

# What do gay and bisexual men in New Zealand know about human papillomavirus?

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# Overview

1. Background
2. Methods
3. Results
4. Conclusions

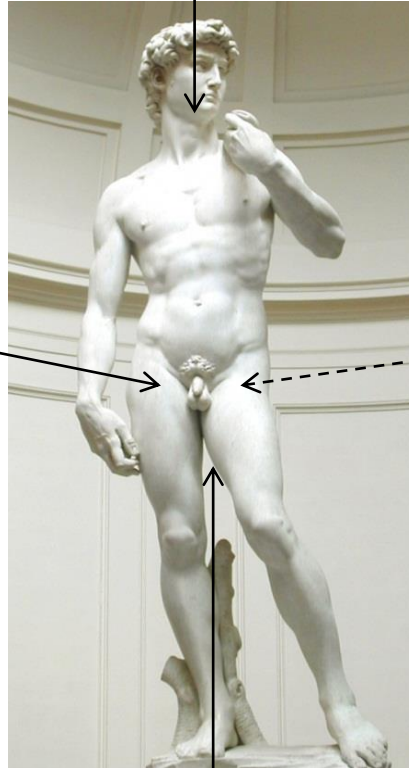
# Background

HPV and men who have sex with men (MSM)

# Human papillomavirus

- A virus.
- Infects epithelial cells.
- Transmitted through direct skin-to-skin contact.
- Most common STI in the world.
- Over 140 types that affect humans.
- Can be broadly classed into two groups:
  1. **High-risk (Hr) HPV** – potential to cause cancer – mainly **Type 16** & 18.
  2. **Low-risk (Lr) HPV** – little/no evidence of causing cancer – Type 6 & 11 also cause genital warts.

Base of tongue,  
oropharynx

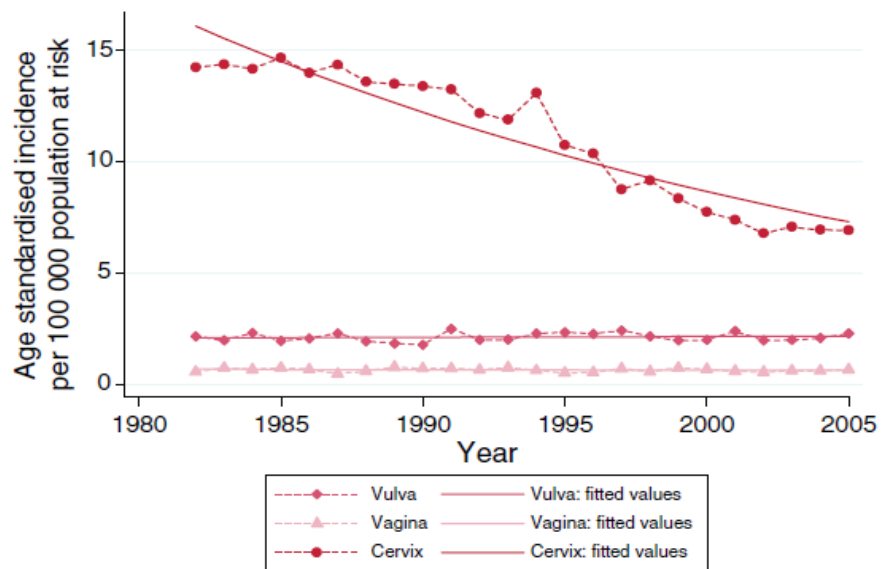


Penis

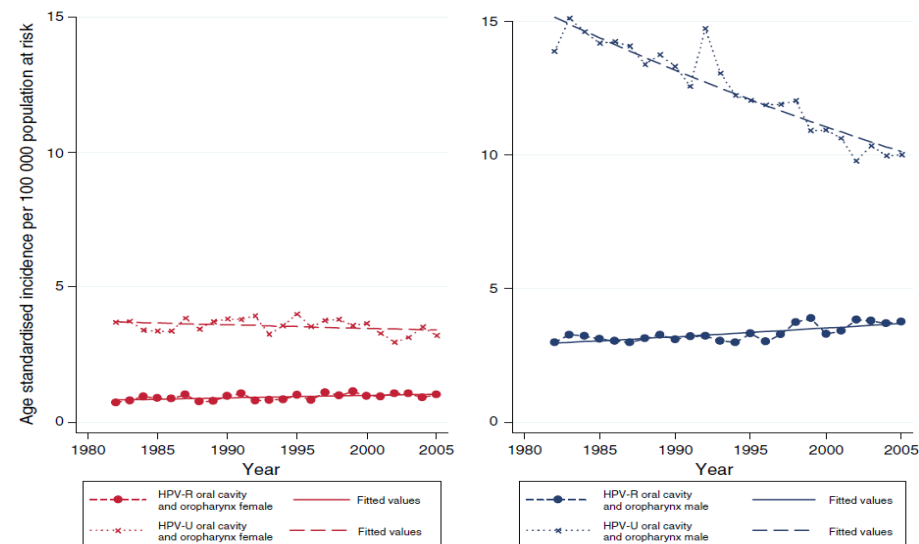
Cervix,  
vulva,  
vagina

Anus,  
anal canal

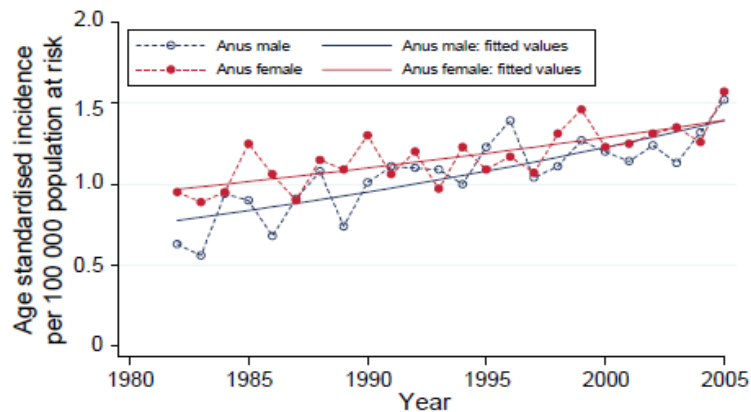
## Cervix, vulva, vagina



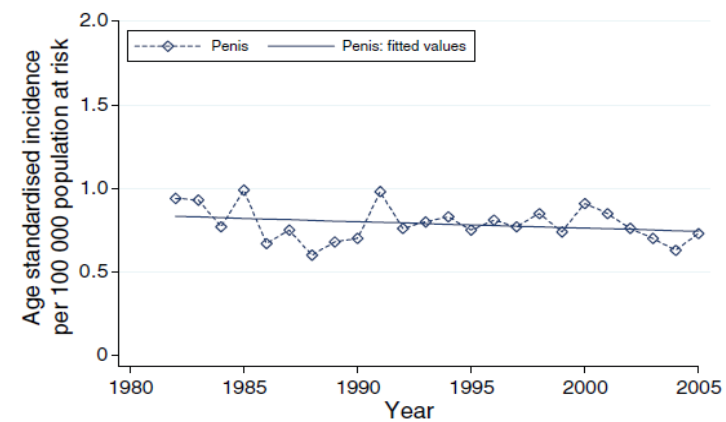
## Oropharyngeal



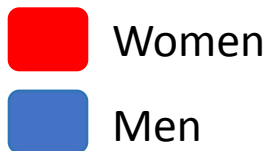
## Anal



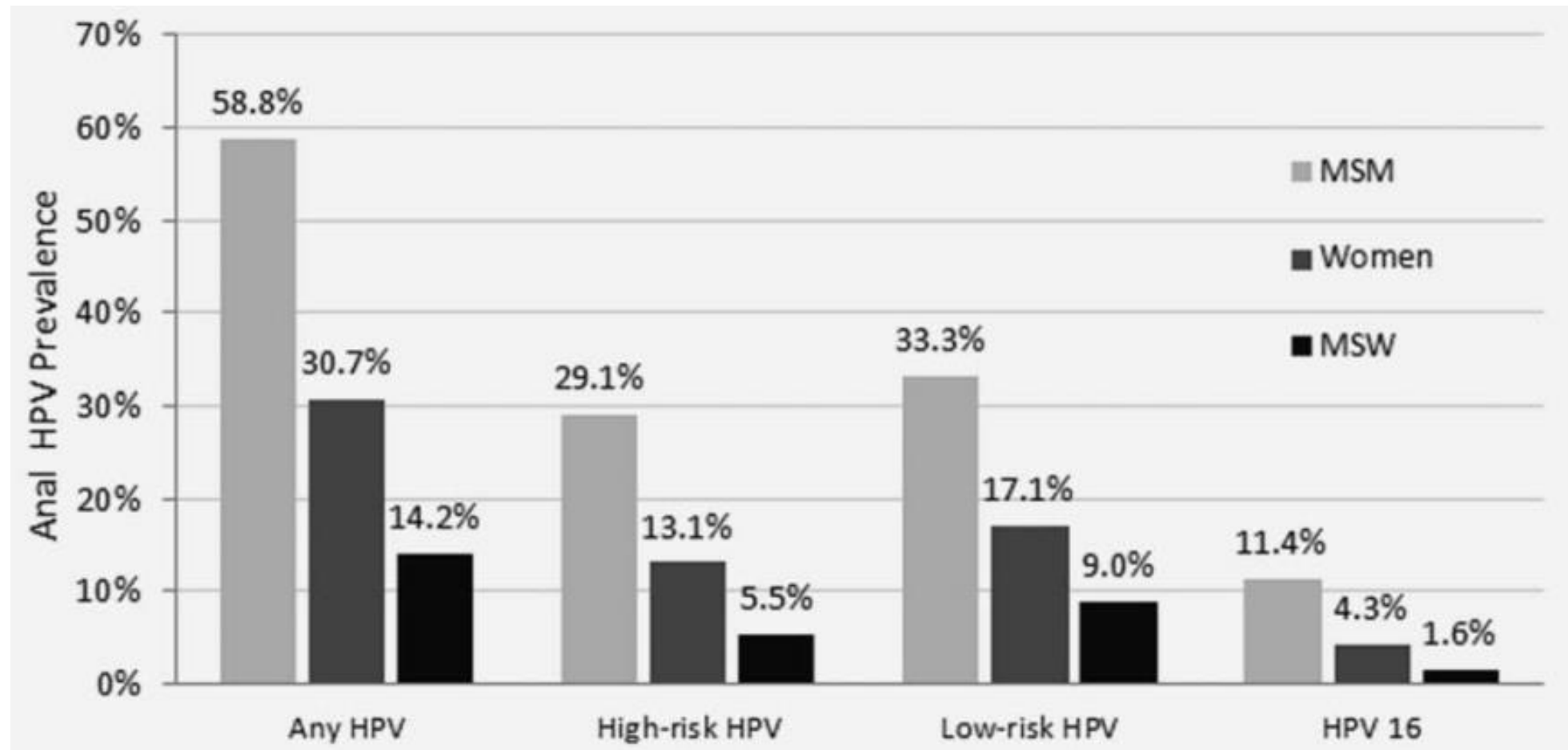
## Penile



Age standardised  
incidence of cancers,  
Australia 1982-2005



# Mean anal HPV infection among HIV-negative populations compared: review



\*MSM – men who have sex with men

Giuliano et al. EUROGIN 2014 roadmap: Differences in HPV infection natural history, transmission, and HPV related cancer incidence by gender and anatomic site of infection. *Int J Cancer*, 2014.

# Prevalence of anal HPV infection among MSM by HIV status: meta analysis

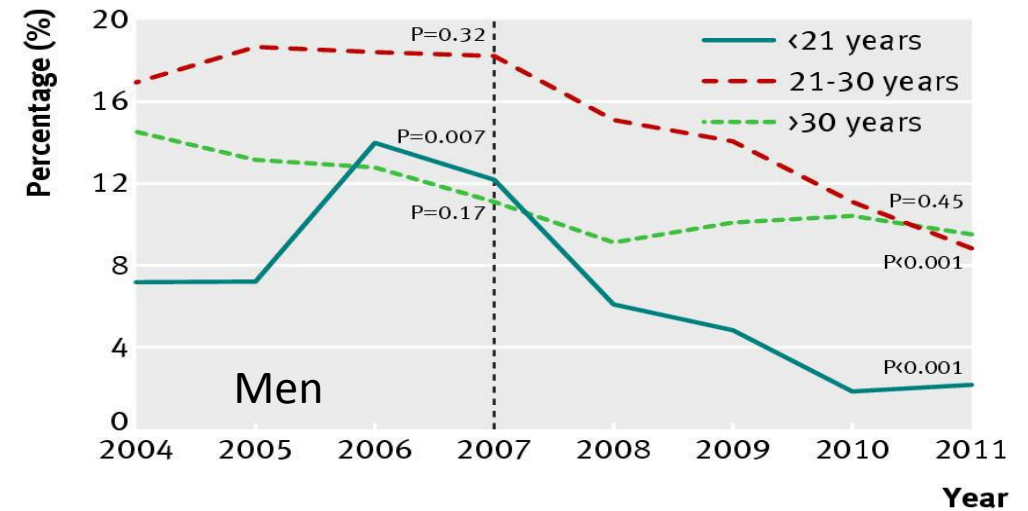
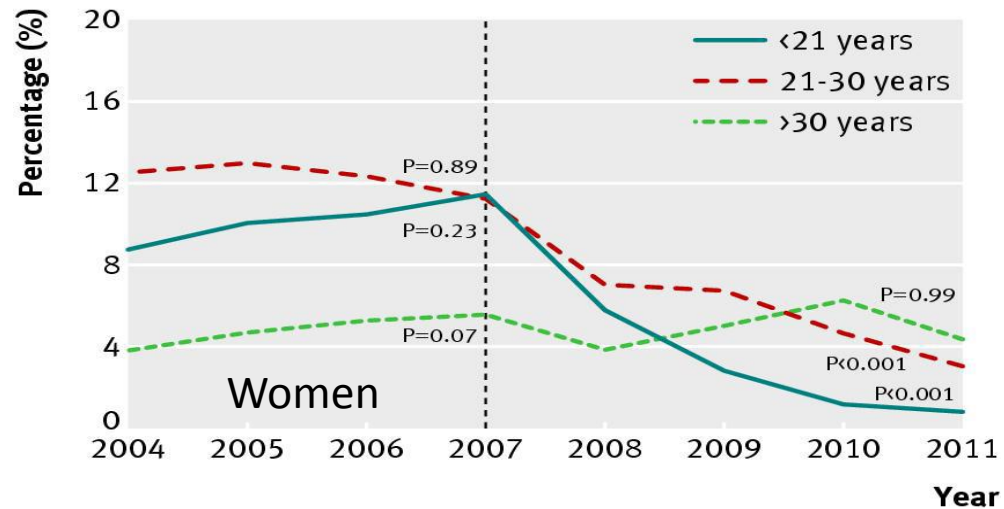
	<b>HIV -</b>	<b>HIV +</b>
<b>Any HPV</b>	63.9%	92.6%
<b>High-risk HPV</b>	37.2%	73.5%
<b>HPV 16</b>	12.5%	35.4%



# HPV vaccination

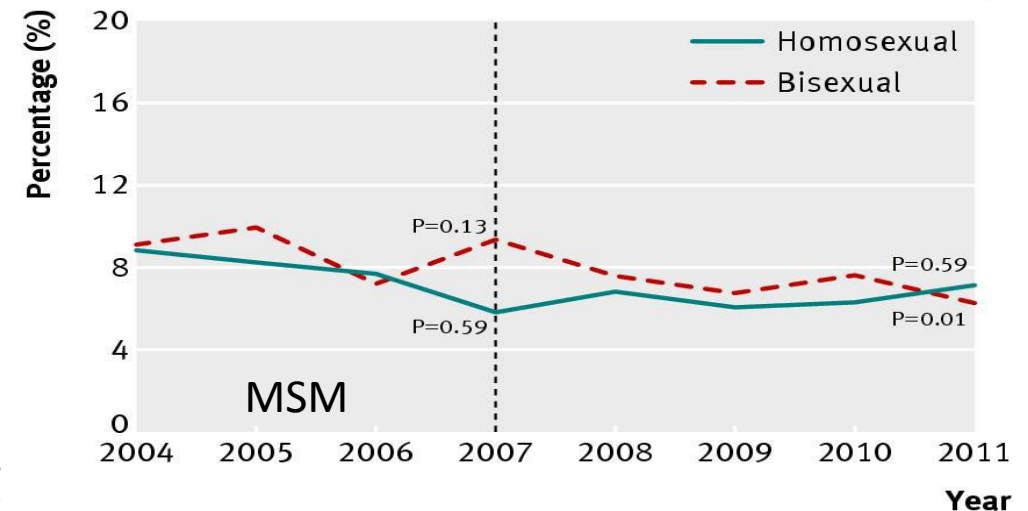
- The best option to prevent HPV-related disease is to vaccinate early.
- In New Zealand all girls aged 9-20 can receive the HPV vaccine for free.
- Heterosexual males are offered protection through the vaccination of their sexual partners – if coverage is high enough.
- **MSM get no protection.**

# Results among women and men (AUS)



Proportion of Australian born women, men and MSM diagnosed with genital warts on first visit by age group

83% first dose vaccine coverage, ↓93% in genital warts after 5 years



# Methods

Research question and data collection and analysis

# What is the gap?

- Current HPV programme solely targeted at females – no health promotion for males.
- Do MSM, know they are at risk of HPV-related disease and that there is a vaccine available?
  - In particular, HIV positive MSM who are the most
- There are no data on HPV among MSM in New Zealand.
  - Prevalence, knowledge/awareness, vaccine acceptability and uptake.

# Hypotheses

- HPV-related knowledge:
  1. Will be low (<50%) among NZ MSM.
  2. Will be greater among those living with HIV (LWHIV).
  3. Will be greater among those with a higher level of education.
  4. Will be greater among those more actively engaged with sexual health care.

# Data – GAPSS and GOSS

- Tri-annual.
- Self-completed, anonymous survey.
- Sexual behaviour, attitudes and knowledge questions related to HIV.
- 2014 included questions relating to HPV.

## **1. Gay Auckland Periodic Sex Survey: *n= 1421***

- Offline, Auckland only, community fair day, bars, sex-on-site (SOS) venues

## **2. Gay Online Sex Survey: *n= 1793***

- Online, nationwide, internet dating sites, mobile dating apps

## MEN'S HEALTH

The following statements are all TRUE. Please indicate whether you knew this or not.

58. Human papillomavirus (HPV) is a virus that can cause....

	I knew that	I wasn't sure	I didn't know that
Penile and anal warts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Anal cancer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mouth and throat cancer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Penile cancer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

59. Gardasil - the vaccine used to protect girls against cervical cancer - also protects men against other cancers and genital warts

☐ I knew that      ☐ I wasn't sure      ☐ I didn't know that

The NEXT questions are about the Gardasil vaccine that requires three injections to give the best protection against HPV.

60. I would get vaccinated with Gardasil if it was offered for free...

☐ Yes      ☐ No      ☐ Don't know

61. I would get vaccinated with Gardasil if it cost \$500...

☐ Yes      ☐ No      ☐ Don't know



# Populations

- Respondents recruited in the 2014 round of GAPSS and GOSS were split into two populations:
  1. GBM not living with HIV (LWHIV): **n= 2942**
    - All those participants who took part in the 2014 round of GAPSS and GOSS.
  1. GBM LWHIV: **n= 155**
    - Those who reported that they tested positive for HIV at their last HIV test.

# Dependent variables

## Knowledge

### 1. Knowledge of genital warts.

- *Dichotomised:*
  - “I knew this”, “I wasn’t sure/I didn’t know that”.

### 2. Knowledge of any HPV-related cancer.

- *Dichotomised compound variable:*
  - “I knew this” to at least one of the following: anal cancer, penile cancer, mouth and throat cancer.
  - “I wasn’t sure/I didn’t know that” to all of the following: anal cancer, penile cancer, mouth and throat cancer.

### 3. Knowledge of HPV vaccine.

- *Dichotomised:*
  - “I knew this”, “I wasn’t sure/I didn’t know that”.

## Acceptability

### 1. Gardasil for free.

- *Dichotomised:*
  - “Yes”, “Don’t know/No”.

### 1. Gardasil for NZ\$500.00.

- *Dichotomised:*
  - “Yes”, “Don’t know/No”.

# Bivariate analyses

- Independent variables in bivariate:
  - Age
  - Sexual identity
  - Ethnicity
  - Site of recruitment
  - Education
  - Time spent with GBM peers
  - Last sexual health test:
    - *HIV test for GBM not LWHIV*
    - *STI test for GBM LWHIV*
- Tests of association:
  - GBM not LWHIV:
    - *Pearson's  $\chi^2$  test*
  - GBM LWHIV:
    - *Fisher's exact test*

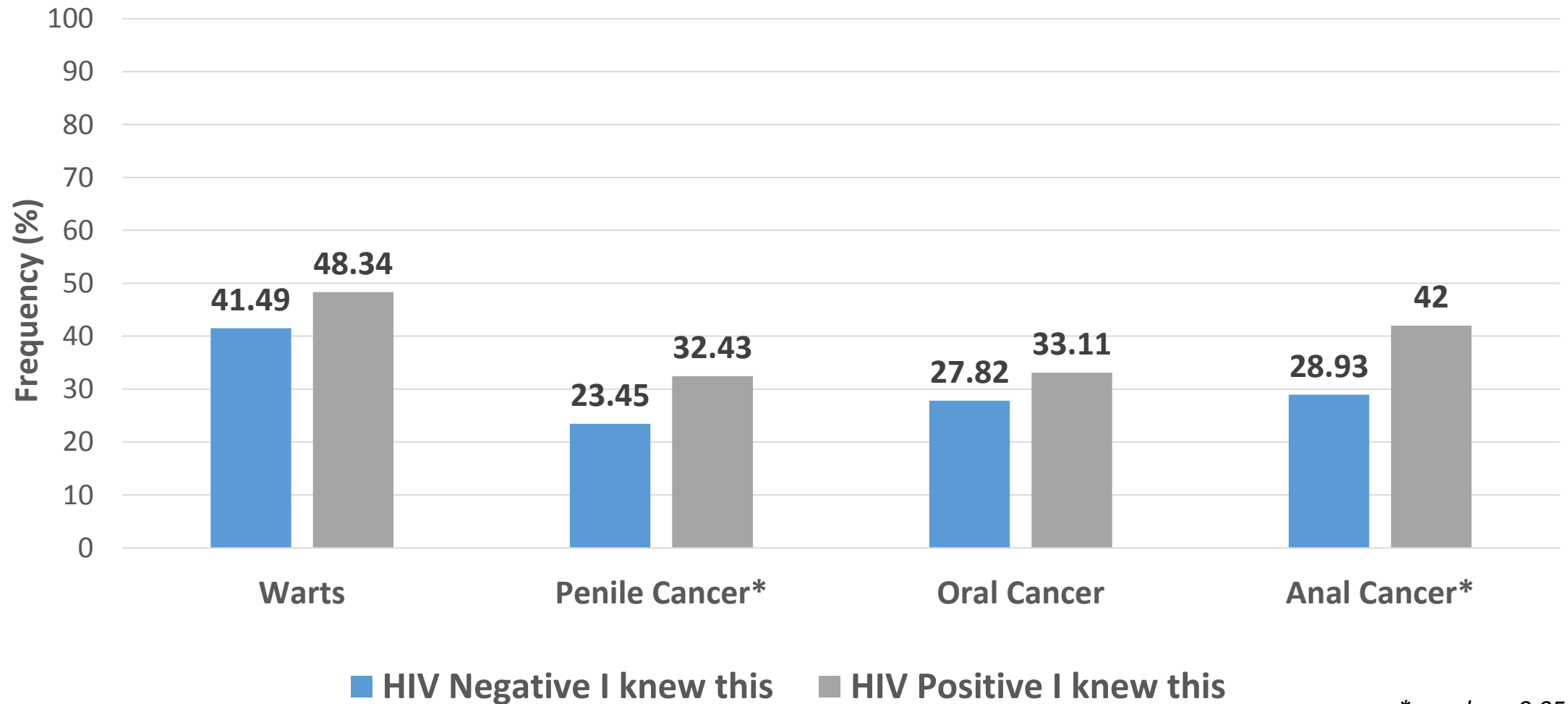
# Multivariate analysis

- Variables significant at bivariate level included in the model.
- Variables considered as potential confounders:
  - Age.
  - Site of recruitment.

# Results

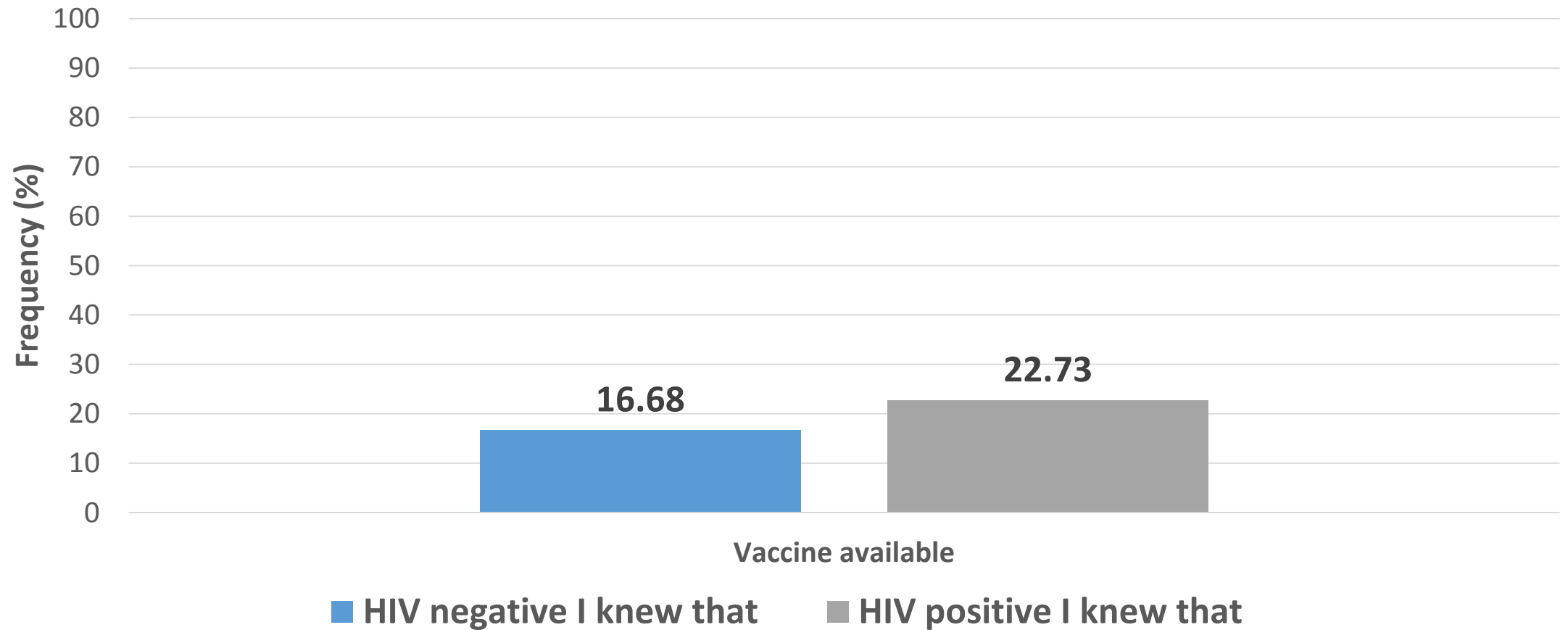
Basic frequencies and bivariate analyses

# Knowledge of HPV-related disease by HIV status

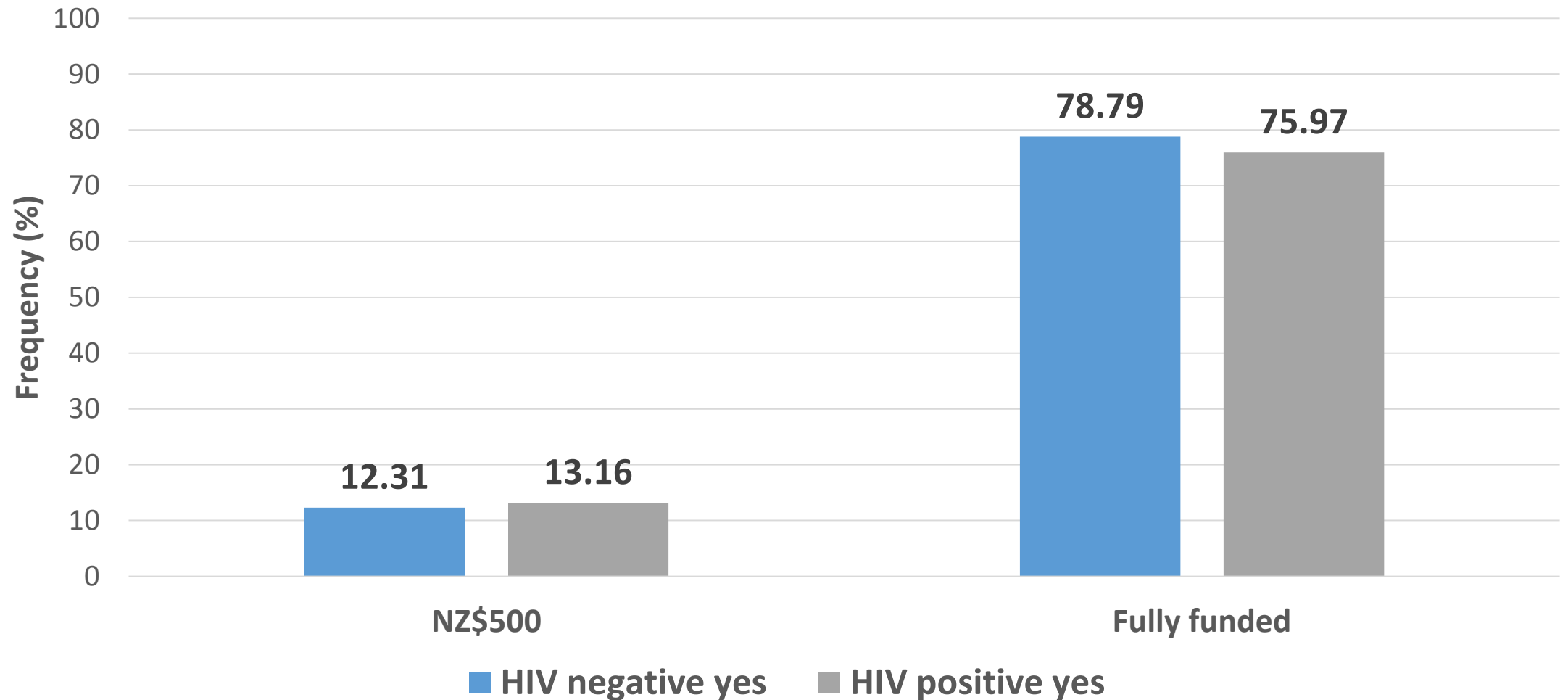


\*  $p$ -value  $< 0.05$

# Knowledge of HPV vaccine by HIV status



# Vaccine acceptability by HIV status





# HIV-negative MSM - bivariate

- HPV-related cancers:
  - **All variables** tested were significant at the bivariate level, the exception being age.
- HPV vaccine:
  - **All variables** tested were significant at the bivariate level, the exceptions being age and HIV status.

# HIV-negative MSM – multivariate – knowledge of any HPV-related cancers

	Comparison Group	Group	OR	95% CI
<b>Demographics</b>				
Ethnicity	<i>NZ European</i>	Māori	0.72	0.53 – 0.97
Highest qualification	<i>None/&lt;tertiary</i>	Tertiary	1.78	1.48 – 2.15
Site of recruitment	<i>Online</i>	Community fair day	1.22	1.01 – 1.46
<b>Behaviours</b>				
Time since HIV test	<i>Never tested</i>	<12 months	1.67	1.34 – 2.07

# HIV-negative MSM – multivariate – knowledge of HPV vaccine

	Comparison Group	Group	OR	95% CI
<b>Demographics</b>				
Age	<30 years	30-44 years	0.75	0.58 – 0.97
Ethnicity	NZ European	Other	0.25	0.11 – 0.54
Qualification	None/<tertiary	Tertiary	2.28	1.76 – 2.95
Site of recruitment	Online	Community fair day	1.57	1.24 – 1.98
<b>Behaviours</b>				
Time since HIV test	Never tested	<12 months	1.76	1.13 – 2.35

# HIV-negative MSM – multivariate – vaccine acceptability: NZ\$500

	Comparison Group	Group	OR	95% CI
<b>Demographics</b>				
Age	<30 years	30-44 years	1.85	1.39 – 2.48
		>45 years	1.96	1.44 – 2.68
<b>Behaviours</b>				
Time since HIV test	Never tested	<12 months	1.57	1.14 – 2.16

# HIV-negative MSM – multivariate – vaccine acceptability: fully funded

	Comparison Group	Group	OR	95% CI
Demographics				
Age	<30 years	30-44 years	0.64	0.50 – 8.13
		>45 years	0.55	0.43 – 0.71
Sexual identity	Gay/homosexual	Bisexual	0.77	0.59 – 0.99
		Other	0.55	0.36 – 0.83
Qualification	None/<tertiary	Tertiary	1.24	1.01 – 1.52
Site of recruitment	Online	<i>All other sites p-value &lt;0.001</i>		
Behaviours				
Time since HIV test	Never tested	<12 months	1.98	1.55 – 2.53

# HIV positive MSM

- HPV-related cancers:
  - No variables were significant.
- HPV vaccine:
  - No variables were significant.
- Regression models were not constructed.

# Conclusions

# HIV negative MSM

- Two factors strongly independently associated:
  1. Education level
  2. Testing/sexual health seeking behaviour
- Supports the hypothesis – actively engaging in their sexual health.
- Age also important for vaccine acceptability.
- Site of recruitment indicates a potential confounder/recruitment bias.



# HIV positive MSM

- More complicated.
- GBM LWHIV are more actively engaged in healthcare than HIV negative peers.
- Does this override any other potential factors?
- Limitations of study.
  - Small population of GBM LWHIV – decreased statistical power
  - Other factors that we haven't measured may come into play.

# Conclusions

- Most MSM are **not aware** they are at risk of HPV-related disease nor that there is a vaccine to prevent these diseases.
- Nearly 80% would get vaccinated if offered for free, while only 12% would do so for the current price.
- The vaccine is now funded for HIV positive individuals under the age of 26, regardless of gender.
  - 65% of new HIV diagnoses among NZ MSM in 2015 were over the age of 30.

# Acknowledgements

- Participants and staff:
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