Determinants of influenza vaccination among undocumented immigrant populations in underserved areas of New York City

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Outline

- Background
- Project VIVA Overview
- Analysis and results
- Conclusions

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Influenza and vaccination

- Every year, 10-20% of the American population falls ill with influenza, and an estimated 36,000 persons die from influenza-related complications *(Thompson WW, JAMA, 2003;289:179-186)*
- Vaccination is known to reduce morbidity and mortality from secondary respiratory infections *(Fedson DS, Am J Med, 1987;82:42-27)*
- Undocumented immigrants are less likely to be covered by health insurance, and less likely to have access to routine health care *(Marshall KJ, Health Care Women Int, 2005;26(10):916-36, and Ku L, Health Affairs, 2001;20(1): 247-256)*
- Undocumented immigrants may be less likely to receive regular flu vaccination.

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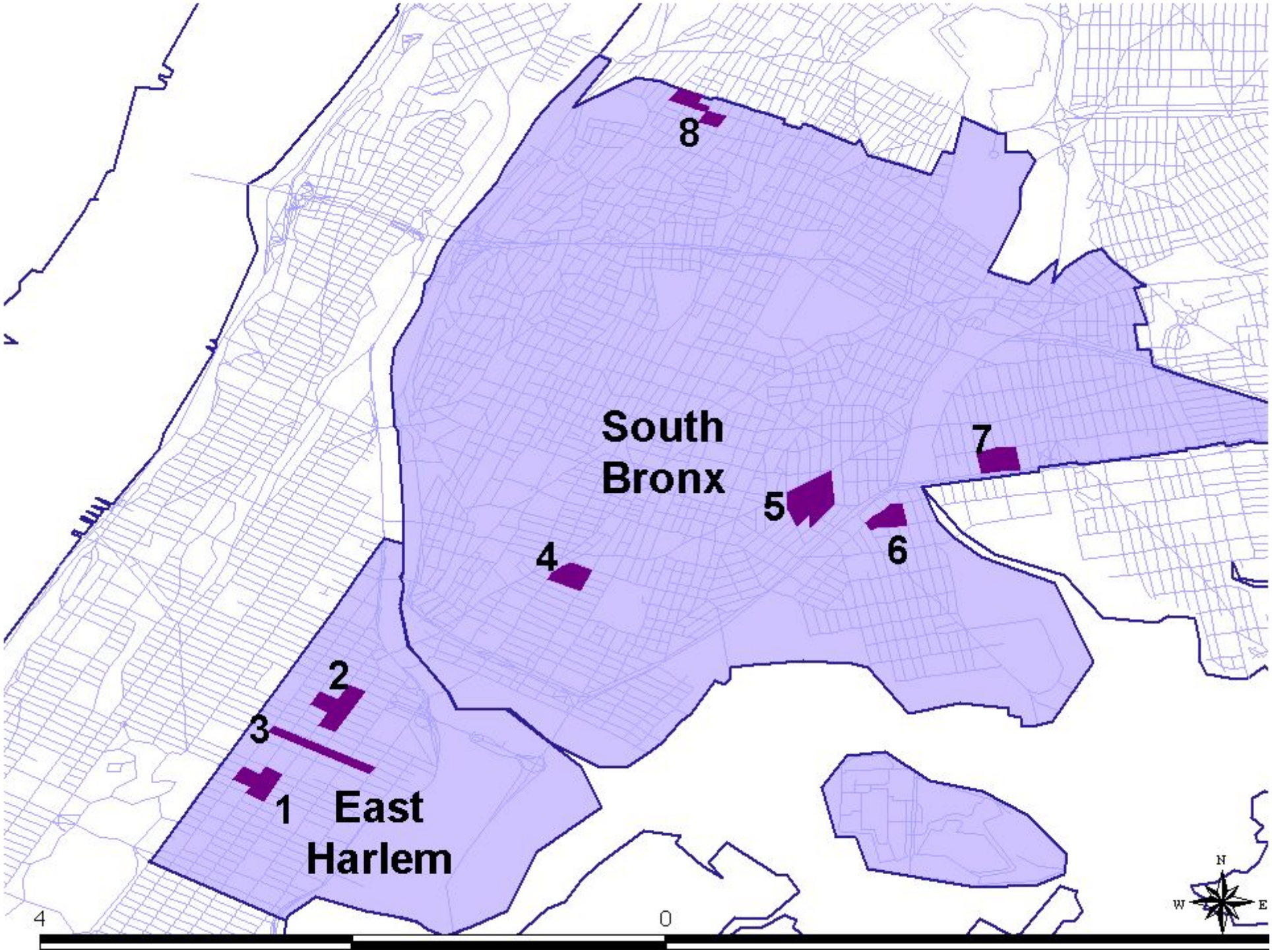
Project Objectives

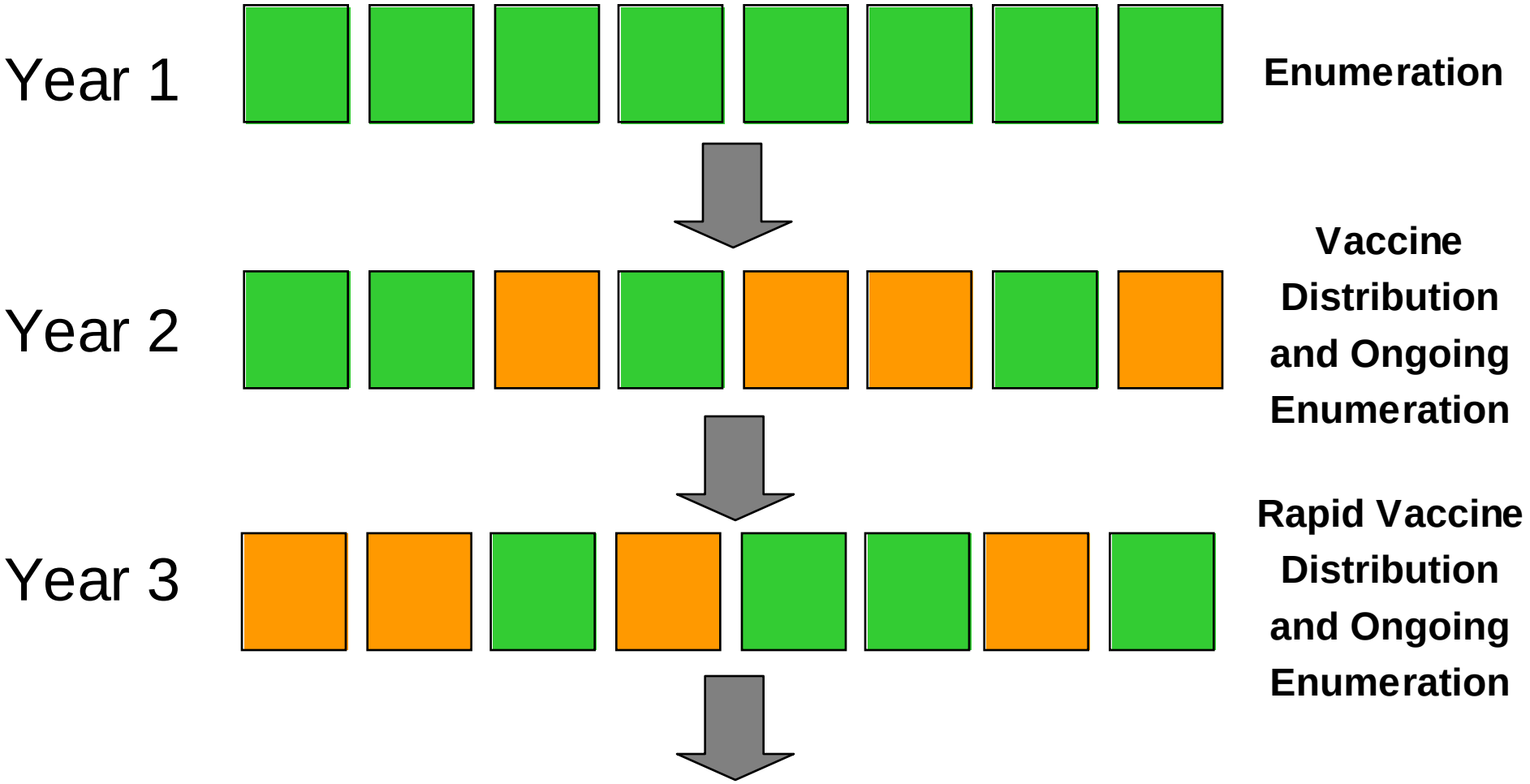
- Using a community-based participatory research approach:
  - To accurately enumerate hard-to-reach populations in disadvantaged neighborhoods
  - Immunize hard-to-reach populations with flu shots in East Harlem and the Bronx
  - Create a rapid vaccination protocol of hard-to-reach populations that serves as a model for public health vaccination plans—both annually and in the event of a pandemic

Project Overview

- Public health concern: Influenza
- Target population: hard-to-reach populations (elderly shut-ins, substance users, sex workers, homeless individuals, and undocumented immigrants)
- Communities to address: 8 designated areas in East Harlem and the Bronx
- Outreach by a small, bilingual (Spanish and English) team
- October 2003 – July 2007
- Funded by NIDA and Merck Foundation



Project VIVA Design



Our VIVA Team!

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Research Question

- **What are the barriers to lifetime flu vaccination among possible undocumented immigrants who live in disadvantaged urban areas?**
  - Cross-sectional study using data from venue-based sampling, door-to-door sampling, enumeration and distribution phases
  - Assessed key determinants of lifetime receipt of flu vaccination among undocumented immigrant population
  - Also assessed determinants of past-year vaccination among those who had ever been vaccinated previously

Proxy measure of immigration status

- In order to reach as many undocumented immigrants as possible, no questions were asked about immigration status

- Instead, a proxy measure of immigration status was created

Proxy measure, continued

- If the participant selected a single, non-US national origin in the series of race/ethnicity questions, and if the participant had never accessed government services, such as government health insurance, then he or she was categorized as a possible undocumented immigrant

- 15% of our sample were classified as possible undocumented immigrants

Characteristics of possible undocumented immigrant participants compared to other Project VIVA participants

Characteristic	Possible undocumented immigrants (n = 1123)	All other participants (n = 6144)	P-value
	%	%	
Prior flu vaccination			
No	64	31	<0.01
Yes	36	70	
Interested in taking flu vaccine			
No	11	21	<0.01
Yes	89	79	
Health insurance			
No	72	20	<0.01
Yes	28	80	
Receives routine medical care			
No	46	18	<0.01
Yes	54	82	

Characteristics of possible undocumented immigrant participants compared to other Project VIVA participants

Characteristic	Possible undocumented immigrants (n = 1123)	All other participants (n = 6144)	P-value
	%	%	
Medically indicated to receive flu vaccine			<0.01
No	76	51	
Yes	24	49	
If medically indicated to receive flu vaccine, ever been vaccinated (n = 3294)			<0.01
No	47	24	
Yes	53	76	

Demographic characteristics of possible undocumented immigrant Project VIVA participants, n=1123

Characteristic	%
Age, mean (SD)	37 (13)
Gender	
Male	50
Female	50
National origin	
Mexico	41
Dominican Republic	28
Central America	10
South America	10
Caribbean, English-speaking	7
Caribbean, French/Creole-speaking	0.4
Africa	4
Annual income	
$9,600 or less	71

Ever vaccinated	Total sample (n=1123)	Ever vaccinated (n=404)	P-Value
	%	%	
Age, mean (SD)	37 (13)	40 (14)	<0.01
National origin			<0.01
Mexico	41	23	
Dominican Republic	28	45	
Central America	10	44	
South America	10	39	
Caribbean, English-speaking	7	58	
Caribbean, French/Creole-speaking	0.4	60	
Africa	4	50	
Annual income			<0.01
No income	44	29	
Up to $4,800	9	32	
$4,801 to $9,600	18	38	
Over $9,600	24	48	
Medically indicated for vaccine			<0.01
No	76	32	
Yes	24	47	

Ever vaccinated	Total sample (n=1123)	Ever vaccinated (n=404)	P-Value
	%	%	
Has health insurance			
No	72	27	<0.01
Yes	28	59	
Receives regular medical care			
No	46	22	<0.01
Yes	54	48	
Current drug use			
No	94	35	<0.01
Yes	6	54	
HIV status			
Never tested	48	26	<0.01
Negative	51	44	
Positive	0.5	80	
Prior hepatitis vaccination			
No	61	28	<0.01
Yes	39	48	

Correlates of lifetime flu vaccination

	Adjusted Odds Ratio (95% CI)
Greater likelihood of past vaccination	
Age	1.03 (1.02-1.05)
Has health insurance	1.90 (1.33-2.73)
Receives regular medical care	2.29 (1.65-3.18)
Prior hepatitis vaccination	1.85 (1.36-2.53)
Current drug user	2.74 (1.50-5.00)
HIV negative (comp. to never tested)	1.53 (1.12-2.09)
Medically indicated for vaccine	1.56 (1.10-2.21)
Lower likelihood of past vaccination	
National origin- Mexico	0.36 (0.27-0.50)

Past year vaccination, if ever vaccinated	Total sample (n=404)	Past year vaccination (n=53)	P-Value
	%	%	
Age, mean (SD)	40 (14)	36(12)	0.04
National origin			
Mexico	26	11	
Dominican Republic	35	18	
Central America	12	8	0.03
South America	10	5	
Caribbean, non-Spanish speaking	11	7	
Africa	5	27	
Has health insurance			
No	54	12	0.40
Yes	46	15	
Receives regular medical care			
No	28	13	0.87
Yes	72	13	
Medically indicated for vaccine			
No	69	14	0.25
Yes	31	47	

Past year vaccination, if ever vaccinated	Total sample (n=404)	Past year vaccination (n=53)	P-Value
	%	%	
Interview method			
Street-based	69	17	<0.01
Door-to-door	31	4	
Year of VIVA project			
Year 1	63	20	<0.01
Year 2	37	1	
Calendar quarter			
Jan-Feb-Mar	19	14	
Apr-May-Jun	8	29	<0.01
Jul-Aug-Sep	34	19	
Oct-Nov-Dec	38	4	

Why was past year vaccination so much lower in VIVA year 2?

Flu vaccine shortage 2004

"Chiron will not supply FLUVIRIN Influenza virus vaccine for 2004-2005 Influenza Season"

--*Chiron Corporate Communications and Investor Relations*, October 5, 2004

"…the CDC anticipates a significant reduction in the available supply of influenza vaccine…"

--*New York City Department of Health and Mental Hygiene,* October 6, 2004

"The U.S. will miss half its supply of flu vaccine"

--*New York Times*, October 6, 2004

"Few flu shots? The city is told to live with it"

--*New York Times*, October 9, 2004

Correlates of past year flu vaccination, if ever vaccinated

	Adjusted Odds Ratio (95% CI)
Lower likelihood of past year vaccination	
Intervention year- 2	0.10 (0.02-0.49)
Interview method- door-to-door	0.23 (0.07-0.68)

Hard-to-Reach Populations (% of total vaccinated)

Population Group*	n	(%)
Elderly	218	(13)
Homeless	96	(6)
Injection drug users	218	(13)
Sex workers	16	(1)
Undocumented immigrants	301	(18)
Total Hard-to-Reach Populations	**781**	**(47)**

*not mutually exclusive

(Galea S, Coady MH, Blaney S, Ompad DC, Glidden K, Vlahov D, for the Project VIVA Intervention Working Group. International Conference on Urban Health meeting [Under review] Amsterdam, The Netherlands, October 2006)

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Conclusions

- Greater likelihood of ever vaccination was associated with older age, health insurance, receipt of regular health care, prior hepatitis vaccination, current drug use, HIV testing, and medical indication for vaccination.
- Mexican origin was associated with decreased likelihood of lifetime vaccination
- The association between recent vaccination and year may have been driven by the flu vaccine shortage.
- Among possible undocumented immigrants, interest in vaccination was high, but coverage was low
- Undocumented immigrants may benefit from tailored interventions designed to increase vaccination coverage among the underserved.

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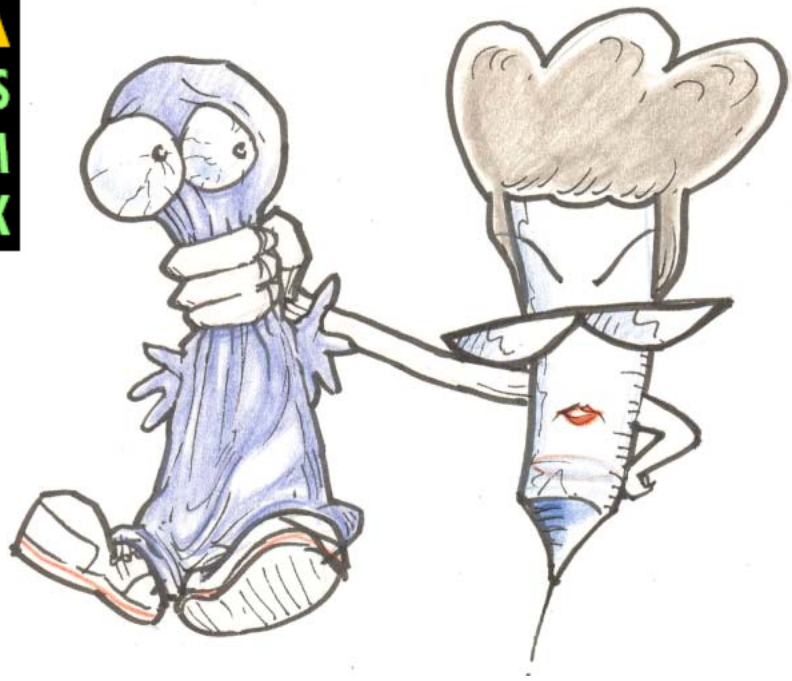
PROJECT VIVA

FREE FLU VACCINES FOR EAST HARLEM AND THE BRONX



(Artists: Carlos Molina and Derrick Freeman)