



Citywide Messaging and Community Receptivity:

An evaluation of Ready New York's
pandemic influenza outreach campaign

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Ready New York Evaluation Project

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Executive Summary

Public health risk communication is a central feature of New York City's pandemic flu preparedness plan. Particularly in the early stages of a pandemic, before effective therapeutic measures are available, non-pharmaceutical interventions such as social distancing, personal protective hygiene, and voluntary isolation are critical strategies for suppressing the spread of a novel viral strain. New York City health and emergency management officials have decided to use the city's risk communication structure – the Office of Emergency Management's Ready New York outreach and dissemination capacities – as one of the primary means to communicate pandemic flu health messages. In October 2008, NCDP contracted with Public Health Solutions and the Office of Emergency Management (OEM) to evaluate the reach and effectiveness of its planned Ready NY Pandemic Flu community outreach campaign. Among the evaluation research questions considered were:

- What is the potential value, efficacy, and community perception of the Ready NY brochure and community presentation?
- How do different NYC communities approach preparedness and response to a pandemic flu?
- How do communities vary in their approach to such critical communication issues such as message content and style, messengers and media, and message dissemination timing?

In order to evaluate the outreach campaign, the OEM stock presentation was piloted in six distinct NYC neighborhoods and feedback was gathered through subsequent focus group discussions. Communities were selected such that geographically, ethnically, and linguistically diverse citizen groups within the city were represented, and participants were recruited primarily through random, street-based recruiting. Selected neighborhoods span four of the five boroughs and represent unique cultural and ethnic identities: Greek/European in Astoria; African American in Bedford-Stuyvesant; Chinese in Chinatown; Indian/Bengali in Jackson Heights; Caribbean/Jamaican in Wakefield; and Dominican/Latin American in Washington Heights. A case-control design was incorporated into the evaluation to account for behavior change, information retention, and situational awareness that may have arisen as a result of the focus group discussion rather than from the intervention itself. All participants attended the presentation, received a brochure and completed a baseline questionnaire, but roughly half the participants – the cases – partook in the focus group discussion. All respondents were contacted to complete a follow-up interview 4-6 weeks following the initial intervention.

Findings

Focus group discussion topics explored strengths and weaknesses of the Ready New York Pandemic Flu materials and how culturally diverse customs affect citizens' reception of the city's messaging. Among the central findings are the following:

- Communities are concerned that the uneducated and ignorant will act as vectors and put others at risk of infection. There was similar concern regarding children, the elderly, and the isolated.
- Public transportation lines are seen as sources of infection, but also opportune places to promote good health practices.
- Although the presentation and brochure were highly regarded, participants were left with a number of unanswered questions which may be incorporated into future outreach strategies.
- Preferred message timing differs by community – some want a just-in-time type message and others feel information should be distributed as early as possible.
- Doctors, schools, and religious leaders were commonly cited as trusted sources of information in all communities. The mayor and other government officials were highly regarded in some places, while others were much less trusting.

Data from the follow-up interviews allowed assessment of participants' behavior change, information retention, and situational awareness in the 4-6 weeks following the intervention. Interview data was analyzed to determine any significant differences between both cases and controls and among neighborhoods. Due to small sample sizes across all groups, few differences between cases and controls were found to be statistically significant. Cases, however, were more likely than controls to remember details about the differences between pandemic and seasonal flu, personal protective measures, and what the city will do in the event of a pandemic. They were also more likely to use the suggested sources of additional information.

Analysis of neighborhood-level differences in follow-up data shows that no two communities are alike. Respondents from Bedford-Stuyvesant, Wakefield, and Astoria were able to recall a broader spectrum of topics than were the other neighborhoods, and were furthermore more likely to want a community-specific format of the presentation. Wakefield respondents found the brochure to be less visually appealing than other groups, and were the least likely to have read or shared it or to have used any of the recommended sources of information. Compliance with recommendations also differed by community. Respondents from Astoria and Chinatown were much less likely than others to have stocked food and over-the-counter medication by follow-up. People from Bedford-Stuyvesant were least likely to have followed social distancing precautions.

Among all respondents overall home preparedness significantly increased from baseline to follow-up (63% to 93%). Personal preparedness strategies with the lowest rates of compliance include stocking over-the-counter medications (52%), stocking prescription medication (35%), stopping sharing food and drinks (54%), and staying home if sick (61%). Hygiene-related personal protective measures were the most commonly recalled message component. While many respondents had used 311, a total of 62% of people had not accessed any of the suggested sources of information in the preceding month.

Recommendations

Three major themes emerged from focus group and follow-up data: the saliency of risk, community response and perception, and issues of communication. On the topic of saliency and risk, the city should consider the following strategies to make their health communication and outreach even more effective:

- Communities were quite responsive to the dramatic consequences of the 1918 flu and to the similarities to other “known” communicable diseases which have no vaccine and no cure, such as HIV/AIDS, SARS or avian flu. Consider exemplifying these issues to raise the public’s perception of risk.
- In order to combat public uncertainty about saliency of the threat and the value of recommended actions, develop easily accessible answers to the most frequently asked questions.

The studied communities varied widely in their attitudes, perceptions, and anticipated behaviors. These findings suggest something about the ways that different communities depend upon and trust in government and community-based institutions, and the roles that each might play in communicating critical emergency messages. For example, in communities that are less trusting of government but have high dependence on community institutions, the city may benefit from collaborative efforts with mediating community institutions. In considering how the city could engage communities more directly, several broad recommendations are offered:

- Continue to expand existing partnerships through the Ready New York infrastructure through CERTs and community boards.
- Expand partnerships to include religious leaders and institutions, which may use religious ethics to disseminate and craft messages around shared responsibility, adopt strategies that take into account the need to modify current religious practices, and otherwise convey key messages about social distancing.
- Develop community-based sites where information and medical care may be accessed in the event of a pandemic, so hospital emergency departments would not be regarded as the only available service and information site.

Under the rubric of communication, which includes issues regarding messengers, messages, media, and timing, some additional recommendations are offered: (1) to consider developing a “hard-sell” campaign similar to the state’s smoking cessation campaign ; (2) to avoid the terms “isolation” and “quarantine,” which have negative connotations to many people, and are generally misunderstood; (3) to address the subway as both a potential infection site and as a critical messaging platform, since it was of great concern to many of the community respondents; (4) to consider private medical doctors as a key information dissemination source and service site; (5) to consider mailing brochures; and (6) to encourage the utilization of telephone and Internet resources, particularly among limited-English proficiency populations.

Conclusion

In summary, this evaluation of the Ready New York pandemic flu outreach campaign suggests that it is a successful platform from which to engage different New York City communities, and that the nature of the engagement varies from community to community. Each community welcomed the opportunity to discuss specific concerns, and all acknowledged how difficult it will be to gain the attention of their community, particularly in the absence of a clear and present threat. Perhaps most important for city planners to take into account is that community attention and receptivity rises in tandem with (a) empirical evidence of the salience of the threat, and (b) uncertainty about the most advantageous health behaviors and decisions. Clear, authoritative messaging can validate the salience of the threat, and also provide focused guidelines and recommendations to the city's many communities. The mechanisms for delivering health messages should be many and varied, and the city should consider multiple ways with which to engage its residents. Partnering with community-focused institutions, ethnic press, and faith-based institutions as sponsors and "co-leaders" of these message dissemination strategies can enhance the city's reach, and capitalize on the strengths of the many different neighborhoods, communities, and affiliations of those who live and work in New York City.

Introduction

Two years ago, Columbia University’s National Center for Disaster Preparedness reported to the New York City Department of Health and Mental Hygiene on research it had conducted on New York City community preparedness for a flu pandemic, with a particular focus on how racially and ethnically-homogeneous neighborhoods might vary in their response to such an event¹. Among the report’s findings were that communities varied in their trust in and dependency upon local government, the variable strength of their social networks that might be activated during a disaster, and the perceived “trusted” sources of health and risk information. These results were very much in keeping with the academic literature, including several major review articles that catalogued the ways that ethnic and minority communities have been historically more vulnerable to disasters, less trusting of public authority, and whose social isolation often places them in harm’s way².

Much like a giant version of the children’s game “Telephone,” in which a message delivered serially from one child to the next is transformed in to something entirely different from the original message, emergency communication is socially re-constructed and re-interpreted by different communities. A prominent model in the risk communication and disaster warning literature is that of Turner and Killian’s *emergent norm theory of collective behavior*. It stipulates that when groups are faced with a need to act in the face of relative uncertainty they collectively develop a new set of norms by which to interpret information and make decisions. According to this theory, groups collectively decide if they are personally in danger, whether they can reduce their vulnerability to the danger, and how and when they should act³. Similarly, Witte’s Extended Parallel Process Model argues that people take protective action based on the saliency of a threat (it’s severity and their susceptibility) and the perceived value of recommended actions (a person’s self-efficacy to accomplish the action, and a valuation of the action itself to avert or address the threat)⁴. **Explicit in both these models is that different communities will hear and respond to messages differently.**

Public health risk communication is a central feature of New York City’s pandemic flu preparedness plan. Particularly in the early stages of a pandemic, before effective therapeutic measures are available, non-pharmaceutical interventions such as social distancing, personal protective hygiene, and voluntary isolation are critical strategies for suppressing the spread of a novel viral strain. New York City health and emergency management officials have decided to use the city’s risk communication structure – the Office of Emergency Management’s Ready New York outreach and dissemination capacities – as one of the primary means to communicate pandemic flu health messages.

¹ EJ Fuller, DM Abramson, J Sury (2007). “Unanticipated Consequences of Pandemic Flu in New York City: A Neighborhood Focus Group Study.” Columbia U: NCDP Research Brief, 2007_10.

² See DP Andrusis, NJ Siddiqui, and JL Gantner (2007). “Preparing racially and ethnically diverse communities for public health emergencies.” *Health Affairs*, 26(5):1269-1279, and A Fothergill, EGM Maestas, and JD Darlington (1999). “Race, ethnicity and disasters in the United States: A review of the literature.” *Disasters*, 23(2):156-173.

³ RH Turner and LM Killian (1987). *Collective Behavior* (3rd Edition). Englewood Cliffs, NJ: Prentice-Hall.

⁴ K Witte (1998). Fear as motivator, fear as inhibitor: Using the extended parallel process models to explain fear appeal successes and failures. In PA Anderson and LK Guerrero (eds), *The handbook of communication and emotion: Research, theory, applications, and contexts*. NY: Academic Press, pp 423-450.

In October 2008, NCDP contracted with Public Health Solutions and the Office of Emergency Management to evaluate the reach and effectiveness of its planned Ready NY Pandemic Flu community campaign. Among the evaluation research questions considered were:

- What is the potential value, efficacy, and community perception of the Ready NY brochure and community presentation?
- What community-level issues arise related to the saliency of the threat and the perceived risk of pandemic flu?
- How do different NYC communities approach preparedness and response to a pandemic flu?
- How do communities vary in their approach to such critical communication issues such as message content and style, messengers and media, and message dissemination timing?
- What questions remain unanswered after community presentations?

The NCDP research team decided to use a similar qualitative research method to that employed in the earlier community-based work, and to use the same six communities as living laboratories: Washington Heights (Manhattan – Dominican population), Chinatown (Manhattan – Chinese population), Astoria (Queens – Greek population), Jackson Heights (Queens – Indian, Pakistani, and Bengali populations), Wakefield (Bronx – Caribbean populations), and Bedford Stuyvesant (Brooklyn – African American and Caribbean populations). In addition, a research team from Maimonides Medical Center headed by Dr. Hillary Cohen agreed to replicate our research protocol among two Brooklyn-based populations in their catchment area, an Orthodox Jewish population and a Pakistani population.

H1N1 Outbreak

Data collection for the research field effort was predicated on the city's completion of the Ready NY brochure, a corresponding PowerPoint presentation, and training of presenters. As it happened, the final draft of the Ready NY Pandemic Flu presentation and brochure – and the training of volunteer presenters from the city's Medical Reserve Corps – coincided with the outbreak of the H1N1 novel virus in late April 2009. Initial news

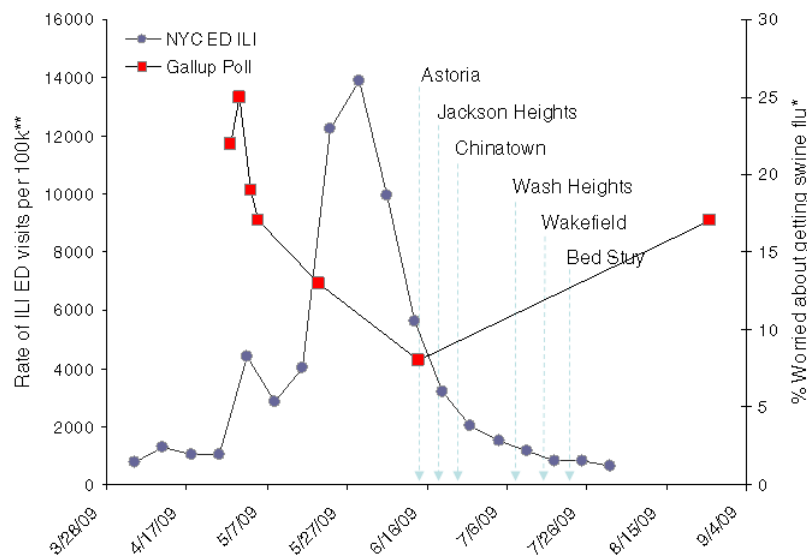


Figure 1: Influenza-like Illness Emergency Department visits in NYC, National survey data on concern about swine flu illness, and timing of focus groups.

reports of the novel virus were widely circulated on April 24th, and there was sustained public and media interest in the subject for several weeks. As Figure 1 illustrates, the incidence of this first wave of the pandemic crested in early June, as evidenced by emergency department visits, and predated the research team's data collection by several weeks. The actuality of the pandemic event certainly colored the attitudes, interest, and perceptions of community respondents, and the apparent mildness of the virus influenced community-wide perceptions of the actual threat as well. National opinion tracking, also illustrated in Figure 1, suggests that the general public's perceived personal risk crested before the actual incidence did. Although NYC trended opinion data were not available to the NCDP research team, anecdotal reports and the community's responses in the focus groups echoed some of that declining risk awareness and salience.

Methods

Study Design

The OEM’s information dissemination strategy consists of conducting informational presentations and distributing brochures throughout New York City. In order to evaluate the efficacy of this strategy, we piloted the OEM stock presentation in NYC neighborhoods and held a focus group discussion immediately thereafter. Focus group discussions are not typically part of the OEM strategy, but are a necessary component of our evaluation process. Consequently, it was necessary to take into account any impact participation in the focus group discussion may have had on participants’ behavior change, information retention, and situational awareness. Since the topics discussed in the focus group inevitably subjected participants to the beliefs and knowledge of other group members, it was hypothesized that the focus group would act as a supplement to the intended intervention and influence participant responses at follow-up.

To address this issue, we incorporated a “nested case-control” design. This method provides a reference group – “controls” – who received only the intended intervention strategy, and a comparison group – “cases” – who additionally participated in a focus group discussion. The separation of cases and controls enabled direct assessment of differences in comprehension, retention and behavior change at follow-up as a function of the educational materials alone versus the added influence of the focus group discussion. Aside from participation in the focus group, case and control groups participated in exactly the same activities.

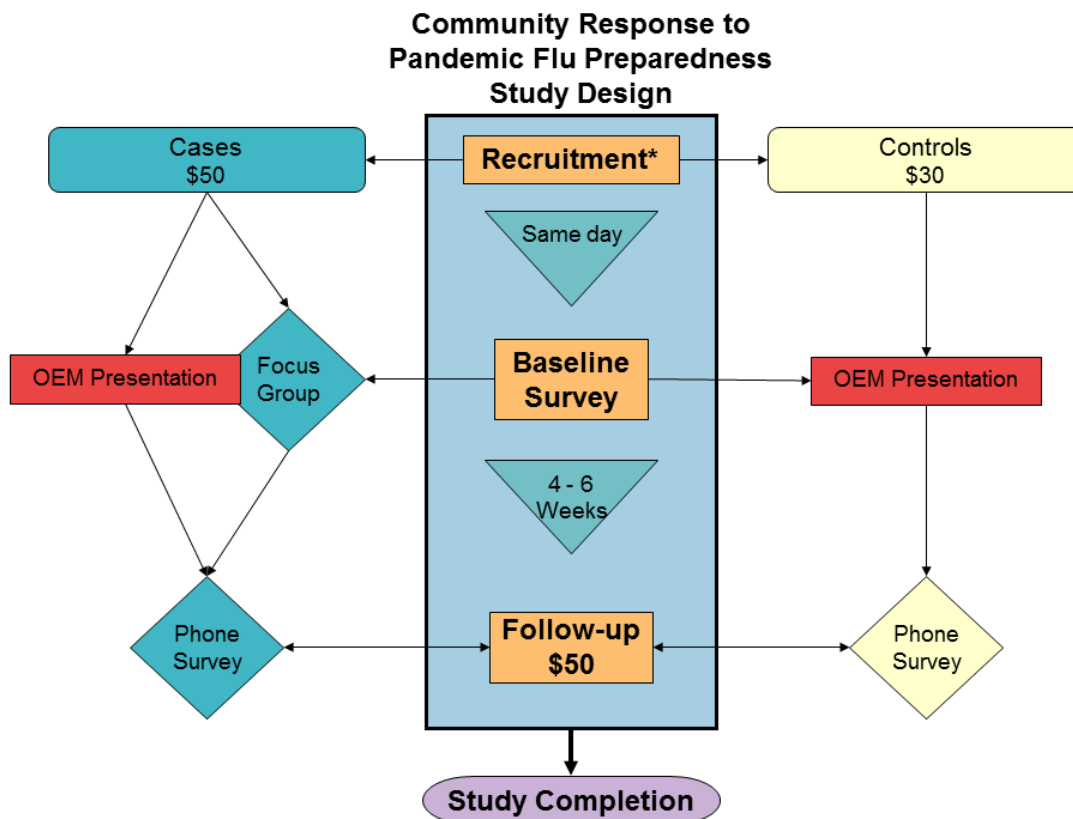


Figure 2. Study Design for Ready New York Evaluation Project

Site Identification

Community-based focus groups were conducted in six select communities within New York City. Communities were selected such that geographically, ethnically, and linguistically diverse citizen groups within the city were represented. The neighborhoods span four of the five boroughs of New York and represent six unique cultural and ethnic identities: Greek/European in Astoria; African American in Bedford-Stuyvesant; Chinese in Chinatown; Indian/Bengali in Jackson Heights; Caribbean/Jamaican in Wakefield; and Dominican/Latin American in Washington Heights. Meeting venues were selected based on target recruitment area, access by foot and public transportation, and cultural appropriateness. Venue types included restaurants, community centers, and religious gathering sites.

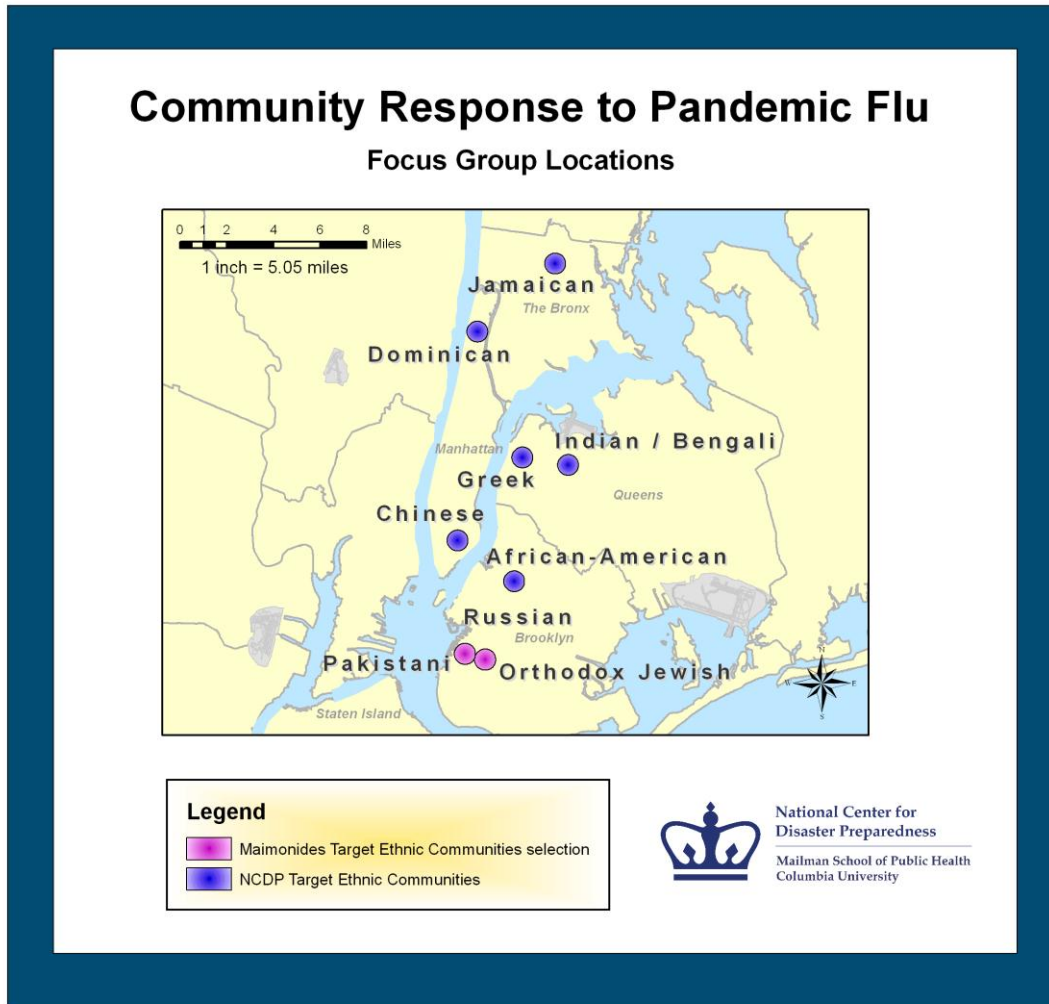


Figure 3. Focus Group Venues by Neighborhood

*Maimonides groups were conducted through a sister study to be described below.

Recruitment

Study participants were recruited directly from the selected neighborhoods on the days of and directly before the gathering. Recruitment of study participants was primarily street-based, with trained recruiters handing out flyers and explaining the study to passersby. Recruiters aimed to recruit between 30 and 40 individuals for each neighborhood in anticipation of low turnout rates. To reach our recruitment quota, a

targeted sampling strategy was utilized to ensure appropriate numbers of each respective ethnic group, equal numbers of men and women, young and old, aged 18 years and older. To achieve the most diverse sample, efforts were made to recruit only one member from each household. All recruiting was conducted in English, with the exception of the Chinatown and Washington Heights sites, in which recruitment was conducted in Cantonese and Spanish, respectively.

Initial recruits were asked to provide their name and telephone number, and were given a recruitment flyer with a unique identification code. The code indicated recruitment site, age group, and sex of participant, and acted as a form of identification at the event. Participants were informed that their flyers did not ensure a spot in the study, nor did they represent a final commitment to attend; they were also told that study participation was limited to the first 20 arrivals. Due to the fairly complex study design, specifics of the study were printed on the back of the flyer and recruiters explained the design to all new recruits.

The day of the study, the field team contacted all previously recruited individuals by telephone in order to confirm their intention to participate in the study that evening. For neighborhoods with low interest or in which we anticipated low turnout rates, recruiters were sent out the day of the meeting to recruit additional participants as needed. Due to low turnout rates in the first two communities (Astoria and Jackson Heights), the recruitment technique was altered in subsequent communities to supplement street recruitment with use of an agency or community liaison. Liaisons were trained on the recruitment strategy and were supplied with official recruitment flyers.

The Intervention

Upon arrival to the study, all participants were required to present their flyer so that their unique identification number could be matched with the information on our recruiting sheet. Individuals who heard about the study by word of mouth and did not receive a flyer from a recruiter were not eligible for participation. Individuals were then semi-randomly divided into case and control groups and received color-coded forms which indicated for tracking purposes to which group they had been assigned. A maximum of 24 people were admitted to each neighborhood gathering, with no more than 12 participants assigned to participate in the focus group in any one neighborhood. In locations where more than 24 people showed up to the meeting, excess individuals were assigned to the “control” group and participated in the presentation and questionnaire, but were then dismissed. If fewer than 12 individuals showed up, all participants were assigned to the “case” group, as the focus group was the most critical component of this study.

Both “case” and “control” participants were given a long consent form, OEM brochure, and baseline questionnaire. After a short introduction, the facilitator summarized the informed consent form which was signed and collected. The baseline questionnaire was then read aloud to mitigate complications due to literacy, language, or comprehension barriers. The Ready New York Pandemic Flu presentation was then given by a trained Medical Reserve Corps (MRC) volunteer to all participants. With the exception of the Spanish- and Chinese-speaking groups, which were entirely conducted in the native language, all presentations were given by the MRC volunteer in order to facilitate continuity of content among groups, and to minimize the addition or omission of information across presentations. The volunteers who presented the OEM intervention

in the foreign language groups were trained by the MRC volunteer to preserve consistency of message throughout the presentation locations. Duration of the presentation was limited to 20 minutes, and the brochure was referred to multiple times throughout the demonstration as a visual aid and supplementary source of information. Participants were asked to refrain from asking questions in order to keep presentation content consistent across neighborhood groups.

Following the presentation, members of the “control” group checked out, and “cases” gathered for the focus group discussion. Focus groups were held directly following the viewing of the Ready New York presentation, and centered on evaluation of both presentation and brochure, and community attitudes and awareness. Each focus group was composed of at least 6 people, and lasted about one hour on average. Check-out procedures included verification completed questionnaire and informed consent sheets, confirmation of contact information, and disbursal of participant incentives. Members of the control group were compensated a total of \$30 cash for their participation and members of the case group were compensated a total of \$50 cash to account for the additional time spent participating in the focus group. All participants were given a written reminder of our intent to contact them for a follow-up interview 6 to 8 weeks in the future.

Focus Group Discussion Topics

Using the focus group method as a primary source of data, we were able to identify strengths and weaknesses of the Ready New York Pandemic Flu materials, and furthermore explore how culturally diverse customs and beliefs directly affect citizens' understanding and retention of the city's guidelines in the event of pandemic flu. The focus group discussions were facilitated by an experienced moderator, who helped to create a non-evaluative environment in which participants were free to express their thoughts and feelings comfortably and with minimal concern for the differing opinions of others in the group. Use of name placards in front of each respondent helped create feeling of intimacy and enabled the moderator to encourage less vocal group members to contribute. While the guide outlined specific topic areas of interest, the moderator was free to probe deeper into topics as they arose or to deviate from the guide if an unanticipated topic of interest came up in discussion.

Key Areas of Discussion

- Saliency of Message
- Belief in Control over Transmission and Recommended Behavioral Changes
- Preparation Recommendations
- Trust in Government
- What Your Community Needs to Know
- Effectiveness of the Presentation and Brochure

At least one note taker was present at each focus group. The note taker's role was to observe the process, take note of any non-verbal cues, alert the moderator of timing, and keep track of any topics that may not have been discussed in the desired amount of detail. All focus group discussions were conducted in English, with the exception of those in Washington Heights and Chinatown, which were moderated in Spanish and Cantonese, respectively. Digitally recorded audio files which were later transcribed and analyzed by the research team were made of each focus group discussion. Participants were made aware of this intent both verbally and through the written consent form.

Follow Up Survey Topics

Follow-up interviews of both cases and controls were administered a total of 4 to 6 weeks following the initial gathering. Interviews were completed over the telephone, and conducted by trained members of the field staff.

Follow-up Survey Topics

- Evaluation of Presentation
- Evaluation of Brochure
- Personal Preparedness
- Personal Reactions

Interviewers used a web-based Computer-Aided Phone Interview (CAPI) system to reduce systematic errors in data collection. The survey was designed such that comparison could be made between it and the baseline questionnaire and focus group responses. Survey questions further investigated the topics introduced in the

baseline questionnaire and centered on information retention, message dissemination, behavior change and level of preparedness, and situational awareness as a result of the intervention. Survey topics were divided into four sections, and each section consisted of both multiple choice and open-ended questions. The interviewer was encouraged to probe deeper into topics for which the respondent had limited response.

Maimonides Companion Study

Through a companion study conducted through Maimonides Hospital's Emergency Department, baseline and follow-up data for two additional communities – Orthodox Jewish and Pakistani – in the Boro Park region of Brooklyn were gathered. The parallel research design utilized identical baseline and follow up surveys, OEM presentation, and focus group discussion guide. While many elements of the study design remained constant between the two studies, there were two main differences: 1) the Maimonides study consulted with “ethnic leaders” to identify issues that could be incorporated into a community-specific presentation; 2) both the “official” OEM presentation and the ethnic leader-derived community-specific presentation were piloted in each of the two communities to determine whether a community-specific presentation impacts comprehension, recall, or behavior modification.

Due to differences between the Maimonides and NCDP study aims, respondents recruited from the Maimonides study are considered “cases” for the purposes of this study, as they all participated in a focus group discussion. Although the underlying hypotheses of each of the two studies differed, data collection methods between the two were nearly identical, which enabled baseline and follow-up data to be shared between cohorts.

Results

Community Demographics

Table 1 depicts select socio-demographic characteristics of the cohort by neighborhood (see Table A1 in Appendix for complete composite). Overall, a total of 96 respondents were recruited from the six neighborhoods in the NCDP catchment area, and an additional 78 respondents were recruited through the Maimonides sister study, for a total of 174 participants from eight different neighborhoods. Of the 96 participants recruited through NCDP, there were 58 cases and 38 controls, whereas all 78 participants recruited through Maimonides were assigned to the control group. Group size varied by neighborhood, with the smallest group in Jackson Heights and the largest in Chinatown. The average group size was 12 participants.

Table 1: Select Sociodemographic Characteristics by Neighborhood

		Astoria	Bed-Stuy	Chinatown	Jackson Hts	Wakefield	Wash Hts
<i>Borough</i>		Queens	Brooklyn	Manhattan	Queens	Bronx	Manhattan
<i>Ethnicity</i>		Greek	Afr-Am, Caribbean	Chinese	Indian/ Bengali	Caribbean	Dominican
<i>Total (n)</i>	96	13	15	31	6	16	15
<i>Cases</i>	58	13	9	11	6	10	9
<i>Controls</i>	38	0	6	20	0	6	6
<i>Foreign-born (%)</i>		53.9	46.7	96.8	83.3	62.5	100.0
<i>Language</i>		English	English	Cantonese	English	English	Spanish

The overall cohort was approximately half male and half female, with slight variation in each community. The mean age of the cohort was about 45 years old, with the youngest group being the Maimonides Pakistanis (mean age 35 years old) and the oldest being the Chinese in Chinatown (mean age 56 years old). A total of 40% of participants were employed, and about one-third of all respondents had children in the household. There was an overall percentage of about 65% who were foreign born, with the largest populations in Washington Heights and Chinatown (100% and 97%, respectively) and the smallest in the Maimonides Pakistani and Jewish communities (25% and 28%, respectively). Poverty rates exceeded 30% in five out of the eight communities, with the average poverty rate of the cohort at 21% - a rate nearly twice the national average of 12% (CITE).

Baseline Data

Data derived from the baseline questionnaire reflect differences pre-focus group preparedness attitudes and behaviors among the eight neighborhoods (Appendix Table A2). As seen in Table 2, self-proclaimed levels of preparedness were low in all groups, with less than one-third of respondents claiming to be prepared for a major disaster. A total of 31% of all respondents indicated they had no intent to prepare at all. The Chinatown and Maimonides Pakistani participants were most prepared, with 58% and 39% of respondents, respectively, “prepared or preparing” for a major disaster; the Jackson Heights and Wakefield groups were least prepared, with preparedness levels below 10%. One-third of all respondents had experienced some sort of major disaster in

the past, although prior experience did not necessarily reflect levels of preparedness. Among the two most prepared groups – Chinese and Pakistani – the Chinese had the highest percentage of respondents that had previously experienced a disaster (65%), while the Pakistani group had the lowest (18%).

Table 2: Levels of Preparedness by Neighborhood

	Total	Astoria	Bed-Stuy	China-town	Jackson Heights	Wake-field	Wash. Heights	Orth Jewish	Pakistani
Total (n)	174	13	15	31	6	16	15	50	28
Preparedness Behavioral Stage (%)									
<i>Not yet prepared</i>	37	39	53	26	33	69	47	30	32
<i>Prepared</i>	30	23	33	58	0	6	20	22	39
<i>No intent to prepare</i>	31	39	7	13	50	25	33	48	29
% Disaster Experience									
	33	31	40	65	17	31	33	24	18

The length of time a household could last on current food supplies and the percentage of people that received the flu shot in the previous year were also not necessarily indicative of a community's self-proclaimed level of preparation for a disaster. Chinatown, in which 60% of respondents claimed to be prepared for disasters, had the second-highest number of people who could not last more than 4 days without going to the grocery store. Conversely, Wakefield, which had one of the lowest levels of preparedness, had one of the highest proportions of people getting the flu shot and being able to last more than 5 days on their current grocery supply. Overall, about 37% of respondents received the flu shot during the previous year, while about 62% could last five days or longer on the food they have in their house. Washington Heights falls far below the average when it comes to the amount of food they have in their homes, with 40% of respondents saying they could only last 1 day. Astoria falls far below the average in respect to getting the flu shot – just about 8% had received the vaccination in the previous year.

Table 3: Anticipated Role in a Disaster by Neighborhood

	Total	Astoria	Bed-Stuy	China-town	Jackson Heights	Wake-field	Wash. Heights	Orth Jewish	Pakistani
Total (n)	174	13	15	31	6	16	15	50	28
Anticipated Disaster Role (%)									
<i>Leader</i>	18	23	60	7	17	13	47	12	4
<i>"Lone wolf"</i>	55	69	33	40	67	63	13	60	86
<i>Turn to others</i>	25	8	7	52	0	25	33	20	10

Attitudes regarding leadership in a disaster situation also varied significantly by neighborhood (Table 3). While a total of 18% said others would look to them for leadership (“Leader”), 55% said they would work alone to protect themselves and their family (“Lone wolf”), and 25% would either turn to someone else for leadership or wait for help to arrive (“Turn to others”), this breakdown is not consistent across all groups. The Bedford-Stuyvesant and Washington Heights groups were much more likely than the other groups to be leaders (60% and 47%), with other people turning to them for help. Chinatown was by far the most likely to look to someone else for leadership (39%), while the majority of the remaining five groups would work alone to protect themselves and their families. Whereas Chinatown had high faith in the government’s ability to respond in an epidemic, Bed-Stuy took the opposite stance. Overall, confidence in the government’s ability to respond during an epidemic ranged from the very skeptical Astoria and Bed-Stuy groups (39% and 40%) to the very confident Maimonides Pakistani, Jackson Heights, and Chinatown groups (89%, 83%, and 81%). On average, about two-thirds of respondents felt the government would come through for them in a pandemic situation.

News information sources also differed among communities. Television was as the leading source of information (44%), although Astoria utilized radio and internet just as frequently, and the Maimonides Jewish population actually preferred all other options over television. Internet ranked as the second most common source of information, but its use was practically non-existent in Bedford-Stuyvesant, Chinatown, and Wakefield and very limited in Washington Heights and Jackson Heights. Radio and newspaper use similarly differed greatly from one community to another.

Focus Groups

Appendix Table A3 (general findings matrix) shows focus group findings by neighborhood. Findings are separated into three major themes: Risk/Threat/Virus, Community Preparedness and Response, and Messages, Messengers and Communication Platforms. The Risk/Threat/Virus theme incorporates respondents’ perception of risk, concerns and vulnerabilities, dominant worldview, and feelings of control over transmission. Community Preparedness and Response reflects the current neighborhood cohesion, any barriers to compliance with recommendations, existing community infrastructure, and ideas about the role of the government versus the individual. The Messages, Messengers and Communication Platforms theme delineates communities’ preferred methods of risk communication, saliency of health communication messages, and trusted sources of information.

Theme 1: Risk/Threat/Virus

- Many communities felt the uneducated and ignorant would act as vectors and put others at risk of infection. Astoria, Washington Heights and Wakefield felt more at risk due to the variety of social classes in their neighborhoods, and the inability of the lower class to receive medical attention and stay home if sick.
- The increased risk of disease transmission on public transportation lines was a common concern in nearly all communities. Many respondents said they would be unable to avoid crowds or public gatherings because of their reliance on buses or the subway to get around the city.
- Media hyperbole and prolonged coverage of the issue decreases perception of risk. Astoria, Jackson Heights, and Wakefield indicated their perception of risk

has waned over time, since the media seems to have blown the issue of swine flu out of proportion.

- Communities expressed concern for traditionally vulnerable populations such as the elderly, children, and the isolated. Chinatown, Jackson Heights, Astoria, and Maimonides Pakistani groups voiced increased concern for the older generation due to language barrier and a lower level of connectedness to sources of information.

Theme 2: Community Preparedness and Response

- Communities varied in their overall level of preparedness and anticipated response to a pandemic. Some communities, such as Astoria and Maimonides Jewish, found it difficult to stockpile extra food because of their habitual reliance on fresh produce; others, such as Jackson Heights and Wakefield, were much more amenable to keeping large supplies of food in the home. A general concern among all communities was the lack of space for many days' worth of food and water.

“Religious belief is part of a foundation of who they are...so to try and eliminate that is a no-no. People are gonna go to church to pray, to feel secure, to reach out for hope.”

–Male, Washington Heights

- Religious institutions and community organizations are seen as extremely reliable sources of both material and emotional support in a crisis.
- Attitudes and expectations of the government's role in a pandemic vary. Communities such as Astoria and Wakefield feel it is ultimately the government's responsibility to provide for its citizens in an emergency, while Chinatown and Washington Heights believe the burden should be shared between the government and citizen.

“God says ‘take care of yourself that I will take care of you.’ The city is God... I take care of myself and the city takes care of the people.”

– Male, Washington Heights

“If you first prepare, then it will be easier for the government to help you out.”

– Male, Chinatown

“I think that the government should give out some supplies themselves – bring every household 12 gallons of water and a crate of food or something, and tell them that's for when things get bad.”

– Male, Wakefield

Theme 3: Messages, Messengers, and Health Communication Platforms

Message

- Communities emphasize the need for one consistent message to be broadcast through a variety of media sources. Confusion on the topic of pandemic influenza exists because of conflicting messages in the media.
- Public health messaging needs to reach more people. In Wakefield and Chinatown, it was suggested that health officials go out into the communities and speak with people one-on-one. The residents of Bedford-Stuyvesant thought a major corporate sponsor such as McDonalds could help broadcast health

messages to increase the size of the viewing audience and frequency of message. Astoria suggested broadcasting to already captive audiences at the movie theater. The Maimonides Jewish group suggested buying ad space in the local papers or creating a telephone hotline.

- A community-specific message may increase message saliency.

“I think when we look at on the larger scale, we say, oh, it’s all over the country, no big deal. But when you bring it home, I guarantee you folks are gonna stand up and take attention...because now it is at your doorstep.”

– Male, Bedford-Stuyvesant

- Preferred message timing differs by community. While Astoria, for example, prefers a Just-In-Time type message, Bedford-Stuyvesant and Wakefield feel information must be given out as early as possible.

To Scare or Not to Scare?

“I think what they should do is don’t sugar coat. They need to scare people. You know, show them the real deal. This is what a person really looks like when they have the flu. This is the suffering.”

– Female, Wakefield

“They’re not gonna listen to if you cover your nose, then you won’t catch stuff like that. But if you say, this is exactly like if you catch HIV positive, they’re gonna look at that like okay, I need to do this now...”

–Female, Bedford-Stuyvesant

“One problem with scaring them into it is mass hysteria...I think you scare them too much you run the risk of starting riots.”

– Male, Wakefield

Messenger and Communication Platforms

- Doctors and other medical professionals are widely regarded as trusted and preferred sources of information, whether they are private practitioners, celebrity doctors, or Department of Health officials.

“I believe God, and then next, my doctor.”

– Female, Jackson Heights

- Religious leaders are another esteemed resource, and can be utilized at a local level to promote message dissemination.
- Schools are a reliable and trusted source of information. All communities agreed that sending home flyers with the children is a surefire way to reach the parents.
- Some communities put a high level of trust in the mayor and other government officials, while others are much more skeptical.

“The mayor of New York City controls everything. He’s the top dog... you can get a group of people, and say, “Hey, look, this is what the mayor says we gotta do... People will follow you because it’s coming from the top, and you were telling them this all the time.”

– Male, Bedford-Stuyvesant

“I think as a rule, when they say any news like this, concerning some part of political science, people panic a lot. You don’t always get the whole truth.”

– Female, Astoria

Follow-Up Data

A total of 69 follow-up interviews were completed out of the 96 respondents, for a follow-up rate of about 72%. No participants refused participation – those that were lost to follow-up were either unable to be reached or had since left the country. Follow-up interviews lasted an average of about 15 minutes, and participants were compensated with a \$50 Visa Gift Card which was delivered by mail.

Data collected in the follow-up interviews was analyzed by cases and controls, and by neighborhood. Analysis was limited to the six neighborhoods included in the NCDP study, as follow-up data from the Maimonides sister study is currently unavailable. Due to the extremely small sample size of the Jackson Heights follow-up group, this neighborhood has been excluded from the interpretation of the results.

Cases vs. Controls

Appendix Table A4 shows the follow-up data comparing cases and controls. Due to small sample sizes across all groups, few differences between cases and controls were found to be statistically significant, but the distributions give insight regarding the four topics of interest: Evaluation of Presentation, Evaluation of Brochure, Personal Preparedness, and Personal Reactions.

Evaluation of Presentation and Brochure

Overall, when asked what points they remembered from the presentation, cases and controls were able to recall much of the same information (Table 4). In both groups, personal protective measures were most commonly cited as important points remembered from the presentation. The most common guideline respondents were able to recall was regarding personal preparedness measures, specifically washing hands, covering your cough, and staying away from sick people. Although topic recall between cases and controls were similar, cases were more likely than controls to remember details about the differences between pandemic and seasonal flu, personal protective measures, and what the city will do in the event of a pandemic. Both groups found the presentation to be useful overall, and there were few complaints about length or content.

Table 4: Message Recall in Cases vs. Controls

	Cases (n=44)	Controls (n=25)
Key Points Recalled from Presentation (%)		
<i>Personal protective measures</i>	86	76
<i>Diff between seasonal and pan flu</i>	11	0
<i>Sources of further info</i>	7	0

The brochures were similarly regarded by cases and controls. A total of 68% of respondents read or re-read the brochure, and 67% gave the brochure to someone else to read. Use of informational sources found in the brochure varied, and cases were slightly more likely than controls to use the suggested sources. Of all recommended sources of information, 3-1-1 was most commonly used, with 26% of all follow-up respondents using it in the last 30 days. Lifenet/Ayudese and www.pandemicflu.gov were scarcely used by either cases or controls, and a large proportion (62%) of people did not access any of the suggested sources of information.

Personal Preparedness

As seen in Appendix Table A4, almost everyone who attended the OEM presentation talked to others about the flu after the presentation, most people within their own household or community. A significant proportion of respondents (41%) spoke with 11 or more other people. Among both cases and controls, home preparedness before and after the presentation differed significantly, reflecting the efficacy of the presentation. When asked at follow-up if they felt prepared *before* the presentation, 63% said yes⁵; when asked at follow-up if they felt prepared *after* the presentation, 93% said yes. The increase in feeling of personal preparedness is additionally apparent in the proportion of people who say they can now go 1 week or longer without going to the grocery store (70%), have washed hands more frequently (93%), cover cough with a tissue or sleeve (86%), and feel more confident in their ability to respond should the flu come back stronger in the fall (94%).

Personal preparedness strategies with the lowest rates of compliance include stocking over-the-counter medications (52%), stocking prescription medication (35%), stopping sharing food and drinks (54%), and staying home if sick (61%).

Personal Reactions

Overall, general reactions to the presentation and brochure did not significantly differ between cases and controls. The proportion of cases whose perception of swine flu was changed by the presentation was slightly higher than that of the controls (77% vs. 68%), while more controls than cases thought about what might happen in a severe pandemic (88% vs. 71%). Concern about the swine flu before and after the presentation, however, did significantly differ between cases and controls. Cases saw a 34% *increase* in the proportion of people who were concerned about the swine flu whereas there was an 8% *decrease* in the proportion of controls who were concerned over the same time period. Confidence in the government's ability to respond in a pandemic also significantly differed, with more controls than cases claiming to be confident (92% vs. 71%).

⁵ Notice this proportion is twice that of the baseline questionnaire, indicating respondents self-proclaimed level of preparedness differed when asked before and after the presentation.

Neighborhood Differences

Follow-up data by neighborhood is presented in Appendix Table A5.

Evaluation of Presentation and Brochure

Retention of information from the presentation did not differ greatly by neighborhood. In all neighborhoods, personal protective measures were the most frequently recalled points. In general, respondents from Bedford-Stuyvesant, Wakefield, and Astoria were able to recall a broader spectrum of topics than were the other neighborhoods. All neighborhoods agreed that the presentation length was appropriate, although 15% of respondents in Chinatown thought it too short and 18% of respondents in Astoria thought it too long. Interest in adaptation of the current presentation into a more community-specific presentation was expressed in all communities, with the highest levels of interest in Astoria, Wakefield, and Bedford-Stuyvesant (73%, 42%, and 36% respectively).

Opinions regarding the brochure were slightly more diverse among groups. Despite the fact that 87% of all respondents valued the brochure as an effective way to reach community members, respondents from Astoria fell far below this average with just 64% agreeing to this statement. Members of this community were additionally more selective about where they thought brochures should be made available, with receiving it in the mail, at the workplace, or in public entertainment venues at the bottom of their list. Other suggested venues included out on the streets, on public transportation, and at social service organizations, at malls, retirement homes, libraries, and doctors' offices. While most neighborhoods found the brochure to be visually appealing (73%), just one-fourth of the Wakefield respondents felt similarly – this group was also the least likely to have read or shared the brochure (50%), and far less likely than other groups to have used any of the recommended sources of information (25%). While 3-1-1 was the most commonly used of the recommended sources (26%), its use was disproportionately distributed among communities with respondents from Bedford-Stuyvesant and Astoria much more likely to have accessed it in the last month than people from any other area (73% and 55%).

Personal Preparedness

Actions regarding personal preparedness also differed by community. In every neighborhood, the majority of people spoke to others about the flu while in the home setting (65%). Residents of Washington Heights, Astoria, and Bed-Stuy were more likely than residents of the other neighborhoods to speak to others in their community (outside the home) about the topic (82%, 73%, and 55%). Respondents of Bed-Stuy and Washington Heights were additionally more likely than others to have spoken about the flu with people at a community or religious organization (64% and 36%).

Levels of home preparedness differed significantly from before the presentation to after in all communities. That is, the number of people who claimed to be prepared in the home before the presentation (63%) was statistically much lower than the number that claimed to exhibit home preparedness following the presentation (93%). Preparation strategies followed were very similar across communities. However, respondents from Astoria were much less likely to have stocked food (46%) and over-the-counter medication (9%) or to have identified friends and family to rely on in an emergency (55%) than other neighborhoods. Along with Chinatown (55%), Astoria was also less likely than other areas to have stocked enough food to last one week or more (46%).

Neighborhoods also differed significantly on actions taken to prevent contracting the flu. Bed-Stuy was least likely to follow the recommendations of avoiding contact with sick people (37%) and ceasing to share food and drinks (27%). Of the neighborhoods, only Chinatown and Jackson Heights had a high proportion of people that stopped sharing food and drinks (85% and 75%, respectively). Of all neighborhoods, residents of Astoria were more likely to stay home if sick (73%), but less likely to have cleaned commonly used surfaces than in other neighborhoods (55%).

Personal Reactions

Neighborhood differences in personal reactions to the intervention were minimal. Of all neighborhood groups, Chinatown had the lowest proportion of people state that the presentation changed the way they thought about swine flu (50%). It was additionally the only group in which level of concern about the swine flu went down after attending the intervention. Bedford-Stuyvesant (64%) and Astoria (46%) were much more skeptical of government preparedness of a pandemic. Astoria was also less likely than the others to have thought about what might happen in a severe pandemic (55%).

Baseline to Follow-Up Comparison

Due to the largely qualitative nature of the study design, baseline to follow-up comparison is limited. Figure 5 shows cumulative percentages of respondents' attitudes regarding preparedness, stockpiling food, and trust in government. Overall levels of preparedness improved significantly from baseline to follow-up. Whereas just 30% of people at baseline claimed to be prepared for a major disaster, the proportion of prepared respondents rose to 93% of those interviewed at follow-up. The proportion of people who report having stockpiled food is consistent with this apparent increase in preparedness, with a two-fold increase from baseline to follow-up in the number of people that can last longer than one week on the food supply currently in their household (36% vs. 70%). Trust in government also increased following the presentation, with 64% of respondents at baseline feeling confident that the government is adequately prepared to respond in a flu pandemic, as compared to 78% of respondents at follow-up.

Table 5: Baseline to Follow-Up Comparison of Preparation Measures

	Baseline (n=174)	Follow-up (n=69)
Preparedness for Major Disaster (%)		
<i>Not prepared</i>	70	7
<i>Prepared</i>	30	93
Household Food Stockpile (%)		
<i>1-4 days</i>	27	16
<i>5-7 days</i>	26	13
<i>8+ days</i>	36	70
Trust in Government (%)		
<i>Not confident</i>	36	22
<i>Very confident in government</i>	64	78

Findings from the Maimonides Companion Study **by Hillary Cohen, MD MPH**

It is often assumed that communities will look to local community leaders for information and support during times of uncertainty and crisis. These community leaders or “experts” may provide valuable information for community specific emergency preparedness. The validity of this information, however, will depend on concordant views regarding risk, community preparedness and response, trusted messengers, and communication between the communities and their leaders.

In this study we interviewed groups of community “experts” from the Pakistani community and Orthodox Jewish community in the catchment area of Boro Park, Brooklyn. Participants included prominent religious leaders, local businessmen, health care providers, and members of community based organizations. Similar to the focus group participants, the community “experts” were given a short presentation regarding pandemic flu and then participated in a group discussion.

The Orthodox Jewish community experts unanimously believed the community would come together and support each other during a pandemic flu crisis. They felt that even without government assistance, existing religious and community based organizations would meet the needs of the community. These beliefs were partially based on prior instances when the Orthodox Jewish community came together to collectively improve health behaviors. For examples, the community initiated a program against drunk driving and underage drinking during the Purim holiday. The experts collectively invoked the Jewish edict valuing the sanctity of life, and felt that this edict would be a prominent force driving protective health behaviors among members of their community in the event of a flu pandemic. Using religious leaders to disseminate information was considered of paramount importance.

It was notable that the Jewish community member focus groups held completely concordant views with their community leaders. The views were comparable in terms of risk perception, community preparedness and response, trusted messengers, and communication. The suggestions given by the community focus groups invoked comparable suggestions for message dissemination and cited the same examples when the community came together to encourage healthy behaviors. These findings suggest that in the Boro Park Orthodox Jewish community, using community leaders or “experts” would be valuable adjunct to inform health messaging strategies and may be able to serve as a proxy for their community.

In the Pakistani community we found a greater divergence of opinions between the Pakistani community leaders or “experts” and the Pakistani community focus groups. The Pakistani community leaders collectively agreed that the communities had very little trust in government. They conveyed that there was a great deal of skepticism regarding the motives of any government programs, including public health programs. This skepticism was related back to concerns of the Pakistani community in Brooklyn being targeted by the US government after 9/11. The expert consensus opinion was that the only way to effectively convey risk to the Pakistani community was to use the religious structures in place. Targeting health messaging strategies using the mosque and trusted religious leaders would be effective. In contrast, the Pakistani community focus group participants repeatedly mentioned the importance of using trusted Pakistani doctors to

communicate risk and information surrounding pandemic flu. While it was felt that the Mosques should be included in health messaging strategies, they were mentioned as a secondary mode of information transmission. Other secondary mode of information transmission mentioned included community based organizations, news programs, the internet, and word of mouth.

“Pakistanis go to a lot of doctor’s offices and listen to a lot of doctors. So I think if doctors tell them that you should stay home. If doctors promote it then they will listen.”

– Focus Group Participant

Additionally, there was a more positive view of the government from the Pakistani community members compared to the community experts. The community members were generally trusting of the US government. Although, it was mentioned that some undocumented immigrants fear deportation if they seek health care, they generally felt that the US government would have favorable intentions surrounding programming for pandemic flu and the care that they would receive would be vastly improved over the health care available in Pakistan.

“Those who are illegal, those who do not have papers, when they fall sick, they are treated the moment they go to the hospital, everything is done”

– Focus Group Participant

“[In Pakistan] if no one has come along with me the doctor will not touch me, till people with money were to reach, even if I were to die. Here [US], if I do not have proper papers or if they are not able to contact my heir, they would not allow me to die...If I have to die I will die, but they would not let lack of treatment be the cause.”

– Focus Group Participant

In general there were similar views between Pakistani community members and the community experts surrounding community preparedness and risk perception. These findings suggest that there is a greater divergence of opinion between the Pakistani community members and their community “experts.” In the Pakistani community surrounding Boro Park, community experts may not reliably serve as proxies for the beliefs of the general community. Strategies to inform health messaging should include both members of the general community and community experts. .

Limitations to these findings include that the number of community experts selected were few and there may be other members of the community who more accurately reflect the general community opinions. The presence of local religious leaders in the community expert panel may have biased the discussion towards the importance of the mosque in health messaging.

Conclusions and Recommendations

Similar to the findings from the 2007 NCDP report, the communities studied varied widely in their attitudes, perceptions, and anticipated behaviors. Because these are not representatively drawn samples, though, a reader must be careful in generalizing from the findings to all residents of a given community, and even more so to generalizations about similar or larger communities across the city. **Nonetheless, these findings do suggest something about the ways that different communities depend upon and trust in government and community-based institutions, and the roles that each might play in communicating critical emergency messages.** One way that we have considered how the communities differ is based on their perceived relationship to government and community. Table 6 below represents a matrix comparing a community’s apparent relationship to local government (generically referred to as “state” in the table) and its dependence upon community networks and institutions in a health emergency. This has been inferred from the focus group data collected in this and the earlier study, and would require further validation by representative sampling in order to corroborate these assumptions. Mainly we have drawn this based on how focus group participants referred to city government and officials (and what they expect of them), and how often and in what context they refer to local community networks and institutions as instrumental agencies in a health emergency. We have considered the relationships of communities to the city along four dimensions – **trusting**, **skeptical** (which allows for some trust in a city’s capacity and interest in serving their needs but is skeptical of its willingness to do so), **wary/mistrustful** (suggesting that the city has less interest or willingness than those who are merely skeptical), and **independent** (in which a community considers itself in “arms-length” transactions with city governance, as if the ethnic community has an extant governance which can negotiate its relationships with the city governance structure). Using these categories, we have characterized the Brooklyn Pakistani, Jackson Heights, and Chinatown communities as “trusting,” the Astoria community as “skeptical,” the Washington Heights, Bedford Stuyvesant, and Wakefield communities as “wary,” and the Brooklyn Orthodox Jewish community as “independent.”

Table 6: Community Relationship to Government

		Dependence on Community	
		High	Low
Relationship to State	Trusting		Pakistani Jackson Heights Chinatown
	Wary		Astoria
	Skeptical/ Mistrustful	Washington Heights Bedford-Stuyvesant Wakefield	
	Independent/ Negotiated	Orthodox Jewish	

The other dimension we coded was the community’s apparent dependence on local networks and institutions, and we considered a range of “high dependence” or “low

dependence.” Interestingly, most of those communities with the lowest apparent community dependence – the Brooklyn Pakistani, Jackson Heights, and Chinatown communities – appeared to the most trusting of the city. Astoria was also characterized as having a low community dependence, but was considered “skeptical” of city governance. Those with the highest community dependence were either mistrustful or regarded themselves as independent. These included the Washington Heights, Bedford Stuyvesant, Wakefield, and Brooklyn Orthodox Jewish communities. This type of formative analysis – which would need to be validated with larger statistically representative samples – suggests that communication strategies to those in the “Low dependence” / “Trusting” categories could be most effectively conveyed directly from the city to the population. In those communities that are less trusting but who have greater dependence on community institutions, the city might benefit from significant collaborative efforts to communicate through mediating community institutions.

Following the three major themes that emerged from the focus groups – the saliency of the risk, community attachment and perception, and communication issues and venues – we have arranged a series of recommendations, listed in Table 7. These represent strategies the city should consider to make their health communication and outreach even more effective. Within the domain of the saliency of the threat, the communities were quite responsive to the dramatic consequences of the 1918 flu and also to the similarities to other “known” communicable diseases, such as HIV/AIDS, SARS or avian flu, which are threatening because there is no or limited immunity to the viral agents, no vaccine, and no cure. The city might consider highlighting all of these issues so as to raise the public’s perception of risk. In order to combat public uncertainty about the saliency of the threat and the value of recommended actions – both of which could minimize people’s perceived risk – it is also worth developing easily accessible answers to the most frequently asked questions. Table 7 below lists those issues which arose most frequently in the community sessions, and which had not been answered by the brochure or presentation alone.

Table 7: Recommendations for Effective Health Communication and Outreach

Recommendations	
Risk/Threat	<ul style="list-style-type: none"> • Highlight saliency and urgency of risk by making consequences of 1918 more pronounced in the presentation • Place flu in the context of communicable diseases such as HIV/AIDS, SARS, avian flu: no immunity, vaccine or cure • Prepare answers to Frequently Asked Questions
Community	<ul style="list-style-type: none"> • Develop community partners with whom to present Ready New York material <ul style="list-style-type: none"> ○ CERTs and Community Boards ○ Religious leaders and institutions • Consider development of alternative sites of care and information to deflect ER surge
Communications	<ul style="list-style-type: none"> • Consider “hard-sell” campaigns similar to NYS smoking cessation campaign • Terms “isolation” and “quarantine” connoted sense of martial law among several communities • Subway a concern to many – consider ad campaign on mass transit focused on social distancing and personal protective measures

	<ul style="list-style-type: none"> • Add private doctors as dissemination site and as key resource
	<ul style="list-style-type: none"> • Mailing brochure an effective mechanism
	<ul style="list-style-type: none"> • Encourage the utilization of telephone and internet resources among non-English speaking communities
	<ul style="list-style-type: none"> ○ 311 as primary information source

In considering how the city could engage communities more directly, navigate community institutions and partners, and be responsive to community-specific issues and needs, several broad recommendations are offered. The first is to continue to expand existing partnerships through the Ready New York infrastructure through CERTs and community boards (with particular attention to block presidents, in those communities with such an infrastructure), and also through religious leaders and institutions. The faith-based community can be extremely helpful in disseminating messages, crafting messages around shared responsibility using religious ethics, adopting strategies that take into account the need to modify religious practices and rituals, and generally conveying key messages about social distancing. A common denominator among all these community partnering strategies is to consider ways of having community leaders and institutions sponsor community forums, have an active role in community presentations (so it represents more bilateral communication than merely a “top-down” message from the city to a particular community), and be involved in “train-the-trainer” efforts as well. Furthermore, several focus groups mentioned expanding community-based sites where they could access information and medical care, in the event of a pandemic, so they wouldn’t regard hospital emergency departments as their only potential service and information site.

Under the rubric of communication, which includes messengers, messages, media, and timing, several recommendations are offered: (1) to consider developing a “hard-sell” campaign similar to the state’s smoking cessation campaign ; (2) to avoid the terms “isolation” and “quarantine,” which have negative connotations to many people, and are generally misunderstood anyway; (3) to address the subway as both a potential infection site and as a critical messaging platform, since it was of great concern to many of the community respondents; (4) to consider private medical doctors as a key information dissemination source and service site; (5) to consider mailing brochures; and (6) to encourage the utilization of telephone and Internet resources, particularly among limited-English proficiency populations. As with the earlier 2007 study, the city’s 311 system was highly regarded as an effective means of providing access to critical citywide information.

Lastly, the research team considered the best match of risk communication timing and objectives. In terms of timing, we have characterized three distinct phases – a “preparedness phase” far in advance of an event, a just-in-time “near phase” in which the event is imminent, and a just-in-time “here phase” in which the event is present. As illustrated in table 8, we have further considered five types of messages and the most appropriate phases in which to disseminate the message in order to be most widely heard and attended to. The first message is that of encouraging household stockpiling and general preparedness, which makes sense during the advance stage and the “near phase.” Raising situation awareness similarly makes sense in these two stages, since once an event in “here” the public is actively seeking information and there is little need to raise further situational awareness. Those strategic recommendations that target

specific behaviors, such as promoting personal protective measures, non-pharmaceutical interventions, and decision-making regarding treatment and vaccines, are obviously of greatest value in the “near” and “here” phases, when populations are most sensitized and attendant to such messages.

Table 8: Appropriate Time to Disseminate Message

Objectives	Preparedness Phase (“far in advance”)	Just-in-Time	
		“Near”	“Here”
<i>Encourage household stockpiling</i>	√	√	
<i>Raise situational awareness</i>	√	√	
<i>Promote personal protective measures</i>		√	√
<i>Explain non-pharmaceutical interventions</i>		√	√
<i>Assist decision-making regarding vaccine / treatment</i>		√	√

Appendix 1: Data Tables

Table A1. Description of Study Participants									
	<i>Astoria</i>	<i>Bed Stuy</i>	<i>Chinatown</i>	<i>Jackson Heights</i>	<i>Maimonides Jewish</i>	<i>Maimonides Pakistani</i>	<i>Wakefield</i>	<i>Washington Heights</i>	<i>Total</i>
Total (n)	13	15	31	6	50	28	16	15	174
Borough	Queens	Brooklyn	Manhattan	Queens	Brooklyn	Brooklyn	Bronx	Manhattan	
Venue type	Community Center	Place of Worship	Community Center	Community Center	Hospital Building	Hospital Building	Community Board	University Building	
Ethnicity	Greek/European	African American	Chinese	Indian/Bengali	Jewish	Pakistani	Jamaican/Caribbean	Dominican/Latino	
Mean age (SD)	40.8 (13.6)	54.4 (13.23)	56.2 (11.8)	44.8 (13.7)	38.2 (20.1)	35.4 (15.5)	50.3 (19.2)	47.6 (15.1)	44.6 (18.0)
Male (%)	38.5	53.3	51.6	66.7	70.0	39.3	37.5	40.0	52.3
Foreign born (%)	53.9	46.7	96.8	83.3	28.0	25.0	62.5	100.0	64.9
Any children (%)	23.1	40.0	19.4	16.7	42.0	57.1	18.8	20.0	33.9
Employed (%)	46.2	46.7	29.0	66.7	52.0	35.7	37.5	13.3	40.2
Living below poverty line (%)	23.3	39.1	36.5	14.4	30.4	30.4	25.1	45.6	21.0
Language of Presentation	English	English	Cantonese	English	English	Urdu	English	Spanish	

*p<0.05, **p<0.01, ***p<0.001 significant difference across all groups.

Table A2. Prior Preparedness Attitudes and Behaviors									
	Astoria	Bed Stuy	China-town	Jackson Heights	Maimon. Jewish	Maimon. Pakistani	Wakefield	Wash. Heights	Total
Total (n)	13	15	31	6	50	28	16	15	174
Preparedness for a major disaster (%)									
Not prepared	38.5	53.3	25.8	33.3	30.0	32.1	68.8	46.7	37.4
Prepared or preparing	23.1	33.3	58.1	0.0	22.0	39.3	6.3	20.0	29.9
No intent to prepare	38.5	6.7	12.9	50.0	48.0	28.6	25.0	33.3	31.0
Experienced a major disaster (%)	30.8	40.0	64.5	16.7	24.0	17.9	31.3	33.3	33.3
Leadership in a disaster situation (%)									
Others will look to respondent for leadership	23.1	60.0	6.5	16.7	12.0	3.6	12.5	46.7	17.8
Respondent will work alone to protect self and family	69.2	33.3	38.7	66.7	60.0	85.7	62.5	13.3	55.2
Respondent will turn to someone else for leadership	0.0	0.0	38.7	0.0	18.0	10.7	18.8	13.3	16.7
Respondent will wait for help to arrive	7.7	6.7	12.9	0.0	8.0	0.0	6.3	20.0	8.1
Confident in government during an epidemic (%)	38.5	40.0	80.7	83.3	54.0	89.3	50.0	73.3	64.4
Received flu shot during previous year (%)	7.7	46.7	51.6	66.7	24.0	39.3	56.3	33.3	37.4
Time household can live on food supplies (%)									
1 day	0.0	0.0	6.5	0.0	4.0	0.0	18.8	40.0	7.5
2-4 days	38.5	20.0	45.2	16.7	32.0	28.6	6.3	20.0	29.3
5-7 days	30.8	20.0	12.9	33.3	36.0	17.9	37.5	26.7	26.4
1 week or longer	30.8	60.0	32.3	33.3	28.0	53.6	37.5	13.3	35.6
Source of daily news (%)									
Television	30.8	60.0	45.2	50.0	16.0	60.7	62.5	73.3	43.7
Newspaper/magazine	7.7	26.7	32.3	16.7	26.0	0.0	12.5	0.0	17.8
Internet	30.8	0.0	6.5	16.7	34.0	28.6	6.3	13.3	20.1
Radio	30.8	13.3	9.7	0.0	24.0	10.7	18.8	13.3	16.7

Table A3: General Findings Matrix								
	Astoria	Bed-Stuy	Chinatown	Jackson Heights	Maimonides Jewish	Maimonides Pakistani	Wakefield	Washington Heights
Borough	Queens	Brooklyn	Manhattan	Queens	Brooklyn	Brooklyn	Bronx	Manhattan
Risk/Threat/ Virus	See a difference in risk between high and low SES. Feel more at risk due to many cultures around. Concerned about media hyperbole. Also concern that uneducated/ignorant will act as vectors.	Feel at risk because their environment is dirty. Concern that the uneducated/ignorant will act as vectors. Concern about spread in public transit. Look at kids as viral portals.	Stressed importance of self-control. Feel at risk if environment is dirty. Elderly more at risk because of language barrier.	Worry has faded. Concern that uneducated/ignorant will act as vectors. Those who use mass transit are more at risk, all else equal. Some reliance on native remedies.	Worry has faded. Feel at more at risk for contracting due to daily religious gatherings. Also feel they have greater capacity to cope than others. Believe after 9/11 are better able to respond.	Fairly lackadaisical regarding illness. Will likely not stop attending religious gatherings even with illness.	Many fatalistic attitudes. Worry about kids as viral portals. Feel more at risk due to lower class status. Concerned affectionate culture will spread germs faster.	Everyone is at risk, but they may be higher due to the many social classes in the area. Also concerned because they are an affectionate culture and germs will spread faster.
Community Preparedness & Response	Difficult to stockpile due to reliance on fresh produce. Concern for elders and children. Organize around church and Greek orgs. Ultimately the city has the money and power and must take responsibility.	A general apathy toward pandemic flu. Will rely on community orgs and churches. Also on others in community. Each family should do what they can, but ultimately the gov't is responsible.	Burden should be shared between individual and government – it is easier for the gov't to help you if you are already prepared.	Older generation is linguistically at disadvantage. High level of trust in religious organizations. Food stockpiles tend to be large, with families able to go 2-3 weeks on dry goods and rice.	Will continue to gather despite sickness. Concern for children and the isolated. Suggest the government supply a 30-day survival package. Focus is on religious values and the preservation of life.	Very reliant upon personal medical doctors. Kinship is more important than other social or communal networks. Homes will be able to stock for maximum one week. Believe it is the city's responsibility to care for its people.	Worry about infrastructure capacity. Amenable to stockpiling. Anticipate the gov't taking a militaristic approach. Look to churches for material and emotional support.	Feel response systems are discriminatory. Believe prevention is key. Burden should be shared between individual and government, but there is a strong sense of individual responsibility.
Messages, Messengers, and Health Communication	High trust in doctors and health officials. Many opposed to mayor and other politicians. More interested in JIT message, but must hear it at least 7 times. Run the presentation in Greek. Use schools to get info out.	Value scare tactics and evidence. Target message to community and age group. Use community council and mayor for message. Message should be delivered early (1 year ahead).	Get news by word-of-mouth. Need a positive message so as not to offend people. Want one-on-one education. Use simple language. Many with low reading ability. Restaurants good places to reach people.	Must include religious groups in messaging. Trust higher in gov't than in media. Will trust primary doctors, but may not be able to reach them. Need to explain consequences for effective health promotion.	Use ethnic media, including newspapers. Can send messages via already established telephone hotlines. Trust city and local gov't for advice, not state or federal.	Message should be delivered through the religious leaders. Trust heavily in doctors. Want more education about the topic. Should use images that will stick with people.	Value scare tactics and evidence. Skeptical of official information and the media. Should educate at the home-level. Partner education with fun. Message should be delivered early.	Health communication may be offensive. Small group presentations empower. Be sure to include rationale behind recommendations for people to trust. Use sports figure to promote.

Table A4. Follow-up by Case/Control

	Case	Control	Total
Total (n)	44	25	69
PRESENTATION (%)			
<i>Important points remembered</i>			
Differences between pandemic and seasonal flu	11.4	0.0	7.3
Personal protective measures	86.4	76.0	82.6
Past pandemics	6.8	12.0	8.7
What the city will do	6.8	4.0	5.8
Sources of further information	6.8	0.0	4.4
What the city will be like	6.8	8.0	7.3
Other	15.9	28.0	20.3
<i>Usefulness</i>			
Very useful	77.3	72.0	75.4
Somewhat useful	22.7	28.0	24.6
Not at all useful	0.0	0.0	0.0
Total (n)	44	25	69
BROCHURE (%)			
<i>Read or re-read brochure since it was given</i>	70.5	64.0	68.1
<i>Given brochure to anyone else</i>	72.7	56.0	66.7
<i>Used the following sources in the past month</i>			
Lifenet/Ayudese	4.6	0.0	2.9
311	27.3	24.0	26.1
www.pandemicflu.gov	9.1	4.0	7.3
nyc.gov	22.7	8.0	17.4
none	56.8	72.0	62.3
Total (n)	44	25	69
PERSONAL PREPAREDNESS (%)			
<i>Talked to others about the flu</i>	97.7	92.0	95.7
Where? (n)	43	23	66
In household	62.8	69.6	65.2
In community*	58.1	30.4	48.5
At work or school	34.9	43.5	37.9
Community organization	18.6	26.1	21.2
Other	41.9	39.1	40.9
How many have you spoken to (n)	43	23	66
1-5	20.9	17.4	19.7
6-10	32.6	30.4	31.8
11+	46.5	52.2	48.5
<i>Home Preparedness**</i>			
BEFORE the presentation*	59.1	70.8	63.2
AFTER the presentation	90.9	95.8	92.7
<i>Preparedness strategies followed</i>			
Stocked food	72.7	76.0	73.9
Stocked water	70.5	76.0	72.5
Stocked over-the-counter medication	45.5	64.0	52.2
Stocked prescription medication	29.6	44.0	34.8
Bought extra cleaning and hygiene supplies	77.3	76.0	76.8
Identified friends and family to rely on in emergency	70.5	88.0	76.8

	Other	15.9	8.0	13.0
Total (n)				
	44	25	69	
<i>Length household can last without going to grocer</i>				
1 day	0.0	4.0	1.5	
2-4 days	13.6	16.0	14.5	
5-7 days	11.4	16.0	13.0	
1 week or longer	75.0	60.0	69.6	
<i>Actions taken to protect from the flu</i>				
Washed hands more frequently	90.9	96.0	92.8	
Covered cough with your sleeve or a tissue	90.9	76.0	85.5	
Avoided contact with sick people	61.4	64.0	62.3	
Stayed at home if sick	61.4	60.0	60.9	
Stopped sharing food or drinks	50.0	60.0	53.6	
Cleaned commonly used surfaces	77.3	76.0	76.8	
Other	18.2	4.0	13.0	
<i>If the flu came back stronger, now better prepared</i>	90.9	100.0	94.2	
<i>Paid more attention to news about the flu</i>	81.8	84.0	82.6	
Total (n)				
	44	25	69	
PERSONAL REACTIONS (%)				
<i>Presentation changed thinking about the swine flu</i>	77.3	68.0	73.9	
<i>Thought about what might happen in a severe pandemic</i>	70.5	88.0	76.8	
<i>Concern about the swine flu</i>				
PRIOR to the presentation*	50.0	76.0	59.4	
AFTER the presentation	84.1	68.0	78.3	
<i>Confidence in government preparedness*</i>	70.5	92.0	78.3	

Notes: *p<0.05, **p<0.01, ***p<0.001 significant difference across all groups.
 Figures are percents unless otherwise indicated

Table A5. Follow up by Community

	<i>Chinatown</i>	<i>Bed Stuy</i>	<i>Washington Heights</i>	<i>Wakefield</i>	<i>Jackson Heights</i>	<i>Astoria</i>	Total
Total (n)	20	11	11	12	4	11	69
PRESENTATION (%)							
<i>Important points remembered</i>							
Differences between pandemic and seasonal flu	5.0	18.2	0.0	8.3	25.0	0.0	7.3
Personal protective measures	90.0	81.8	81.8	66.7	100.0	81.8	82.6
Past pandemics	5.0	18.2	9.1	8.3	0.0	9.1	8.7
What the city will do	0.0	18.2	0.0	8.3	0.0	9.1	5.8
Sources of further information	0.0	9.1	0.0	8.3	0.0	9.1	4.4
What the city will be like	5.0	18.2	9.1	8.3	0.0	0.0	7.3
Other	15.0	0.0	45.5	25.0	0.0	27.3	20.3
<i>Length</i>							
Too long	0.0	0.0	0.0	0.0	25.0	18.2	4.4
Too short	15.0	9.1	0.0	8.3	25.0	9.1	10.1
Appropriate	85.0	90.9	100.0	91.7	50.0	72.7	85.5
<i>Type preferred*</i>							
Specific to community	15.0	36.4	27.3	41.7	50.0	72.7	36.2
General	50.0	63.6	72.7	58.3	50.0	18.2	52.2
Doesn't matter	30.0	0.0	0.0	0.0	0.0	0.0	8.7
Don't know	5.0	0.0	0.0	0.0	0.0	9.1	2.9
<i>Usefulness**</i>							
Very useful	60.0	81.8	100.0	100.0	75.0	45.5	75.4
Somewhat useful	40.0	18.2	0.0	0.0	25.0	54.6	24.6
Not at all useful	0.0	0.0	0.0	0.0	0.0	0.0	0.0

	<i>Chinatown</i>	<i>Bed Stuy</i>	<i>Washington Heights</i>	<i>Wakefield</i>	<i>Jackson Heights</i>	<i>Astoria</i>	Total
Total (n)	20	11	11	12	4	11	69
BROCHURE (%)							
<i>Brochure was effective to reach community members*</i>							
Brochures should be available at (n)	20	9	11	10	3	7	60
Grocery stores**	20.0	88.9	18.2	60.0	66.7	57.1	43.33
Hospital clinics*	15.0	77.8	54.6	60.0	66.7	42.9	45.0
Sent by mail*	40.0	55.6	63.6	60.0	100.0	0.0	48.3
Workplace***	10.0	66.7	0.0	60.0	33.3	0.0	25.0
Public entertainment venues	25.0	55.6	54.6	30.0	33.3	0.0	33.3
Schools**	10.0	77.8	36.4	30.0	33.3	57.1	35.0
Other	75.0	77.8	81.8	70.0	100.0	100.0	80.0
<i>Read or re-read brochure since it was given</i>	75.0	72.7	81.8	50.0	75.0	54.6	68.1
<i>Given brochure to anyone else**</i>	60.0	90.9	72.7	25.0	100.0	81.8	66.7

<i>Brochure was visually appealing</i>	80.0	72.7	81.8	50.0	75.0	72.7	72.5
Total (n)	20	11	11	12	4	11	69
<i>Used the following sources in the past month</i>							
Lifenet/Ayudese	0.0	9.1	0.0	8.3	0.0	0.0	2.9
311***	10.0	72.7	9.1	8.3	0.0	54.6	26.09
www.pandemicflu.gov*	0.0	9.1	0.0	8.3	50.0	9.1	7.25
nyc.gov**	5.0	36.4	0.0	8.3	75.0	27.3	17.39
none***	85.0	18.2	90.9	75.0	25.0	36.4	62.32

	<i>Chinatown</i>	<i>Bed Stuy</i>	<i>Washington Heights</i>	<i>Wakefield</i>	<i>Jackson Heights</i>	<i>Astoria</i>	<i>Total</i>
Total (n)	20	11	11	12	4	11	69
PERSONAL PREPAREDNESS (%)							
<i>Talked to others about the flu</i>	95.0	100.0	100.0	91.7	75.0	100.0	95.7
<i>Where? (n)</i>	19	11	11	11	3	11	66
In household	57.9	72.7	81.8	54.6	33.3	72.7	65.2
In community*	21.1	54.6	81.8	36.4	33.3	72.7	48.5
At work or school	42.1	54.6	27.3	36.4	33.3	27.3	37.9
Community organization like church or synagogue**	5.3	63.6	36.4	18.2	0.0	0.0	21.2
Other***	73.7	9.1	9.1	54.6	100.0	18.2	40.9
<i>How many have you spoken to* (n)</i>	19	11	11	11	3	11	66
1-5	21.1	18.2	0.0	27.3	0.0	36.4	19.7
6-10	15.8	18.2	45.5	45.5	0.0	54.6	31.8
11+	63.2	63.6	54.6	27.3	100.0	9.1	48.5
<i>Home preparedness**</i>							
BEFORE the presentation*	85.0	81.8	36.4	63.6	50.0	36.4	63.2
AFTER the presentation*	95.0	100.0	100.0	100.0	50.0	81.8	92.7
<i>Preparedness strategies followed</i>							
Stocked food*	70.0	81.8	100.0	83.3	50.0	45.5	73.9
Stocked water*	75.0	63.6	100.0	75.0	25.0	63.6	72.5
Stocked over-the-counter medication**	70.0	63.6	72.7	33.3	50.0	9.1	52.2
Stocked prescription medication	30.0	36.4	45.5	50.0	25.0	18.2	34.8
Bought extra cleaning and hygiene supplies*	85.0	72.7	100.0	75.0	25.0	63.6	76.8
Identified friends and family to rely on in emergency**	95.0	81.8	63.6	91.7	25.0	54.6	76.8
Other***	5.0	18.2	27.3	8.3	25.0	9.1	13.0
<i>Length household can last without going to the grocery*</i>							
1 day	5.0	0.0	0.0	0.0	0.0	0.0	1.5
2-4 days	35.0	0.0	0.0	0.0	0.0	27.3	14.5
5-7 days	5.0	27.3	9.1	8.3	0.0	27.3	13.0

1 week or longer	55.0	72.7	90.9	83.3	100.0	45.5	69.6
<i>Actions taken to protect from the flu</i>							
Washed hands more frequently*	100.0	81.8	100.0	100.0	75.0	81.8	92.8

	<i>Chinatown</i>	<i>Bed Stuy</i>	<i>Washington Heights</i>	<i>Wakefield</i>	<i>Jackson Heights</i>	<i>Astoria</i>	<i>Total</i>
Total (n)	20	11	11	12	4	11	69
Covered cough with your sleeve or a tissue	85.0	81.8	81.8	100.0	100.0	72.7	85.5
Avoided contact with sick people	65.0	36.4	81.8	58.3	75.0	63.6	62.3
Stayed at home if sick*	60.0	63.6	63.6	50.0	50.0	72.7	60.9
Stopped sharing food or drinks**	85.0	27.3	45.5	33.3	75.0	45.5	53.6
Cleaned commonly used surfaces*	85.0	72.7	100.0	66.7	75.0	54.6	76.8
Other***	10.0	18.2	18.2	8.3	0.0	18.2	13.0
<i>If the flu came back stronger, now better prepared</i>	100.0	100.0	100.0	91.7	75.0	81.8	94.2
<i>Paid more attention to news about the flu</i>	75.0	100.0	100.0	75.0	100.0	63.6	82.6

	<i>Chinatown</i>	<i>Bed Stuy</i>	<i>Washington Heights</i>	<i>Wakefield</i>	<i>Jackson Heights</i>	<i>Astoria</i>	<i>Total</i>
Total (n)	20	11	11	12	4	11	69
PERSONAL REACTIONS (%)							
<i>Presentation changed thinking about the swine flu</i>	50.0	81.8	90.9	83.3	100.0	72.7	73.9
<i>Thought about what might happen in a severe pandemic</i>	80.0	81.8	90.9	83.3	50.0	54.6	76.8
<i>Concern about the swine flu</i>							
PRIOR to the presentation	80.0	54.6	54.6	58.3	25.0	45.5	59.4
AFTER the presentation	75.0	90.9	54.6	83.3	100.0	81.8	78.3
<i>Confidence in government preparedness*</i>	95.0	63.6	90.9	75.0	100.0	45.5	78.3

Notes: *p<0.05, **p<0.01, ***p<0.001 significant difference across all groups.
 Figures are percents unless otherwise indicated