfusion [N (%)]	Missing [N (%)]	Overall [N (%)]
2009	11259 (39)	1588 (6)	10866 (38)	301 (1)	14 (0)	75 (0)	4705 (16)	28808 (100)
2010	12889 (39)	1729 (5)	12641 (39)	334 (1)	12 (0)	100 (0)	4961 (15)	32666 (100)
2011	12267 (38)	2006 (6)	12705 (39)	315 (1)	13 (0)	80 (0)	5163 (16)	32549 (100)
2012	12038 (36)	2232 (7)	13909 (41)	287 (1)	8 (0)	90 (0)	5263 (16)	33827 (100)
2013	11548 (34)	1867 (6)	14205 (42)	272 (1)	11 (0)	84 (0)	5610 (17)	33597 (100)
2014	11618 (34)	1487 (4)	14704 (44)	272 (1)	16 (0)	99 (0)	5570 (16)	33766 (100)
2015	10955 (33)	1432 (4)	14424 (43)	238 (1)	9 (0)	71 (0)	6153 (18)	33282 (100)
2016	10589 (33)	1204 (4)	13344 (42)	171 (1)	17 (0)	89 (0)	6399 (20)	31813 (100)
2017	9996 (33)	1134 (4)	12380 (41)	170 (1)	12 (0)	70 (0)	6428 (21)	30190 (100)
2018	8580 (33)	974 (4)	10415 (40)	177 (1)	9 (0)	83 (0)	5926 (23)	26164 (100)
2019	297 (30)	14 (1)	262 (26)	11 (1)	- (-)	2 (0)	410 (41)	996 (100)
Overall	112036 (35)	15667 (5)	129855 (41)	2548 (1)	121 (0)	843 (0)	56588 (18)	317658 (100)

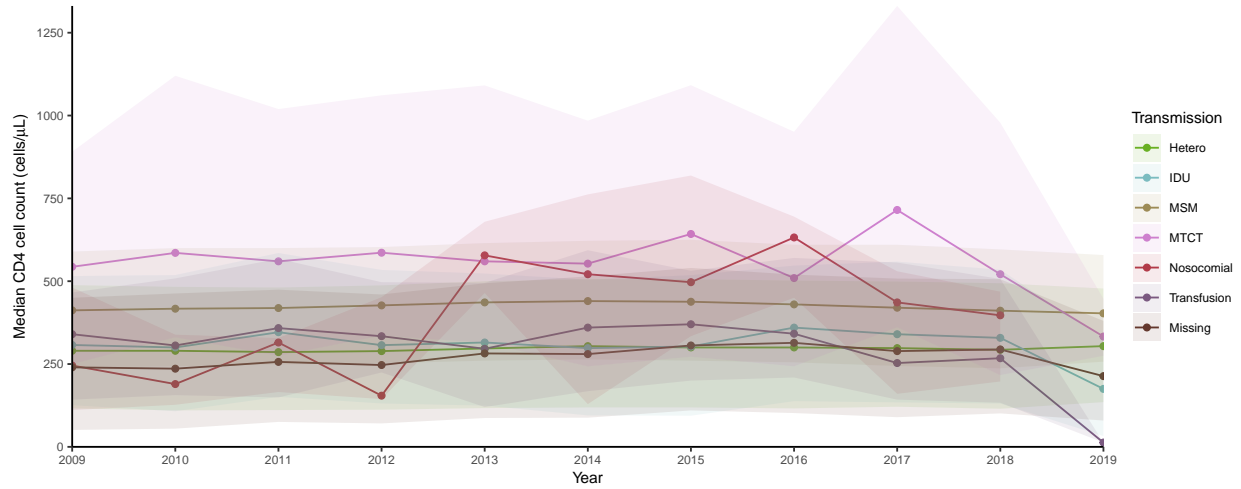
3.1.2 After adjustments



Year of diagnosis	Hetero [N (%)]	IDU [N (%)]	MSM [N (%)]	MTCT [N (%)]	Nosocomial [N (%)]	Transfusion [N (%)]	Overall [N (%)]
2009	13573 (47)	1880 (7)	12927 (45)	366 (1)	14 (0)	90 (0)	28850 (100)
2010	15367 (47)	2060 (6)	14844 (45)	376 (1)	13 (0)	121 (0)	32782 (100)
2011	14769 (45)	2413 (7)	15064 (46)	367 (1)	14 (0)	101 (0)	32728 (100)
2012	14526 (43)	2658 (8)	16445 (48)	340 (1)	10 (0)	109 (0)	34087 (100)
2013	14246 (42)	2251 (7)	17007 (50)	332 (1)	13 (0)	103 (0)	33952 (100)
2014	14380 (42)	1828 (5)	17608 (51)	332 (1)	18 (0)	121 (0)	34287 (100)
2015	14003 (41)	1782 (5)	17856 (52)	283 (1)	12 (0)	92 (0)	34028 (100)
2016	14053 (43)	1542 (5)	16904 (51)	225 (1)	24 (0)	120 (0)	32868 (100)
2017	14296 (43)	1542 (5)	16783 (51)	260 (1)	16 (0)	105 (0)	33002 (100)
2018	12997 (44)	1431 (5)	14828 (50)	311 (1)	12 (0)	121 (0)	29700 (100)
2019	508 (51)	35 (4)	428 (43)	21 (2)	- (-)	4 (0)	996 (100)
Overall	142717 (44)	19424 (6)	160693 (49)	3212 (1)	146 (0)	1087 (0)	327279 (100)

3.2 Median CD4 cell count (cells/ μ L)

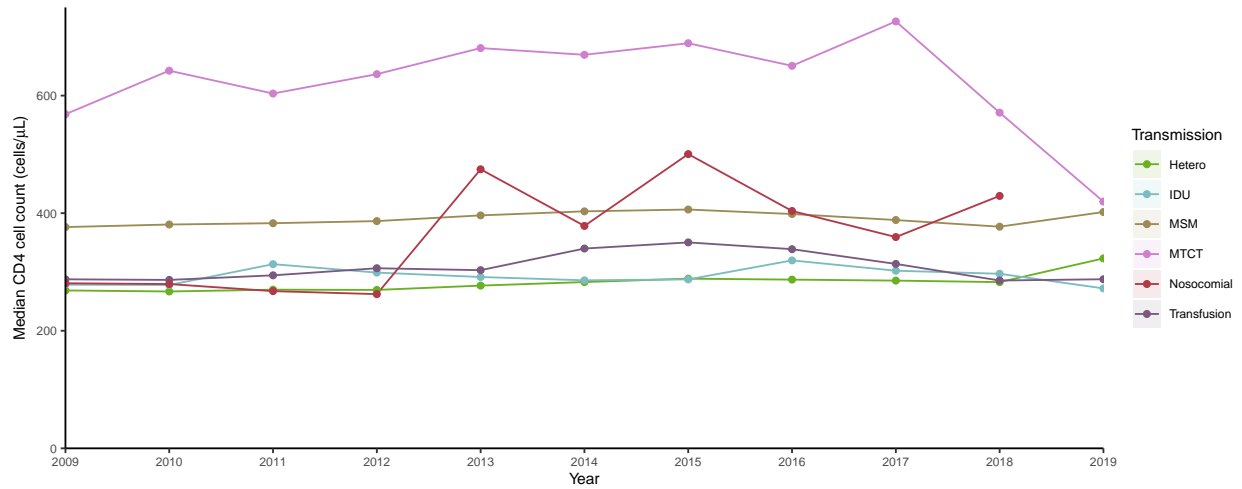
3.2.1 Before adjustments



Year of diagnosis	Hetero [Median (IQR)]	IDU [Me- dian (IQR)]	MSM [Me- dian (IQR)]	MTCT [Median (IQR)]	Nosocomial [Median (IQR)]	Transfusion [Median (IQR)]	Missing [Median (IQR)]	Overall [Median (IQR)]
2009	290 (116, 488)	308 (126, 516)	412 (240, 590)	544 (250, 891)	246 (111, 481)	340 (142, 466)	240 (51, 450)	347 (156, 540)
2010	290 (110, 483)	300 (108, 518)	417 (243, 600)	586 (331, 1120)	190 (127, 339)	306 (156, 508)	236 (55, 463)	350 (153, 544)
2011	286 (111, 481)	346 (151, 585)	419 (249, 600)	560 (275, 1020)	315 (166, 328)	358 (149, 568)	256 (75, 475)	353 (160, 546)
2012	289 (112, 488)	307 (131, 534)	427 (252, 603)	586 (336, 1061)	154 (144, 452)	334 (224, 497)	247 (71, 460)	357 (160, 553)
2013	297 (117, 500)	315 (124, 523)	436 (260, 615)	560 (314, 1091)	578 (464, 680)	296 (120, 495)	282 (87, 494)	368 (173, 564)
2014	304 (119, 506)	298 (95, 504)	440 (264, 622)	553 (243, 984)	521 (129, 762)	360 (168, 593)	280 (88, 514)	376 (178, 575)
2015	300 (119, 506)	303 (94, 518)	438 (260, 625)	642 (272, 1092)	497 (334, 819)	370 (200, 532)	306 (110, 540)	376 (178, 575)
2016	300 (116, 502)	360 (138, 547)	430 (255, 610)	510 (243, 951)	632 (450, 695)	342 (209, 570)	314 (102, 520)	370 (173, 568)
2017	298 (121, 499)	340 (134, 559)	420 (244, 610)	715 (361, 1331)	436 (160, 530)	253 (142, 556)	289 (90, 508)	360 (170, 563)

Year of diagnosis	Hetero [Median (IQR)]	IDU [Me- dian (IQR)]	MSM [Me- dian (IQR)]	MTCT [Median (IQR)]	Nosocomial [Median (IQR)]	Transfusion [Median (IQR)]	Missing [Median (IQR)]	Overall [Median (IQR)]
2018	293 (115, 494)	329 (131, 535)	411 (237, 596)	521 (216, 978)	397 (197, 468)	268 (133, 507)	294 (101, 506)	354 (162, 553)
2019	304 (135, 478)	175 (32, 326)	403 (257, 579)	333 (275, 447)	- (-, -)	13 (13, 13)	214 (80, 380)	353 (174, 529)
Overall	294 (116, 495)	318 (124, 531)	427 (251, 609)	579 (275, 1040)	380 (147, 633)	326 (163, 530)	276 (82, 498)	361 (167, 560)

3.2.2 After adjustments



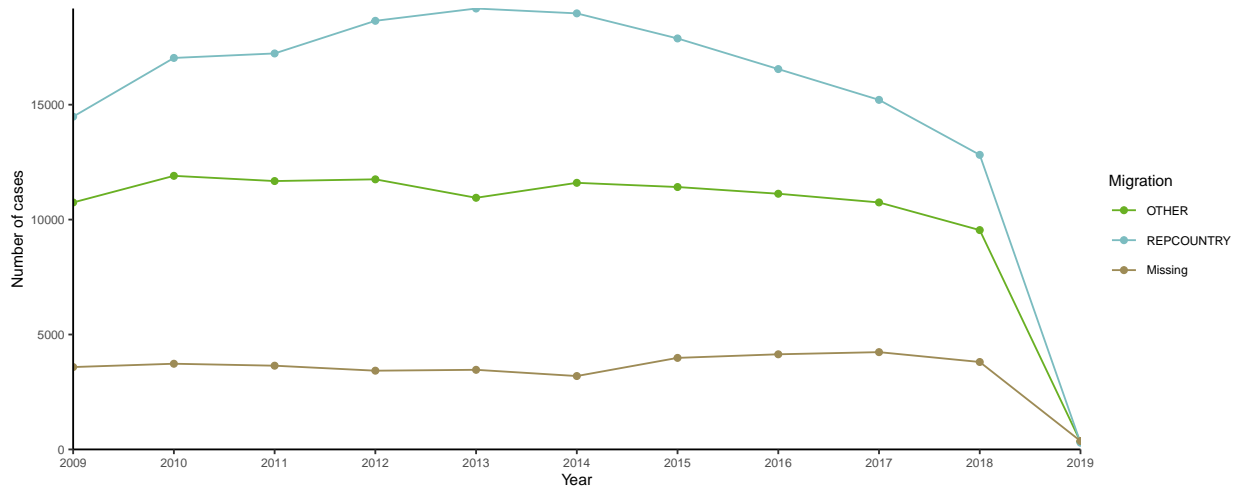
Year of diagnosis	Hetero [Median (IQR)]	IDU [Median (IQR)]	MSM [Median (IQR)]	MTCT [Median (IQR)]	Nosocomial [Median (IQR)]	Transfusion [Median (IQR)]
2009	269 (269, 269)	278 (278, 278)	376 (376, 376)	568 (568, 568)	281 (281, 281)	288 (288, 288)
2010	267 (267, 267)	278 (278, 278)	381 (381, 381)	642 (642, 642)	279 (279, 279)	286 (286, 286)
2011	270 (270, 270)	313 (313, 313)	383 (383, 383)	604 (604, 604)	267 (267, 267)	294 (294, 294)
2012	269 (269, 269)	299 (299, 299)	387 (387, 387)	637 (637, 637)	262 (262, 262)	306 (306, 306)
2013	277 (277, 277)	291 (291, 291)	396 (396, 396)	681 (681, 681)	475 (475, 475)	303 (303, 303)
2014	283 (283, 283)	286 (286, 286)	403 (403, 403)	669 (669, 669)	378 (378, 378)	340 (340, 340)
2015	289 (289, 289)	287 (287, 287)	406 (406, 406)	689 (689, 689)	501 (501, 501)	350 (350, 350)
2016	287 (287, 287)	320 (320, 320)	399 (399, 399)	651 (651, 651)	404 (404, 404)	339 (339, 339)

Year of diagnosis	Hetero [Median (IQR)]	IDU [Median (IQR)]	MSM [Median (IQR)]	MTCT [Median (IQR)]	Nosocomial [Median (IQR)]	Transfusion [Median (IQR)]
2017	285 (285, 285)	302 (302, 302)	388 (388, 388)	726 (726, 726)	359 (359, 359)	314 (314, 314)
2018	283 (283, 283)	297 (297, 297)	377 (377, 377)	571 (571, 571)	429 (429, 429)	285 (285, 285)
2019	323 (323, 323)	272 (272, 272)	402 (402, 402)	420 (420, 420)	- (-, -)	288 (288, 288)

4 Comparison of data by Migration

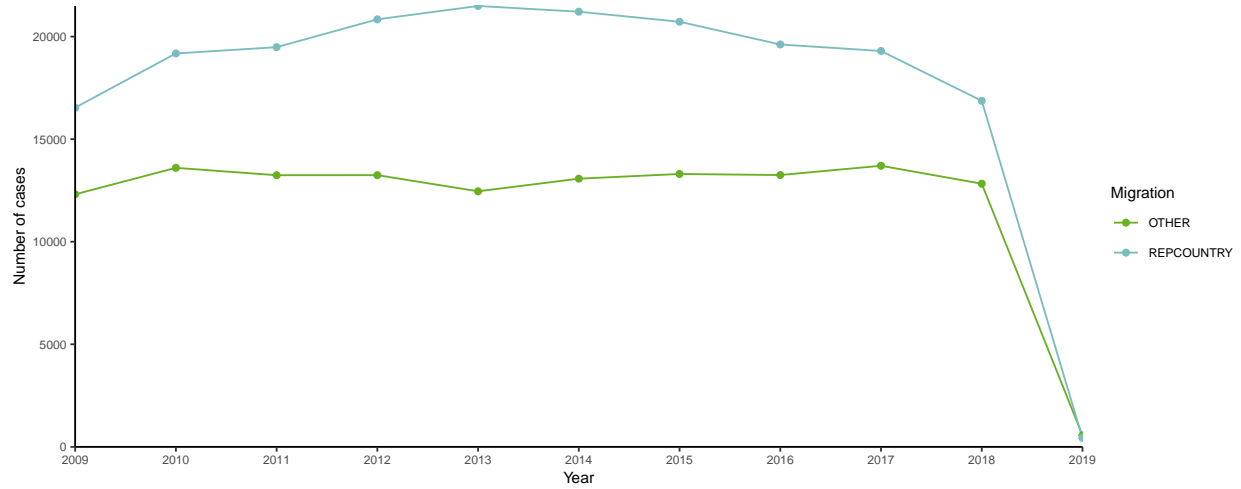
4.1 Number of diagnoses per year

4.1.1 Before adjustments



Year of diagnosis	OTHER [N (%)]	REPCOUNTRY [N (%)]	Missing [N (%)]	Overall [N (%)]
2009	10745 (37)	14479 (50)	3584 (12)	28808 (100)
2010	11904 (36)	17034 (52)	3728 (11)	32666 (100)
2011	11677 (36)	17229 (53)	3643 (11)	32549 (100)
2012	11752 (35)	18649 (55)	3426 (10)	33827 (100)
2013	10949 (33)	19184 (57)	3464 (10)	33597 (100)
2014	11600 (34)	18973 (56)	3193 (9)	33766 (100)
2015	11417 (34)	17882 (54)	3983 (12)	33282 (100)
2016	11125 (35)	16549 (52)	4139 (13)	31813 (100)
2017	10747 (36)	15210 (50)	4233 (14)	30190 (100)
2018	9543 (36)	12817 (49)	3804 (15)	26164 (100)
2019	338 (34)	292 (29)	366 (37)	996 (100)
Overall	111797 (35)	168298 (53)	37563 (12)	317658 (100)

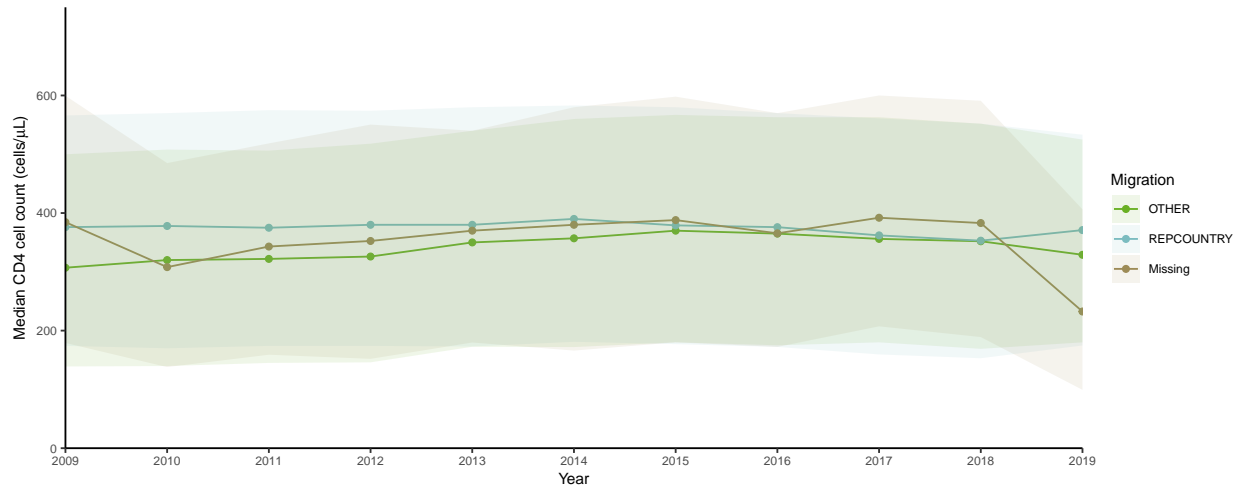
4.1.2 After adjustments



Year of diagnosis	OTHER [N (%)]	REPCOUNTRY [N (%)]	Overall [N (%)]
2009	12312 (43)	16538 (57)	28850 (100)
2010	13603 (41)	19179 (59)	32782 (100)
2011	13243 (40)	19484 (60)	32728 (100)
2012	13246 (39)	20841 (61)	34087 (100)
2013	12459 (37)	21493 (63)	33952 (100)
2014	13074 (38)	21213 (62)	34287 (100)
2015	13303 (39)	20725 (61)	34028 (100)
2016	13252 (40)	19616 (60)	32868 (100)
2017	13703 (42)	19299 (58)	33002 (100)
2018	12830 (43)	16871 (57)	29700 (100)
2019	563 (57)	433 (43)	996 (100)
Overall	131588 (40)	195692 (60)	327279 (100)

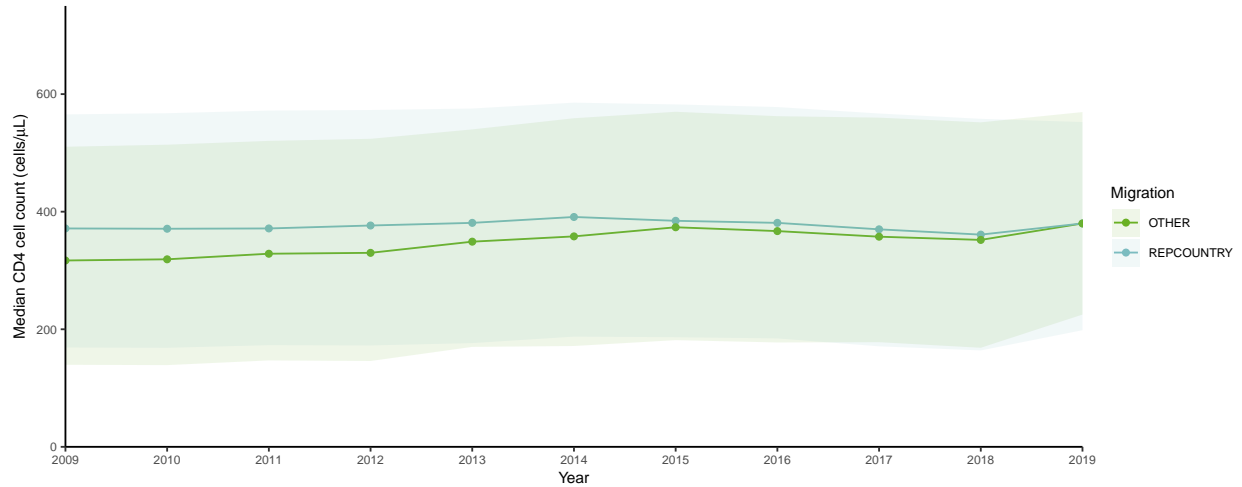
4.2 Median CD4 cell count (cells/ μ L)

4.2.1 Before adjustments



Year of diagnosis	OTHER [Median (IQR)]	REPCOUNTRY [Median (IQR)]	Missing [Median (IQR)]	Overall [Median (IQR)]
2009	307 (139, 500)	376 (174, 566)	384 (179, 600)	347 (156, 540)
2010	320 (140, 508)	378 (170, 570)	308 (138, 485)	350 (153, 544)
2011	322 (145, 506)	375 (174, 575)	343 (159, 518)	353 (160, 546)
2012	326 (146, 518)	380 (174, 574)	352 (152, 550)	357 (160, 553)
2013	350 (172, 540)	380 (173, 580)	370 (180, 540)	368 (173, 564)
2014	357 (172, 560)	390 (181, 583)	380 (166, 580)	376 (178, 575)
2015	370 (180, 567)	379 (177, 580)	388 (180, 598)	376 (178, 575)
2016	365 (175, 563)	376 (172, 570)	366 (172, 570)	370 (173, 568)
2017	356 (180, 563)	362 (160, 561)	392 (207, 600)	360 (170, 563)
2018	352 (169, 552)	353 (153, 552)	383 (189, 591)	354 (162, 553)
2019	329 (180, 525)	371 (175, 533)	232 (99, 406)	353 (174, 529)
Overall	341 (160, 539)	376 (171, 572)	363 (170, 554)	361 (167, 560)

4.2.2 After adjustments



Year of diagnosis	OTHER [Median (IQR)]	REPCOUNTRY [Median (IQR)]
2009	317 (139, 510)	371 (169, 565)
2010	319 (139, 514)	371 (168, 567)
2011	328 (147, 520)	371 (173, 572)
2012	330 (146, 524)	376 (172, 573)
2013	349 (170, 540)	381 (176, 575)
2014	358 (171, 559)	391 (187, 585)
2015	373 (181, 570)	384 (186, 582)
2016	367 (177, 562)	381 (184, 578)
2017	357 (178, 560)	370 (171, 567)
2018	352 (168, 552)	361 (164, 558)
2019	380 (225, 569)	380 (198, 552)

5 Comparison of the reported and estimated number of diagnoses per year

Diagnosis year	Reported	Weight estimated	Weight not estimated	Estimated unreported [N (95% CI)]	Estimated total [N (95% CI)]
2009	28808	18526	10282	42 (18, 66)	28850 (28826, 28874)
2010	32666	28657	4009	116 (75, 157)	32782 (32741, 32823)
2011	32549	28799	3750	178 (133, 223)	32727 (32682, 32772)
2012	33827	29803	4024	259 (208, 310)	34086 (34035, 34137)
2013	33597	29130	4467	352 (297, 408)	33949 (33894, 34005)
2014	33766	29277	4489	518 (455, 581)	34284 (34221, 34347)
2015	33282	29036	4246	743 (672, 814)	34025 (33954, 34096)
2016	31813	27427	4386	1053 (974, 1133)	32866 (32787, 32946)
2017	30190	26211	3979	2812 (2689, 2936)	33002 (32879, 33126)
2018	26164	6081	20083	3540 (3384, 3695)	29704 (29548, 29859)
2019	996	0	996	0 (0, 0)	996 (996, 996)
Total	317658	252947	64711	9612 (8904, 10321)	327270 (326562, 327979)