The importance of disaggregating "transactional sex" from "sex work" in the Modes of Transmission model

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Holly Prudden

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Introduction: What is the Modes of Transmission (MoT) Model?

- User-friendly spreadsheet model, developed to predict the distribution of new HIV infections in the population.

- Population divided into subgroups, depending on highest level of risk for acquiring HIV.

- Subgroups include: FSW, FSW clients, MSM, IDUs, Casual female/male sex partners, 'low-risk' individuals.

- **Currently used in 29 countries to guide interventions.**

Setting: Cross River State, Nigeria

- Located in the South-South geopolitical region.
- 2008 ANC estimates HIV prevalence as 8%.
- Populations size of 2.1 million aged 15-49.
- Fifth highest prevalence state in the country.

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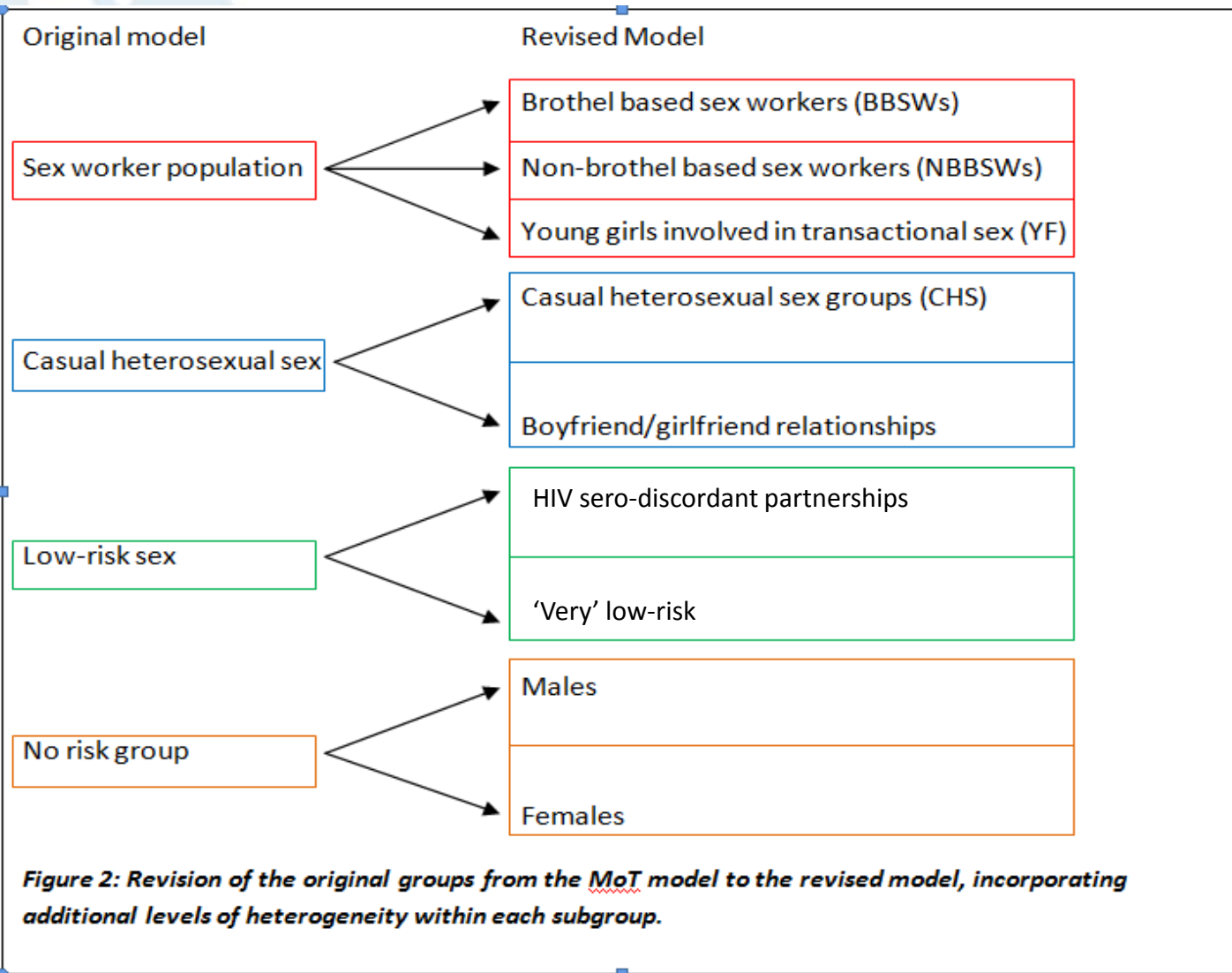HYGIENE
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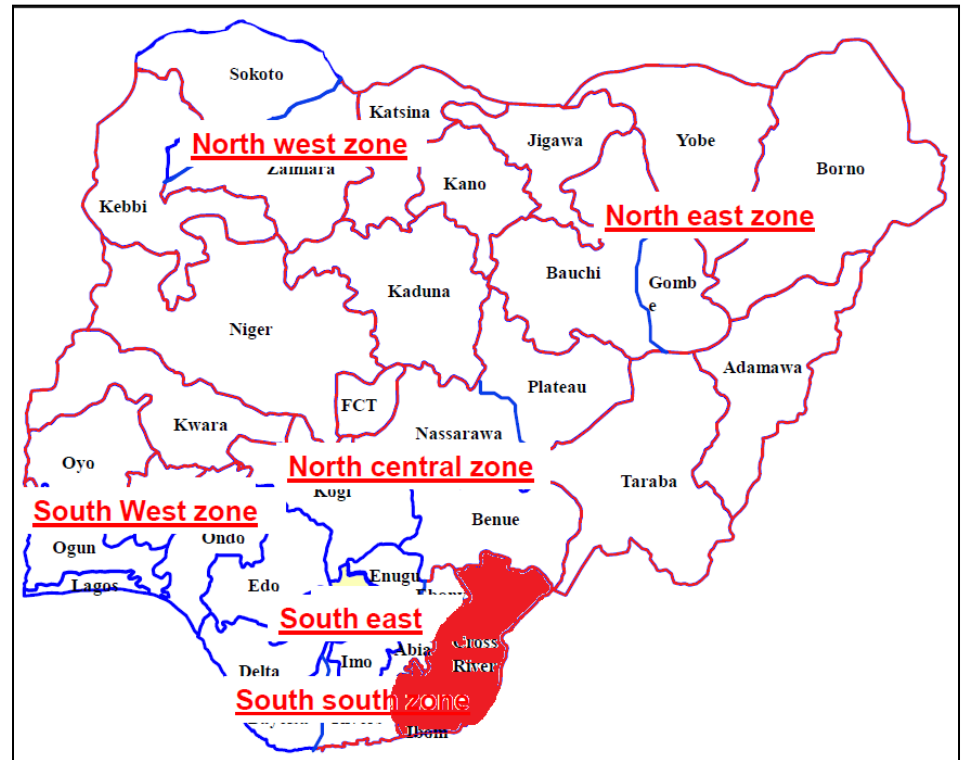
Aim and objectives:

Aim:

To compare the MoT model projections from Cross River (2009), with a revised MoT model that incorporates additional heterogeneity and sexual mixing.

Main objectives:

-To restructure the current model by introducing additional heterogeneity into key subgroups in the model, based on evidence from the literature and surveys.

- To explore whether the introduction of sexual mixing and multiple sources of HIV risk influence the projected percentage of HIV infections occurring in most-at-risk-populations (MARPs)
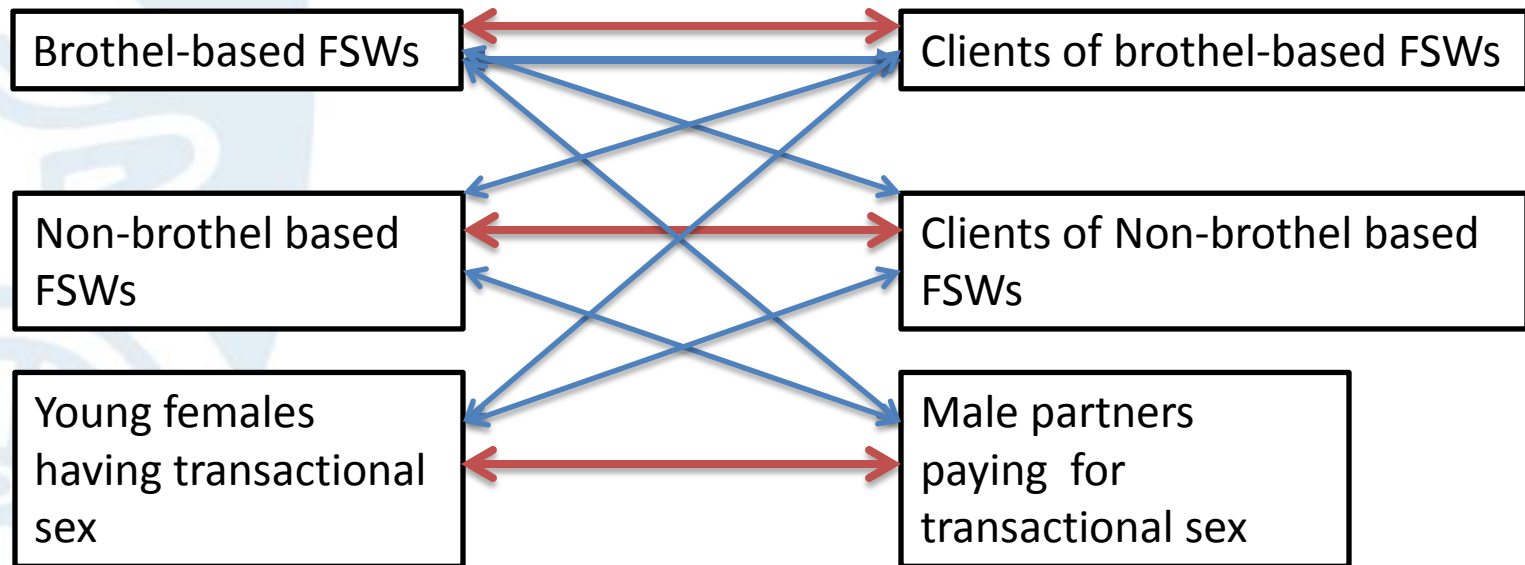
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1. Methods: Introducting greater levels of heterogeneity into the MoT

Figure 2: Revision of the original groups from the MoT model to the revised model, incorporating additional levels of heterogeneity within each subgroup.

# 2. Methods: The introduction of multiple sources of HIV risk amongst high-risk females

➢ Evidence from the literature suggests female sex workers mix with a large heterogeneous client population:

➢ But in current MoT, risk of infection is only from main partner group.

Brothel-based FSWs	Clients of brothel-based FSWs

Non-brothel based FSWs	Clients of Non-brothel based FSWs

Young females having transactional sex	Male partners paying for transactional sex

→ HIV transmission routes for MoT, single source of infection
→ HIV transmission routes for MoT, multiple sources of infection

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1. Results: Changes in the HIV epidemic profile following the introduction of additional heterogeneity
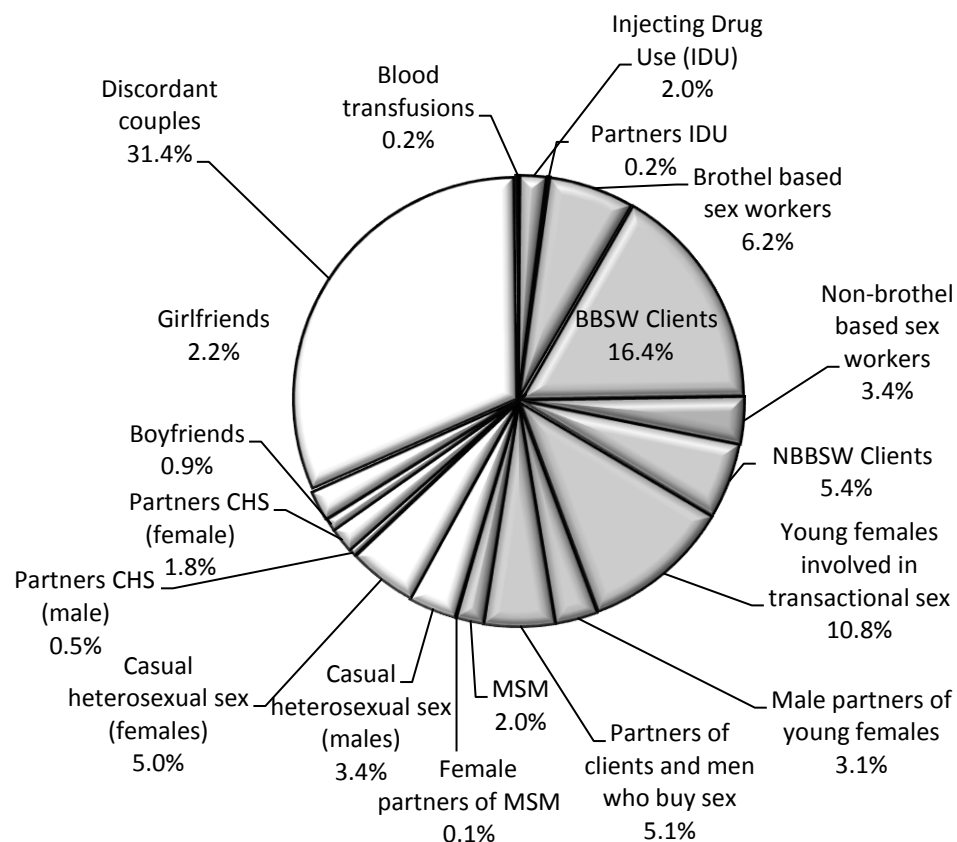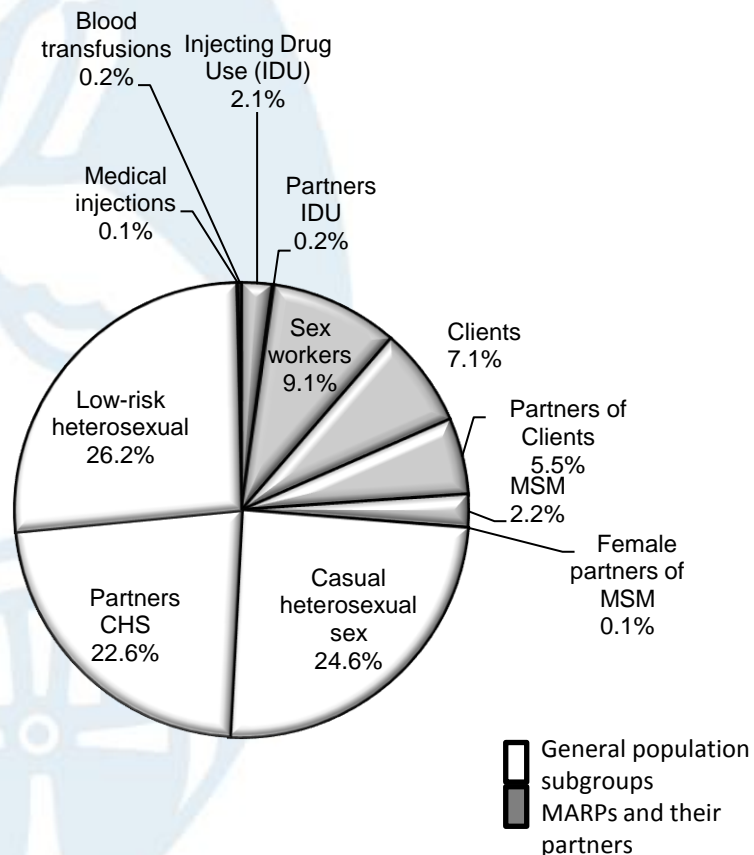
Projected distribution of new HIV infections for original MoT model in Cross River State

Projected distribution of new HIV infections for revised MoT model in Cross River State

1. Results: Sensitivity analysis results, estimating max % of new infections occurring in MARPs versus general population
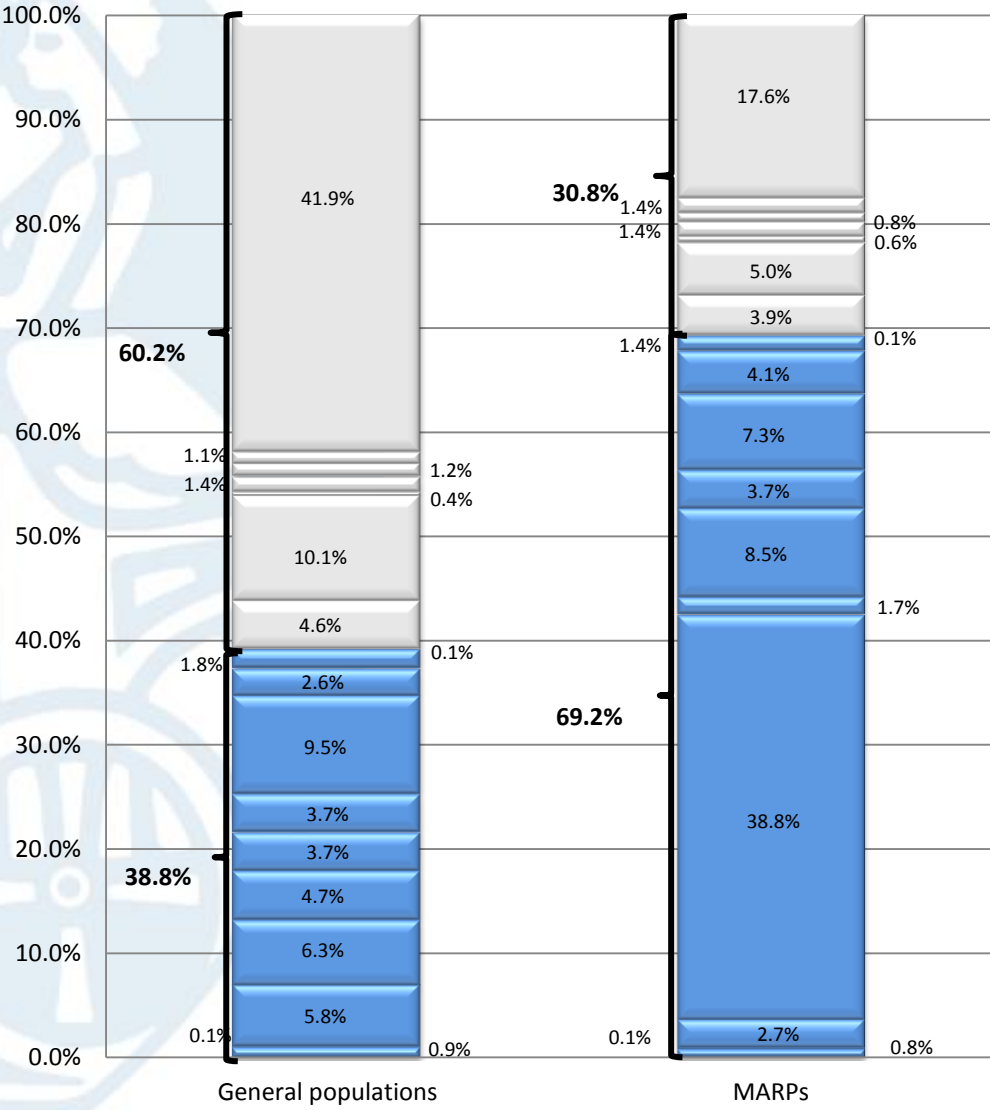
Legend:
- Discordant couples
- Girlfriends
- Boyfriends
- CHS parts (f)
- CHS parts (m)
- CHS females
- CHS males
- MSM female partners
- MSM
- Male partners of Yfs
- Young females
- Long-term female partners clients
- NBBFSW clients
- NBBFSWs
- BBFSW clients
- BBFSWs
- IDU Partners
- IDUs

Results from sensitivity analysis, displaying scenarios in which the highest possible percentage of infections occur in the general population subgroups (left column) versus a scenario in which the highest possible percentage of infections occur in MARPs (right column)

General populations column values: 41.9%, 1.1%, 1.4%, 10.1%, 4.6%, 1.8%, 2.6%, 9.5%, 3.7%, 3.7%, 4.7%, 6.3%, 5.8%, 0.1%, 1.2%, 0.4%, 0.1%, 0.9%
60.2%, 38.8%

MARPs column values: 17.6%, 1.4%, 1.4%, 5.0%, 3.9%, 4.1%, 7.3%, 3.7%, 8.5%, 38.8%, 2.7%, 0.8%, 0.6%, 0.1%, 1.7%, 0.1%, 0.8%, 1.4%
30.8%, 69.2%

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2. Results: The introduction of multiple sources of HIV risk amongst high-risk females
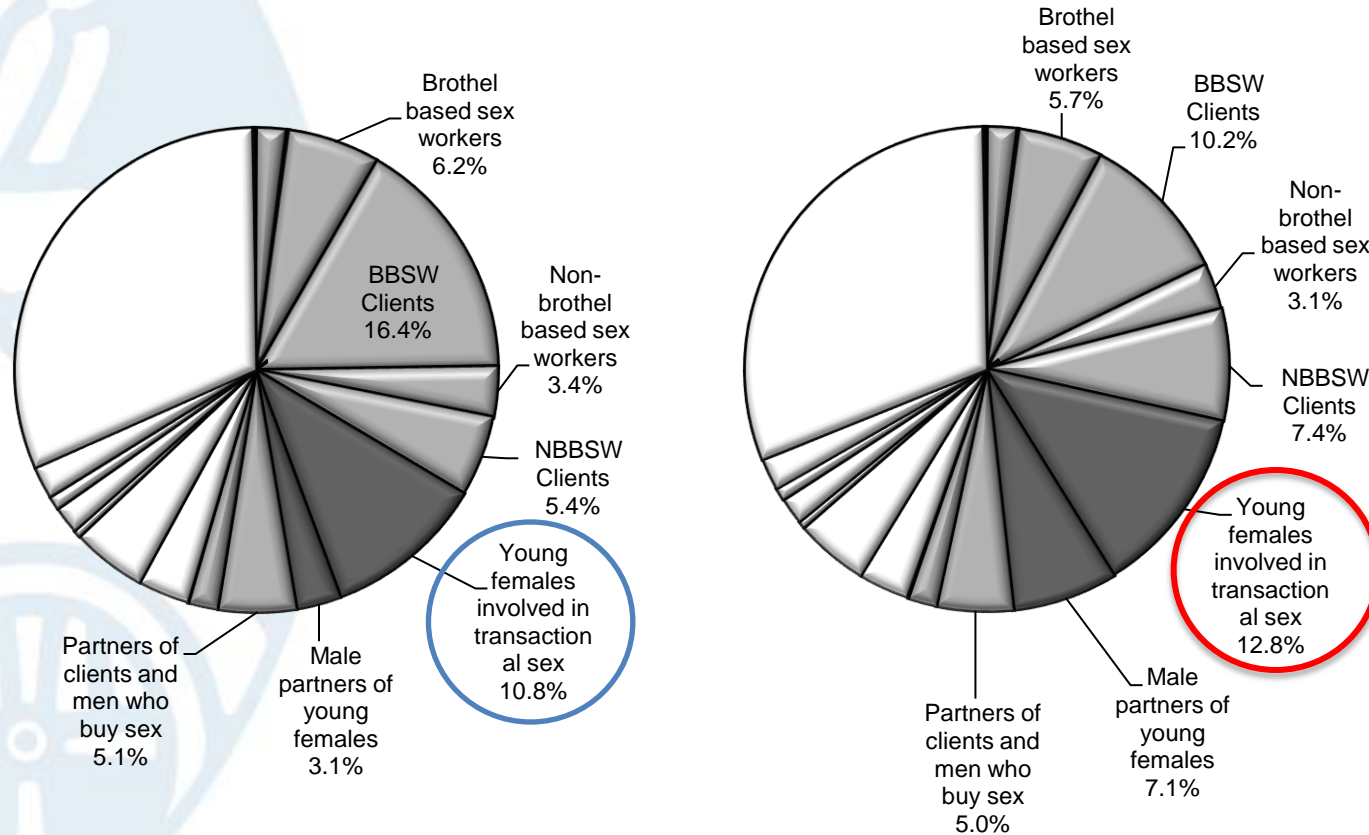
General population subgroups
MARPs and their partners
Young females, their male partners and long-term female partners

Conclusions:

- The introduction of more heterogeneity into the MoT model, for our setting in Nigeria, dramatically changes the epidemic profile.

- The change leads to very different conclusions about the required priorities for HIV prevention, with the revised model highlighting the importance of continuing interventions focused on MARPs.

- Young females involved in transactional sex, omitted from the original MoT, generate a higher percentage of total infections compared to both brothel-based and street-based female sex workers individually.

- New more innovative approaches are needed to target this population and prevent future HIV transmission.

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