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BIOMEDICAL AND HEALTH SCIENCES

Determinants of Seasonal Flu Vaccine Hesitancy Among University Students in the US
ML MPH, CG MD, EM PhD, SK PhD, and TG PhD, MPH

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Introduction & Background

- Influenza
 - 5-20% of the US population gets sick with flu annually¹
 - 1 in 4 students experienced ILI
 - 5 mil US students²⁻⁵
 - Virus can spread easily in university setting
- Vaccination
 - Reduces healthcare visits, poor school performance, missed workdays^{4,6}
 - Current CDC recommendations include all students⁷
 - **Uptake among students remains low (12-30%)**⁸⁻¹⁰

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Introduction & Background Cont'd.

- Prior research focused on
 - Healthcare workers
 - High-risk groups
 - General public
- Study objectives
 - Assess factors influencing vaccine hesitancy among students
 - Compare students by area of study

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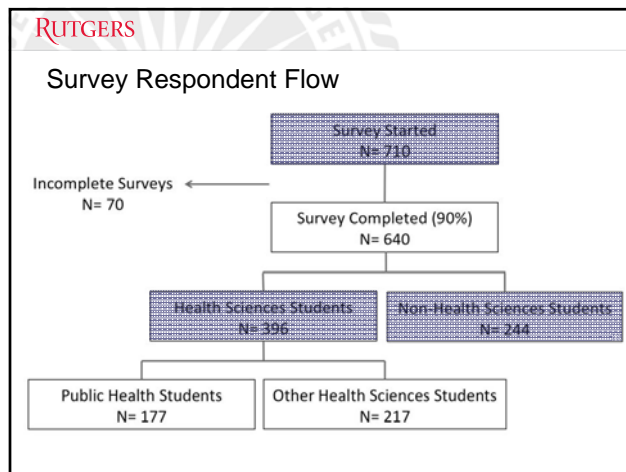
'3 Cs' Model of Vaccine Hesitancy, WHO¹¹

The diagram consists of three overlapping circles: a green circle at the top labeled 'Complacency', a red circle at the bottom left labeled 'Confidence', and a yellow circle at the bottom right labeled 'Convenience'. The circles overlap in the center and at the intersections between pairs of circles.

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Methods

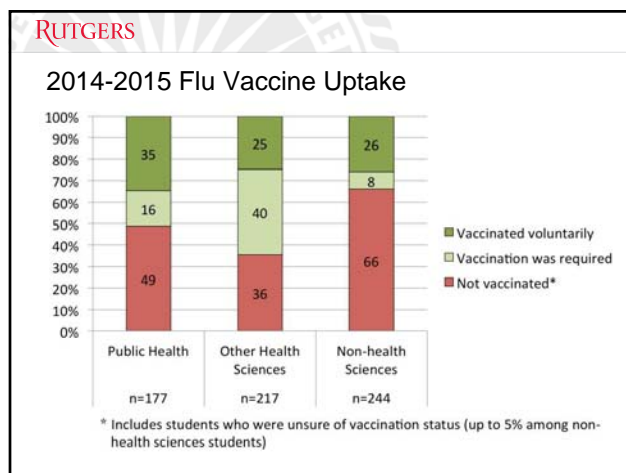
- Survey development
 - Used Qualtrics® software
- Survey distribution
 - Online
 - Computer-assisted
- Analysis
 - Main outcome of interest
 - Self-reported receipt of flu vaccine, 2014-2015 season
 - Sociodemographic variables
 - Unadjusted/ adjusted logistic regression
 - Hesitancy-related attitudes
 - Chi-square tests
 - SAS®
 - Rutgers IRB granted permission

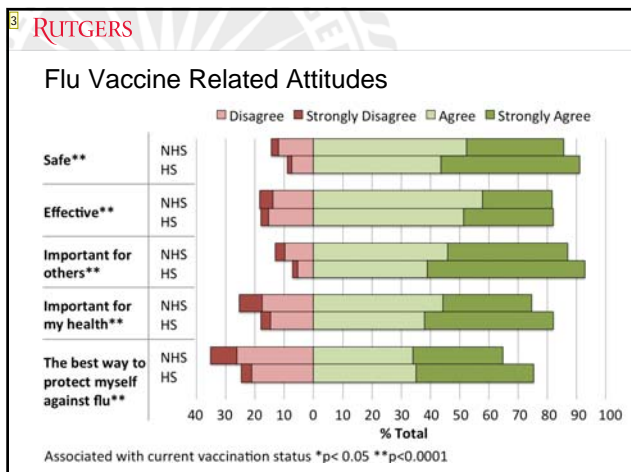


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Selected Descriptive Statistics of Study Population

Variables	Health Sciences Students n=396 (62%)	Non-Health Sciences Students n=244 (38%)
Median age, in years (IQR*)	22 (4.5)	21 (3.0)
Gender, n (%)		
Female	294 (74.2)	134 (54.9)
Race/ethnicity, n (%)		
Non-Hispanic White	148 (37.4)	114 (46.7)
Asian	134 (33.8)	51 (20.9)
Hispanic	40 (10.1)	29 (11.9)
Non-Hispanic Black	31 (7.8)	27 (11.1)
Other/ multiracial	20 (8.2)	8 (2.0)
Student status, n (%)		
Undergraduate	156 (39.4)	187 (76.6)
Graduate	203 (51.3)	40 (16.4)
Other (e.g. certificate students)	31 (7.8)	12 (4.9)
Awareness of coverage of vaccination cost		
Insurance fully covers cost	256 (64.7)	143 (58.6)
Insurance does not fully cover cost	31 (7.8)	6 (2.5)
Don't know	99 (25.0)	92 (37.7)
Currently uninsured	6 (1.5)	3 (1.2)





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Factors Associated With Current Vaccination Status, N=640

	aOR ^a (95% CI)
Health Sciences Student	
No	Ref
Yes	2.13 (1.4, 3.1)*
Student status	
Undergraduate	Ref
Graduate	2.67 (1.8, 4.0)**
Other (e.g. certificate students)	1.24 (0.6, 2.5)
Family/ friend encouraged vaccination	
No	Ref
Yes	3.39 (2.3, 5.0)**
Awareness of coverage of vaccination cost	
Insurance fully covers cost	Ref
Insurance does not fully cover cost	1.50 (0.7, 3.5)
Don't know	0.34 (0.2, 0.5)**
Currently uninsured	0.38 (0.2, 0.5)

^a Adjusted odds ratio
*p < .05 **p < .0001

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Discussion

- Limitations
 - Model interpretation
 - Cross-sectional study -> no causal inference
 - Required vaccinations
- Conclusions
 - Need effective promotion programs
 - Use influential channels such as parents
- Future Research
 - Explore additional measures of convenience among students
 - Evaluate applicability of '3 Cs' model:
 - In other settings
 - For planning and evaluation

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 - **CSTE** and **Rutgers SPH** for making my attendance possible
 - **SPH faculty** who supported this research and provided guidance along the way
 - All **Rutgers students** who took the time to make this study possible

Slide 9

- 3 I tried rearranging the chart multiple ways but there's no way to get the full 'complacency' in the limited space (at least not in a sufficiently large fontsize). I can remove the 'C' references from this slide or leave them like this.

Maxine Langenfeld, 9/02/15

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Questions?