

Predictors of Knowledge of H1N1 Infection and Transmission in the U.S. Population

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Presenter Disclosure

- **Personal financial relationships with commercial interests relevant to this presentation existed during the past 12 months:** No relationship to disclose.

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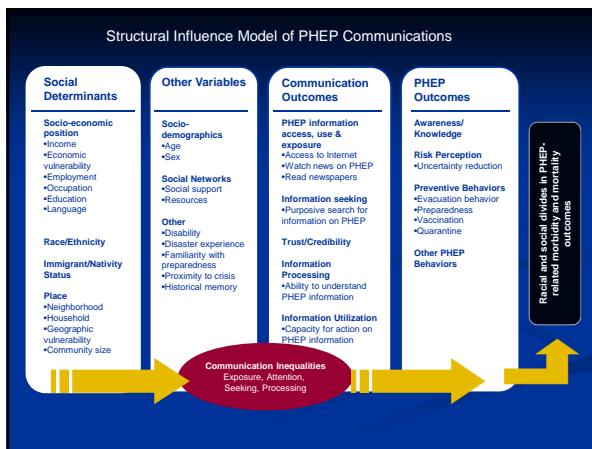
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LAMPS

- Goal: develop and validate metrics and criteria for public health emergency preparedness (PHEP): 4 projects
- Project 3 focuses on PHEP Communication (P.I. Vish Viswanath): this project explores how one might measure inequalities in PHEP communications and how this affects preparedness of people from diverse backgrounds of social class, race, and ethnicity.

Survey Development Process

- Literature Review
- 3 Focus Groups
- Development of the Structural Influence Model (SIM) of PHEP Communication



Survey Development: Main Domains

1. Information sources
2. Knowledge about H1N1
3. Barriers to obtaining and processing the information
4. H1N1-related behaviors.

Aim of the study

- The aim of this study was to investigate gaps in knowledge about H1N1 transmission, signs and symptoms experienced by the U.S. population during the 2009-2010 H1N1 pandemic and identify the social determinants associated with such gaps.

Sample

- A representative sample of U.S. households was selected by Knowledge Networks Inc. using their KnowledgePanel® online survey methodology.
- The selected panel of survey respondents is based upon a representative sample of U.S. adults and developed on dual sampling frame: a random digit dial sample as well as addressed-based sample, a strategy that allows for the inclusion of both landline as well as cell phone only households.

Sample

- Knowledge Networks Inc. provides the selected households with access to the Internet and hardware if needed. Post-stratification weights were used to adjust for non-coverage and non-responders biases. These adjustments were made by applying the most recent data from the Current Population Survey and the 2006 Pew Hispanic Center Survey of Latinos.
- Post-stratification weighting included gender, age, race/ethnicity, education, census region, urbanicity, internet access and dominant language.
- The survey was conducted in both English and Spanish and implemented in March 2010.

2 Knowledge Questions

1) To the best of your knowledge, how can someone get H1N1? (CHECK ALL THAT APPLY)

- From being in close contact with someone who has H1N1 (within arms length of someone)
- From eating pork
- From coming in contact with pigs
- From touching objects (i.e. glass) recently touched by someone with flu
- None of the above



2) To the best of your knowledge, what are some of the most common/most likely symptoms of H1N1? (CHECK ALL THAT APPLY)

- *Coughing*
- *Fever*
- *Body aches*
- *Bleeding*
- *Rash*
- *Stomach pain*
- *Chest pain*



■ Given that each question had multiple-choice responses, including both right and wrong response options, we used patterns of subject responses rather than individual responses to build the dependent variables.

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1 red=0
1 green + 0 red = 1
1-2 greens= 2

To the best of your knowledge, what are some of the most common/most likely symptoms of H1N1?
(CHECK ALL THAT APPLY)

- Coughing
- Fever
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- Rash
- Stomach pain
- Chest pain

1 red=0,
1 green + 0 red + 0 or 1 yellow = 1
2 greens + 0 red + 0 or 1 yellow = 2

2 Outcome Variables

- Knowledge about H1N1 transmission
- Knowledge about H1N1 signs & symptoms

Both on an ordinal scale 0, 1, 2



Study Sample Demographics 1,569 subjects

Gender	Weighted estimates of pop %
Female	51.1
Male	49.9
Age	
18-29	22.7
30-44	27.2
45-59	28.4
60+	22.7
Education	
Less than high school	13.8
High school	29.7
Some college	28.5
Bachelor or higher	27.9
Parent/guardian of children <18	
Yes	29.5
No	70.2

Language spoken at home	
English	88.7
Other than English	21.3
Household income	
≤ 14,999	13.7
15,000-34,999	20.8
35,000-74,999	34.5
≥75,000	31.0
Race/ethnicity	
White	68.3
Black (non-Hispanic)	10.7
Hispanic	14.4
Other	5.2
More than two races (non-Hispanic)	1.2
Parent/guardian of children <18	
Yes	29.5
No	21.3

Household ownership	
Owned	71.0
Rented*	26.5
Occupied*	2.5
Employment status	
Employed	61
Retired/disability check	26.1
Laid off/looking for work	12.8
Food ran out and had no money to buy more	
Never	76.3
Sometimes*	18.9
Often*	4.8
Neighbourhood cohesion	
	Mean (SD)=5.9 (0.1) Range=0-10

* Combined in subsequent analysis

Knowledge about H1N1 virus transmission

- No correct answer (score=0) = 11%
- One correct answer (score=1) = 45%
- Two correct answers (score=2) = 44%

Knowledge about signs and symptoms of H1N1

- No correct answer (score=0) = 7%
- One or two correct answers (score=1)=24%
- Three correct answers (score=2) = 69%

Data analysis



- Ordered logistic regression (svy ologit command)
- Brant test – parallel regression assumption
- Multivariate ordered logistic model **or** Generalized regression model
- Single predictors models p-value >0.25 excluded: gender, US region of residence, family and friends support.

Stata version 11

Ordered logistic regression on knowledge of H1N1 virus transmission

Independent variables	Single Predictor Model	Model 1	Model 2	Model 3
Household income	1.24 (1.06-1.45)**	1.08 (0.90-1.31)	1.02 (0.84-1.23)	1.01 (0.82-1.24)
Difficulty in buying food	0.53 (0.34-0.81)**	0.64 (0.40-1.03)	0.68 (0.42-1.10)	0.70 (0.42-1.17)
Education	1.41 (1.20-1.65)***	1.32 (1.11-1.58)**	1.35 (1.11-1.61)**	1.35 (1.12-1.63)**
White	2.12 (1.50-3.0)***		2.11 (0.82-4.48)	2.11 (0.80-5.54)
Black	0.51 (0.30-0.88)*		0.98 (0.34-2.77)	1.12 (0.38-3.29)
Hispanic	0.55 (0.42-0.72)**		1.69 (0.61-4.68)	1.60 (0.57-4.47)
Language spoken at home	0.44 (0.32-0.61)**		0.62 (0.33-1.16)	0.81 (0.44-1.48)
House ownership	1.52 (1.03-2.24)**			0.97 (0.59-1.57)
Parenthood	0.70 (0.48-1.02)			0.73 (0.48-1.11)
Neighborhood cohesion	1.06 (0.98-1.14)			1.03 (0.95-1.11)

*P-value <0.05
 ** P-value <0.01
 *** P-value <0.001

Generalized ordered logistic regression on knowledge about H1N1 signs and symptoms

Independent variables	Single Predictor Model	Model 1	Model 2	Model 3
Household income	1.17 (0.97-1.42)	1.10 (0.87-1.40)	1.10 (0.86-1.41)	0.98 (0.75-1.30)
Difficulty in buying food	0.65 (0.42-1.01)	0.71 (0.43-1.17)	0.83 (0.49-1.39)	0.89 (0.52-1.53)
Education	1.11 (0.93-1.34)	1.04 (0.83-1.30)	1.03 (0.81-1.31)	1.04 (0.82-1.32)
Age	1.29 (1.07-1.55)**		1.24 (1.02-1.52)	1.21 (0.98-1.49)
White	1.57 (1.08-2.28)*		1.27 (0.71-2.26)	1.15 (0.65-2.03)
Hispanic	0.62 (0.46-0.83)**		1.17 (0.58-2.39)	1.13 (0.54-2.34)
Language spoken at home	0.53 (0.38-0.74)***		0.66 (0.35-1.26)	0.78 (0.40-1.5)
House ownership	1.90 (1.26-2.86)**			2.89 (1.26-6.66)** 1.40 (0.82-2.38) ¹
Neighborhood cohesion	1.09 (1.05-1.14)***			1.10 (0.99-1.20)

*P-value <0.05, **p-value <0.01, ***p-value <0.001
¹ score 2 versus 0
² score 2 versus 1

Discussion

- Differences in H1N1 knowledge existed and were related to level of education and house ownership – both SEP indicators
- House ownership > community ties and engagement > health knowledge
- House ownership as indicator for a need to target communities with high renters using different means of communication? Foreclosure trends? Focus on developing better trust? better networks?



<http://lamps.sph.harvard.edu/>

- Thank you!

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