

Cutting prison sentences could reduce spread of HIV, study suggests

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Reducing the number of men who go to prison could help curb the spread of HIV and other sexually transmitted infections in a community, according to research published in *Social Science & Medicine*.

A new computer model developed by researchers at the University of Michigan in the US suggests that reducing [incarceration](#) in a community may also reduce the number of [sexual partners men](#) and women have, therefore reducing the spread of [sexually transmitted infections](#).

Men who have been to [prison](#) can experience major changes in their sexual behavior when they're released. In a community, this can affect the way men and women interact sexually. The new computer model shows that high rates of incarceration of men increase the number of sexual partners for both men and women in a community.

"The model shows that simply removing men and returning them to the community frequently can increase the number of sexual partners that both men and women have in the community," said lead author Dr. Andrea Knittel, who is now at the University of California, San Francisco. "It supports the assertion that mass incarceration has complicated and far-reaching unintended consequences, and may have significant public health implications."

Men are incarcerated much more often than women - in the US in 2009, 954 men were incarcerated per 100,000 residents, compared to 68 women per 100,000 residents. Because of this, most research focuses on men.

Previous research has shown links between high levels of incarceration in a community and higher rates of HIV infection. Studies have also revealed a connection between incarceration and risky sexual behavior, such as having more than one

sexual partner at a time, or a greater number of sexual partners. However, until now, there has been little research into the effect of incarceration rates on the sexual behavior and spread of sexually transmitted infections in a community.

In the new study, the team developed an agent-based model - a computer simulation that creates a small community in which 250 "agents" or simulated people can date and have sexual relationships.

The team ran the simulation without incarceration to see how many sexual partners men and women in the community would have. They then ran it again with incarceration to see what would happen. They used data from other studies that show when men are incarcerated they have a slightly higher risk of ending a relationship and become slightly less desirable as partners.

In the simulation, incarceration increased the number of sexual partners for both the male and female agents. In addition, when the average sentence length was increased, the differences were more pronounced, suggesting that harsher or longer penalties might exacerbate the effect of incarceration.

"Our model showed that high levels of incarceration likely play a role in community-level [sexual behavior](#), and are likely detrimental in terms of sexual risk for HIV and other STDs," said Dr. Knittel. "The results suggest that reducing incarceration and creating a more open criminal justice system that supports the maintenance of inmates' relationships to reduce instability of partnerships for men who are incarcerated may have important sexual health and public health implications."

Prisons are expensive and overcrowded; there is growing interest in decreasing incarceration to tackle these issues. Dr. Knittel believes computer

simulations like the one in this study are a helpful way to model the effects of reducing incarceration at the community level.

"The methods are interesting and unique, and offer a digital petri dish in which experiments that would be impossible in the real world are absolutely doable. The results from computational models can never be applied thoughtlessly to the real world, but are thought-provoking and demonstrate what is possible."

More information: Andrea K. Knittel et al.

Modeling the community-level effects of male incarceration on the sexual partnerships of men and women, *Social Science & Medicine* (2015).

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