Consequences of COVID-19 pandemic for local HIV epidemics in the US

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Background

- The potential impact of COVID-19 pandemic on the US HIV epidemic remains unclear

Methods

- The Johns Hopkins Epidemiologic and Economic Model of HIV transmission (**JHEEM**) simulates HIV epidemics in **32 US cities.**
- We randomly sampled a range of pandemic effects and simulated their impact on HIV incidence:

Parameter	Reduction
Sexual transmission	0-50%
Viral suppression among people with diagnosed HIV	0-40%
HIV testing	0-50%
PrEP Use	0-30%

March 1st, 2020
Disruptions begin

Sexual transmission fully reduced to March 8th, 2021, then rebounded by July 4th, 2021

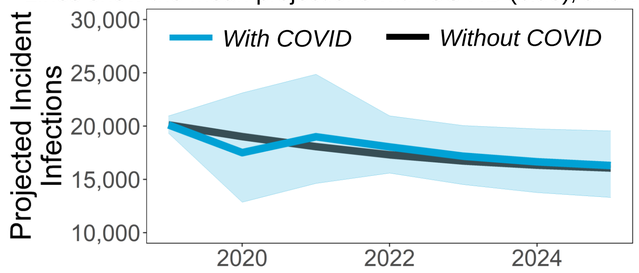
HIV services remained reduced by Sep 8th, 2021, then normalized by Feb 4th, 2022

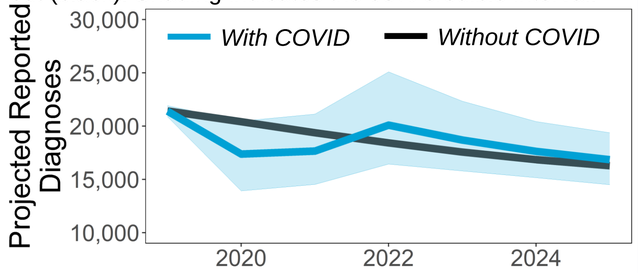
- **Outcomes** Change in the *projected number of incident infections from 2020 to 2025 in absence and presence of COVID-19 related disruptions*

Results

Across all cities, **simulations projected a decline in HIV incidence and diagnoses followed by a rebound**. The rebound in diagnoses lagged 1-2 years behind incidence.

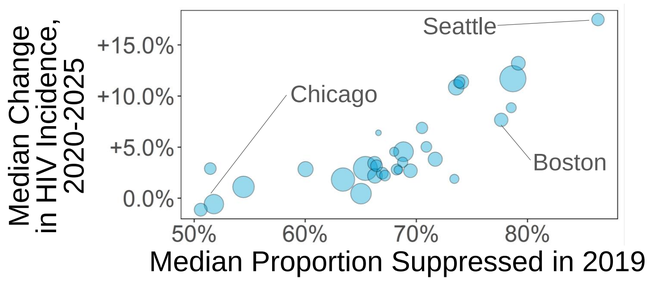
*Lines show the mean projections with COVID (blue), and without (black). Shading indicates the 95% credible interval.



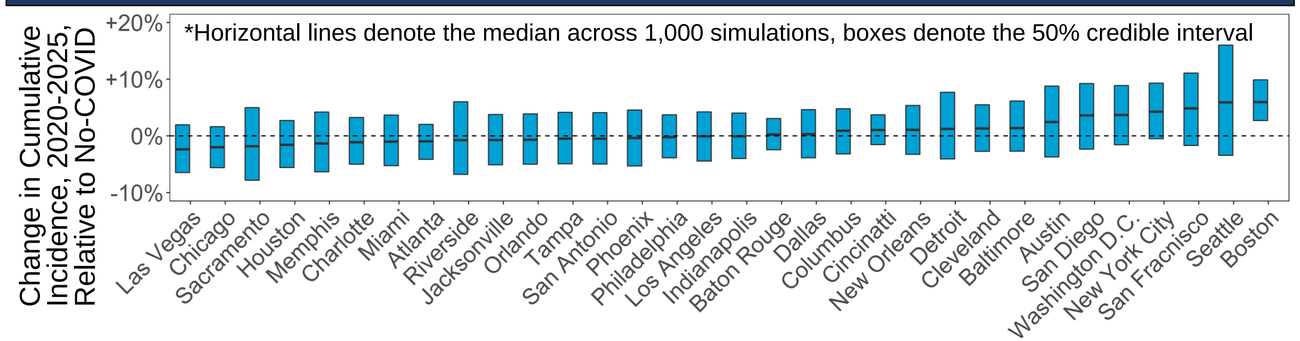


Among simulations with large (>25%) reductions in viral suppression, **HIV incidence rose more where pre-pandemic levels of viral suppression were higher.**

*Circles represent individual cities; the size of each circle is proportional to the city's 2019 incidence.



Projections varied by city, ranging from a median of 3% fewer incident cases in Las Vegas to 9% more cases in Boston post COVID-19



Visit www.jheem.org/covid to visualize projections under each COVID scenario and under user-customizable scenarios in each of the 32 cities.

Limitations

- The impact of COVID-19 may be heterogeneous by age, race, sex and HIV risk factor
- The true time-frame of impact is uncertain and may vary by location
- The impact on various factors is likely correlated
- Finding can alter in the light of new COVID-19 variants

Conclusions

- Trends in reported diagnoses are likely to lag incidence in the years just after the pandemic.
- Disruptions to HIV care and viral suppression may have greater impact where pre-existing suppression levels are higher
- The effects of COVID-19 on HIV transmission differ substantially at the local level.

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