

# Leveraging Big Data to Identify People at the Highest Risk of Suicide in South Africa

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**WCE**

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# Data & Population

## Period

Jan 2011 – June 2020 (Oct 2022)

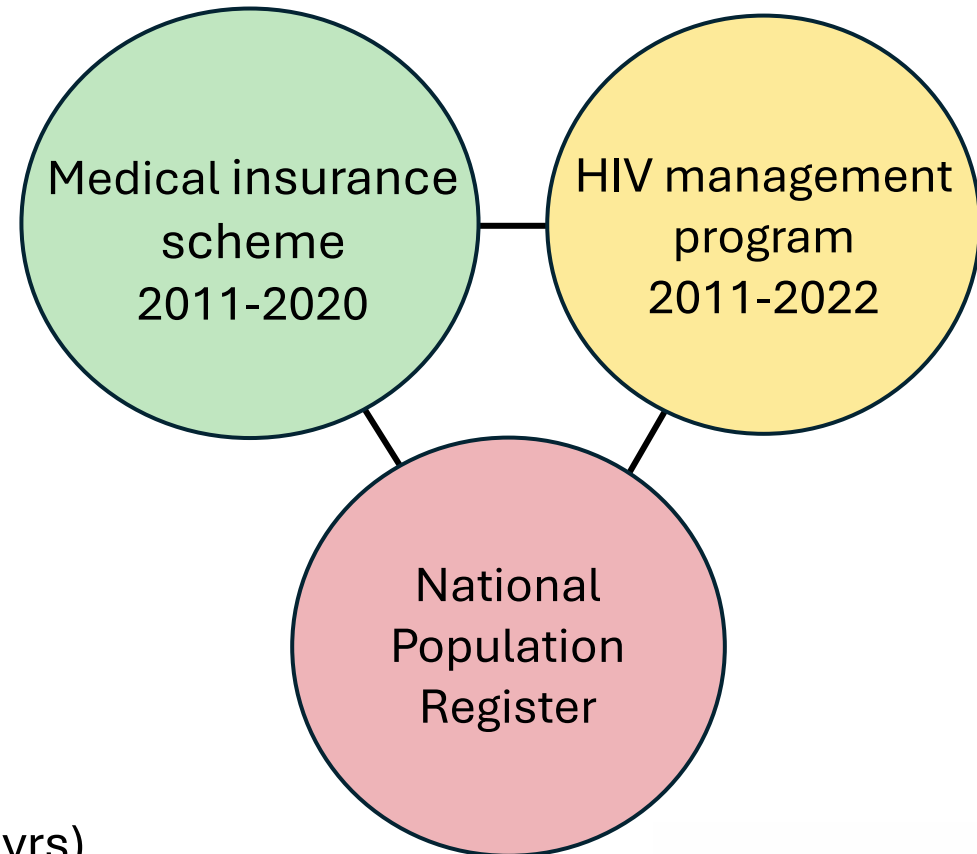
## Population

Adolescents + adults ( $\geq 10$  yrs old)

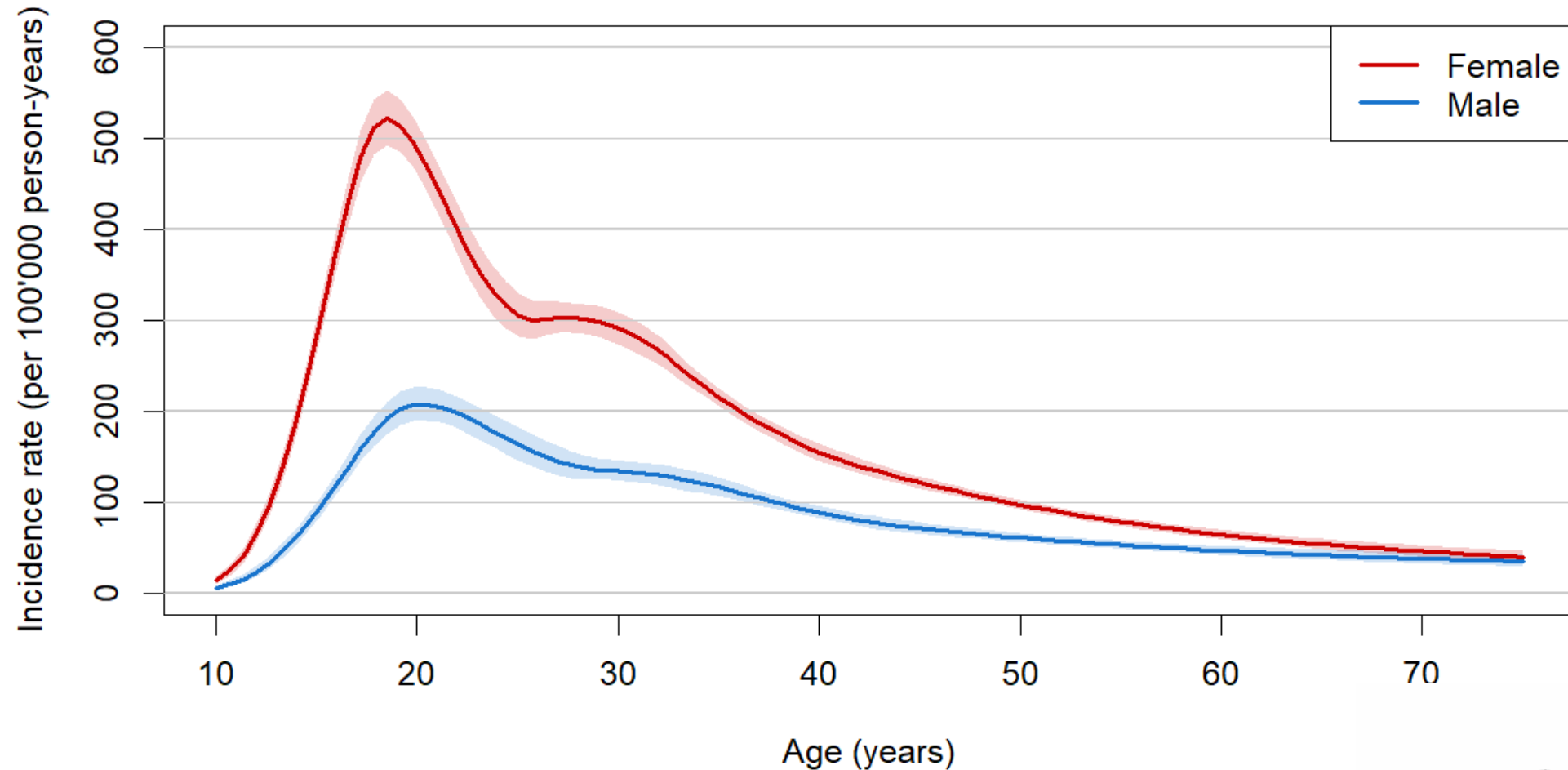
N = 1,256,688

## Data

- Sex, date of birth
- In/out-patient reimbursement claims (ICD-10 diagnoses, tests, treatments, dates)
- Vital status (end of follow-up)
- Cause of death (natural / unnatural)
- Follow-up time: median 3.3 yrs (IQR 1.2 – 6.7 yrs)



# Intentional self-harm encounter: Incidence

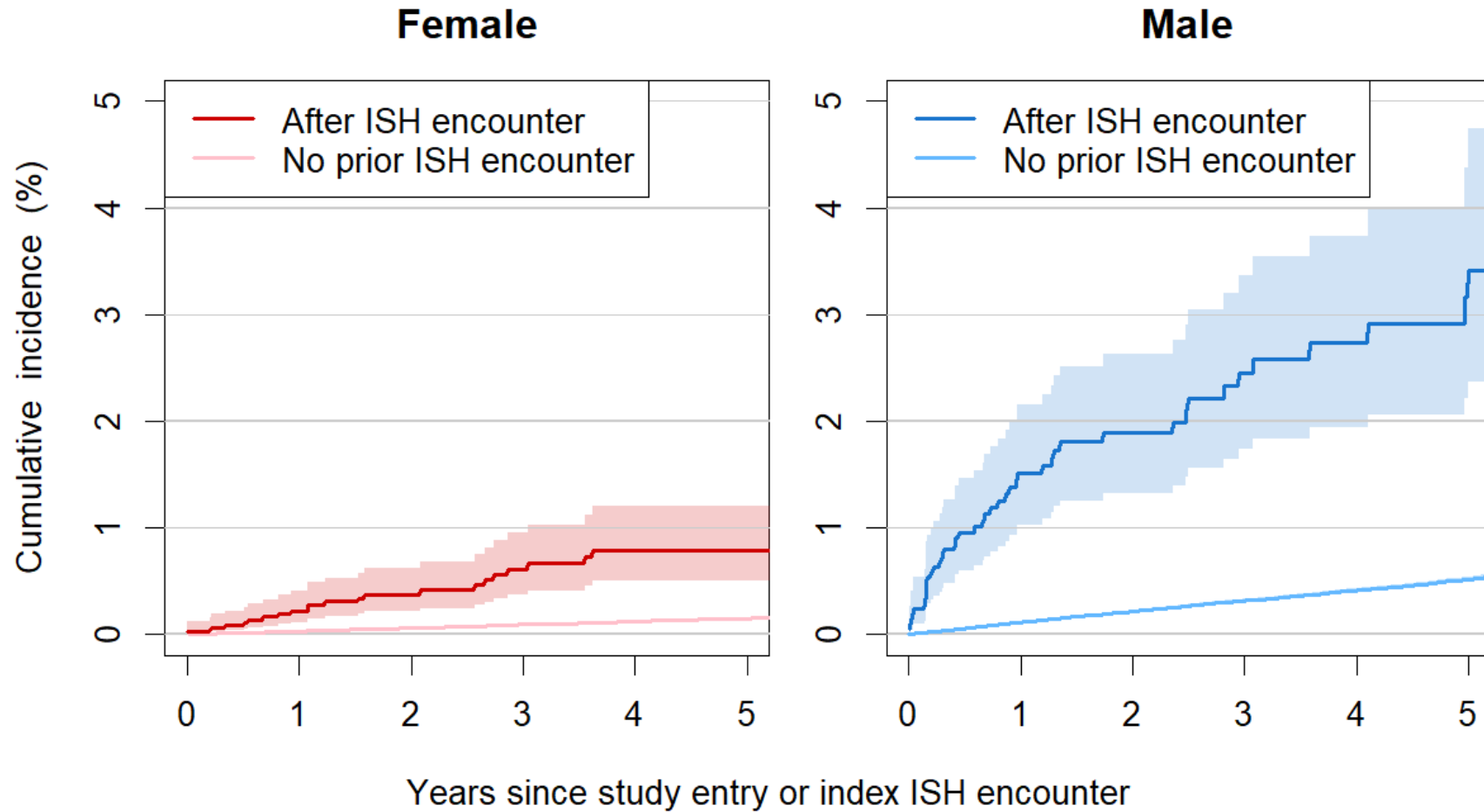


# Intentional self-harm (ISH) encounter: Population

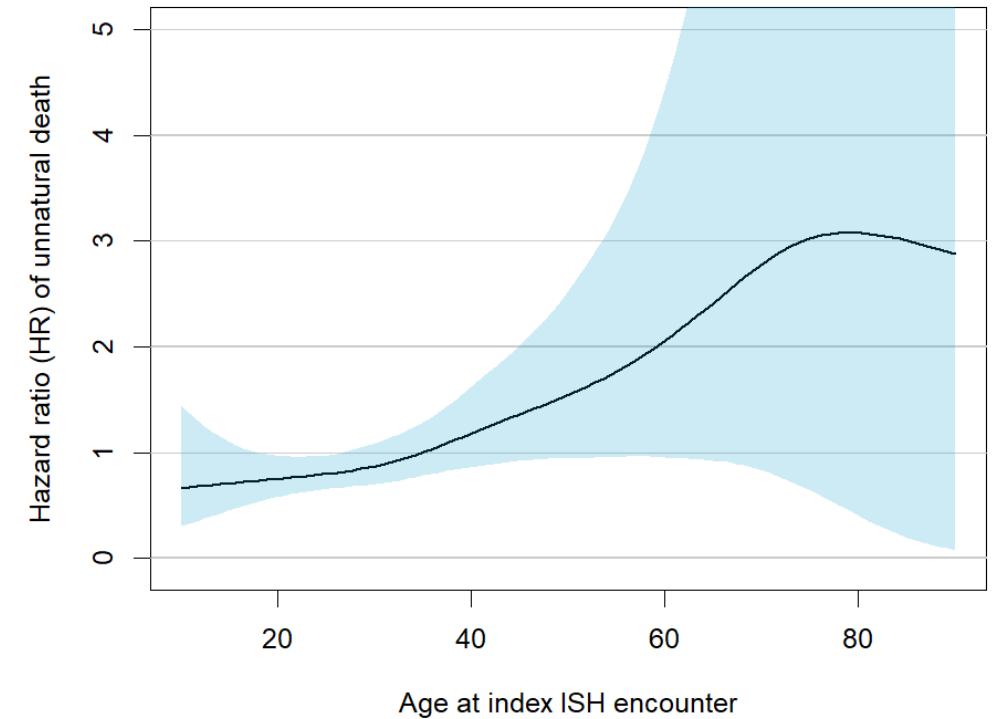
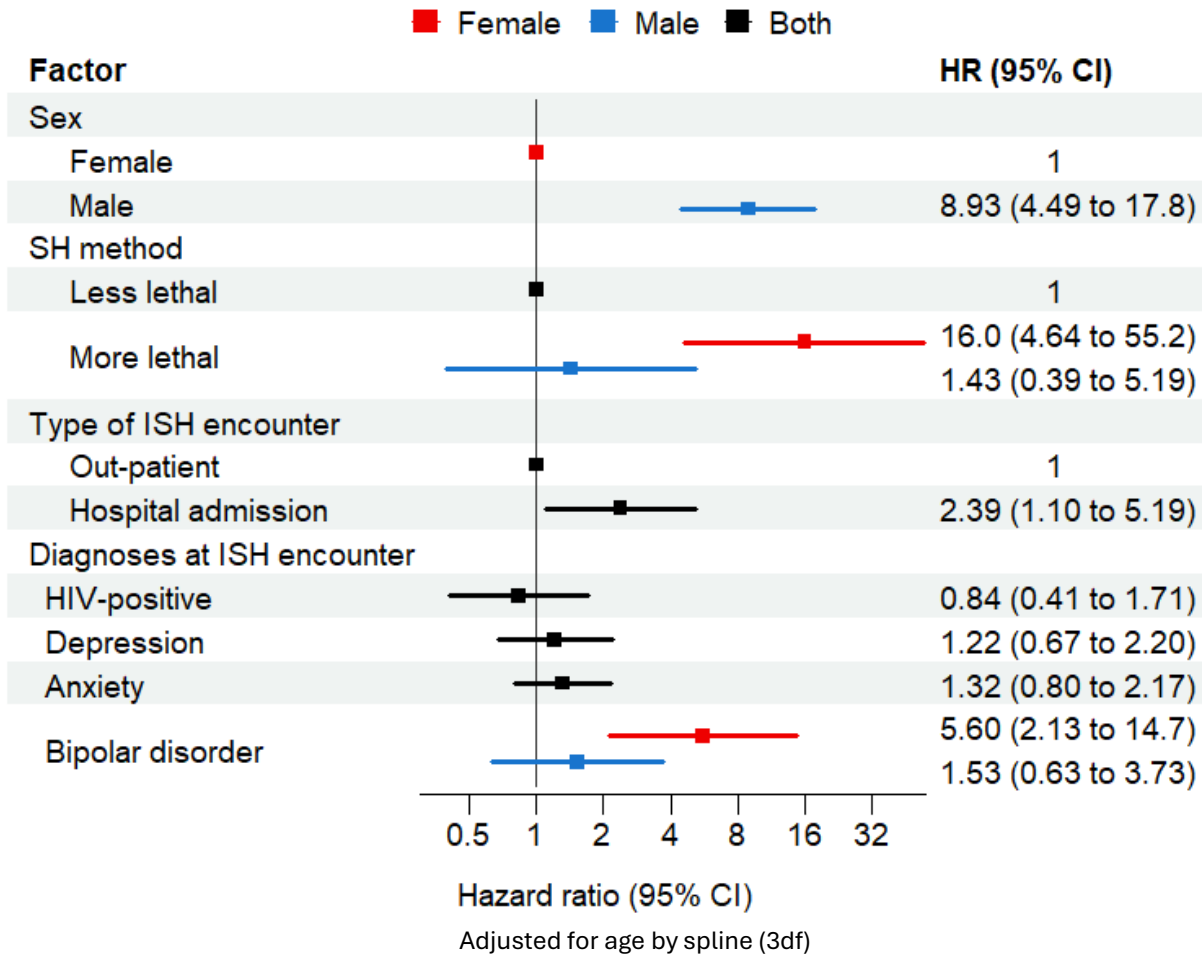
Characteristics	Female N = 4,780	Male N = 2,114
Age at ISHE, median (IQR), yrs	30 (21 – 39)	34 (23 – 44)
Encounter type: Hospital admission	83%	73%
HIV-positive	24%	21%
Mental-health disorders (prior ISHE + 7days)	76%	71%
Depression	66%	55%
Anxiety	39%	34%
Bipolar disorder	13%	13%
Substance use disorder	3.1%	12%
Self-harm method <sup>#</sup>		
More lethal (firearms, explosives, hanging, gas, etc)	1.1%	4.0%
Less lethal (poisoning, sharp objects, etc)	99%	96%

<sup>#</sup> Cai et al., *The lethality of suicide methods: systematic review and meta-analysis*, JAD, 2022

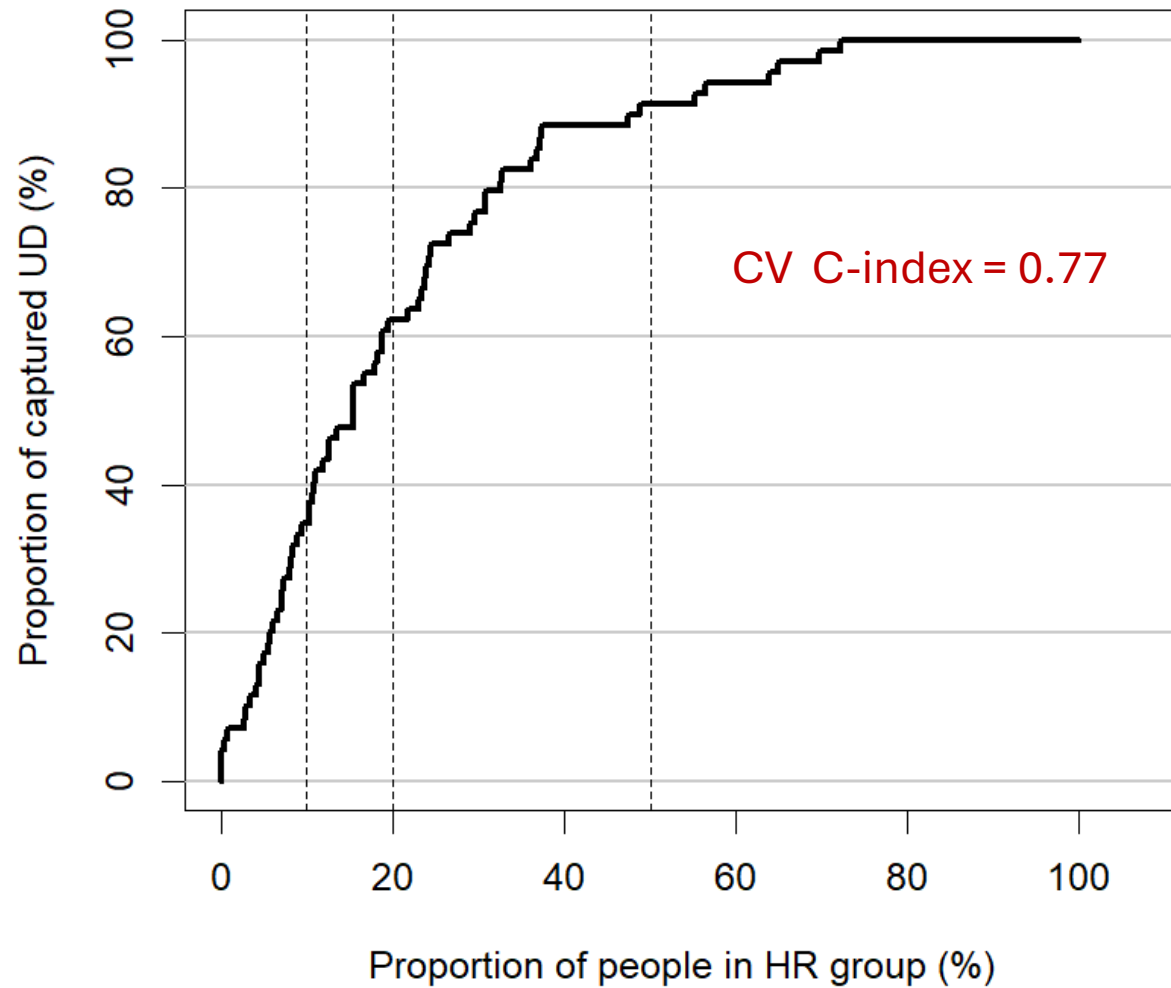
# Unnatural death after ISH encounter



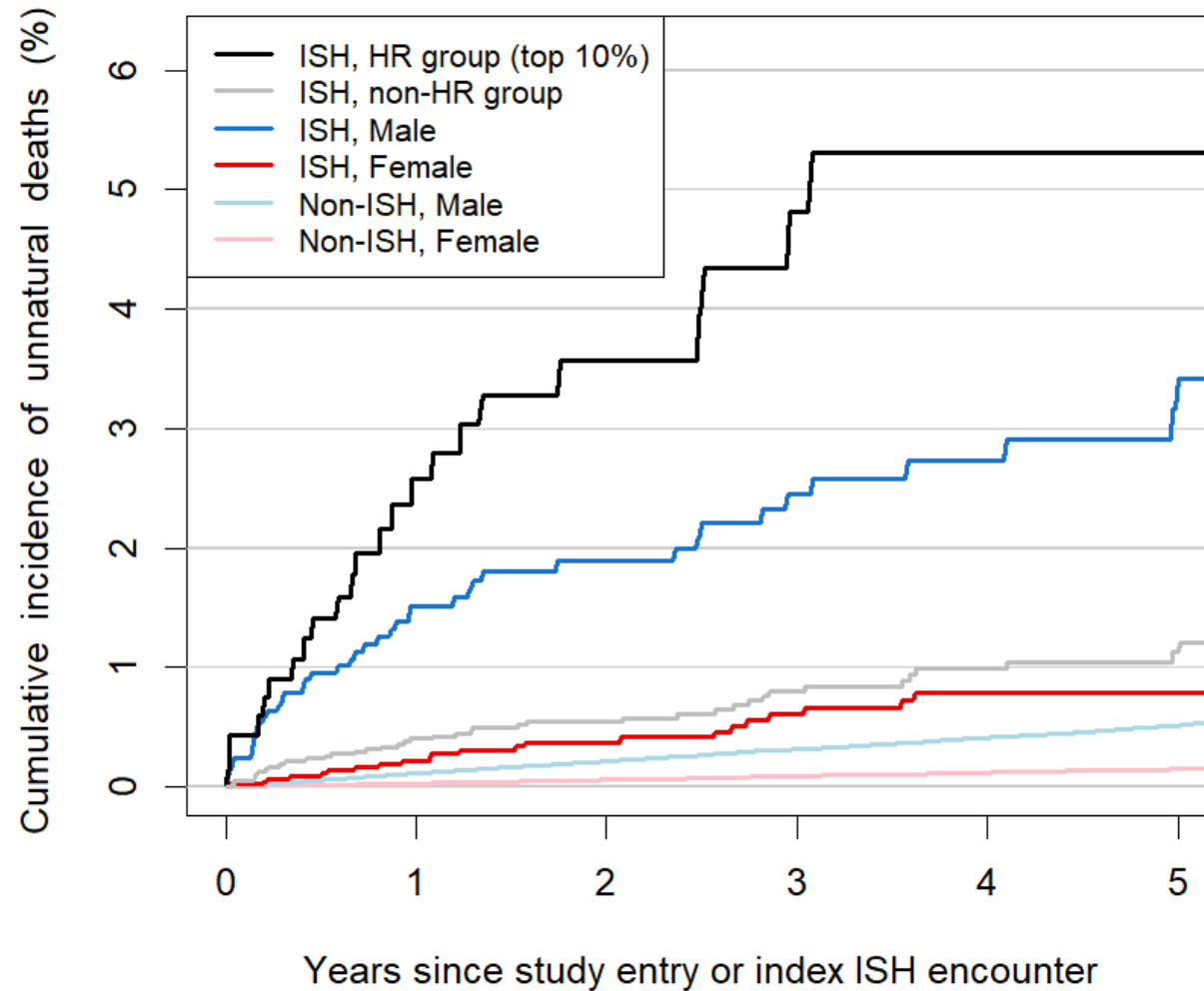
# Unnatural death: Who is at highest risk?



# Prediction model: Discrimination



# High-risk group (top 10%): Unnatural deaths





# Conclusions

There is a high burden of intentional self-harm (ISH) in private health-care sector in South Africa

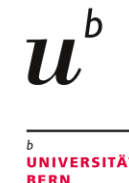
Prediction model for UD following non-fatal ISH encounter

- Discriminates well between people at higher and lower risk
- Could guide prioritization for intensified care, when resources are limited

Limitations

- Prediction model doesn't advise on best treatment strategy
- UD only proxy for suicide

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- Aid for AIDS
- International epidemiology Databases Evaluating AIDS (IeDEA-SA)
- University of Cape Town
- University of Bern

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**THANK YOU.**

