City of Amsterdam

GGD Amsterdam

IAPAC INTERNATIONAL ASSOCIATION OF PROVIDERS OF AIDS CARE

FAST-TRACK CITIES INSTITUTE

1st 95 estimations at the city-level using the ECDC modelling tool: outcomes and challenges

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REPÚBLICA PORTUGUESA SAÚDE | SNS SERVIÇO NACIONAL DE SAÚDE | DGS desde 1899 Direção-Geral da Saúde | Programa Nacional para as Infeções Sexualmente Transmissíveis e Infeção pelo VIH | Instituto Nacional de Saúde Doutor Ricardo Jorge

AMSTERDAM FAST-TRACK CITIES 2023

September 25-27, 2023 | RAI Amsterdam Convention Center

Outline

I. Portugal – HIV epidemiology

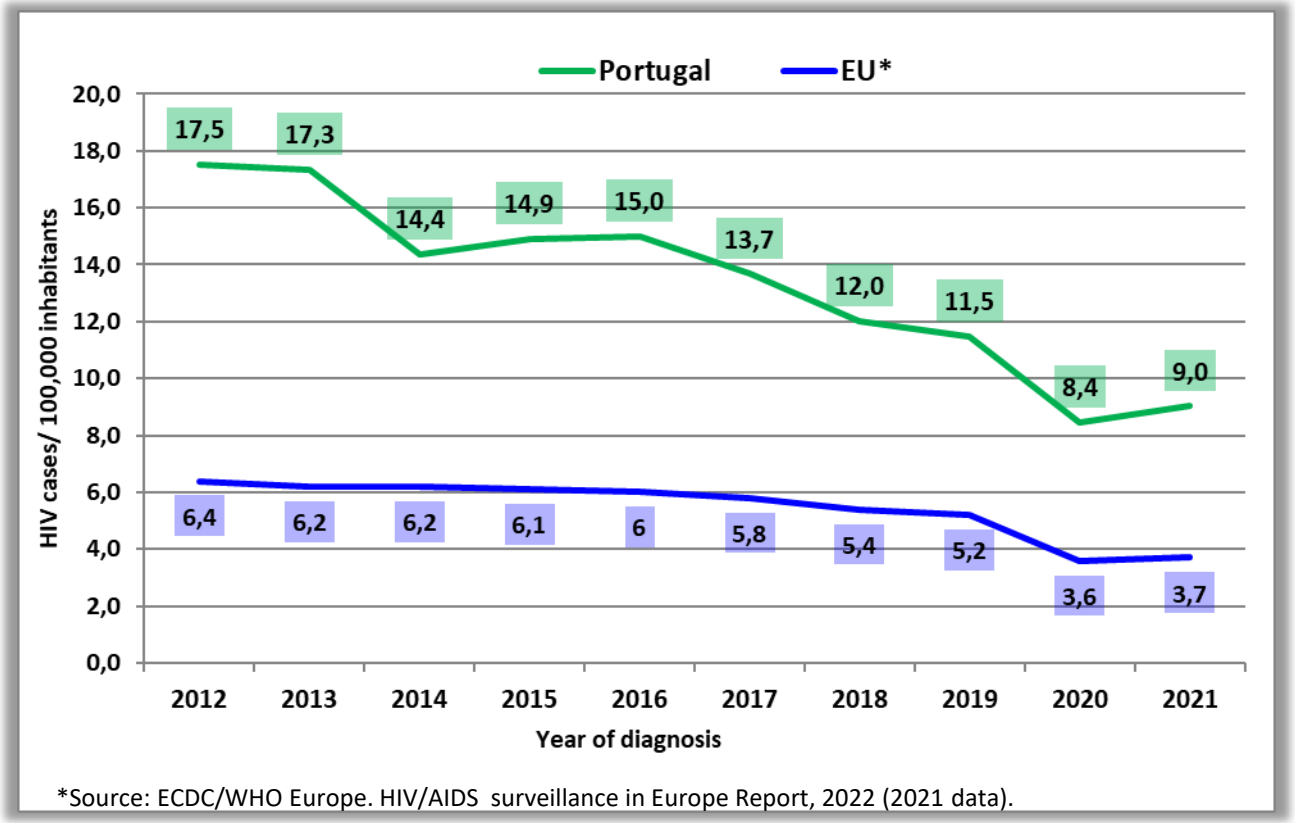
II. Informing Portuguese FTC on the characteristics of their HIV epidemics

III. Assessing the number of PLWHIV and the 1st 95 at local level

IV. Findings & challenges

I. Portugal – HIV epidemiology

- Population – 10.3 million
- 64,257 cumulative HIV cases (1983-2021)
- One of the highest rates of new HIV diagnosis within EU countries
- In 2021, ≈ 45,000 people living with HIV (PLWHIV)
- In 2017, Portugal achieved the 90-90-90 goals (92,2-90,3-93,0)



*Source: ECDC/WHO Europe. HIV/AIDS surveillance in Europe Report, 2022 (2021 data).

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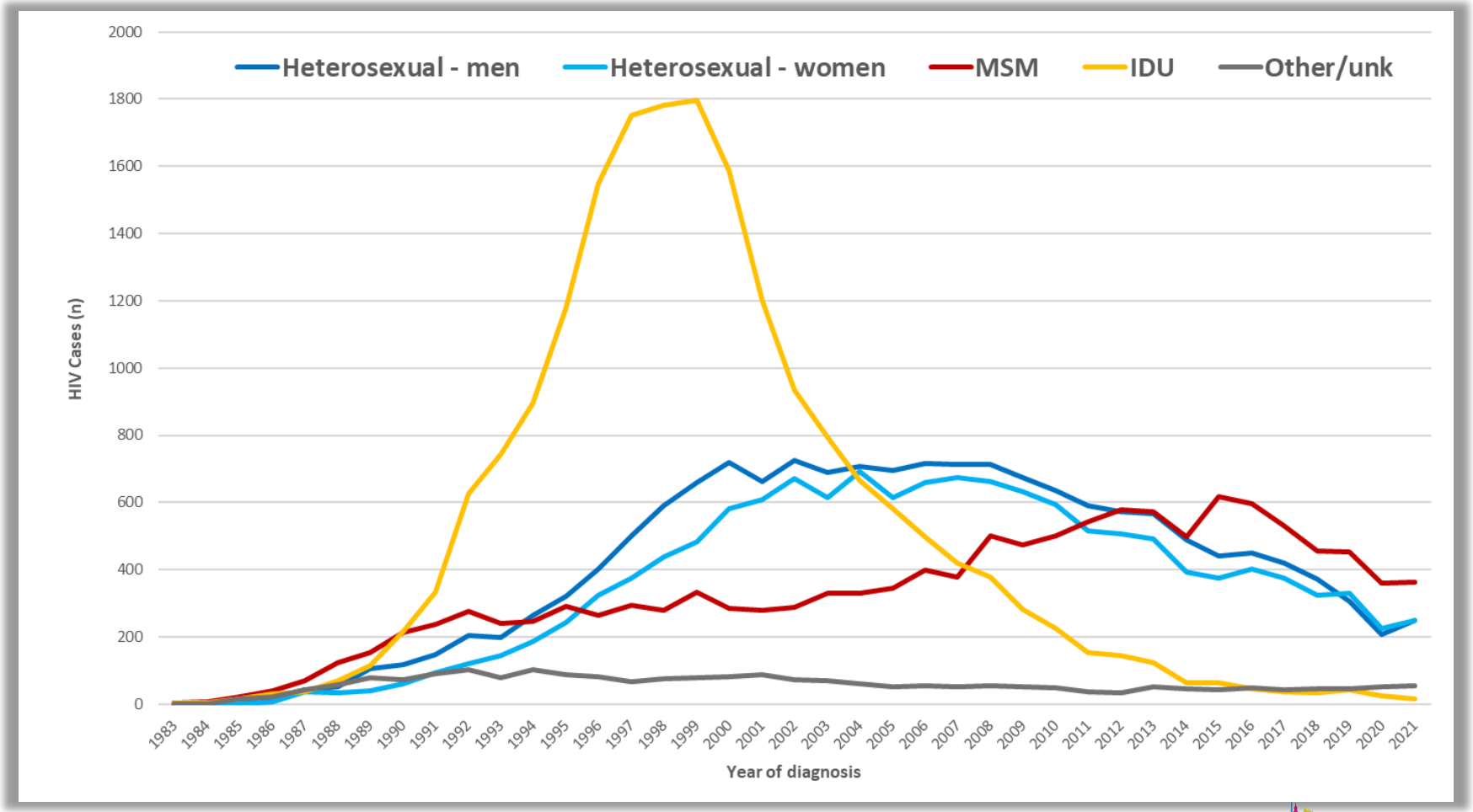
I. Portugal – HIV epidemiology

- Transmission among IDU was the main driver of the epidemic during the 90s.

- Currently, sexual transmission is predominant, with heterosexual transmission being the most frequent overall and MSM representing most of cases among men.



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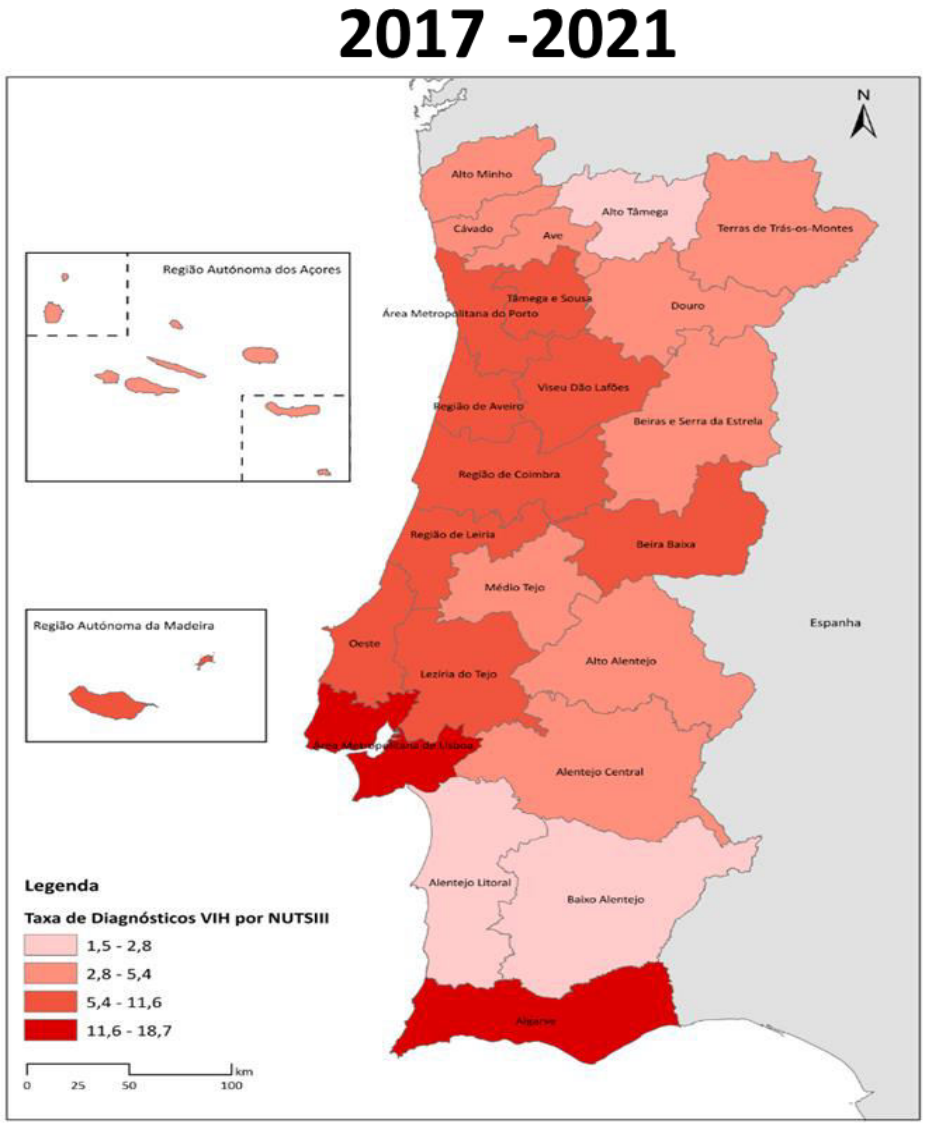
I. Portugal – HIV epidemiology

- The highest rates of new HIV diagnosis are found in Lisbon Metropolitan Area (M.A.) and Algarve

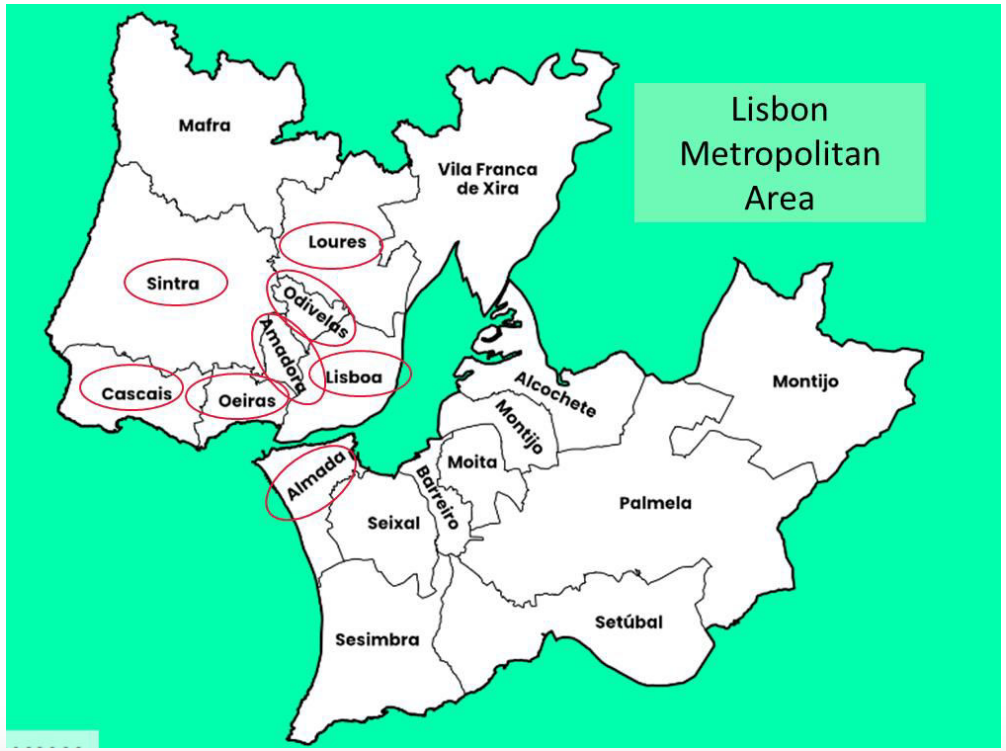
Portugal – 10.9 cases/100,000 inhab.
Lisbon M.A. – 18.7 cases/100,000 inhab
Algarve – 13.6 cases/100,000 inhab.



I. Portugal – HIV epidemiology

Portugal – 10,9 cases/10^5 inhab.

- Cities with the highest rates of new HIV diagnosis have joined Fast Track Cities initiative.



Municipality	Number of cases (2017-2021)	Cases/10^5 inhab.	*Rate ratio* (RR)
Portimão	**88**	**31,2**	**2,9**
Lisboa	**708**	**27,5**	**2,5**
Amadora	**247**	**27,4**	**2,5**
Porto	**277**	**25,3**	**2,3**
Sintra	**471**	**24,2**	**2,2**
Cascais	**236**	**22,1**	**2,0**
Almada	**183**	**21,5**	**2,0**
Sever do Vouga	12	21,2	1,9
Odivelas	**161**	**20,4**	**1,9**
Lagos	26	16,8	1,5
Loures	**173**	**16,5**	**1,5**
Seixal	134	16,0	1,5
Faro	48	15,4	1,4
Albufeira	31	14,8	1,4
Oliveira do Bairro	17	14,2	1,3
Aveiro	54	13,7	1,3

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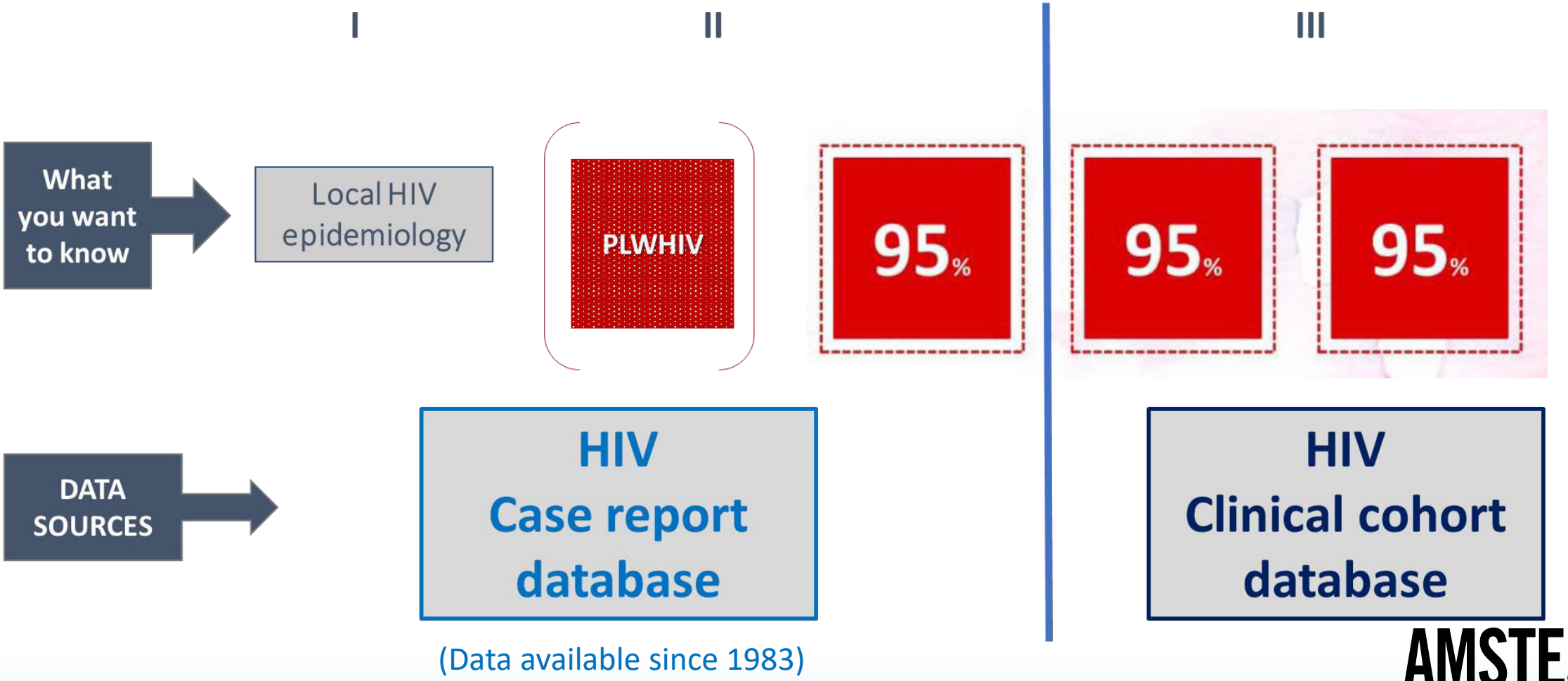
II. Informing Portuguese FTC on the characteristics of their epidemics



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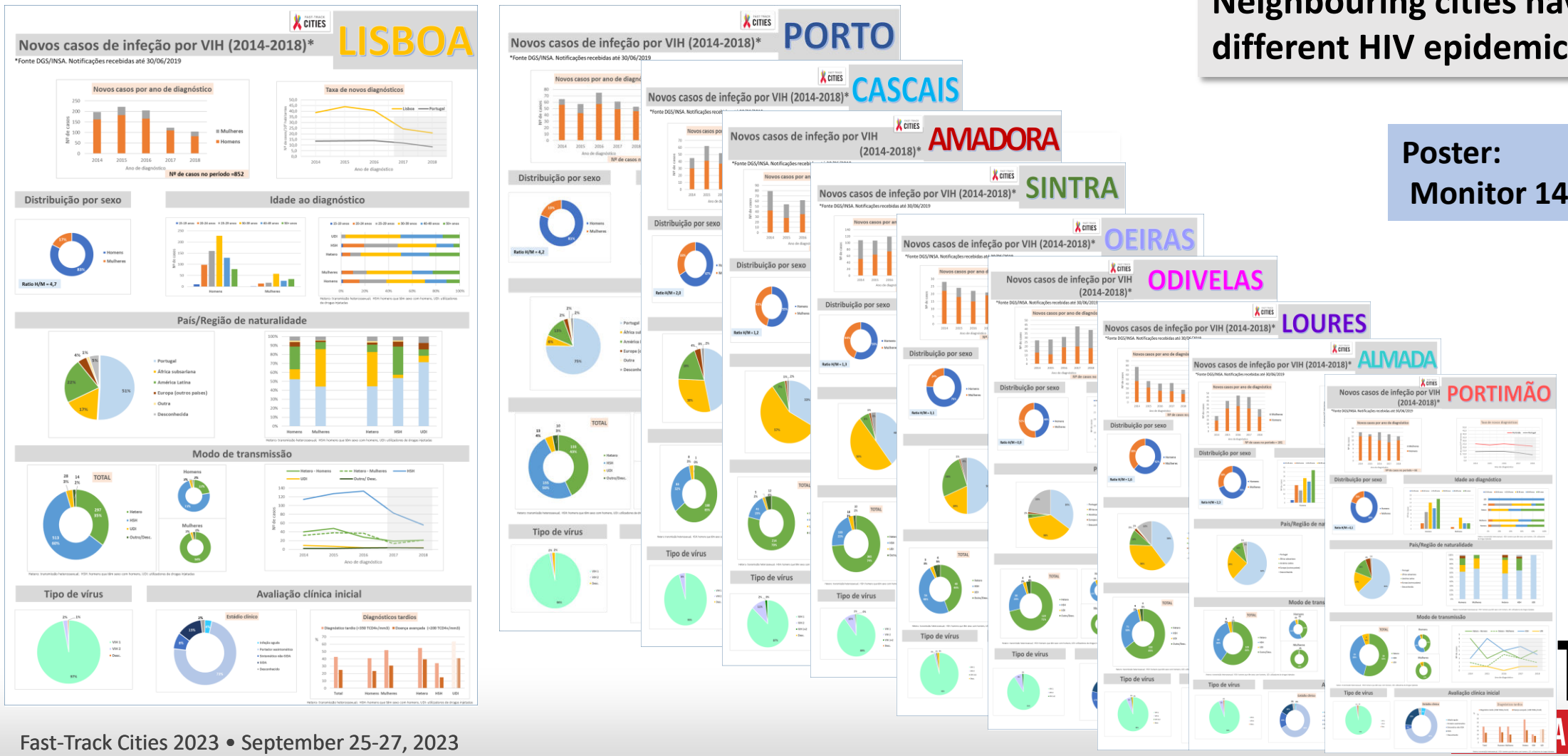
II. Informing Portuguese FTC on the characteristics of their epidemics



Neighbouring cities have very different HIV epidemics.

Poster:
Monitor 14 – # 1318

II. Informing Portuguese FTC on the characteristics of their epidemics

City	Population	Cumulative HIV cases (1983-2018)	PLWHIV (rough estimate)	HIV prevalence (%)
LISBOA	507.220	12.015	**7500**	1,48%
PORTO	215.284	5.243	**2900**	1,35%
CASCAIS	212.474	2.359	**1600**	0,74%
AMADORA	181.724	2.355	**1700**	0,94%
SINTRA	388.434	2.878	**2200**	0,57%
OEIRAS	176.218	1.351	**900**	0,51%
ODIVELAS	159.602	894	**600**	0,38%
LOURES	211.359	1.841	**1200**	0,57%
ALMADA	168.987	2.194	**1300**	0,77%
PORTIMÃO	55.416	552	**350**	0,63%

III. Assessing the number of PLWHIV and the 1st 95

- Estimating the number of PLWHIV must be done using mathematical models.
- We use “ECDC HIV Modelling Tool” for national estimates, option “Incidence method”, once HIV data are available since 1983.
- The model assesses the progression of HIV from the time of infection to diagnosis or development of AIDS in the absence of antiretroviral treatment.

- “ECDC HIV Modelling Tool” outputs:
  - PLWHIV (n)
  - PLWHIV diagnosed (n)
  - PLWHIV undiagnosed (n) & (%)
  - New infections per year (n)
  - Time from infection to diagnosis (years)

III. Assessing the number of PLWHIV and the 1st 95

ECDC HIV Modelling Tool

- Data used:
  - Number of HIV cases/year of diagnosis (total & stratified by CD4 counts)
  - Number of HIV cases with concomitant AIDS diagnosis/year of diagnosis
  - AIDS cases/year of AIDS diagnosis
  - Dead /death year

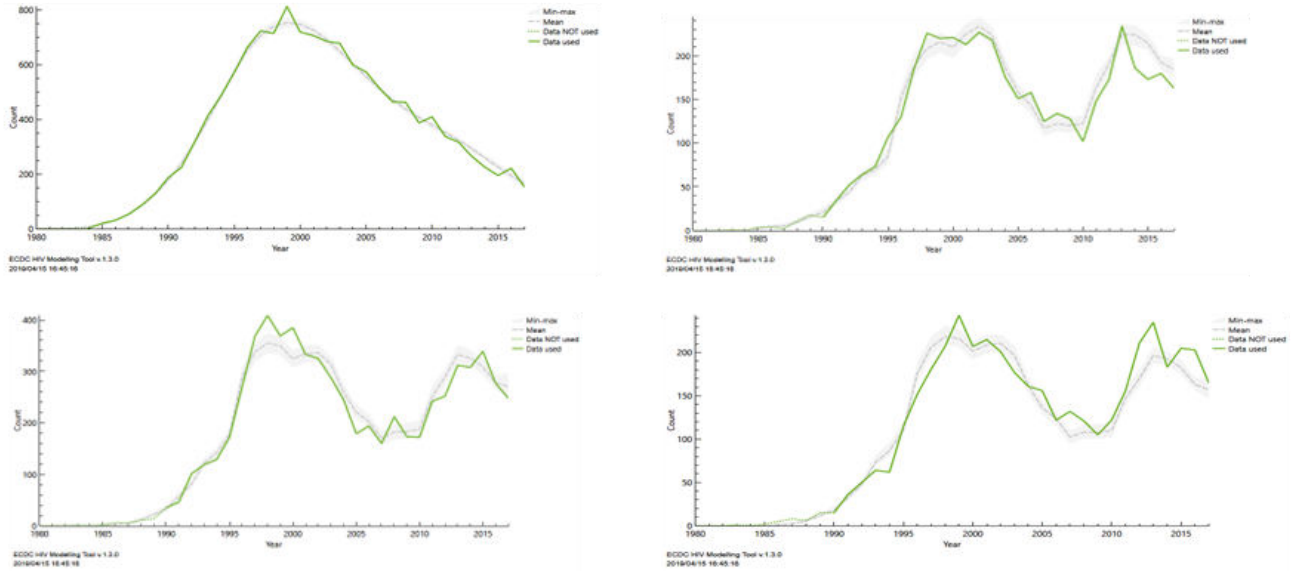
- Model parametrization (ex.):
  - Events that might have influenced HIV epidemics
  - Changes in the probability of diagnosis

III. Assessing the number of PLWHIV and the 1st 95

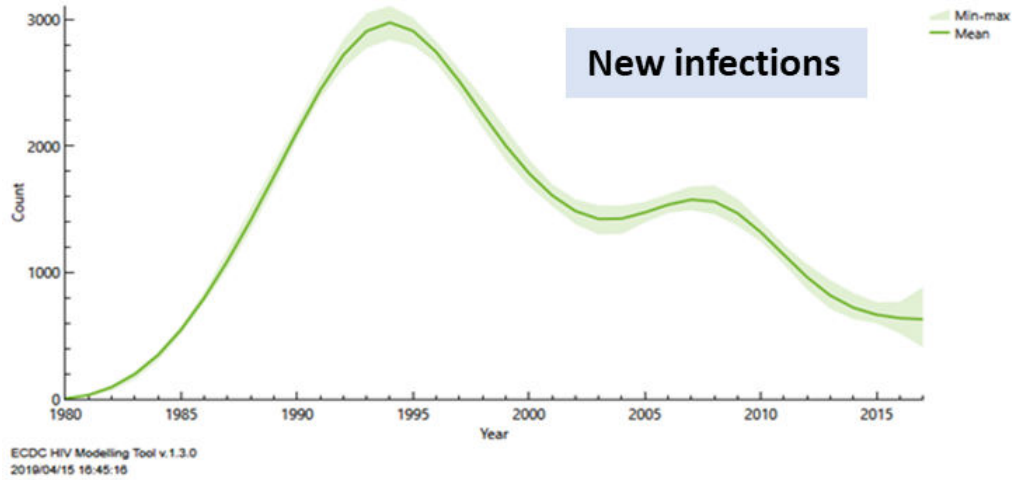
ECDC HIV Modelling Tool

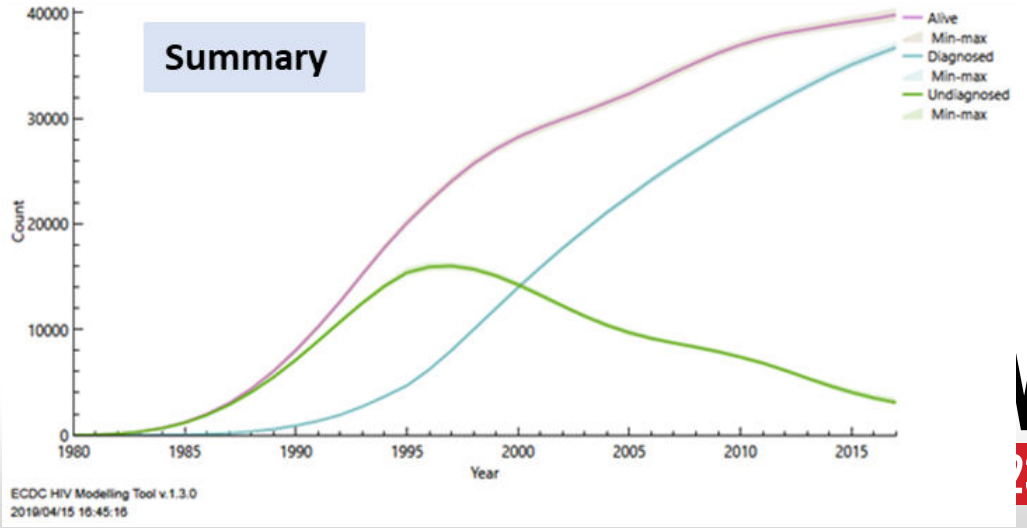
Adjustment of the model parameters to data:

Goodness of fit



Outputs





IV. Findings & challenges

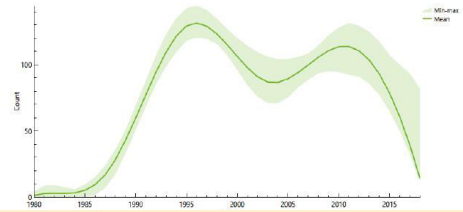
LISB

OEIRAS

2014 a 2018
Nº novos casos: 115 (H/M=3,3)
Idade mediana ao diagnóstico (anos): 37
mediana de CD4 ao diagnóstico (nº cél/mL): 430
Forma de transmissão mais frequente: HSH (48,7%)
% Migrantes: 46% (58% América latina)

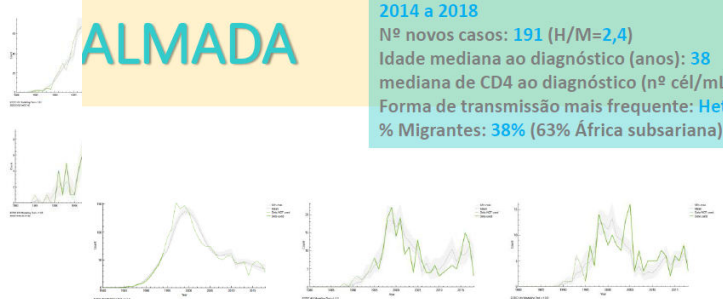
SINTRA

2014 a 2018
Nº novos casos: 544 (H/M=1,3)
Idade mediana ao diagnóstico (anos): 40
mediana de CD4 ao diagnóstico (nº cél/mL): 336,5
Forma de transmissão mais frequente: Heterossexual (72,8%)
% Migrantes: 60% (86% África subsariana)



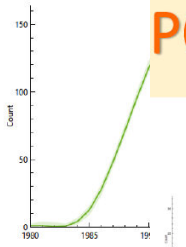
ALMADA

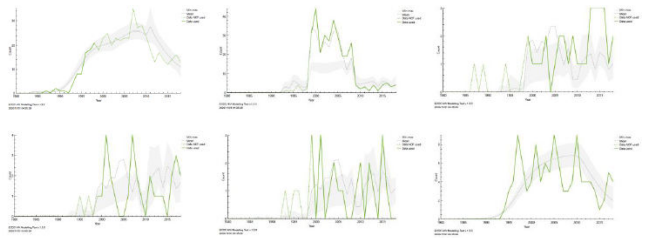
2014 a 2018
Nº novos casos: 191 (H/M=2,4)
Idade mediana ao diagnóstico (anos): 38
mediana de CD4 ao diagnóstico (nº cél/mL): 339,5
Forma de transmissão mais frequente: Heterossexual (58,1%)
% Migrantes: 38% (63% África subsariana)

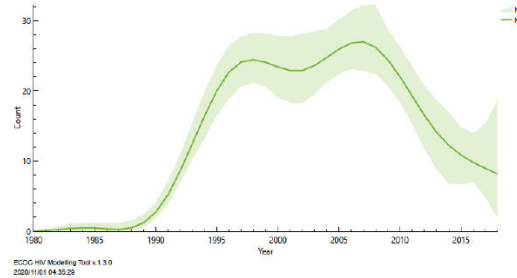


PORTIMÃO

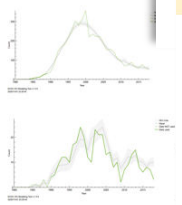
2014 a 2018
Nº novos casos: 70 (H/M=4,4)
Idade mediana ao diagnóstico (anos): 41,5
mediana de CD4 ao diagnóstico (nº cél/mL): 446
Forma de transmissão mais frequente: Heterossexual (55,7%)
% Migrantes: 36% (63% África subsariana)



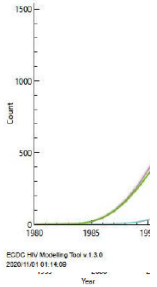




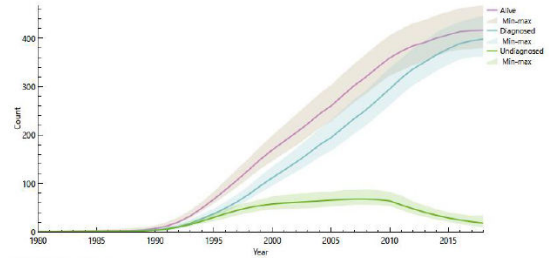
PORTO



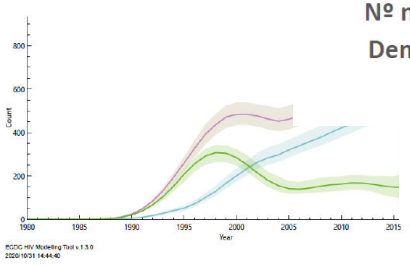
PVVIH	1402 (1355-1405)
PVVIH diagnosticadas	1305 (1280-1404)
PVVIH não diagnosticadas (n)	97 (53-172)
PVVIH não diagnosticadas (%)	6,9 (3,9-11,4)
Nº novas infeções em 2018	30 (4-62)
Demora diagnóstica (anos)	3,1 (2,4-4,1)



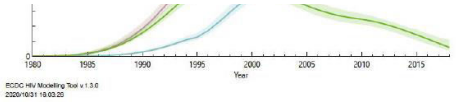
PVVIH	417 (380-469)
PVVIH diagnosticadas	399 (362-446)
PVVIH não diagnosticadas (n)	18 (9-35)
PVVIH não diagnosticadas (%)	4,3 (1,9-7,8)
Nº novas infeções em 2018	8 (2-19)
Demora diagnóstica (anos)	1,6 (1,1-2,5)



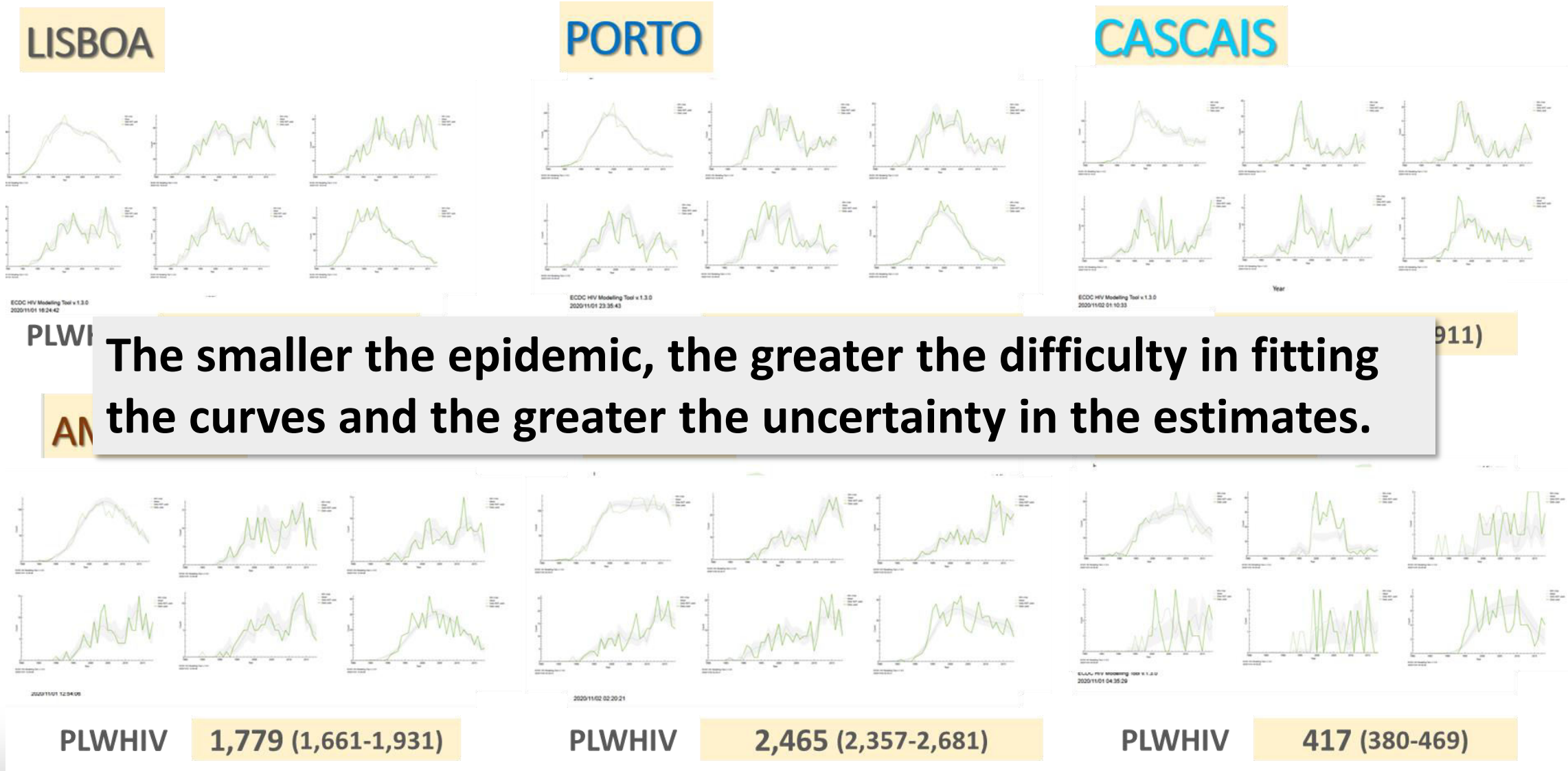
PVVIH	779 (683-934)
PVVIH diagnosticadas	619 (567-684)
PVVIH não diagnosticadas (n)	160 (81-294)
PVVIH não diagnosticadas (%)	20,5 (11,8-31,8)
Nº novas infeções em 2018	45 (4-100)
Demora diagnóstica (anos)	4,4 (3,1-6,1)



Demora diagnóstica (anos)	2,5 (1,9-3,2)



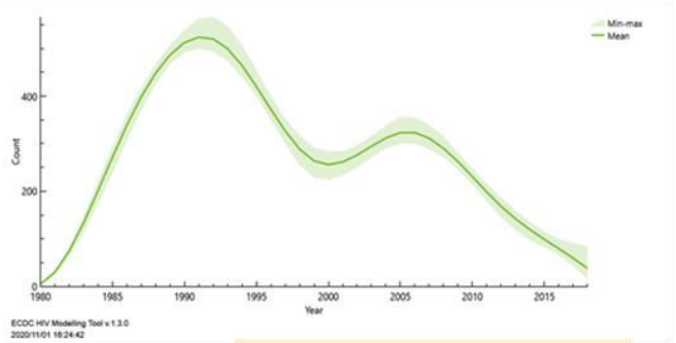
IV. Findings & challenges - Goodness of fit



The smaller the epidemic, the greater the difficulty in fitting the curves and the greater the uncertainty in the estimates.

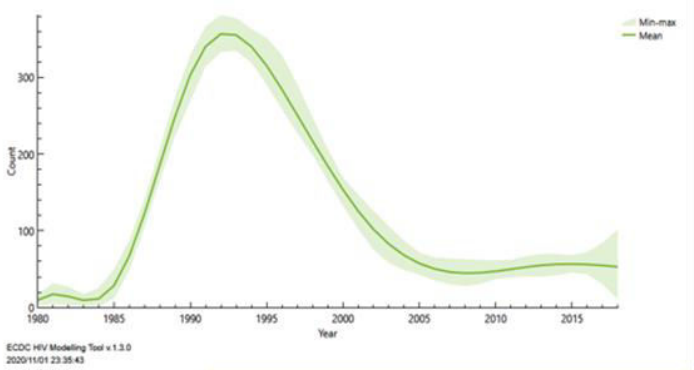
IV. Findings & challenges- Incidence

LISBOA

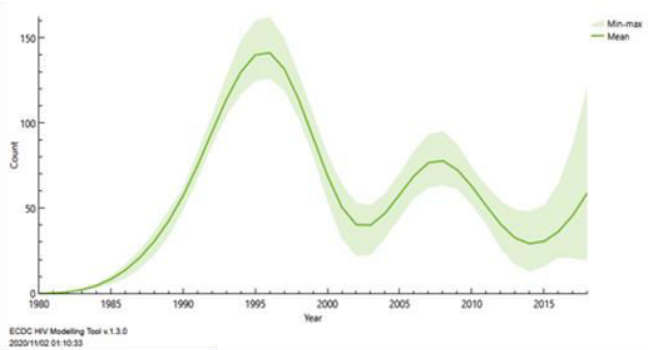


PLWHIV 7,573 (7,391-7,

PORTO



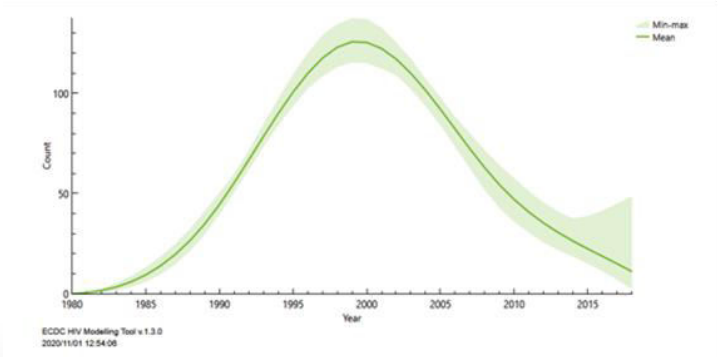
CASCAIS



1,734 (1,623-1,911)

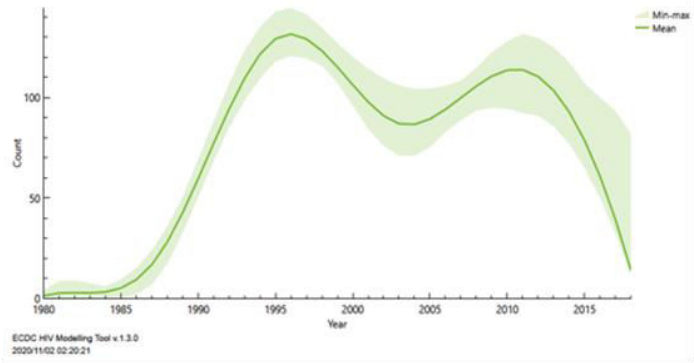
Marked differences in incidence curves

AMADORA



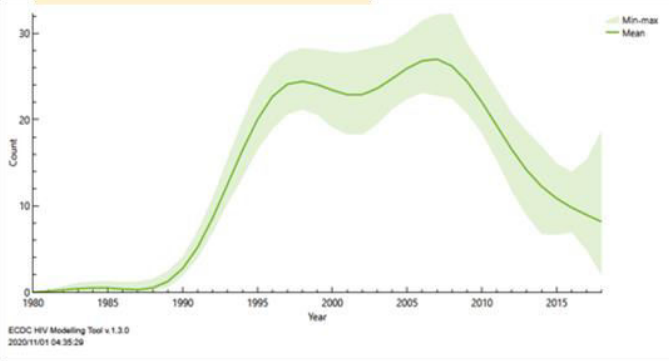
PLWHIV 1,779 (1,661-1,931)

SINTRA



PLWHIV 2,465 (2,357-2,681)

PORTIMÃO



PLWHIV 417 (380-469)

IV. Findings & challenges - Estimates

	LISBOA	PORTO	CASCAIS	OEIRAS	AMADORA	SINTRA	ODIVELAS	LOURES	ALMADA	PORTIMÃO
PLWHIV	7,573 (7,391-7,816)	3,052 (2,910-3,199)	1,734 (1,623-1,911)	1,017 (950-1,124)	1,779 (1,661-1,931)	2,465 (2,357-2,681)	779 (683-934)	1,324 (1,255-1,427)	1,402 (1,355-1,405)	417 (380-469)
PLWHIV diagnosed	7,375 (7,197-7,592)	2,856 (2,729-2,991)	1,557 (1,475-1,655)	967 (910-1054)	1,674 (1,574-1,772)	2,163 (2,069-2,267)	619 (567-684)	1,265 (1,190-1,361)	1,305 (1,280-1,404)	399 (362-446)
PLWHIV undiagnosed (n)	(1!								97 (53-172)	18 (9-35)
PLWHIV undiagnosed (%)	2.6 (2.0-3.6)	6.4 (4.5-8.8)	10.2 (6.6-17.3)	4.9 (2.1-13.3)	5.9 (3.7-11.3)	12.2 (9.5-18.8)	20.5 (11.8-31.8)	4.4 (2.8-7.8)	6.9 (3.9-11.4)	4.3 (1.9-7.8)
New infections in 2018	38 (15-84)	53 (11-103)	59 (19-121)	11 (1-48)	11 (2-49)	14 (12-82)	45 (4-100)	5 (4-25)	30 (4-62)	8 (2-19)
Diagnostic delay (years)	2.3 (2.0-2.7)	3.4 (3.0-3.9)	3.5 (2.7-4.7)	3.2 (2.1-5.1)	3.6 (2.8-5.0)	4.4 (3.7-5.5)	4.4 (3.1-6.1)	2.5 (1.9-3.2)	3.1 (2.4-4.1)	1.6 (1.1-2.5)

Cities were at different stages of attaining 1st 90/95

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Final remarks:

Modelling local epidemics is feasible, although:

- Smaller cities' epidemics can be more difficult to model;
- Estimates by gender or transmission mode/key populations might not be possible at local level;
- Incomplete data series or high % of missing data can have more impact at city level estimates.

Centralizing modelling exercises for same country/region cities might be a good strategy to guarantee that models being used, and respective parameterizations, are equivalent.

Thank you for your attention!

REPÚBLICA PORTUGUESA
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