Increased interest in vaccination following a community-based intervention in NYC

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Outline

- Background
- Project VIVA Overview and Study Design
- Year 1: Enumeration
- Year 2: Vaccine Distribution and Shortage
- Year 3: Rapid Vaccine Distribution
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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)*
- Minorities tend to have lower vaccination rates than non-minorities, a disparity that exists for all age groups, including elderly covered by medicare and those who are targeted by public health interventions *(Ostbye T, BioMed Central Public Health, 2003;3:41-51)*
- Other hard-to-reach groups (elderly shut-ins, injection drug users, sex workers, undocumented immigrants) may be even less likely to receive regular flu vaccination despite high risk of morbidity and mortality secondary to influenza

Distribution of influenza vaccine to high-risk groups

- Variety of settings/approaches used to increase vaccination rates among high-risk groups
  - Hospital/tertiary care, Primary-care, Venue-based targeted delivery, Large-scale regional programs, Community-based distribution programs
- Most interventions focused on the elderly, fewer on adults with high-risk conditions and fewer still on children
- Vaccination was largely examined within the context of primary care settings or large-scale regional programs
- Major limitation: unable to reach those not engaged in the health care system, specifically HTR populations
- Few interventions included active community engagement or were targeted to specific communities

(Ompad DC, Galea S, Vlahov D. Distribution of influenza vaccine to high-risk groups. *Epidemiol Rev.* May 17 2006)

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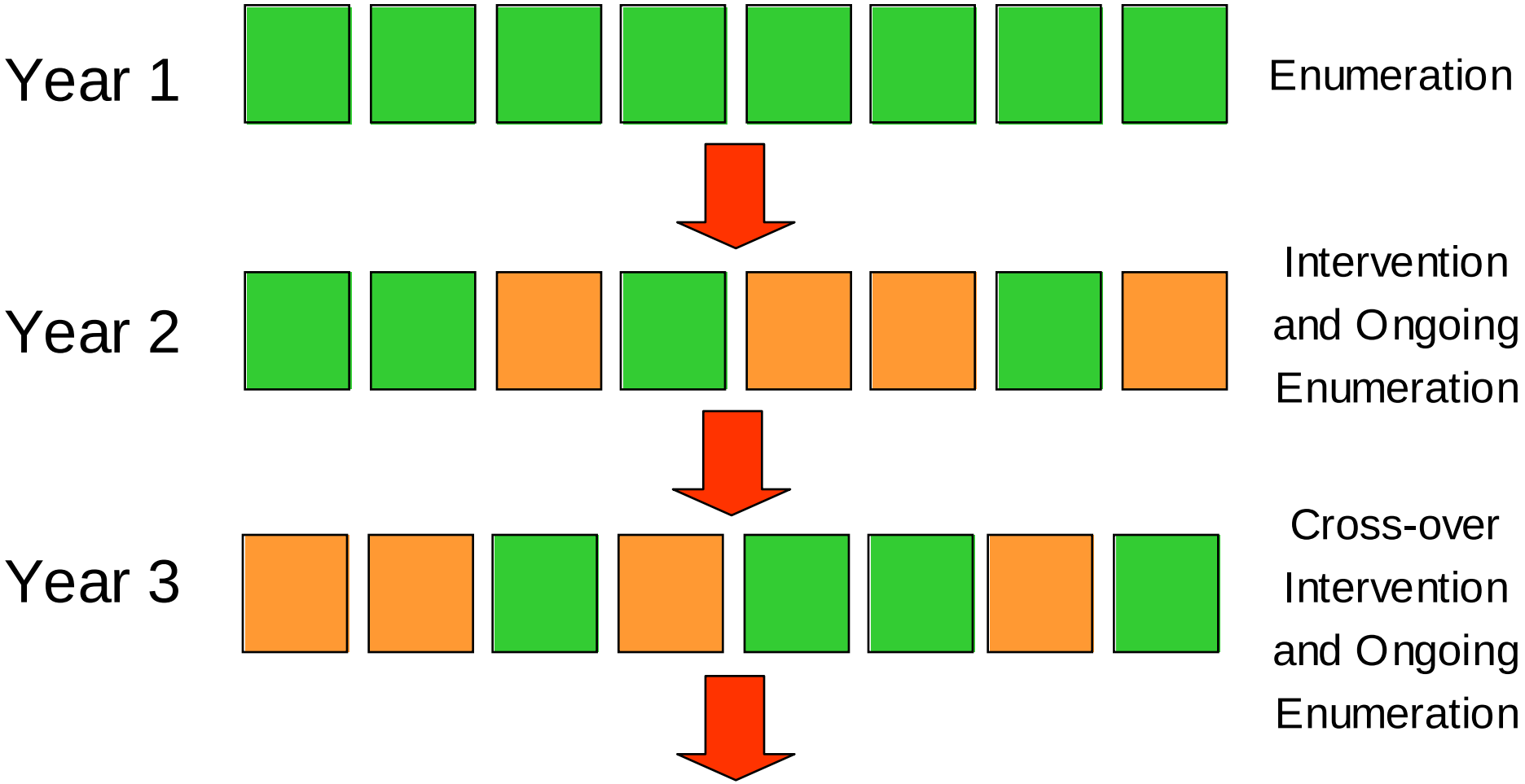
Project Objectives

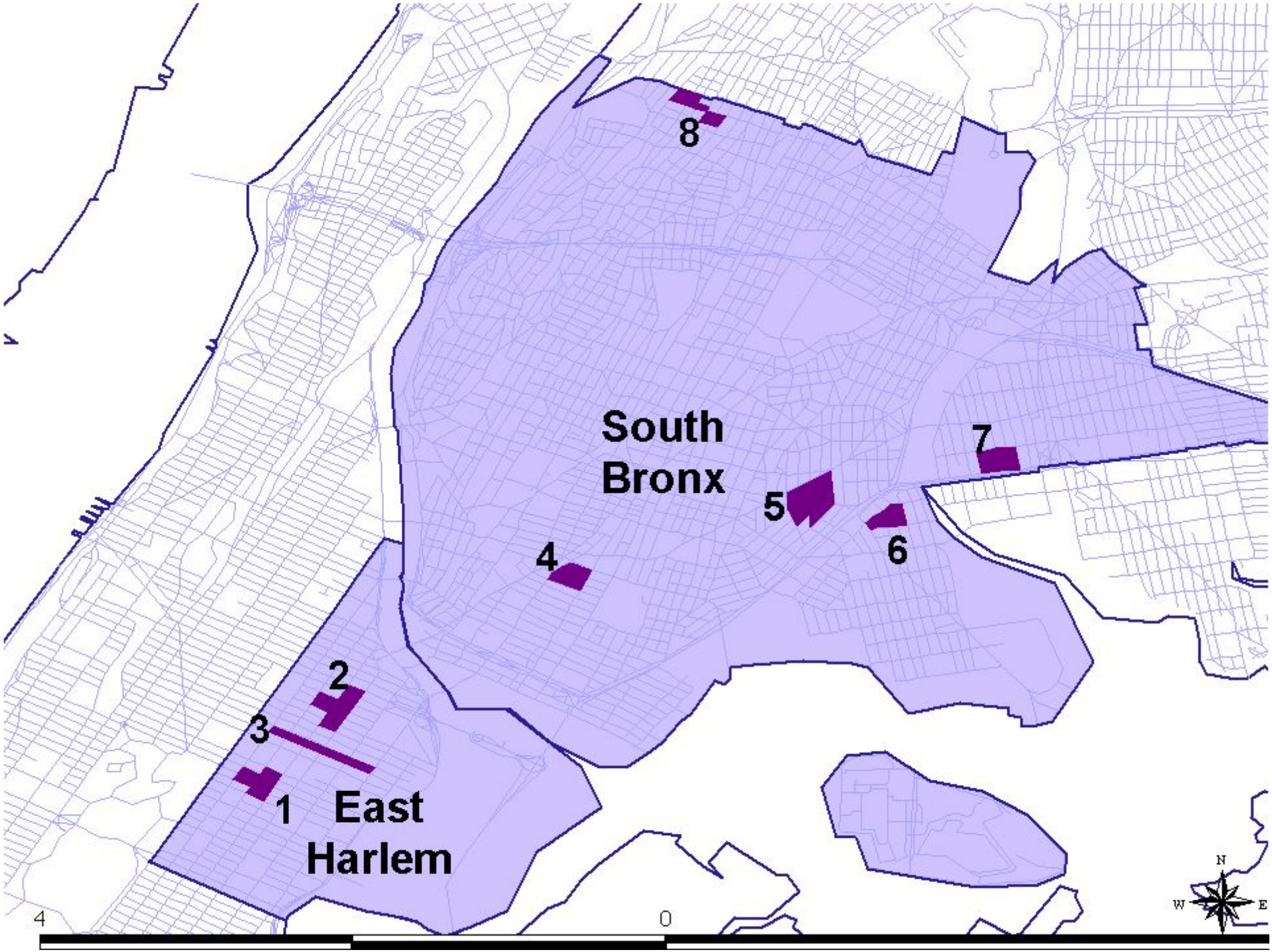
- Using a community-based participatory research approach:
  - To accurately enumerate hard-to-reach populations in disadvantaged neighborhoods
  - Immunize hard-to-reach populations with flu shots in East Harlem and the Bronx
  - Create a rapid vaccination protocol of hard-to-reach populations that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

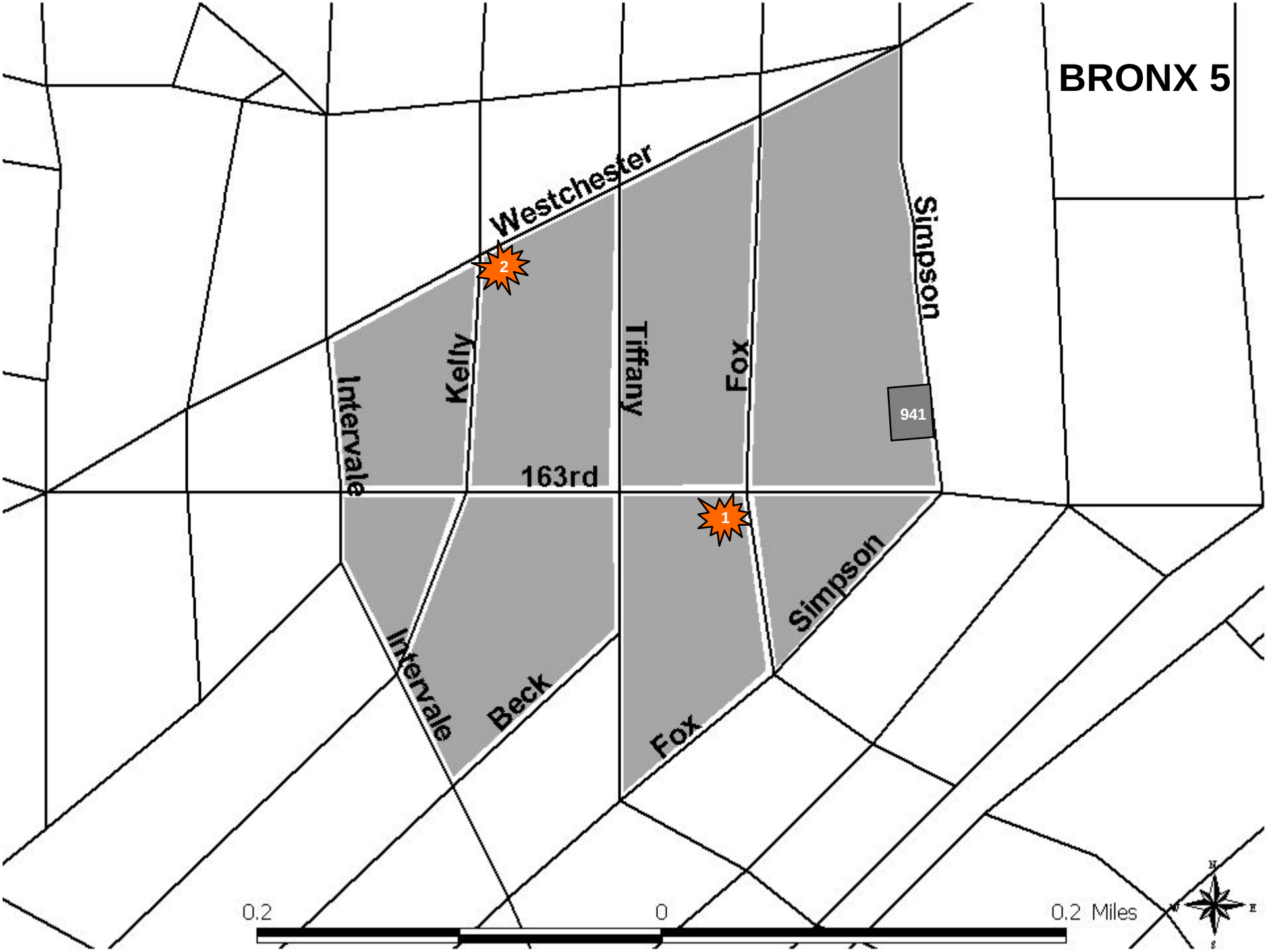
Project Overview

- Public health concern: Influenza
- Target population: hard-to-reach populations (elderly shut-ins, undocumented immigrants, substance users, sex workers, and homeless)
- 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

Study Design







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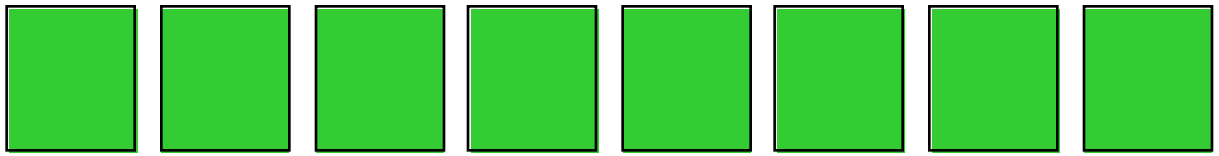
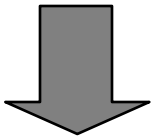
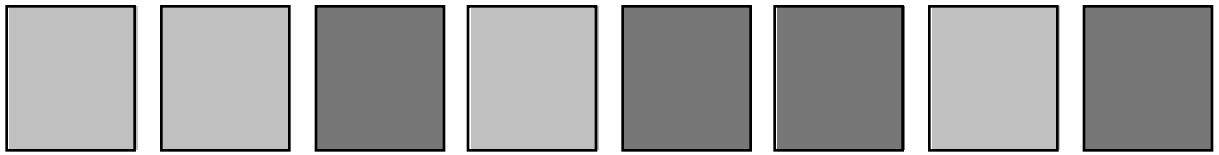
Project VIVA Design

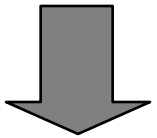


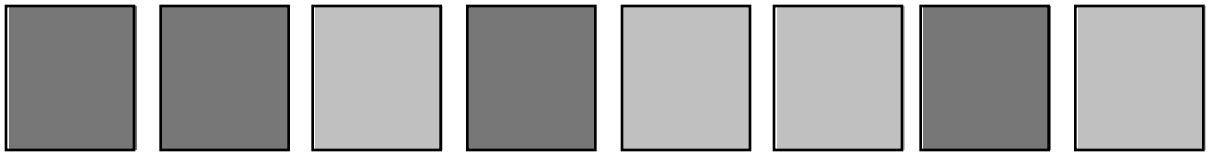
Year 1 **Enumeration**



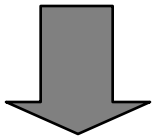


Year 2 **Vaccine Distribution and Ongoing Enumeration**





Year 3 **Rapid Vaccine Distribution and Ongoing Enumeration**



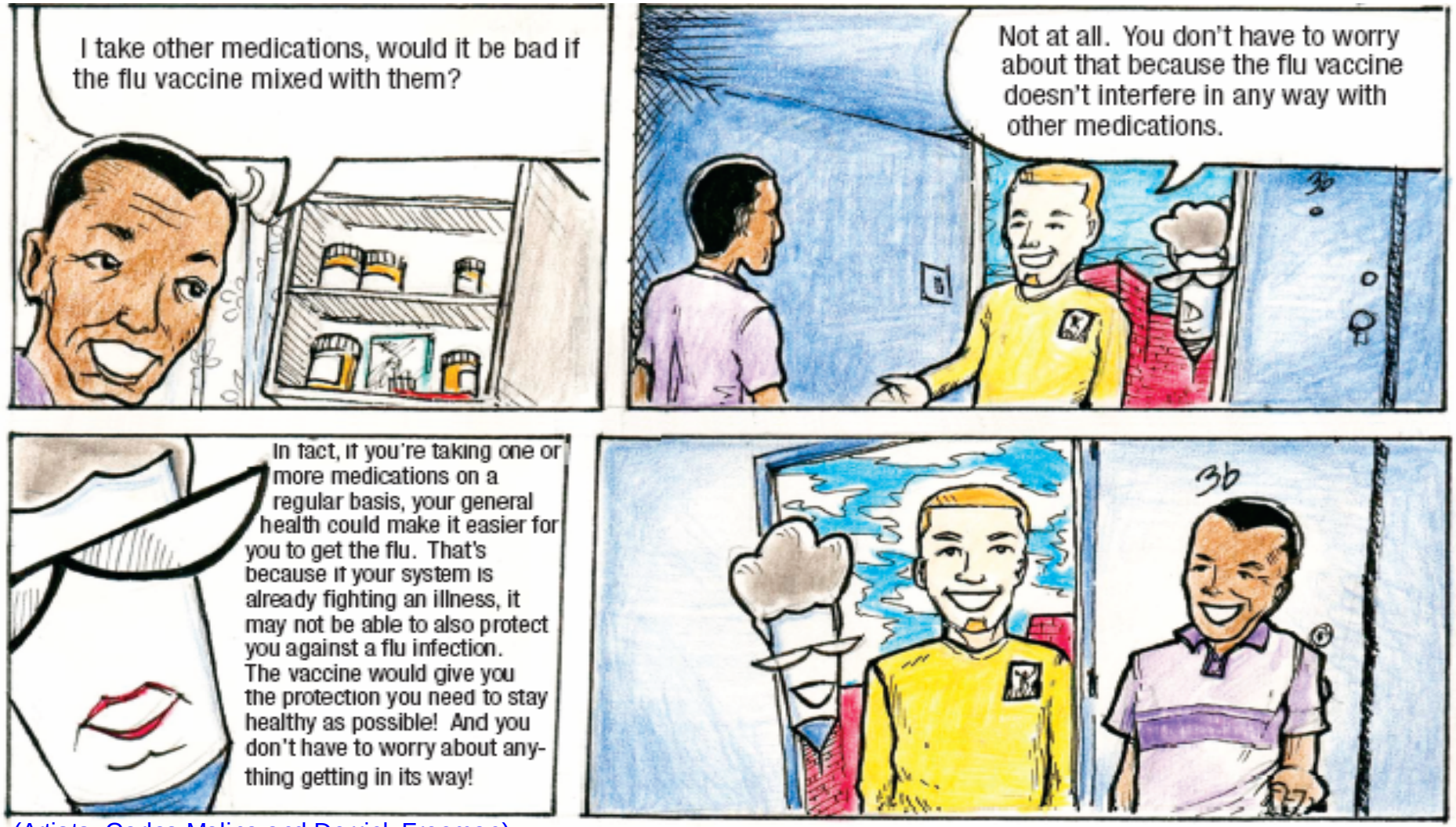
Year 4 Dissemination and Generalization of Results

VIVA Year One: Informing health education efforts (2003-2004)

In all enumeration phases Project VIVA used data from the first year to increase awareness and receptivity to flu vaccine:

- Meetings with local community leaders
- Presentations to local CBOs and service providers
- Flyers distributed on streets, in agencies, at health fairs, and posted in buildings
- Comic strip developed

The flu vaccine won't interfere with meds you are already taking



(Artists: Carlos Molina and Derrick Freeman)

VIVA Year One: Enumeration (2003-2004)

1. **Delphi method**

   Engaged community members with extensive experience reaching our target population

2. **Venue-based sampling**

   IOWs engaged people on the streets of areas where HTR populations exist

3. **Door-to-door sampling**

   IOWs engaged people in apartment buildings, homeless shelters, and elderly care facilities

4. **Capture-recapture method**

   IOWs returned to the streets, engaging people one week, then recorded repeat visits the following week

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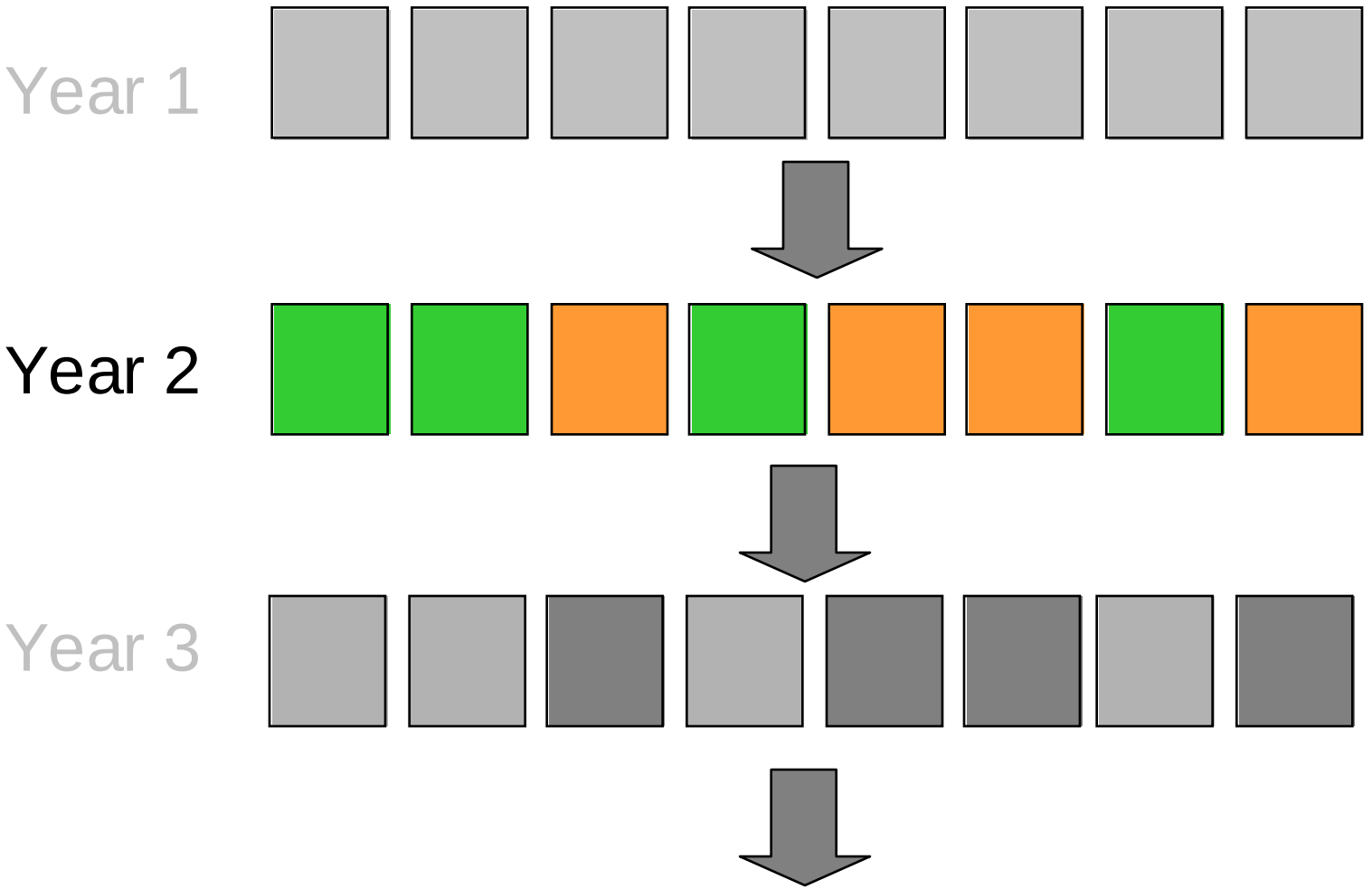

VIVA Year Two: Vaccine Distribution (2004-2005)

- Flu vaccine distribution to eligible residents of East Harlem and Bronx via **door-to-door sampling**
- **Neighborhoods** for distribution in Year 2 were **selected at random:** East Harlem 3, Bronx 5, Bronx 6, and Bronx 8. The other four areas will receive the vaccine in Year 3
- On Wednesdays, partner with an organization to **distribute at a community site**

The Unexpected Crisis: 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

VIVA Year Two:
An end to the shortage

- **Limited amount of Flu vaccine** becomes **available** through the Department of Health
- **Flu vaccine** was **distributed** over four weeks in January 2005 in two neighborhoods
- **Pneumovax vaccine** was the alternative vaccine for distribution, and was **distributed** in the other two neighborhoods

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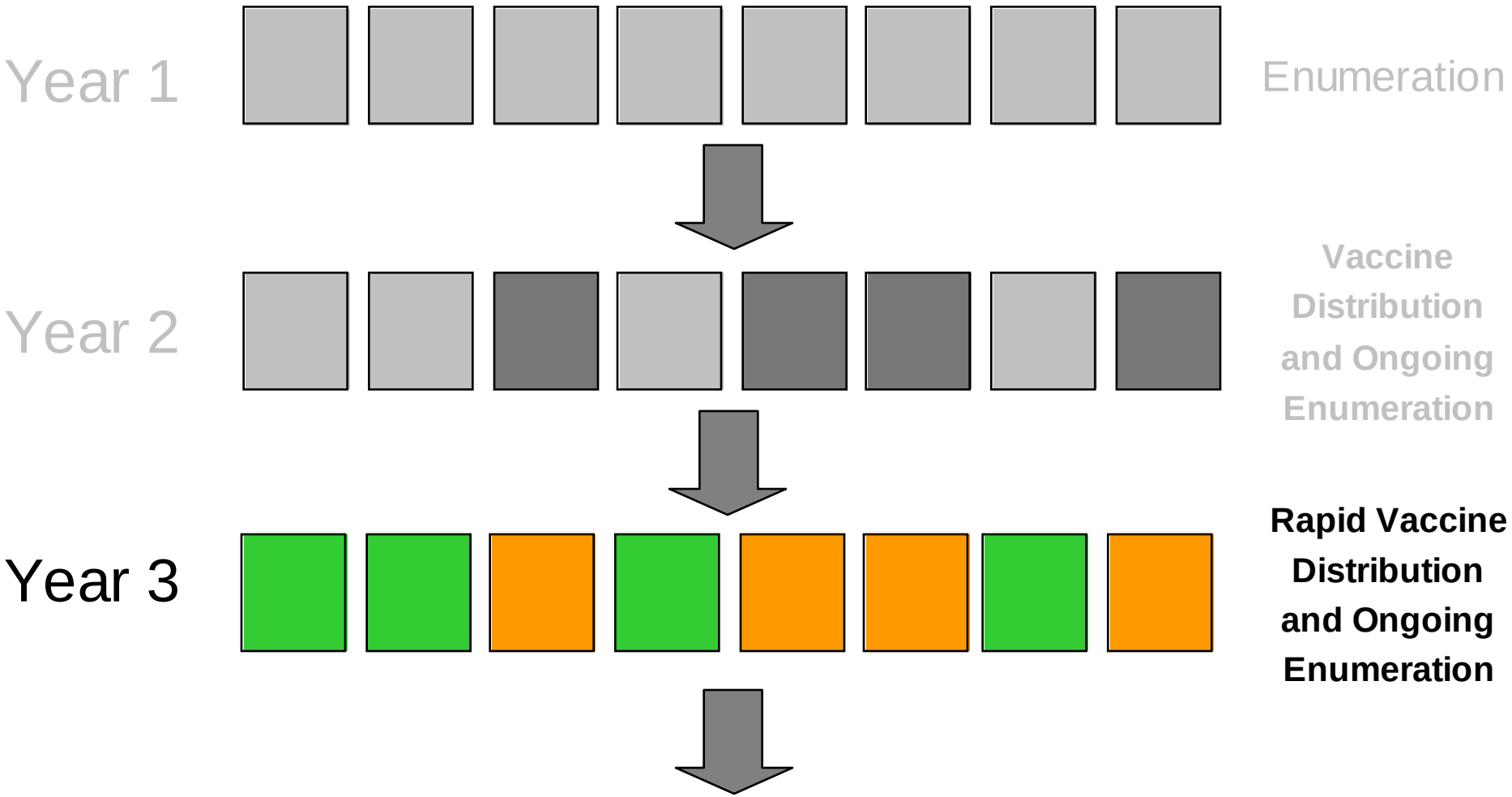

VIVA Year Three: Rapid Vaccine Distribution (2005-2006)

- August 2005: outreach workers start another round of **door-to-door** and **venue-based sampling**
- October 2005: **Flu vaccine distribution** over two weeks via door-to-door and venue-based sampling
  - 4 ***NEW*** neighborhoods in East Harlem and the Bronx
  - **Accelerated pace:** four teams of four outreach workers and two nurses simultaneously distributed vaccine and collected data (24 field staff total)
- Continued **community presentations** and **education**

Our VIVA Team!

Door-to-door and venue-based vaccine distribution

Area	Door-to-Door	Venue-Based	TOTAL
E. Harlem 1	226	284	510 (31%)
E. Harlem 2	89	277	366 (22%)
Bronx 4	99	260	359 (22%)
Bronx 7	283	130	413 (25%)
TOTAL	**697 (42%)**	**951 (58%)**	**1648**

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

Research Question

- What was the interest in, and correlates of, vaccination in disadvantaged urban areas before and after intervention activities?
  - Cross-sectional study using data from door-to-door and venue-based sampling comparing interest in vaccination before and after intervention activities

Demographic characteristics of Project VIVA participants

Characteristic	n=6826
	%
Age (mean, SD)	41 (14.7)
Gender	
Male	40
Female	60
Race/Ethnicity	
Hispanic/Latino	72
Black	21
White	3
Other	5
Income	
≤ $9,600/Year	68

Interest in vaccination	Total sample (n=6826)	Interested in vaccination (n=5893)	P-Value
	%	%	
Surveyed pre- or post-intervention Pre-intervention (years 1 + 2) Post-intervention (year 3)	 55 45	 80 94	<0.01
Member of a HTR population No Yes	 64 37	 86 88	0.04
Prior influenza vaccine No Yes	 36 64	 82 89	<0.01
Medical contra-indication for vaccine None Some contra-indication	 95 6	 88 62	<0.01
Medically indicated for vaccine No Yes	 61 39	 86 87	0.12

Correlates of interest in flu vaccination

	Adjusted Odds Ratio (95% CI)
Greater likelihood of being interested in vaccination	
Surveyed post-intervention	2.69 (2.17-3.33)
Member of a HTR population	1.14 (1.02-1.27)
Prior flu vaccination	2.20 (1.85-2.60)
Medically indicated for vaccine	1.26 (1.09-1.46)
Lower likelihood of being interested in vaccination	
Medical contra-indication for vaccine	0.25 (0.21-0.30)

Conclusions

- Interest in vaccination was high, with a significant increase following intervention
- The majority of participants were female, Hispanic and reported earning low annual income
- Members of HTR populations, persons reporting a prior influenza vaccine, and persons medically-indicated for vaccine were significantly more likely to be interested in vaccine

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- Persons living in intervention neighborhoods were more interested in receiving vaccine compared to their interest before the intervention
- Bypassing traditional modes of health care delivery and offering vaccination in non-traditional settings is a feasible means of accessing HTR populations and increasing interest in vaccine
- CBPR interventions hold promise in increasing vaccination rates among HTR populations, especially in an era of vaccine shortages and threats of an influenza pandemic

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