

ACCURACY IN PREDICTING DAILY ANAL INTERCOURSE WITH CASUAL PARTNERS AND ITS RELEVANCE FOR INTERMITTENT PrEP: AN ONLINE DIARY ANALYSIS OF HIGHLY SEXUALLY ACTIVE GAY AND BISEXUAL MEN

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Background

- PrEP has demonstrated efficacy in reducing HIV transmission among MSM
- One-size-fits-all approach is already being questioned

- New approaches for different population groups are being investigated

- “ To manage side effects
- “ To improve adherence
- “ To increase acceptability
- “ To improve efficacy

HIV PREVENTION PILL FOR NEGATIVE MEN:

A choice when condoms are in the way or not enough?

Manhunt Cares is proud to commemorate this year's World AIDS Day by promoting the [Gladstone Institutes, Feby and Proby](#), and [John O'Brien Research Institute's](#) research in advancing the U.S. FDA's recently approved HIV prevention pill for HIV negative men (and women).

Take a minute to celebrate these advances by learning more:



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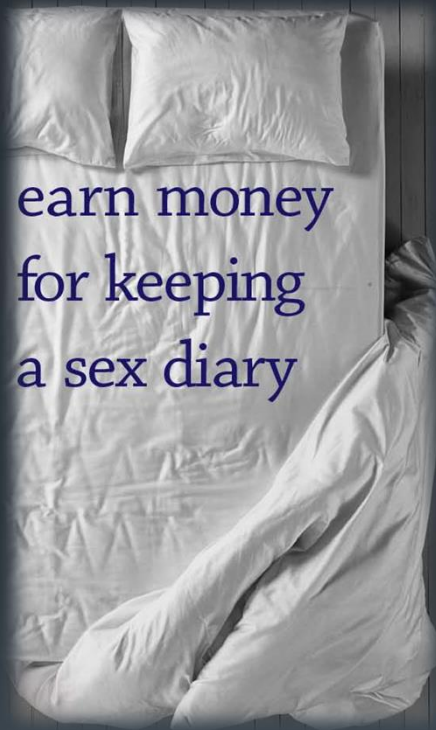
Intermittent PrEP

- Event-driven dosing
- What are the efficacy & optimal dosing schedules?
- Which groups make the best targets for intermittent PrEP?
- Feasibility research is also needed
- Question guiding this study:
 - “ How well can highly sexually active men anticipate when they will have anal sex with casual male partners?



METHODS

Pillow Talk: Compulsive behaviors, mental health, & HIV Risk



Principal Investigator:

Co-Principal Investigator:

Co-Investigator:

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Pillowtalk

Methods

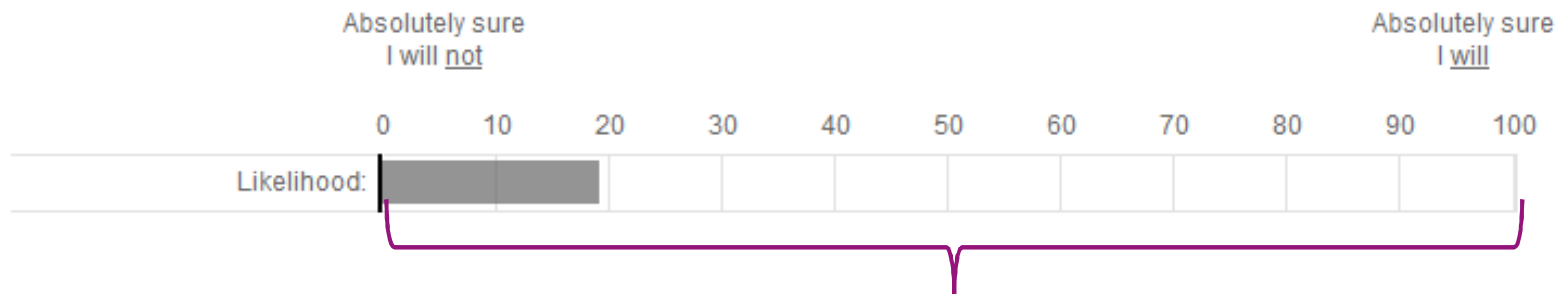
- “ Highly sexually active gay/bisexual men (HIV-negative & positive)
 - “ ≥ 9 male partners in 90 days
 - “ Issues of sexual compulsivity & hypersexuality
- “ Multi-component, longitudinal study
 - “ At-home, online surveys
 - “ In-office HIV testing
 - “ Retrospective sexual behavior & substance use (TLFB)
 - “ Structured clinical interview (CDIS)
 - “ Qualitative interviews
 - “ Neurocognitive testing
 - “ Two, 30-day online daily diaries (affect, sexual behavior)

Online daily diary

- What is it?
 - “ A brief, online, adaptive survey
 - “ Measures daily fluctuations in affect, substance use, sexual arousal, and sexual behavior

Assessment of likelihood

How likely is it that you will have anal sex with a casual male partner tomorrow?



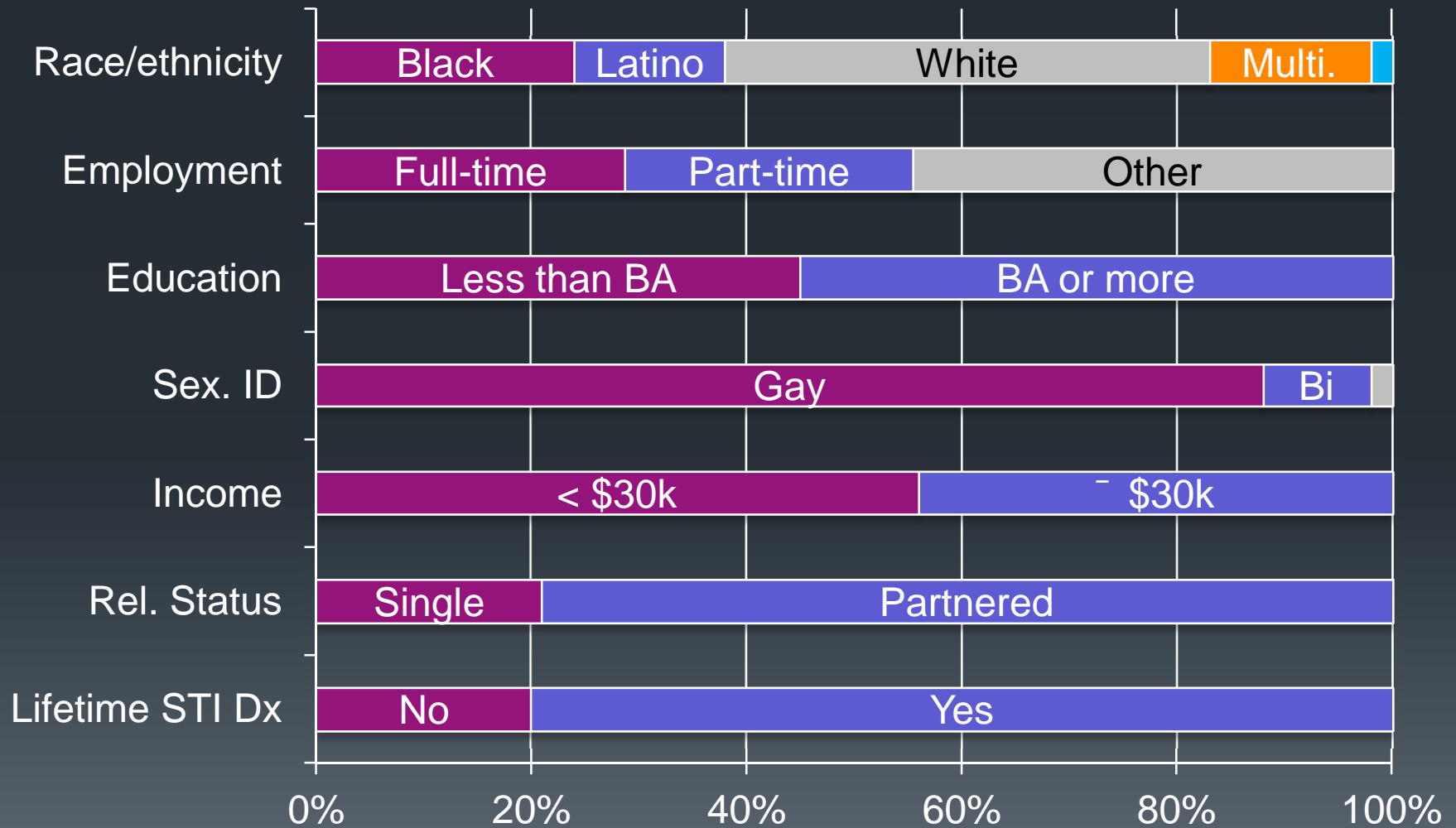
Is there anything else you would like to tell us about your day that will help us to understand your responses?

When you've finished, please click 'Submit Survey!' below to complete today's survey.

RESULTS

Participants ($n = 170$) . all verified HIV-negative

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Matching likelihood to behavior

- Overall, $M = 23$ (77%), $Mdn = 26$ (87%) completed days per person
- Contiguous reporting was required to have valid values for the lagged variable - a total of 2907 days worth of matched data

Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Yes	No	Yes	Yes	Yes	No	Yes

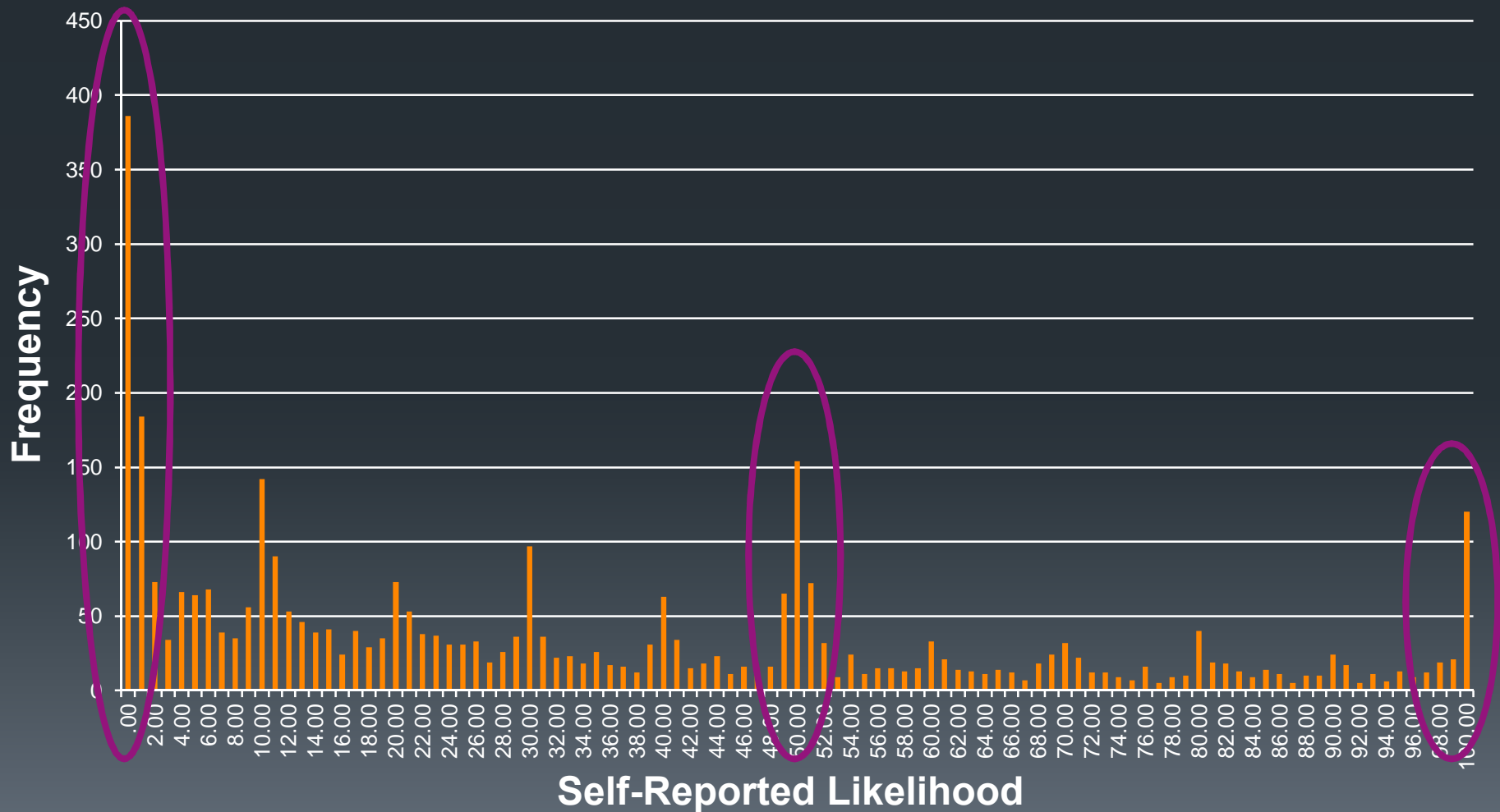
Useable days: 2

- “ Average of 17.1 days of usable data (81% of reports)
- “ $M = 19.2$, $Mdn = 22$ for those with complete cycles

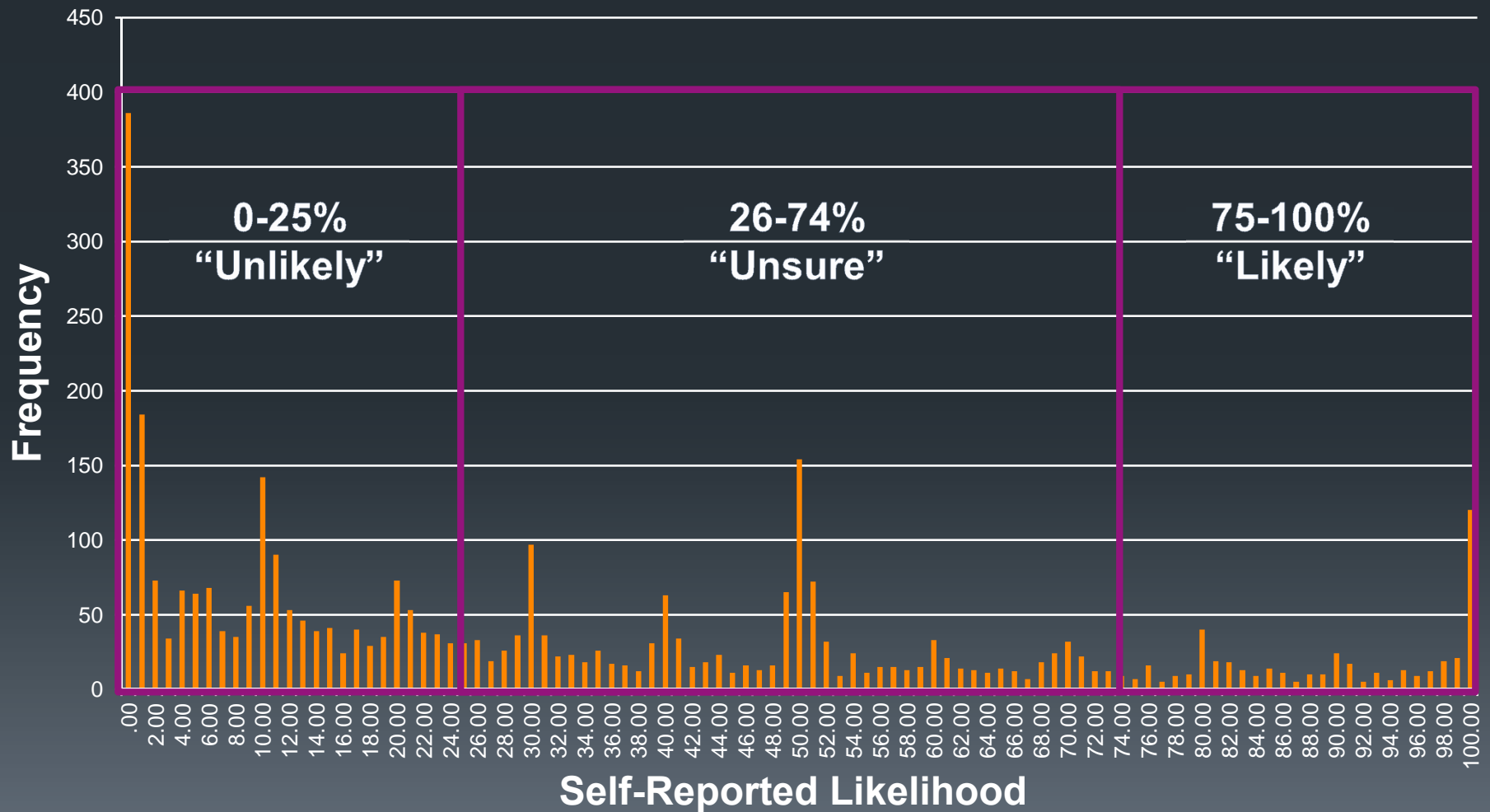
Analysis plan

1. Descriptive information (ignoring nesting)
 - “ What proportion of days include sex at different levels of reported likelihood?
 - “ What is the average reported likelihood on sex days and non-sex days?
2. Multilevel modeling (nested data)
 - “ Examining days (Level 1) within individuals (Level 2)
 - “ Daily **reported likelihood** predicting the **odds/probability of sex** (binary outcome)
 - “ Examining the correspondence between different levels of reported likelihood and the odds/probability of sex

Distribution of self-reported likelihood

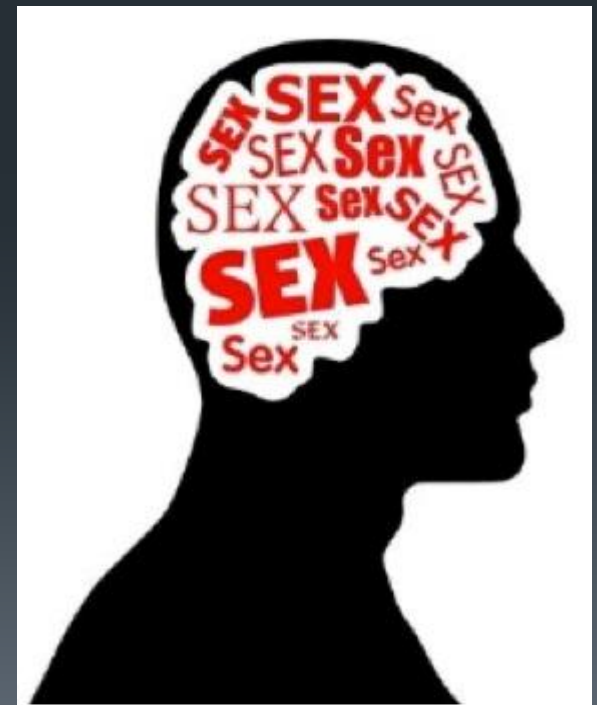


Distributional groups



Results: Descriptive information

- On “unlikely” days, 7% turned out to be sex days
- On “unsure” days, 22% turned out to be sex days
- On “likely” days, 49% turned out to be sex days



Results: Descriptive information

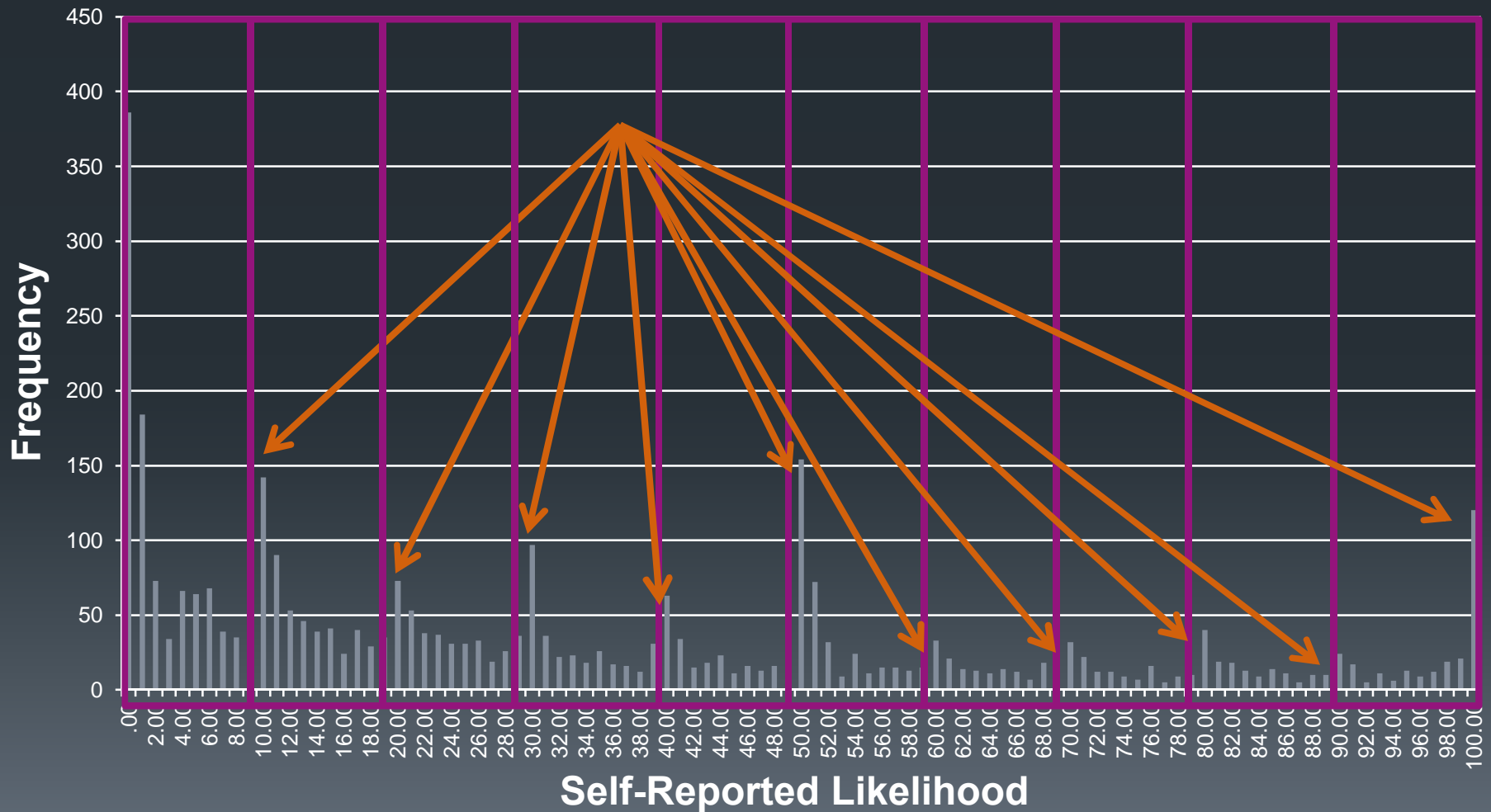
- On days when participants **did not** have sex, their self-reported likelihood of having sex was:
 - “ Mode: 0.0%
 - “ Mean: 26.9%
 - “ Median: 42.0%
- On days when participants **did** have sex, their self-reported likelihood of having sex was:
 - “ Mode: 100.0%
 - “ Mean: 55.4%
 - “ Median: 54.0%



Results: Multilevel model

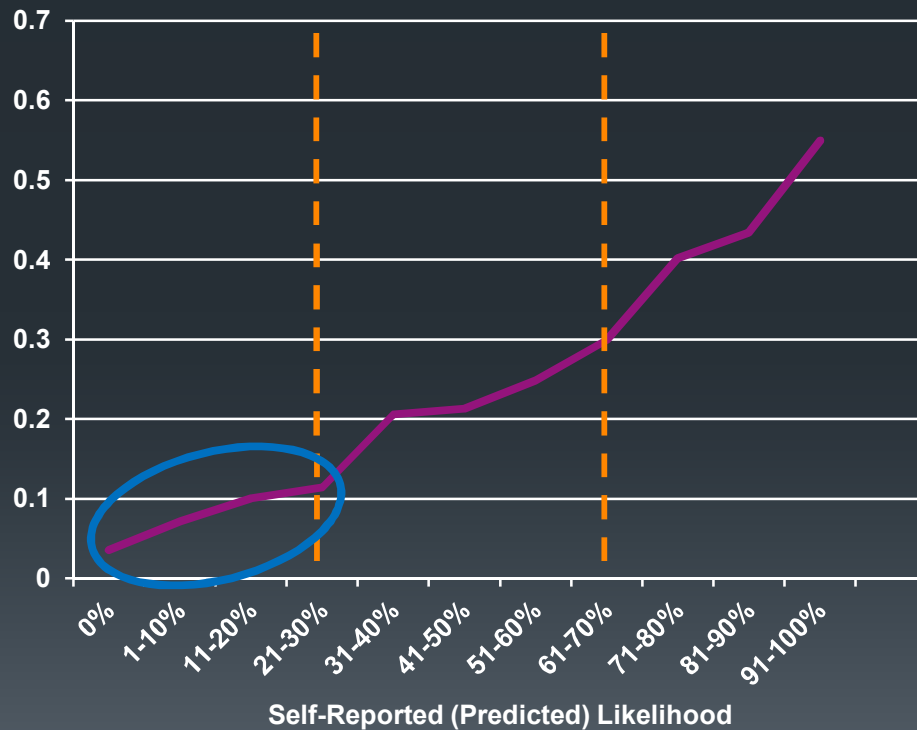
- Overall, the odds of sex on an average day were 0.22 (18% probability) - regardless of their predicted likelihood
- Self-reported likelihood was significantly associated an increase in the odds of sex - every 10% increase in self-reported likelihood was associated with a 36% increase in the odds of sex

Another look at the distribution $\tilde{\theta}$



Examining gradations in the trend

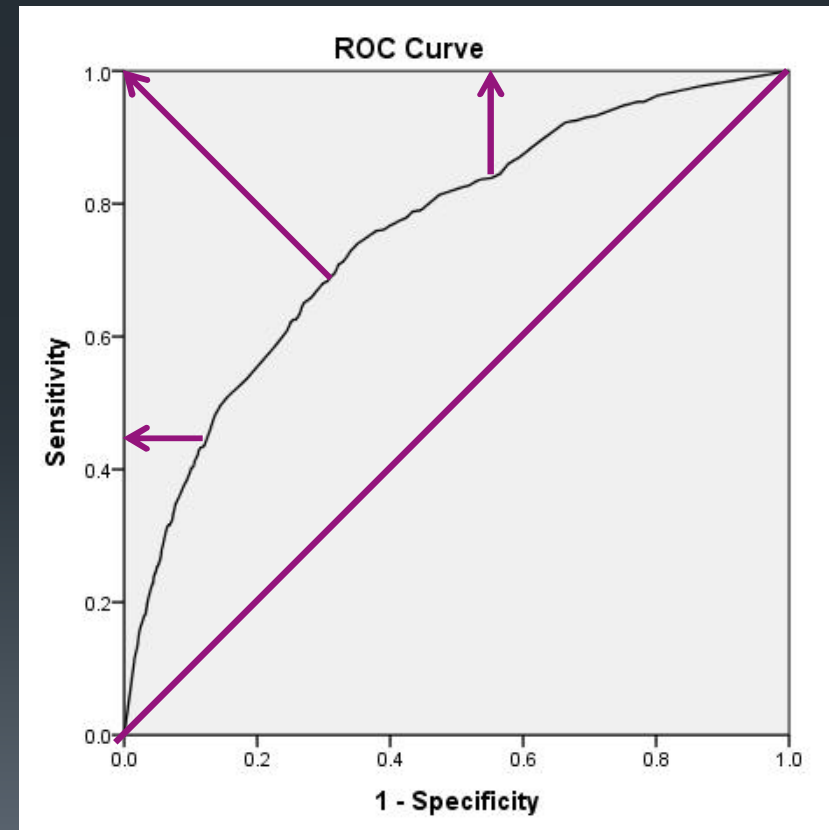
Model-Implied (Observed)
Probability of Sex



Predicted Likelihood	Observed Prob.
0%	3.6%
1-10%	7.2%
11-20%	10.0%
21-30%	11.4%
31-40%	20.5%
41-50%	21.3%
51-60%	24.8%
61-70%	29.9%
71-80%	40.2%
81-90%	43.4%
91-100%	55.0%

Likelihood-sex correspondence

- In order to minimize false-negatives:
 - “ 10% cutoff: 92% sensitivity
 - “ 15% cutoff: 84% sensitivity
 - “ 20% cutoff: 82% sensitivity
 - “ 25% cutoff: 78% sensitivity
 - “ 30% cutoff: 76% sensitivity



DISCUSSION

Summary of findings

- Moderate correspondence between prediction and behavior
- This sample of highly sexually active gay and bisexual men was more accurate at predicting non-sex than sex days
- Three “types” of decisions seemed to appear
 - “ Unlikely, unsure, and likely
- These corresponded to jumps in actual behavior

Implications

- Men may be better suited to accurately predict when they will *not* have sex than when they *will*
- Guidelines might focus on categories of likelihood
 - “ On days when sex is “unlikely” (lower than 20-30% chance), PrEP doses might be skipped
 - “ On days when sex is “unsure” or “likely” (above 20-30%), PrEP doses should be taken in advance
- However, 18-24% of actual sex days would still be non-PrEP days
- Number of “unlikely” days would lead to significant decreases in the number of dosing days

Limitations

- The study relied on a sample of highly sexually active GBM
- Missing data may have biased some results
- Only examined anal sex with casual partners
- Did not look at condom use



Remaining questions

- Would non-highly sexually active men be better or worse at predicting sexual events?
- Is event-contingent dosing feasible from a patient burden perspective?
 - “ How about planning non-dosing?
- What are the HIV infection risks associated with making recommendations based on perceived likelihood of sex?



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Thank you!

For a copy of these slides or further questions,
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www.chestnyc.org

