

# Infectious diseases and social stigma

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Stigma creates a barrier between the sick and the rest of society that prevents them from acting on their instinctive desire to seek curative treatment that will enable them to reenter into their every day social activity. For these ailing persons, the cost of being stigmatized far outweighs the desire to rehabilitate their lifestyle. Further, social stigma associated with infectious disease undermines the overall health of society, and the effectiveness of community efforts to offer unabridged healthcare services to treat and prevent the spread of communicable disease. In the wake of the latest pandemic influenza outbreak, the global community witnessed how under the stress H1N1, communities, regions, and countries can suffer socially and economically. Our research finds a statistically significant relationship between infectious disease and social stigma. We also identify the role the media plays in exacerbating this issue, and address preliminary policy implications to mitigate these issues in the future.

**Keywords:** Stigma, influenza, public health, infectious disease, pandemic.

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From Chile, where sports officials declined to host Mexican soccer teams, to China, where the authorities forced even healthy resident Mexicans and Mexican travelers into quarantine, Mexicans say they have been typecast as disease carriers and subjected to humiliating treatment.

*The New York Times (Lacey et al., 2009)*

If unfortunately, I got infected again, I would prefer hiding myself in a secret place and waiting for death rather than going into the hospital. The discrimination against us is really horrifying...I prefer hiding myself rather than going into hospital if I get infected with bird flu. I do not mean to be irresponsible, but one stigma is already too heavy for me, and I cannot afford to bear an additional one.

*SARS victim (Siu, 2008)*

## Introduction

For centuries, the fear of the unknown and unfamiliar has created justification for the exclusion and disenfranchisement of those with medical conditions for which there seem to be no apparent remedy. Time and experience has also revealed that despite the development of cures for diseases once thought to be terminal, the shadow cast by disease related stigma is not easily lifted with increased knowledge and medical technology. Media reports combined with common myths and misconceptions crystallize public fears and serve to justify drastic measures to contain disease (and its carriers, actual or supposed). The ends justify the means attitude has transcended our past and penetrated into our contemporary societies. The consequences of our actions are an afterthought as scholars seek to diagnose and treat the root cause of this malady - social stigma. Identification of any disease, even briefly with a particular group, country, race, ethnicity, or lifestyle creates a false causal relationship between those associated with a particular category and the disease. The “us”, majority, vs. “them”, minority, mentality drives harmful behaviors detrimental to the community and population as a whole.

Most recently we have witnessed how, with H1N1, naming a disease by country of origin serves to emphasize its “other” aspect and make repressive policies more politically palatable (Perry et al., 2010). Society's stigmatizing behaviors is justified as a means of

protecting the masses from a select few. According to Gilmore et al. (1994), the establishment of the “other,” is one of the core characteristics of stigma. Stigma is defined as having four characteristics. First, a condition must exist which causes a stigmatizing response, and to be effective, the condition is either controllable by and/or spares the stigmatizer. Second, those stigmatized must be able to be distinguishable from others based on a certain characteristic, physical or otherwise. Third, stigmatized individuals must be able to be associated with the condition. And fourth, stigmatizing reactions must create distance between the stigmatized and the stigmatizers; thereby creating the “us” vs. “them” categorization and isolating “the other” - empowering “us” and creating a sense of powerlessness and impotence in the “other.” For example, during the SARS outbreak, China received a substantial amount of blame from American media. This was best captured by a Newsweek article which proclaimed that “the battle will be shaping up between China’s tradition [e.g. the taste for freshly killed meat] and the world’s safety” (Eichelberger, 2007, p.1287).

The instinctive behavior for groups of people having common interests or sharing geographic location is germane to the establishment of functional societies. They reinforce the collective strength of individuals with similar objectives and thought patterns, and confirm the inability of a sole individual to exist without reliance on the resources or collaboration of others. Communities are a powerful means of attaining association and belonging. Therefore, it takes a community to stigmatize - otherwise it would be indistinguishable from individual prejudice (Gilmore et al., 2010), and so would not carry significant weight, power, and authority. It follows, that stigmatizing perceptions must be held by a dominant group. In their analysis, Link et al. (2001) contend that stigma cannot occur without the exertion of power. They conclude that “stigma exists when elements of labeling, stereotyping, separation, status loss, and discrimination occur together in a power situation that allows them” (p.377). Looking back in time we find that communities have used their collective power and authority to banish the diseased, and the afflicted to the fringes of society where they are left - labeled as outcasts.

Infectious disease is one the most common conditions associated with stigma. Cogan et al. (1998) contend that diseases are more likely to be stigmatized under four unique circumstances: First, when the cause of the disease is considered to be the fault of the infected individual; second, when the disease is considered to be terminal and degenerative; third, when the disease is considered to be contagious and detrimental to others; and finally, when the disease is physically apparent. When these observations are applied to communal behavior - disease related stigma is rationalized to maintain the health and strength of the community. Consistent with the findings of their research, Baral et al. (2007) find that communicable diseases in particular are associated with stigma and discrimination. To perpetuate their strength and increase chances of survival the larger priority of community is to sustain the masses - extricating anything or individual that can be clearly identified as a source of the demise of their communal way of life by spreading infectious disease.

The most recent H1N1 outbreak was characterized and treated as being extremely contagious. In a June 2009 emergency meeting, [the] World Health Organization (WHO) classified the H1N1 outbreak as “pandemic;” an epidemic of infectious disease that is spreading through human populations across a large region; for instance a continent, or even worldwide (BBC, 2009). The media coverage of H1N1 was pervasive, and momentum was fueled with each official update regarding the increased number of cases and related fatalities. Although the media coverage was helpful and served as a means to educate the public, the extensive media coverage also incited fear, and created an environment ripe for stigma. Most effected were individuals who were from or who were perceived to be from Mexico (where cases were first reported). Those appearing to have physical symptoms of the virus (albeit due to common allergies) were also stigmatized. From the perspective of those infected or perceived as being at risk of infection, stigma includes shunning, marginalization, and rejection (Lee et al., 2005).

Although in the midst of a pandemic outbreak, stigmatizing behavior may almost seem intuitive, studies show that disease related stigma increases the burden of disease and compounds psychological suffering. It can adversely impact the course of disease or outcome of medical treatment, and could also, in extreme cases, lead to violence. Last year in the wake of the H1N1 outbreak the *Business Insider* (2009) documented a brawl on a New York subway brought on by a woman's failure to cover her mouth while sneezing. To the unassuming, being subject to infectious disease beyond the scope of their control is threatening and intrusive. It imposes or inflicts the burden of another's disease on them and potentially their family.

A study of stigma is pertinent to disease prevention due to the damaging effects it can have on efforts to mitigate infectious disease. Most notable are the insurmountable barriers stigma raises for those seeking or in need of healthcare, which minimizes the net effects of preventative measures and exacerbates the spread of disease (Barrett et al., 2008). This paper investigates the correlative relationships between infectious disease and stigma; and applies lessons learned from the 2009 H1N1 outbreak as a case study to consider appropriate policy implications that may ensue.

The paper is organized as follows. Section one provides an introduction. Section two surveys the literature. Section three discusses the data. Section four reveals the regression results. Section five shows stigmatizing effects of the media. Section six concludes.

## Literature review

We begin with some studies on the SARS outbreak in the early 2000s. Lee et al. (2005) study the experience of SARS-related stigma in Hong Kong in 2003. Their findings provide significant insight into the lives of those stigmatized in the focal point of the SARS epidemic where residents were, marginalized in their work, social, and even their home environments. They observe that SARS impacted most residents and the resulting felt stigma was associated with high instances of emotional distress. Because of its pervasiveness, efforts to circumvent stigma varied with gender, age, education, occupation, and perceived risk factors for SARS - such as residential location. Diverse strategies were undertaken to mitigate the harmful effects of stigma as observations reveal “that public stigma is driven by lay beliefs, emotional responses, and lacks a knowledge base. Education makes little difference to making the public more accepting of conditions that are aversive to their lay beliefs” (Mak et al., 2006, p.1920). Even healthcare professionals confess to avoiding patients with SARS, reinforcing the idea that “knowledge about the disease had no significant effect on stigma” (Mak et al., 2006, p.1912).

Not only is stigma pervasive, but Siu (2008) finds that it tends to be lasting. In the study on SARS victims in the post-SARS era in Hong Kong, Siu reports that SARS-related stigma does not decrease over time. Victims continued to suffer its demeaning effects during follow up visits to medical clinics, and within the contemporary Hong Kong society.

In an analysis of the comparative stigma of HIV/AIDS, SARS and Tuberculosis in Hong Kong, Mak et al. (2006) reveal attributional correlations of stigma to infectious disease. Controllability, responsibility and blame for having the disease were applicable factors in the explanation stigma of all three diseases. Also, they find that knowledge of the disease does not significantly affect stigma. Goodwin, et al. (2009) examine the behavioral and attitudinal responses to H1N1 in Europe and Malaysia and find that specific groups (i.e. homosexuals, homeless, prostitutes) are perceived to be at higher risk and could therefore experience greater prejudice during pandemics.

Des Jarlais et al. (2006) find that educational level is strongly associated with endorsement of stigmatizing behavior. For example, their data shows that when asked whether gay men should be forcibly checked for AIDS or alternatively, whether Chinese should be forcibly checked for SARS, 77.9% of respondents with less than a high school degree agreed,

compared to 17.4% of those with a graduate level education. The findings strongly support that negative emotions arouse similar stigmatizing reactions when comparing the two diseases and that education level may play a role in stigma-forming reactions.

Three months after the peak of the 2003 SARS outbreak in Hong Kong, Lee et al. (2005) conducted a cross-sectional analysis of the public attitudes towards SARS by evaluating survey responses reflecting avoidant and imposing attitudes independently. Indicative of stigma, they find avoidant and imposing attitudes to be significantly correlated. Odds of highly imposing (stigmatizing) attitudes increase significantly for respondents who were middle aged, higher earning, employed and were worried about contracting SARS. Overall, they find employment status to be the most significantly correlated to imposing and avoidant behavior. Housewives report the most avoidant behavior; and the unemployed reflect the most imposing attitudes. These research findings are intuitive as employment status is fundamental to the establishment and continuum of livelihood. The spread of terminal infectious disease threatens the potential to earn income and thereby diminishes the ability to consume goods, services, entertainment, etc. significantly reducing quality of life.

Two months after the outbreak of SARS in Singapore, Verma et al. (2004) surveyed general practitioners and traditional Chinese medicine practitioners to examine the psychological impact of the outbreak on the medical community. They find that general practitioners who worked with SARS patients had significantly higher scores on the General Health Questionnaire, indicating anxiety and social dysfunction compared to traditional Chinese medicine practitioners, who were less likely to treat SARS patients. In aggregate, they find results of the General Health Questionnaire to be significantly correlated to the results in the Impact of Event Scale-R and perceived stigma questionnaire. They conclude that the SARS outbreak is associated with psychological distress and felt stigma among some of the primary healthcare workers in Singapore. Embattled healthcare workers are on the front lines fighting to treat and prevent the spread of infection. Although they may not be infected themselves, they are more susceptible to being infected due to their professional occupation. It follows that healthcare professionals who engage in treatment experience felt stigma among their colleagues with minimal or no exposure.

In a study of the 2003 SARS outbreak in Taiwan, Tzeng et al. (2006) present spiritual needs, coping strategies and psychological impacts of SARS patients. They observe that in the early phases of the outbreak, infected people were labeled as 'Sha', or, taboo. Due to lack of knowledge and popular Taiwanese religion, this kind of labeling was widespread in the media.

The effects of felt stigma are long term. Instances of compounded psychological effect of disease related stigma is documented in numerous case studies resulting from the 2003 SARS outbreak. Despite having recovered from SARS, those who were quarantined, as well as healthcare workers treating SARS patients were shunned and stigmatized (Des Jarlais et al., 2006). SARS was contained globally by widespread quarantine measures. Researchers investigating the effects of quarantine relate the duration of sequester to increased post traumatic stress disorder (Hawryluck et al., 2004). Individuals and families affected by SARS faced multiple complex issues including physical illness, psychological stress, financial hardship, in addition to social stigma (Basrur et al., 2004). Chinese communities in New York's China town were labeled as dangerous, diseased, and inferior (Eichelberger, 2007).

As was seen in the latest influenza outbreak, local communities were able to not only see but they witnessed the rampant effects of H1N1 on their immediate surroundings. However, these realities were made even more troublesome by their ability to only learn of the effects of H1N1 on other countries around the globe via the media. Technological

improvements to communications media has boomed over the past two decades; and our relatively static positions limit our ability to glean our own accurate picture on global activity.

We rely heavily on communications media to gain insight into what is happening in other parts of the world. Communications media may or may not present a realistic picture of global activity. Similarly, information disseminated via the media about disease outbreaks could be inaccurate as well. Compounding this issue is the potential to encounter stigmatizing behavior in the global community. Some countries may not report accurate information regarding outbreaks because of fear of economic backlash or unfair treatment. In aggregate, these issues compromise global health; and prevent individuals from obtaining an accurate perspective regarding their risk of infection.

## Data

The literature review summarizes the previous research findings identifying strong relationships between stigma, infectious disease, and other indicators including education, profession, income, state of health, social interaction, and the media.

Using the World Health Organization statistics (WHO, 2005-2007, 2009a) for reported cases of infectious diseases, and World Values Surveys (WVS, 2005-2007) for our social, demographic and economic data, our research evaluates the relationship between infectious disease and stigma through the focal lens of infectious diseases such as H3N1, H5N1, and H1N1.

Since there are currently no quantitative measures of stigma in a cross-section of countries, the dependent variable, *Stigma*, is constructed using data from the WVS. Associated variables in the WVS include lack of trust, hostility, neighbors of different races, neighbors with HIV/AIDS, and neighbors who are homosexuals.

Trust is included in the index because distrust of infected people was expressed through the respondents of studies on stigma (Lee et al., 2008). We assume that trust is associated with actions of blame, such as stigmatization. Further, the degree of hostility effects how much they project blame on each other. Consistent with previous research, blame is considered a component of stigma.

Hostility is defined as the proportion of people who believe that *others*, if given the opportunity, would take advantage of them. Since hostility is closely associated to the definition of stigma, we included it in our index.

Race, homosexuality, and HIV/AIDS status are characteristics typically associated with prejudice and discrimination. Therefore, we can conclude that having neighbors with the above characteristics that historically incite prejudice impacts a community's or neighbor's willingness to discriminate against such groups. Variables concerning neighbors are measured as a proportion of people who have neighbors with these characteristics. For example, in analysis Des Jarlais et al. (2006) find that when polled, high percentages of respondents indicated that they thought gays should be tested for HIV/ AIDS and Chinese nationals should be forced to submit to SARS testing.

Examining the variables related to stigma individually does not provide significantly strong evidence to warrant testing the relationship between infectious diseases and stigma. Rather, it is more feasible to construct a single indicator using the data reduction method on the associated variables discussed above, and we construct an index of stigma by employing factor analysis. Principal component analysis, the most common form of factor analysis, is used to extract the first principal component based on the largest loading. The rotated component matrix of the factor score is available upon request.

Our independent variable of interest, *Influenza*, represents the aggregate cases of H3N1, and H5N1 reported in WHO during years 2005-2007, and H1N1 in 2009 in the respective

country. We test the relationship of this variable with stigma, controlling for the following socioeconomic and demographic variables:

### **Education, profession, and income**

The literature shows that education level has an effect on stigmatizing behavior (e.g., Des Jarlais et al., 2006). We therefore choose to include the proportion of the population that completed secondary education, *Education*, as a proxy for education. We expect the coefficient of this variable to be negative because individuals with a higher level of educational have less stigmatizing behavior. For example, Lee et al.'s (2008) study resulted in a higher percentage of individuals with less than high school education who were willing to subject individuals with the above characteristics to drastic measures such as quarantine.

Given that different occupations have an effect on stigma (Maunder, 2004; Lee et al., 2008), we control for the proportion that is in professional jobs, *Professional*, compared those who have never had a job or have skilled, semi-skilled, unskilled, agricultural, or in the military. We predict the coefficient of this variable to be positive since professionals tends to have stigmatizing attitudes and avoidant behavior.

Additionally, we controlled for income by using the variable, Q1, which represents the proportion of respondents that are in the richest quintile on a scale of incomes. Since belonging to higher earning quintiles is associated with approval of imposing behavior towards perceived risk groups (Lee et al., 2005), we expect the coefficient of this variable to be positive. All variables are taken from the WVS in the same period 2005-2007 for 27 countries.

The coefficients of the variables for education, profession, and income are intuitive. Education drives the type of employment obtained, in addition to income level. Contraction of an infectious disease can significantly impact the livelihood of individuals and their families. It places them at risk of not being able to provide for their costs of living.

### **State of health, social interaction, media**

The state of health is an important variable as it is of great value with regard to an individual's ability to remain gainfully employed and collect income. Therefore, it serves as a meaningful transitory variable as it is of value and worth protecting. The World Health Organization (WHO) states: "Health is a state of physical fitness and of mental and social well-being, not only the absence of infirmity and disease. The right to health is one of the fundamental rights to which every human being is entitled, without distinction of race, religion, political beliefs, socio-economic condition. The fundamental freedoms can be obtained and maintained only when people are healthy, well nourished, and protected against disease" (MacDougall, 2008, p.7).

The desire to protect personal health in the face of both SARS and H1N1 outbreaks caused substantial decreased social activity. Some healthcare workers' families actively kept them home from work for fear that they would bring infection home during the SARS outbreak. Social interaction is used as a control variable, reasoning that it creates incentives for avoidant or imposing behavior. We use the variable that captures a proportion of those who report being in a very good state of health, *Health*. Given that a good state of health is beneficial to the sustenance of livelihood we predict that the coefficient of this variable will be positive - indicating that healthier people will act in a more imposing/avoidant way to preserve their earned health.

We use the variable that captures a proportion of respondents who are active members of a church or religious organization as a proxy for *Social Interaction*. We assume that strong ties or feelings of belonging to religious or social communities will create more insular behavior, consistent with the literature (e.g., Tzeng et al., 2006). We therefore anticipate the coefficient of this variable to be positive.

Since the presence of media has an impact on the proliferation of stigmatizing viewpoints (Maunder, 2004), we control for the proportion that have used the internet in the last week, *Internet*. This variable is a good proxy for media since internet is a main outlet for news in today's society. We anticipate the coefficient of this variable to be positive.

After merging all the indicators, our sample consists of 27 developed and developing countries. The regression results are described in the next section.

## Regression results

Following the logic in previous sections, we provide a model specification describing the association between stigma and influenza:

$$Stigma_i = \alpha + \beta In\!fluenza_i + \lambda X_i + \mu_i,$$

where  $Stigma_i$  is an index of stigma described in the data section,  $In\!fluenza_i$  is a sum of reported cases (excluded H1N1 cases), and  $X_i$  is a vector of control variables. In Table 1, we report OLS regression results with  $Stigma$  as a dependent variable in column (1), controlling for *Professional*, *Q1 Income*, and *Education*. The result shows that  $In\!fluenza$  has a positive and significant effect on  $Stigma$ , as hypothesized. The coefficient of *Professional* is positive and significant, supporting the evidence that people with professional status are more concerned about their well-being, and therefore tend to have stigmatized attitudes towards infectious diseases. The coefficient of *Q1 Income* is also positive and significant, suggesting that people with high income have stigmatized attitudes because they are concerned about lost of income if they get infected. The coefficient of *Education* is negative and highly significant, per expectation. This equation explains 50% of the variation.

In column (2) we insert the variable *Internet* as a proxy for access to the media. The coefficient of *Internet* is positive and significant, suggesting that access to information raises the levels of stigma. The variable of interest,  $In\!fluenza$ , remains positive and significant at 10% level. The other control variables remain stable. We insert the variable *Health* as a proxy for the state of good health in column (3). The coefficient of *Health* is positive and significant, indicating that healthy people tend to have more stigmatized attitudes towards the afflicted. The coefficient of  $In\!fluenza$  remains positive and significant at 5% level. In column (4) we include *Social Interaction* as a proxy for association with others in the community. The coefficient of this variable is positive and significant, indicating that more interaction with the community leads to higher stigmatized attitudes. The positive sign and statistical significance of  $In\!fluenza$  remains stable. The sign and statistical significance of the control variables as displayed in column (4) are per expectation. In the last column of Table 1, we include all the control variables in the regression. The variable of interest,  $In\!fluenza$ , remains positive and significant at 10% level. Only two out of six control variables remain significant with the correct signs. Overall, the adjusted-R<sup>2</sup> statistics are quite high for each regression, as the regressors explain close to 50% or higher of the variation.

In Table 2, we include the recent cases of *H1N1* in the counts of *Influenza*. The results show that *Influenza* has a positive and significant effect on *Stigma*, as hypothesized in two out of five specifications (viz. columns 1 and 3). Some control variables have the correct and significant signs as displayed in Table 2. The adjusted-R<sup>2</sup> statistics remain quite high for each regression, ranging between 35% to above 60% of the variation.

Despite the limitations of cross-sectional regressions, the analysis is suggestive. The results demonstrate that increase in the cases of influenza reported raise the perceived levels of stigma. In the next section we will offer policy implications for the *H1N1* pandemic in 2009.

TABLE 1. INFLUENZA AND SOCIAL STIGMA (INCLUDED H1N1 CASES)

Variable	(1)	(2)	(3)	(4)	(5)
Constant	-4.984 (-1.312)	-6.320 (-1.598)	-11.117*** (-3.038)	-7.321** (-2.152)	-11.250*** (-3.083)
Influenza	0.0008*** (4.736)	0.0005* (1.722)	0.0005** (2.518)	0.0007*** (4.908)	0.0003* (1.697)
Professional	18.064** (2.166)	3.328 (0.265)	14.628* (1.746)	17.834*** (2.596)	6.989 (0.565)
Q1 Income	39.642** (2.390)	33.356*** (2.599)	21.241 (1.279)	38.800** (2.236)	29.417** (2.238)
Education	-51.518*** (-3.269)	-38.335* (-1.919)	-49.138*** (-3.129)	-55.597*** (-3.957)	-44.441** (-2.397)
Internet	--	22.734** (2.443)	--	--	14.617 (1.362)
Health	--	--	39.977*** (3.765)	--	21.795 (1.556)
Social Interaction	--	--	--	19.987** (2.013)	13.847 (1.656)
No. of Observations	27	26	27	27	26
Adjusted R <sup>2</sup>	0.51	0.58	0.55	0.49	0.66

Notes: The dependent variable is Influenza. t- statistic in parentheses. \*\*\* significant at 1%, \*\* significant at 5%, \* significant at 10%. White Heteroskedasticity-Consistent

TABLE 2. INFLUENZA AND SOCIAL STIGMA (EXCLUDED H1N1 CASES)

Variable	(1)	(2)	(3)	(4)	(5)
Constant	-4.331 (-1.155)	-5.925 (-1.506)	-11.489*** (-3.040)	-6.359* (-1.704)	-11.244*** (-2.898)
Influenza	8.02E-05** (2.070)	3.77E-05 (1.120)	5.51E-05** (2.006)	5.98E-05 (1.304)	2.32E-05 (0.637)
Professional	16.451* (1.863)	-0.386 (-0.032)	13.393 (1.566)	16.140** (2.041)	3.974 (0.305647)
Q1 Income	35.267** (2.071761)	27.290** (2.383)	16.921 (1.046)	34.119* (1.906)	23.085* (1.925)
Education	-45.919*** (-2.821)	-32.691* (-1.693)	-46.454*** (-2.933)	-48.222*** (-2.952)	-38.805** (-2.021)
Internet	--	26.697*** (3.199)	--	--	17.291 (1.531)
Health	--	--	44.484*** (4.601)	--	25.485 (1.655)
Social Interaction	--	--	--	18.102 (1.523)	12.154 (1.274)
No. of Observations	27	26	27	27	26
Adjusted R <sup>2</sup>	0.35	0.55	0.53	0.39	0.64

Notes: The dependent variable is Influenza. t- statistic in parentheses. \*\*\* significant at 1%, \*\* significant at 5%, \* significant at 10%. White Heteroskedasticity-Consistent.



## Stigmatizing effects of media

Media is the driving force behind connectivity and information consumption. However, when produced and consumed irresponsibly, it can be a dangerous distraction in the event of a public health crisis. In April 2009, swine flu, Mexican flu, and the Mexican swine flu were terms the media used to expose the world to H1N1. Although it was eventually renamed, the initial stigmatizing effects proved to be far reaching - inciting stigma directed toward Mexicans, pigs and pork products. In its treatment of H1N1, the media is a recent and tangible example of the causes and implications of disease related stigma. Although sometimes unreliable, the media is empowered as it is the predominate means through which the world produces, transmits, and consumes information. The circumstances surrounding the 2009 H1N1 outbreak create a fertile environment for stigma to fester, in a manner consistent with the findings (Gilmore et al., 1994; Link et al., 2001)

According to the New York Times, (with respect to the effect the 2009 outbreak had on the Mexican population) as whole the outbreak was exploited as an opportunity to “vilify and demonize immigrants from Mexico” (NYT, 2009a). Mexicans at home and abroad were targeted carriers of the disease. Mexico and China engaged in a series of feudal exchanges precipitated by Chinese officials' ban on incoming flights from Mexico, refusal of Mexican pork products, and the removal of Mexican officials from the guest of honor at an upcoming Shanghai tradeshow (from which Mexico eventually withdrew) (CD, 2009). Mexican travelers in China, where even healthy Mexicans were forced into quarantine, were type cast as disease carriers and subjected to humiliating treatment (NYT, 2009b). Even in the state of Guerrero, Mexico, cars with license plates from Mexico City (the state where H1N1 has hit hardest) were stoned by protesters (NYT, 2009b). As stated by the Christian Science Monitor (2009), there are quantifiable costs associated with pandemics, however, they admit that the long term psychological impact of stigma is far more reaching.

During the course of media coverage on the H1N1 outbreak, negative communication and the stigmatizing associations amplified stigma - rather than creating public awareness of appropriate prevention.

### 2009 H1N1 preliminary policy implications

Pandemic disease outbreaks and associated stigma not only overwhelms localized economies, but they have devastating consequences to national populations in addition to international economies. The evaluation of the 2009 H1N1 (Swine Flu) outbreak provides meaningful insight into how the detrimental effects of these catastrophes can be mitigated by the implementation of effective policies. For example, although the latest episode of H1N1 Swine Flu originated in Mexico, The Daily Yomiuri Online (2009) contends that Mexican officials were more prepared to combat the virus than were other countries - whose preliminary response efforts required a substantial undertaking to educate, prepare, and protect citizens from the virus. Because of their commitment to revamp their health system in 1980, Mexico was able to combat H1N1 with their “comprehensive national preparedness plan” developed for public health emergencies (DYO, 2009). In preparation for national health crisis, Mexico has “built a strategic stock of drugs, vaccines, and supplies, begun federal monitoring and support of state-level programs (“Advancing to Excellence”), and created a national committee to ensure coordination across all sectors. The government also took a crucial political decision to address health issues transparently, at both national and international levels” (DYO, 2009).

In contrast, The Washington Post (2010) gives the United States a poor rating for their response to the 2009 H1N1 outbreak and ascertain that although the most recent outbreak was of pandemic proportions the consequences could have been much more severe. Unfortunately, unlike Mexico, the United States depends on inadequate surveillance system; the United States has not made the development of the technology needed to respond to pandemic crisis a priority. Our diagnostic technologies for new

diseases are difficult and time-consuming. If rapid tests were available, people who are sick could get treatment sooner, and we could determine the size of an outbreak, whether the disease is getting more severe, and how to target limited health resources (WP, 2010).

In 2009, The Wall Street Journal reports on the negative responses of China in addition to Argentina, Peru, Ecuador, and Cuba - all of whom acted against the international guidance of the World Health Organization - whose first recommendation for international travelers states, "Travelers must be treated: (a) With courtesy, and respect for their dignity, human rights and fundamental freedoms; (b) So as to minimize any discomfort or distress associated with these measures; and (c) Taking into account their gender, sociological, ethnic and religious concerns (WHO, 2009b, p.12).

Perhaps the most egregious was the response of China who in a matter of days subjected Mexicans to required quarantine regardless of their exposure to the virus, or having recently traveled to Mexico. "Health measures such as quarantine are essential for preventing SARS but are inherently stigmatizing. Indeed, one may say that if there is ever an appropriate use of stigma this would be it" (Lee et al. 2005, p.2039). Other stories told of China's intent to "repatriate [Mexican] nationals effected by the swine flu outbreak" (WSJ, 2009). Negative and stigmatizing reactions from the public, health professionals, and government officials historically have had lasting detrimental effects on entire industries, international trade relations between countries, and the ability of the World Health Organization and the international health community to obtain consistently accurate reporting on disease outbreaks (Cash et al., 2000; MacDougall, 2008).

There is a fine line between the promotion of stigmatizing behavior and the encouragement of appropriate preventative measures which may include exclusionary treatment or justifiable quarantine for the sake of public health (Weiss et al., 2001). In his article, Burris (2002) claims that "it is widely accepted that certain diseases are disfavored in society leading to discrimination against people identified with them..." The investigation of disease related stigma and its effects has become a vital component in the development of public health law. It has also played a critical role in the establishment of privacy and antidiscrimination laws against people with HIV. It was only recently that HIV was taken off the Department of Health and Human Services list of communicable diseases of public health significance - which became effective January 4, 2010 - and is said to end "federally sanctioned stigma" against immigrants infected with HIV (NGLTF, 2009).

Policies designed to mitigate risk of infectious disease historically have polarized public interests by either taking extreme measures - protecting the masses against the spread of infectious disease or protecting the human rights and interests of those infected. Socially constructive public policy must aim to accommodate both interests and not protect one group to the detriment of the other. In their report, Herek et al. (2003) explain the role public health policies play in perpetuating illness related stigma. They contend that "when a disease is stigmatized, public health policy can help to protect those who are ill from popular prejudice or it can promote discrimination against them" (p.533). It is imperative that our local, national, and global health organizations leverage the pervasiveness of the media to provide accurate, timely information regarding infectious disease outbreak. Knowledge of the way in which disease is transmitted and how to protect themselves will equip the public with the necessary information to determine more accurately their risk and prevent prejudicial and stigmatizing behavior.

"Risk assessment as currently practiced and communicated is part of the problem of stigma" (Kunreuther, 1999, p.343). The media can be a powerful and effective tool to circumvent panic in the face of a pandemic. However, balancing freedom of the press and assuring accuracy of communication in times of a global outbreak can be challenging.

Minimization of perceived risk is a means to mitigate and reduce stigma, it enables the better management of disaster, and alleviates panic (Kunreuther et al., 1999; Lau et al., 2005). Accurate and effective dissemination of public health information is imperative to support the development of realistic risk perception in both individuals and social groups

(Brug et al., 2004). “It is important to take the panic out of pandemic. The response to the pandemic influenza should be guided by sound scientific investigations, realistic risk assessments, and good public policy” (Koblentz, 2009, p.80).

“The indirect costs of an epidemic are driven almost solely by the public’s perception of the risk of becoming infected, and the risks associated with the different consequences of that infection” (Smith, 2006, p.3114). When insular risk perception is pervasive and stigma becomes widespread throughout a nation, the issue becomes a matter of public health. Our contribution is in the proof this relationship between stigma and infectious disease at a cross-national level. Our statistical support for associated factors of stigma provides evidence for their contribution to stigma’s relation to infectious disease.

Policymakers and research contributors should work together with an objective to gather more direct conclusions with regard to impact of measures to counter act stigma and investigate them in time-series to further understand their causal relationship in stigma prevention.

## Conclusion

Our research finds a statistically significant relationship between infectious disease and social stigma. We also identify the role the media plays in exacerbating this issue, and address preliminary policy implications to mitigate these issues in the future. Disease related stigma could very well qualify as the most damaging form of social stigma. It poses, in some cases, insurmountable barriers to what could be life saving medical care. Disease related stigma has a deleterious effect on its victims psycho emotional capacity. It effectively hinders our neighbors from seeking treatment - placing the community as a whole at greater risk of contagion, and the effects of unrelenting panic. It is powerful enough to incite violence, and malicious enough to compromise and drive a wedge between amicable nations.

Disease related stigma persists in spite of education and often without rationale. The evidence submitted more than justifies extreme measures to eradicate this lethal social economic poison. It has been around since early civilization and has festered for centuries. And, unfortunately, the latest H1N1 pandemic of 2009 confirms that what has been done in the past is not nearly enough to circumvent its detrimental effects in our world today.

The volume of statistics and research currently offered on the topic offers encouragement. Policies that counter balance the support of the ailing, prevent the spread of infectious disease, and mitigate social economic impact of pandemic disease outbreaks, although currently in there infantile states, can and will grow more robust and effective by using data to support the positive momentum. A quick glance back into the last sixty to seventy years of world history bares testimony to the remarkable progress that can be made based on awareness, properly weighted and legislated policy changes, and most importantly self reinforcing behavior on behalf of the global citizenry.

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