

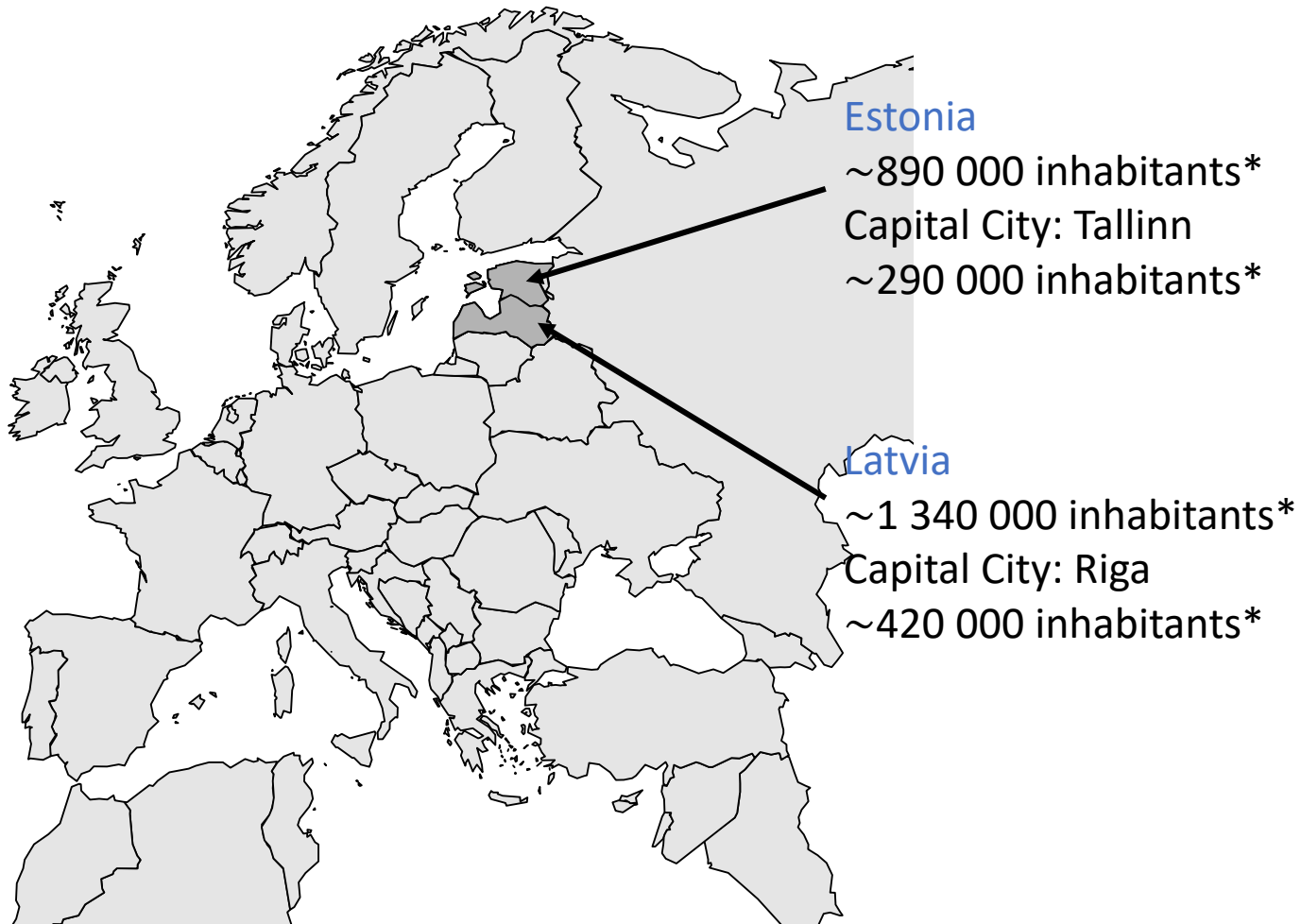
Abstract number: PS1/02

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# The HIV epidemic in two Baltic States: A tale of two stories?

Lise Marty, Liis Lemsalu, Kaire Vals, Dominique Costagliola,  
Ruta Kaupe, Indra Linina, Inga Upmace, Kristi Rüütel, Anda  
Kivite, Virginie Supervie and the HERMETIC study group

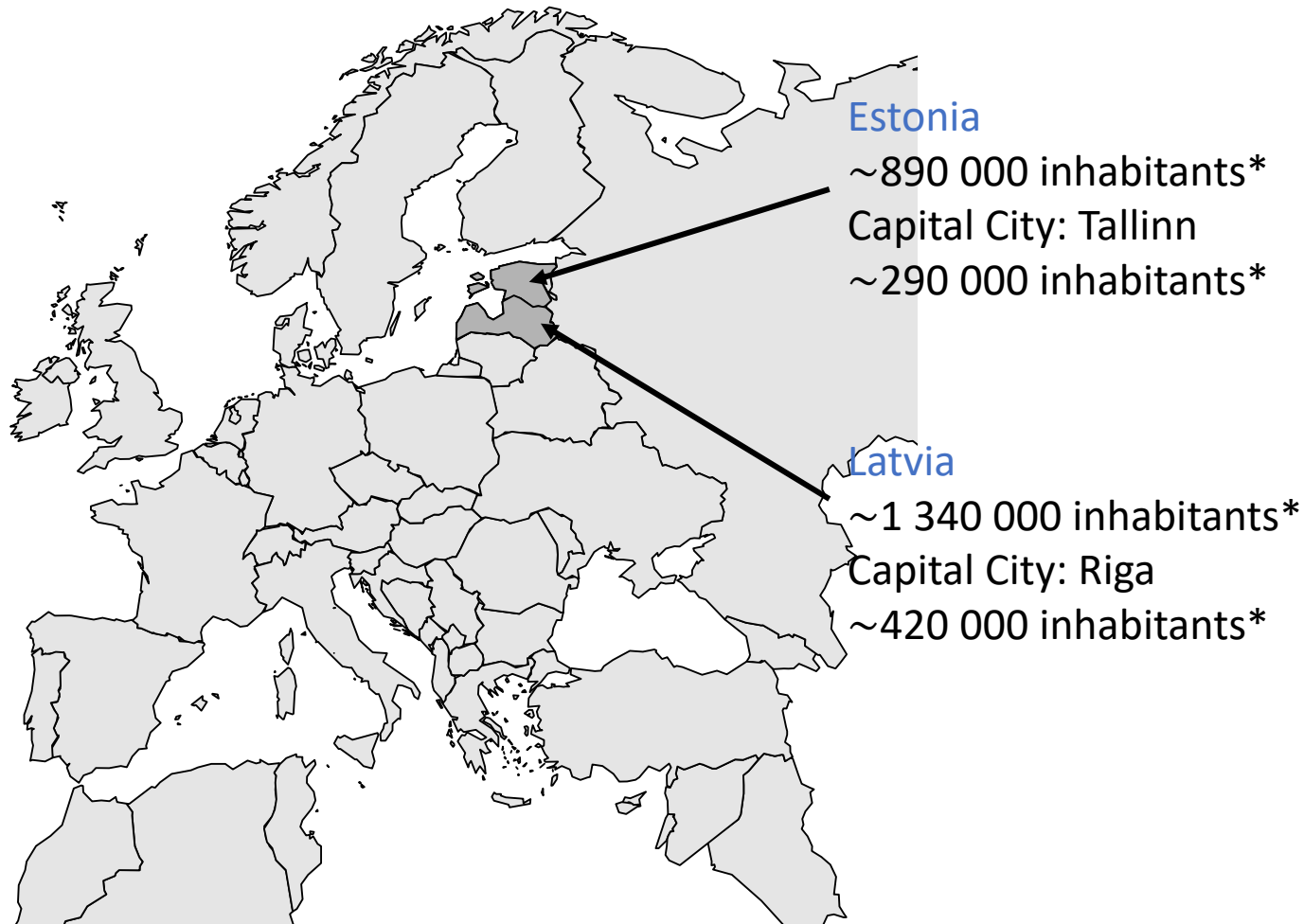
# Presentation of Latvia and Estonia



\*Aged 18-69

# HIV epidemic context

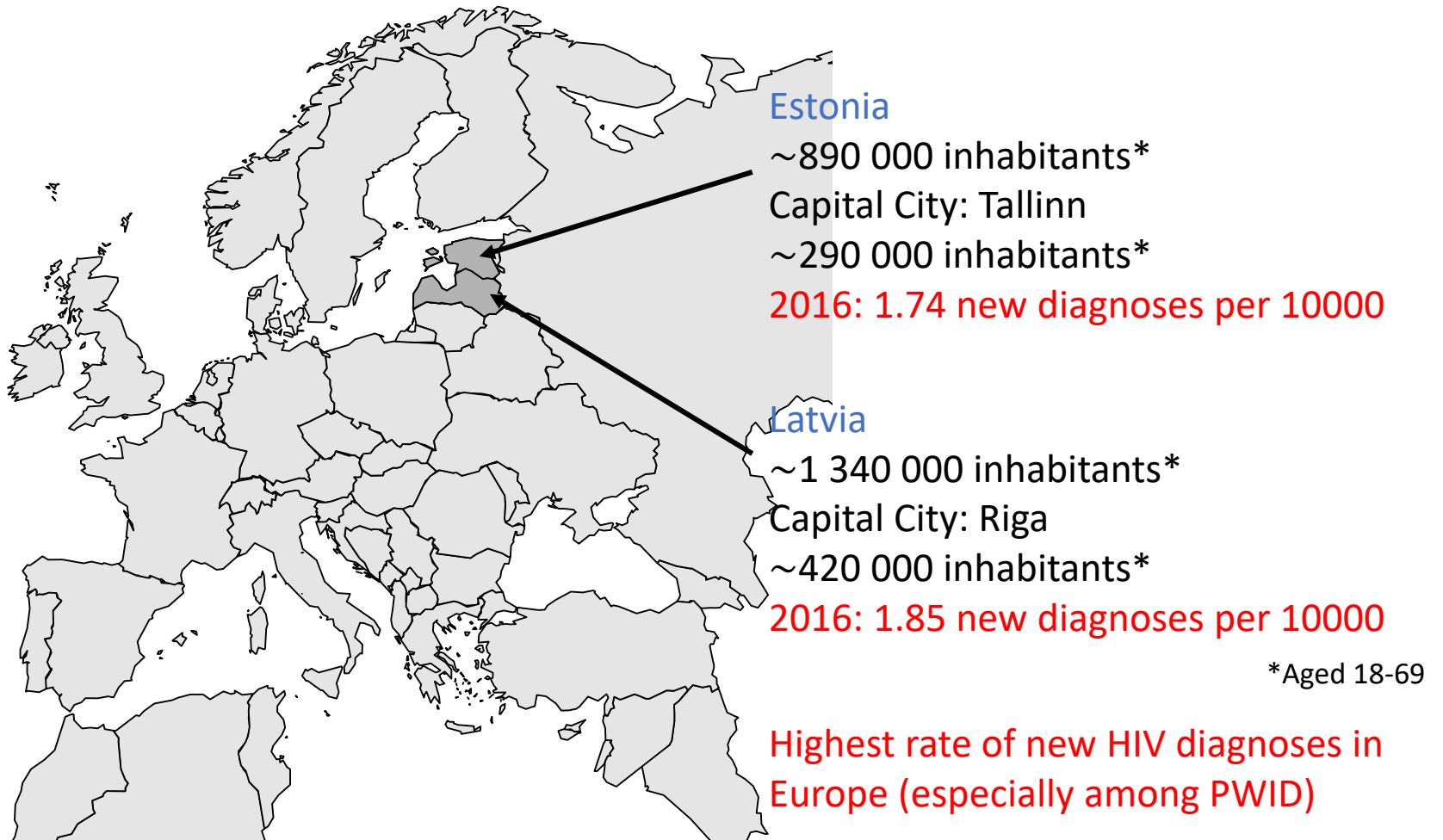
Major HIV outbreak among people who inject drugs (PWID) in the early 2000's



\*Aged 18-69

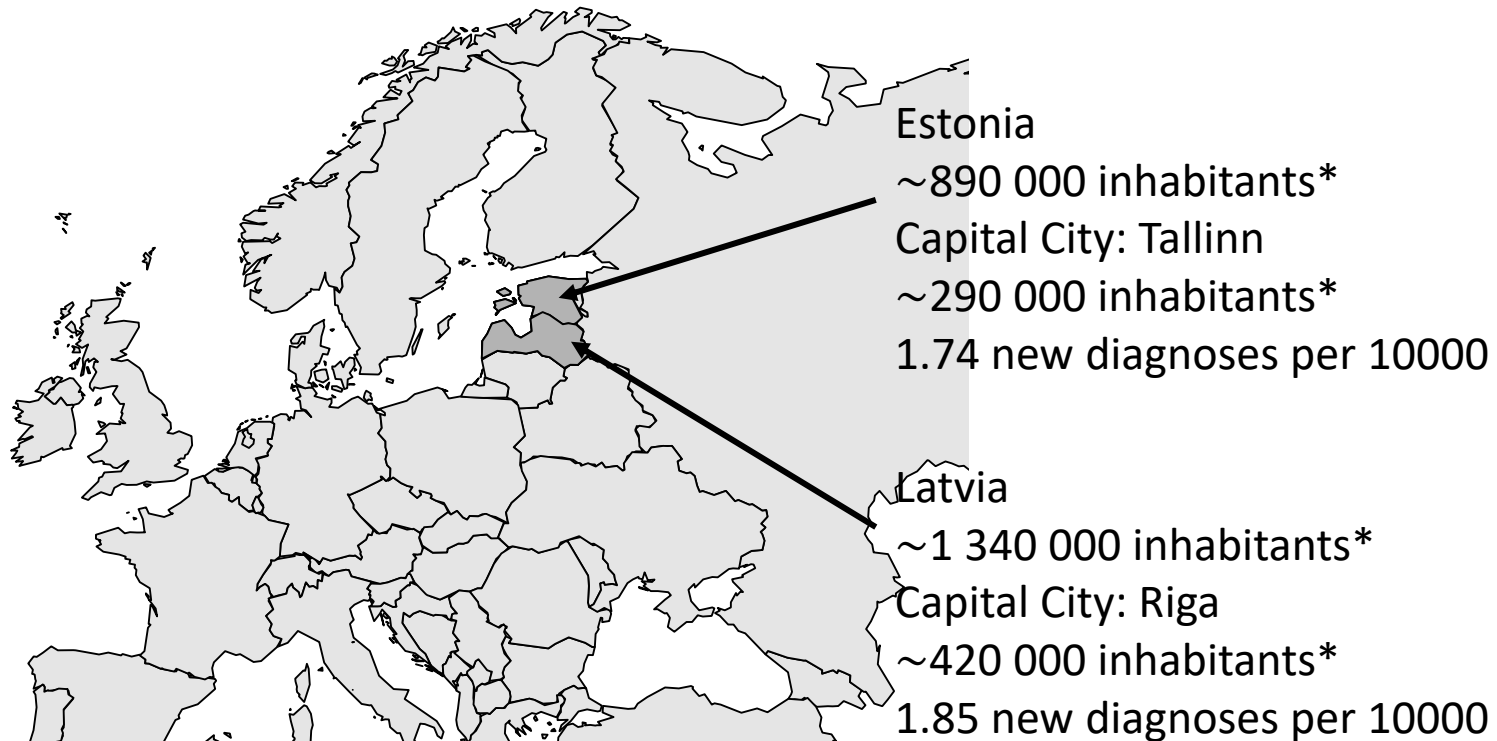
# HIV epidemic context

Major HIV outbreak among people who inject drugs (PWID) in the early 2000's



# HIV epidemic context & objective

Major HIV outbreak among people who inject drugs (PWID) in the early 2000's



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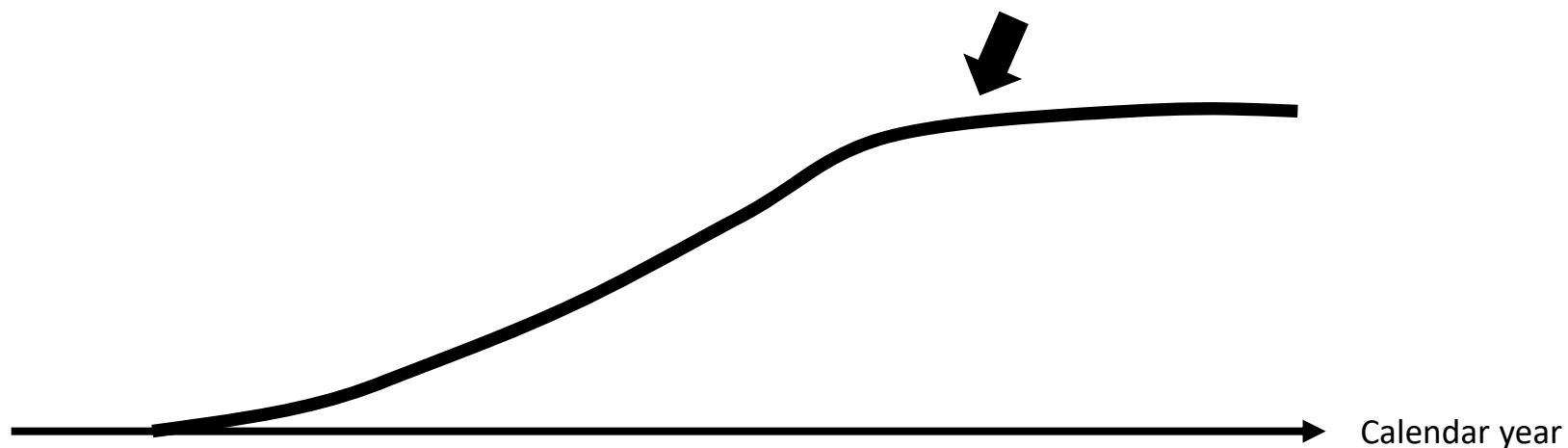
**Question: What are the current states of these two HIV epidemics?**

- ➡ HIV incidence?
- ➡ Time between infection & diagnosis?
- ➡ Number of undiagnosed HIV infections?

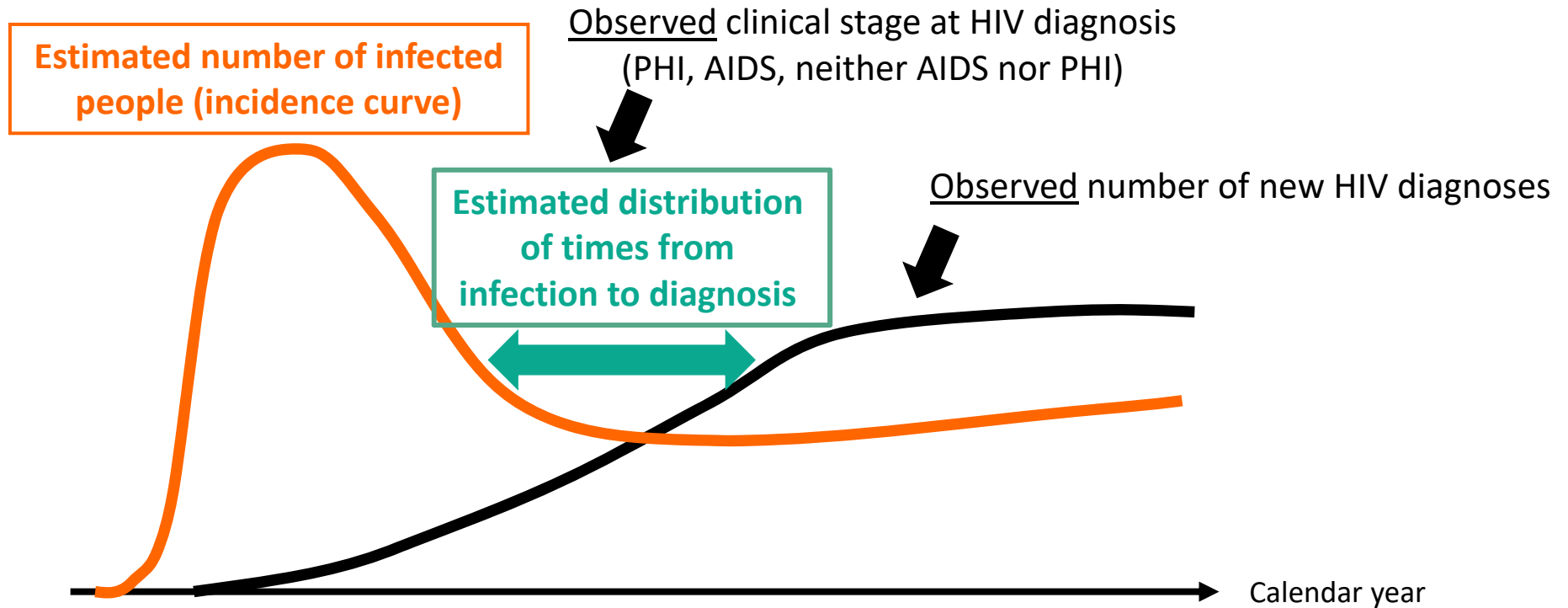
# Back-calculation method

Observed clinical stage at HIV diagnosis  
(PHI, AIDS, neither AIDS nor PHI)

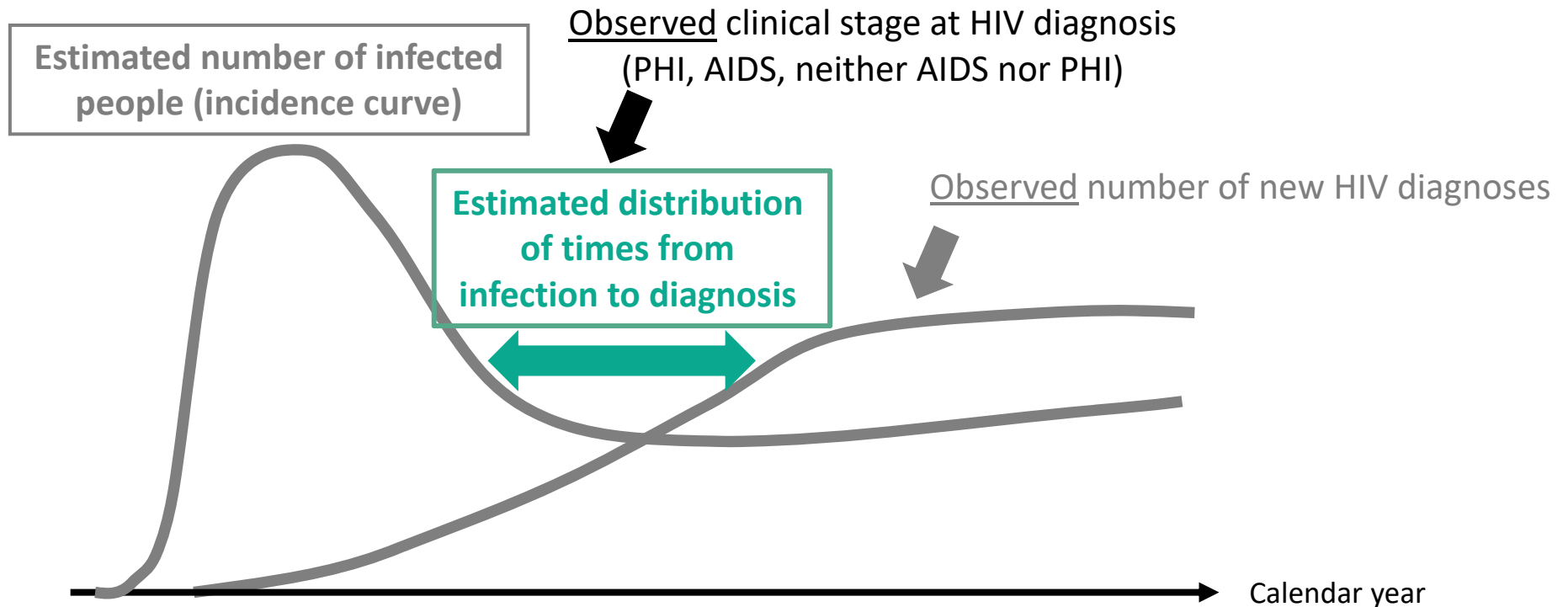
Observed number of new HIV diagnoses



# Back-calculation method



# Back-calculation method

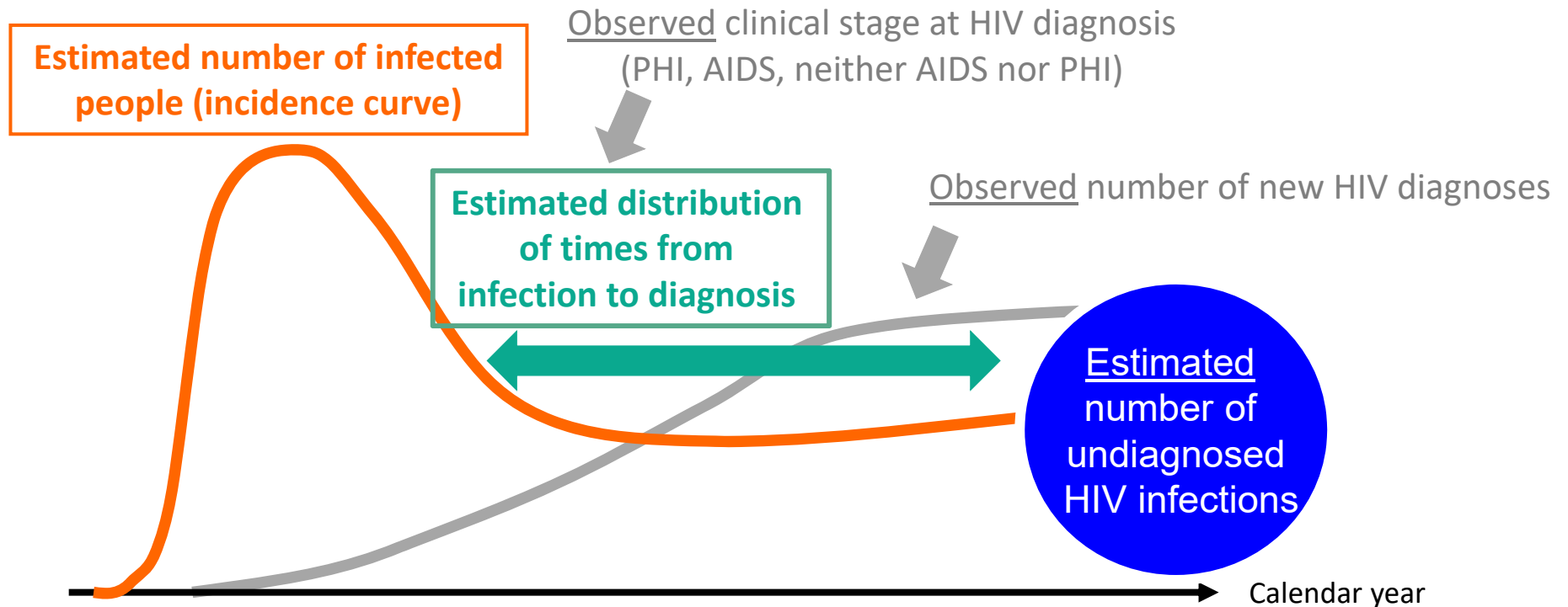


## HYPOTHESES

- PHI diagnosis = uniform distribution with median of 3 months
- AIDS diagnosis = Weibull distribution with median of 10 years
- Diagnosis before AIDS onset and without PHI symptoms = estimations of 2 parameters defining a modified weibull distribution



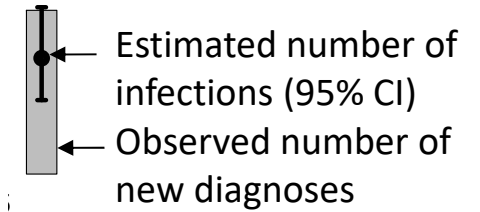
# Back-calculation method



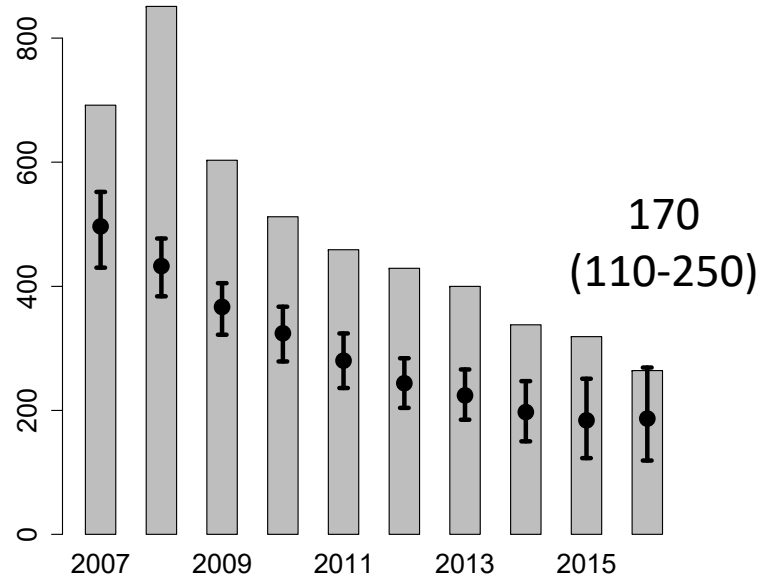
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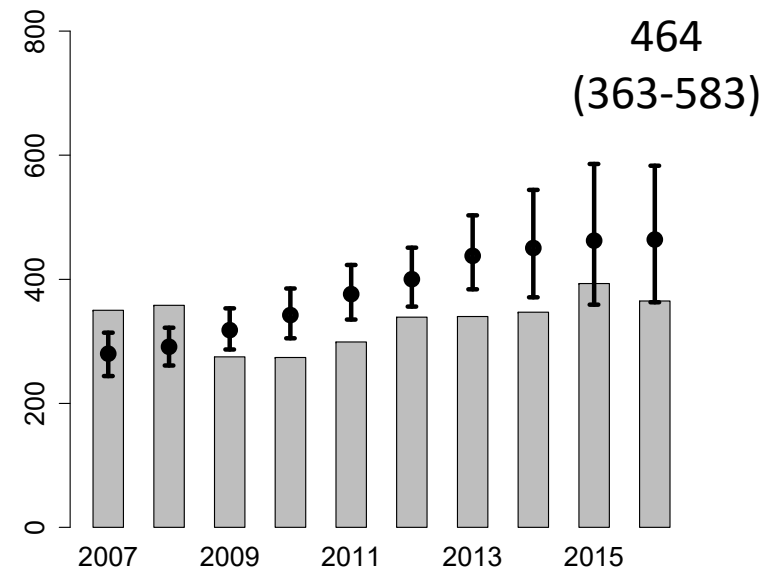
# Estimated HIV incidence 2007-2016



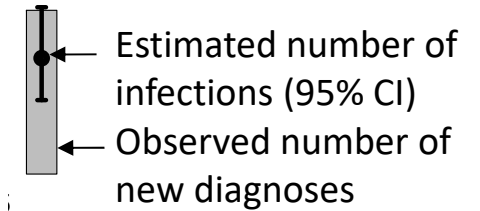
## Estonia



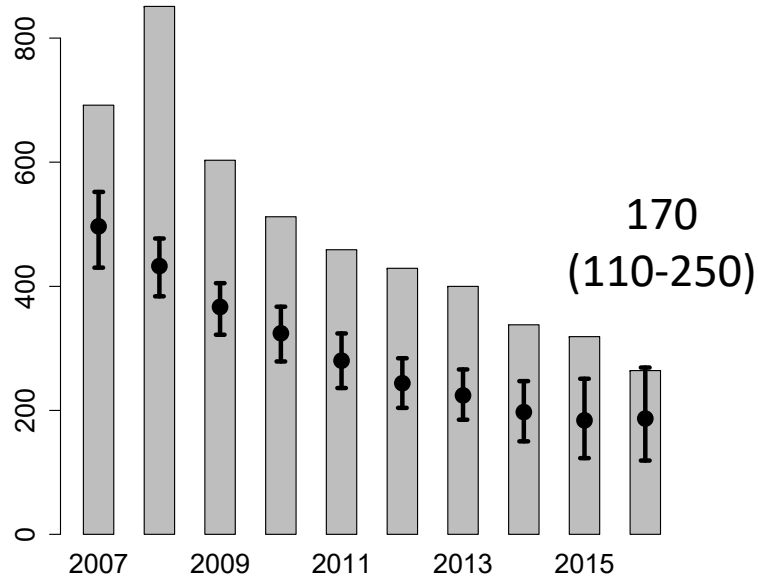
## Latvia



# Estimated HIV incidence 2007-2016

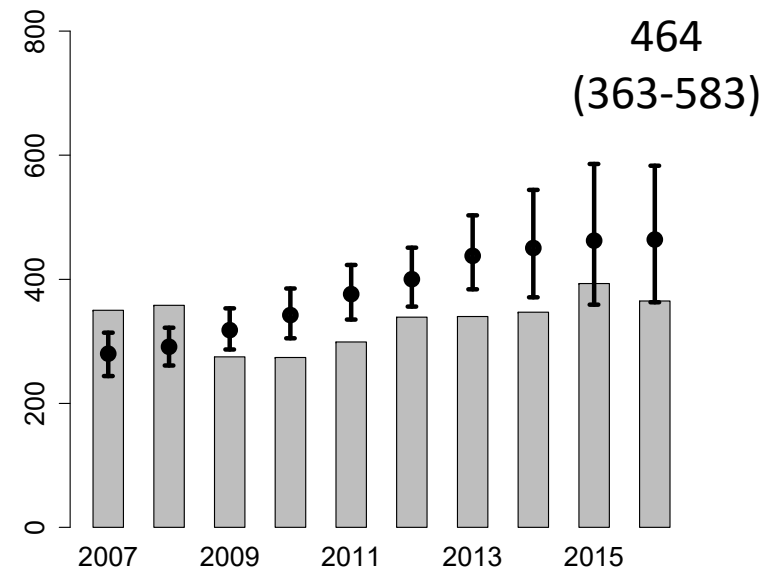


## Estonia



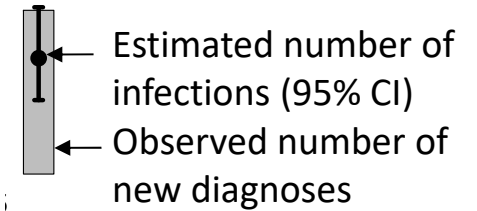
Incidence rate in 2016:  
2.1 (1.3-3.0) per 10000

## Latvia



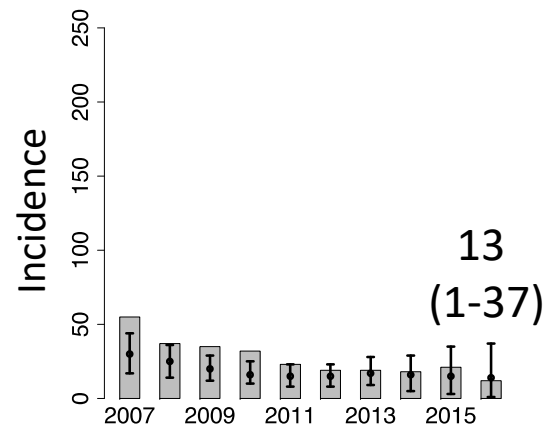
Incidence rate in 2016:  
3.4 (2.7-4.3) per 10000

# Estimated HIV incidence 2007-2016: Persons who inject drugs

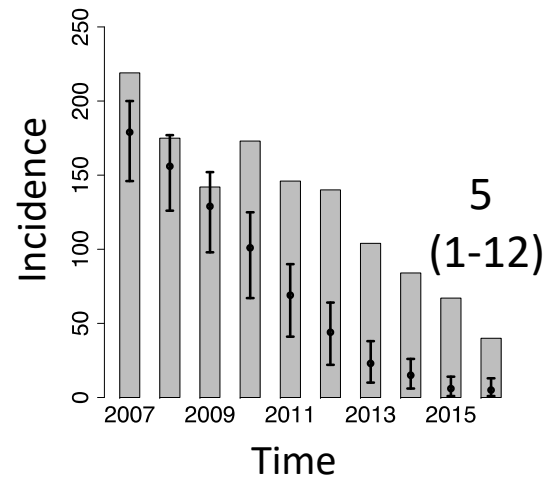


## Estonia

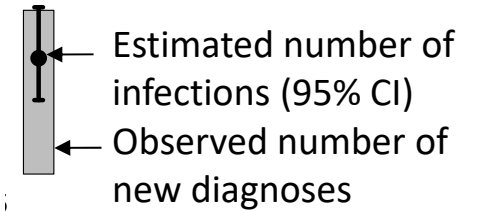
Female PWID



Male PWID

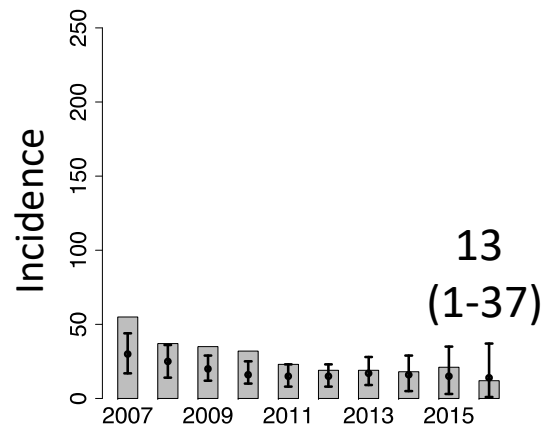


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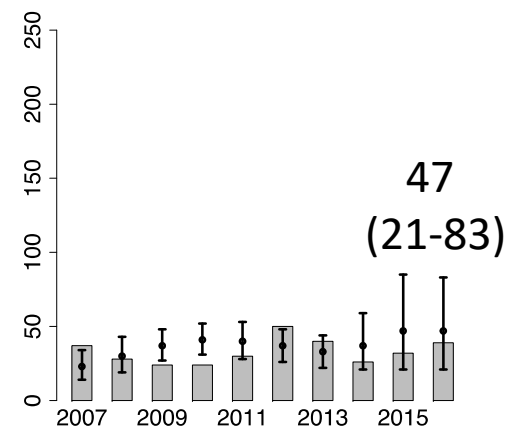


Female PWID

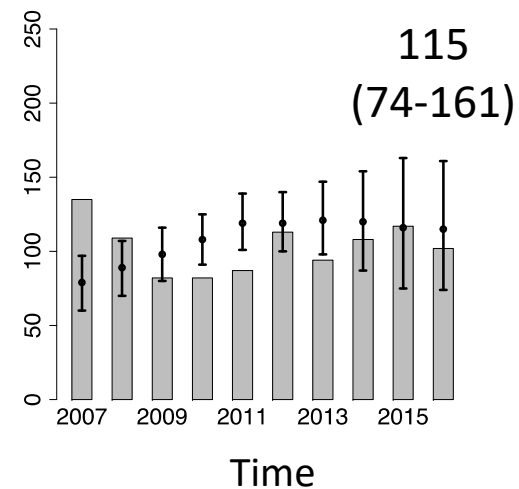
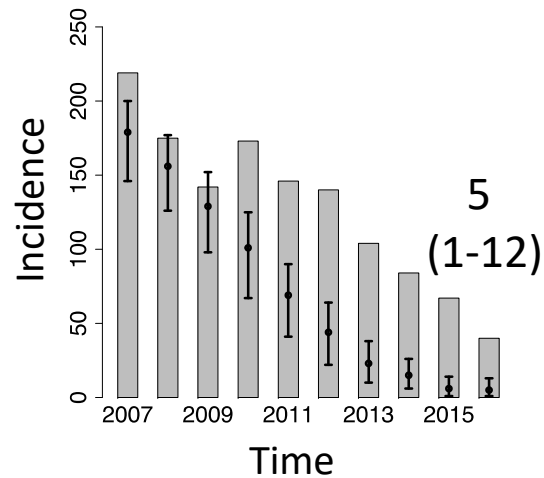
**Estonia**



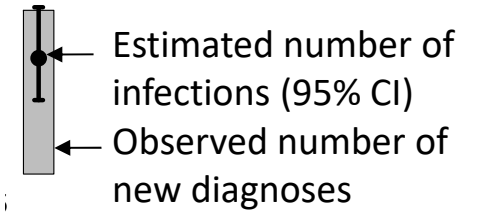
**Latvia**



Male PWID

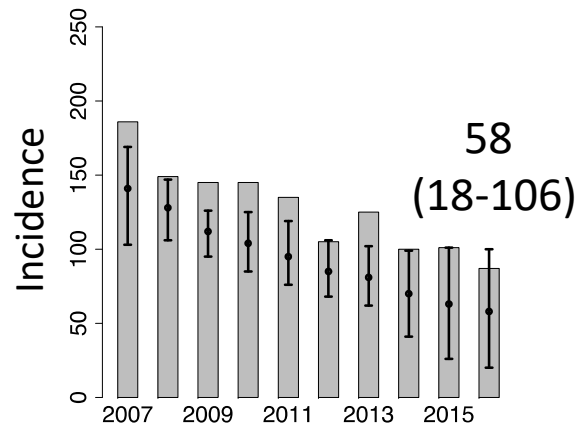


# Estimated HIV incidence 2007-2016: Sexual transmission

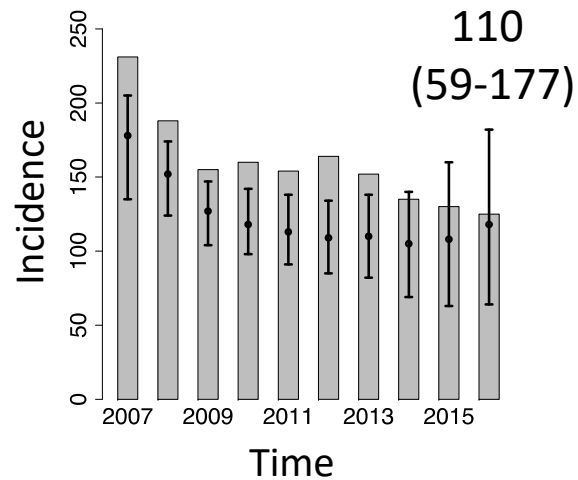


## Estonia

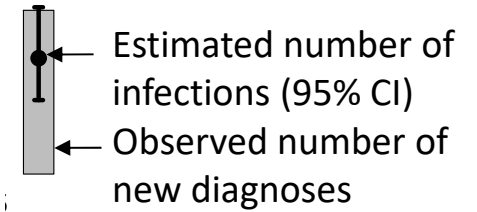
Heterosexual female



Heterosexual male & MSM



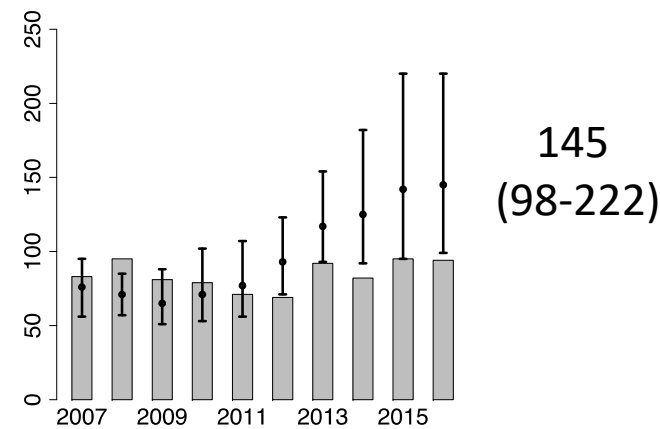
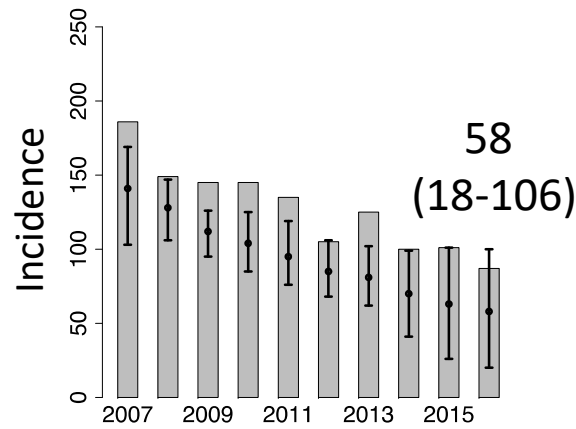
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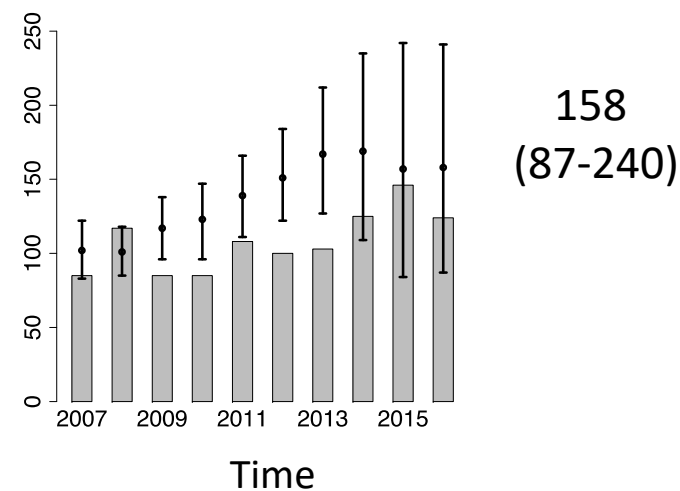
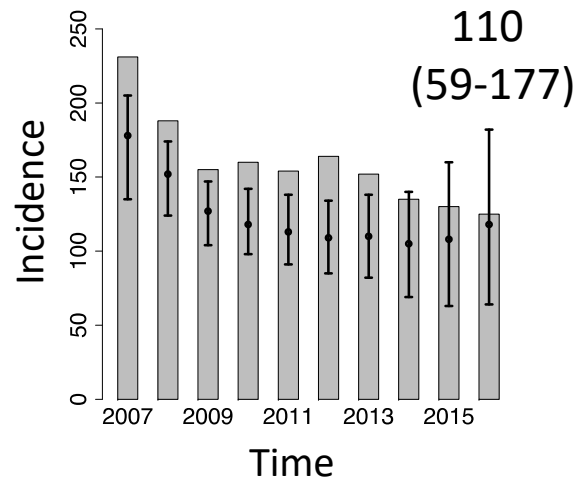
**Estonia**

**Latvia**

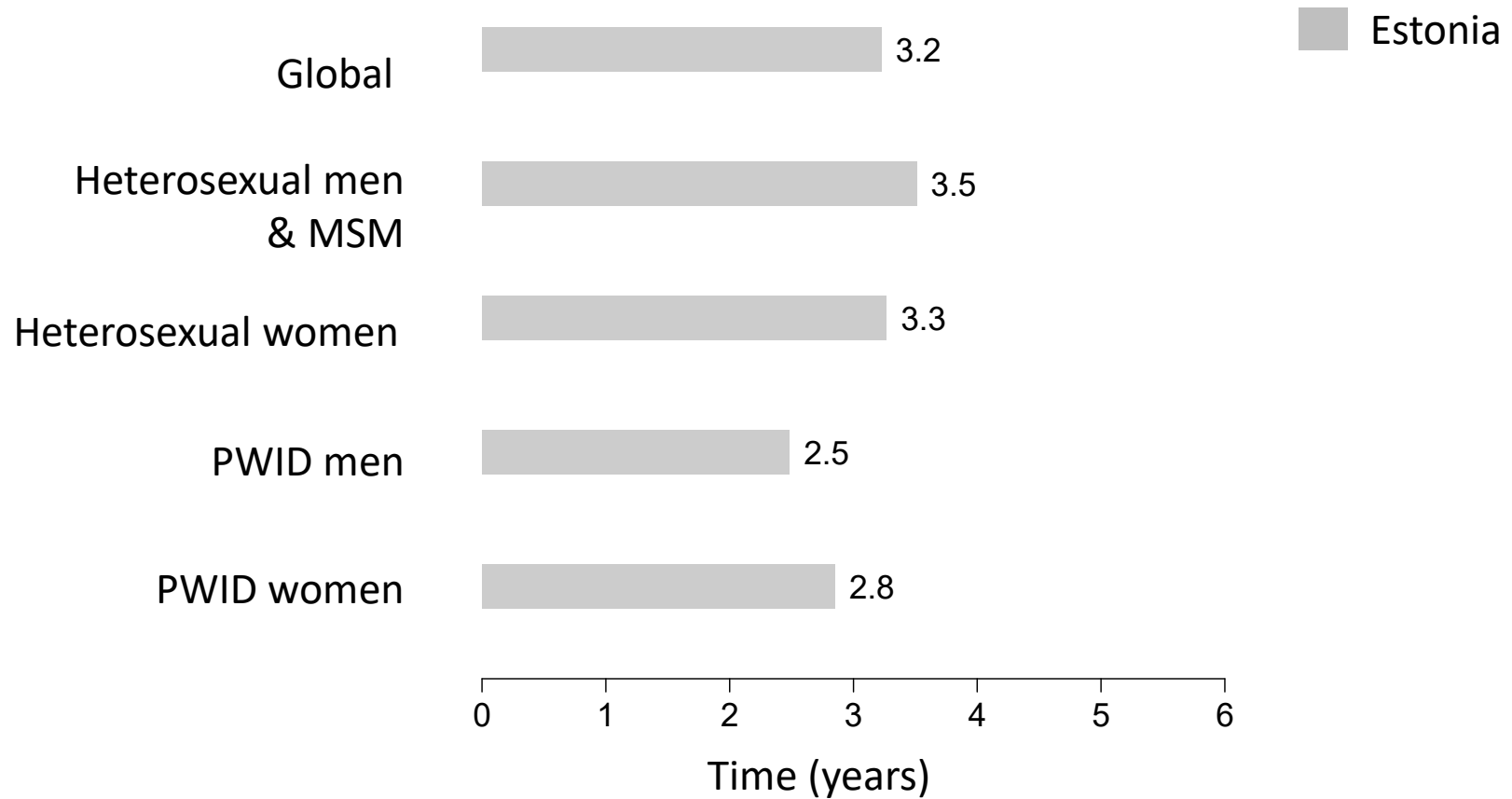
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Heterosexual male & MSM

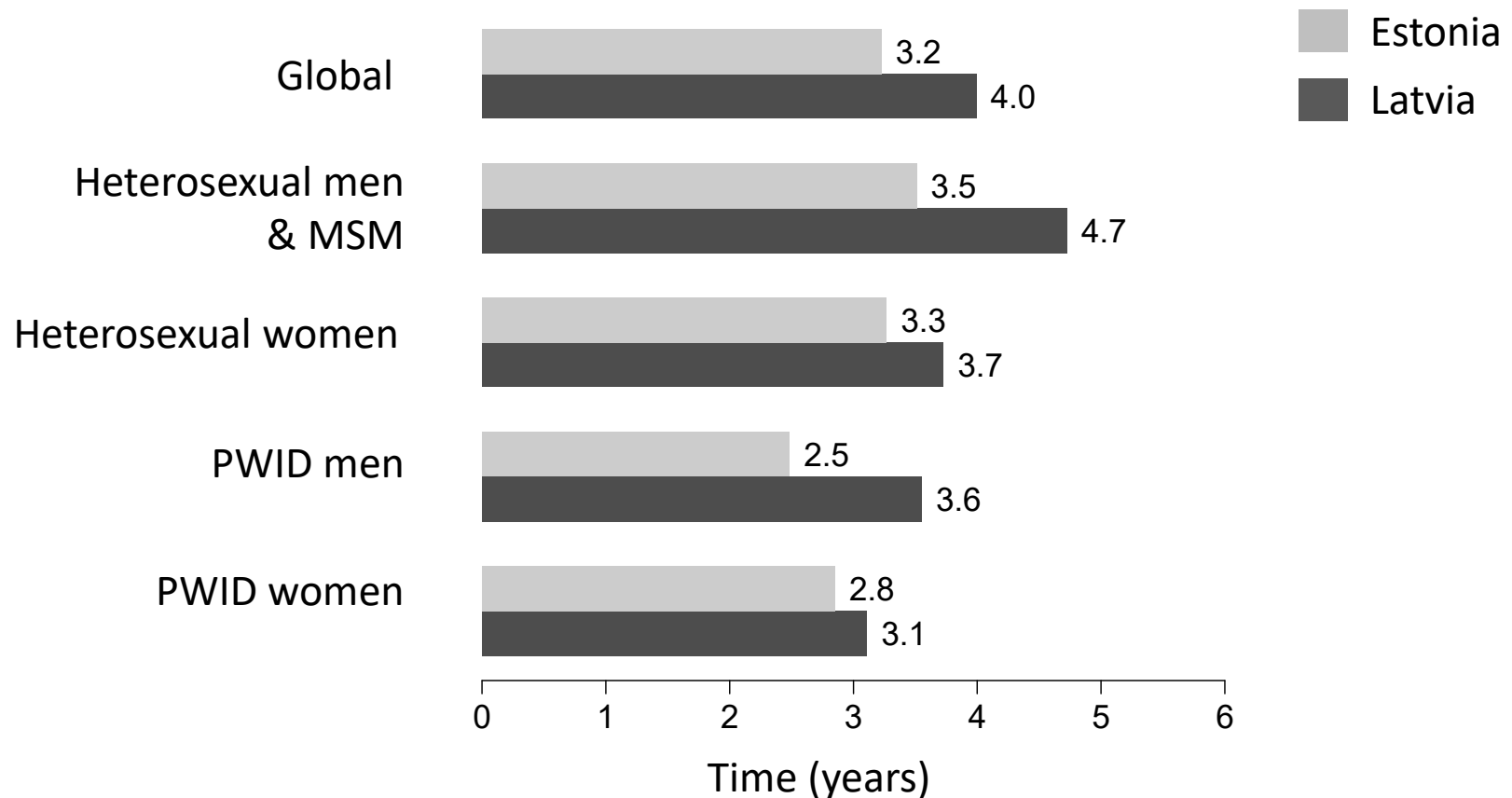


# Estimated median time between infection & diagnosis 2012-2016





# Estimated median time between infection & diagnosis 2012-2016



- Longer global time in Latvia than in Estonia
- Longer times for heterosexual men and MSM than for PWID and heterosexual women

# Number & rates of undiagnosed infections in 2016

	Number of undiagnosed HIV infections (95% CI)	
	Latvia	Estonia
<b>Global<sup>1</sup></b>	1850 (1538-2298)	902 (746-1107)
Male		
Female		
<b>PWID</b>		
Male PWID		
Female PWID		
<b>Sexual transmission</b>		
Heterosexual women		
Heterosexual men & MSM		

➤ Twice more undiagnosed infections in Latvia than in Estonia

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Male	1203 (954-1564)	564 (435-717)
Female	647 (481-975)	338 (250-486)
<b>PWID</b>		
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- Twice more undiagnosed infections in Latvia than in Estonia
- More than 60% of men in both countries

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PWID	603 (460-801)	150 (100-222)
Male PWID	456 (341-617)	101 (66-132)
Female PWID	147 (80-251)	50 (19-112)
<b>Sexual transmission</b>		
Heterosexual women		
Heterosexual men & MSM		

- Twice more undiagnosed infections in Latvia than in Estonia
- More than 60% of men in both countries
- 34% of PWID in Latvia, 17% in Estonia (~70% of men in both countries)

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Heterosexual women	500 (362-826)	289 (213-426)
Heterosexual men & MSM	747 (533-1035)	464 (344-621)

- Twice more undiagnosed infections in Latvia than in Estonia
- More than 60% of men in both countries
- 34% of PWID in Latvia, 17% in Estonia (~70% of men in both countries)
- 67% of sexual transmission in Latvia, 83% in Estonia (~60% of men in both countries)

# Number & rates of undiagnosed infections in 2016

	Number of undiagnosed HIV infections (95% CI)		Undiagnosed prevalence rate per 10000 (95% CI)	
	Latvia	Estonia	Latvia	Estonia
<b>Global<sup>1</sup></b>	1850 (1538-2298)	902 (746-1107)	13.8 (11.5-17.2)	10.2 (8.4-12.5)
Male	1203 (954-1564)	564 (435-717)	18.8 (14.9-24.5)	13.0 (10.0-16.5)
Female	647 (481-975)	338 (250-486)	9.3 (6.9-14.0)	7.4 (5.5-10.7)
<b>PWID</b>	603 (460-801)	150 (100-222)	484.6 (369.8-644.0)	188.1 (125.2-278.0)
Male PWID	456 (341-617)	101 (66-132)	555.5 (414.5-750.9)	258.7 (167.5-336.9)
Female PWID	147 (80-251)	50 (19-112)	347.4 (188.6-592.0)	120.7 (44.6-272.8)
<b>Sexual transmission</b>	1247 (977-1690)	752 (606-963)	9.4 (7.4-12.8)	8.5 (6.9-11.0)
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# Main results and conclusions

- In 2016, **HIV incidence was >1.5-fold higher in Latvia than in Estonia** (3.4/10000 versus 2.1/10000,  $p < 0.05$ )
  - Between 2010-2016, incidence decreased in Estonia but increased in Latvia (average annual change: -7.7% versus +5.9%)
  - Incidence decreased for all exposure groups in Estonia and increased for most in Latvia, but wide confidence intervals for Latvia
- Between 2012-2016, time to diagnosis took longer in Latvia than in Estonia (4.0 versus 3.2 years,  $p < 0.05$ ).
  - In both countries, longer time for heterosexual men and MSM than for PWID and women
- In 2016, undiagnosed prevalence rate was higher in Latvia than in Estonia (13.8/10000 versus 10.2/10000,  $p < 0.05$ )
- In both countries, PWID were the most affected population in terms of rates, but **most new and undiagnosed infections occurred among heterosexuals and MSM**: >60% in Latvia, >80% in Estonia



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**The study shows stark differences in the epidemic dynamics of the two countries. Finding individuals acquiring HIV sexually is one of the challenges in these originally injection drug use-driven epidemics.**

# Acknowledgments

- ANRS (HIVERA consortium)
- State Education Development Agency, Republic of Latvia
- Estonian Ministry of Education and Research (IUT 42-2) and National Health Plan 2009-2020
- HepHIV Scholarship Programme