

# Riots, Fake News, and the Flu – Going Viral!



By *Chuck Dinerstein* — January 19, 2018

*An infectious virus or idea plus a susceptible population can cause the flu, a riot or fake news. A study of the 2005 riots in France finds an epidemiologic explanation.*



Courtesy Charles DeJesus [1]

It turns out you can explain the spread of rioting as well as fake news by understanding the spread of a communicable disease, such as the flu. Both actions and ideas spread like a virus; you need both an infectious idea and a receptive audience. A recent [article](#) [2] in *Scientific Reports* applies that metaphorical thinking and some mathematical formulations to the 2005 riots in France.

The metaphor comes from an epidemiologic model called SIR, for "susceptible, infected and recovered." It describes the interaction of the infected with the susceptible. For this article, let's ignore the recovered because rioters infrequently return for more rioting and we rarely change our opinions back to what we once believed.

## **A Psychological $R_0$**

$R_0$  (r naught) is a measure of how contagious infection can be – how many individuals one person can infect. The value is based on the infectious period, the contact rate and the mode of transmission. In the case of rioting, the contagious period was the long-standing tensions between police and the community; the method of spread was social media, virtually instantaneous.  $R_0$  was principally the contact rate, and the researchers found that the number of rioters was related not to the absolute number of people already rioting, but rather to their density – how many there *appeared*

to be. Fake news is similar, based upon long-standing tensions, disseminated instantaneously by social media, creating the information bubbles we share with our like-minded internet friends.

Transmission requires crossing a threshold - a critical mass must be present for patient one to become infected. An epidemic needs a critical mass of infected patients; one is rarely sufficient. In the French rioting, the threshold was crossed by seeing other people rioting. For fake news, the threshold is even more easily traversed. How difficult or time consuming is it to hit the Like or Share buttons? And with Likes and Shares you are responding to how popular it appears, not some absolute measure.

## **Susceptibility**

There is an interplay between infection and susceptibility. It is hard to become infected when you are not susceptible; the current flu season is a good example. This year thirty percent of the vaccinated population is no longer susceptible. The remaining 70 percent of those vaccinated are more susceptible but not as much as those who disregard the vaccine altogether. The participants in the rioting were primarily poor, uneducated young men – the susceptible. Riots began and spread throughout Paris and France in proportion to their presence. When we create like-minded communities on the internet, we experience the joy of belonging and feeling at home. But at the same time, we are grouping ourselves by our susceptibilities. Facebook creates susceptible populations.

## **The spread of rioting**

The  $R_0$  and susceptibility were sufficient to explain how the riot developed in any one area, but how did it spread across the country? Flu spreads from person to person; it is a contact sport. The closer you are to the source, the more likely you are to be infected. Rioting, as it turns out, is also a bit of a contact sport. The closer susceptible people were to the rioting, the sooner they joined in. It was an issue of geography. It took far longer for isolated clusters of susceptible people to engage in rioting if they did at all. Increasing distance provides some additional resistance or immunity. Could the growing gap in our political thought, our partisanship, be a form of self-defense from fake news and foreign ideas?

The authors successfully demonstrated that a model of infection could describe our group behavior, explaining the transmission of thoughts and deeds. But the power, for me, lies in providing the metaphor. Do ideas and actions spread like an infectious disease? And if they do, is the best treatment to have a lot of exposure, so you're less susceptible or to wall yourself off hoping that the germ doesn't jump the wall you have erected?

**Source** <sup>[2]</sup>: Epidemiological modeling of the 2005 French riots: a spreading wave and the role of contagion *Scientific Reports* DOI: 10.1038/s41598-017-18093-4

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**Links**

[1] [https://upload.wikimedia.org/wikipedia/commons/6/66/VPD\\_anti-riot\\_officers.jpg](https://upload.wikimedia.org/wikipedia/commons/6/66/VPD_anti-riot_officers.jpg)

[2] <https://www.nature.com/articles/s41598-017-18093-4>