



Contagion in school attacks: Role of media, and mitigation with a public health approach

Contágio em ataques escolares: papel da mídia e mitigação com uma abordagem de saúde pública

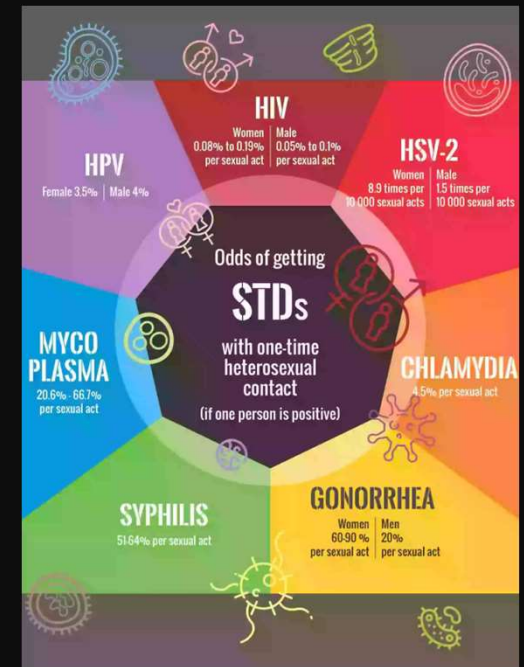
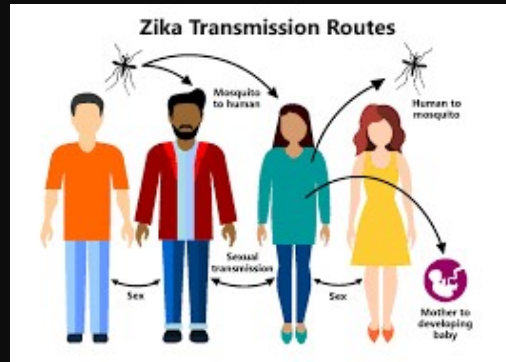
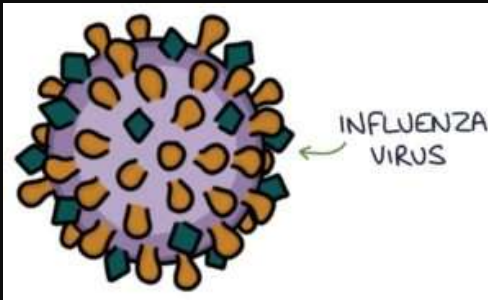
Sherry Towers, PhD
Towers Consulting, LLC
Visiting Scholar, Complexity Science Hub, Vienna



Um pouco sobre mim...

Academic and consultant
Modelling spread of contagion in epidemiology,
and health and behavioural sciences

Acadêmico e consultor
Modelagem da propagação do contágio em
epidemiologia e ciências da saúde e do
comportamento



MRSA SUPERBUG

METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS

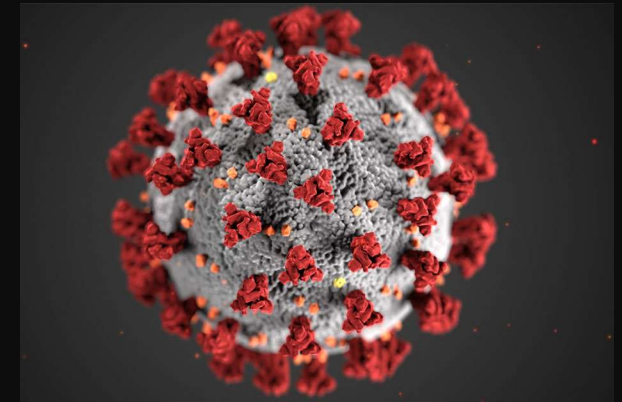
MRSA is a Cause of STAPHYLOCOCCAL INFECTION that is Difficult to Treat Because of RESISTANCE TO SOME ANTIBIOTICS

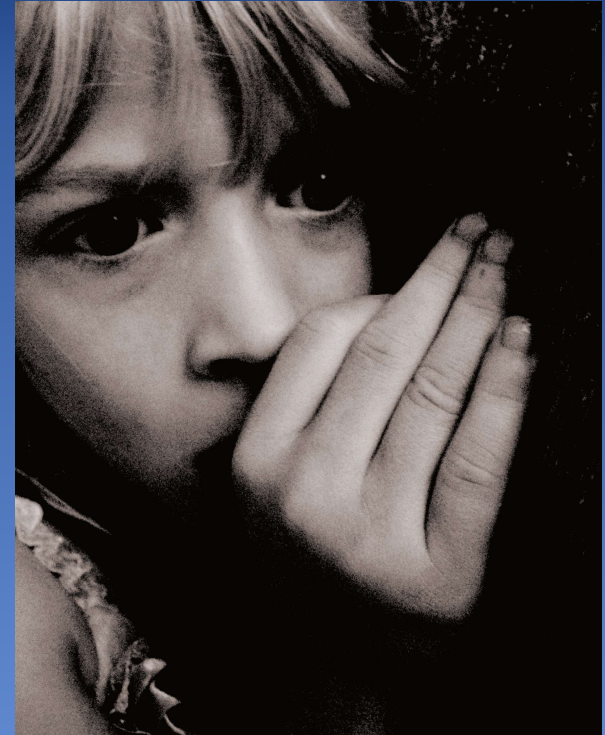
SYMPTOMS
MRSA Staph Infection Start as Swollen, Painful Red Bumps that Might Resemble Pimples or Spider Bites

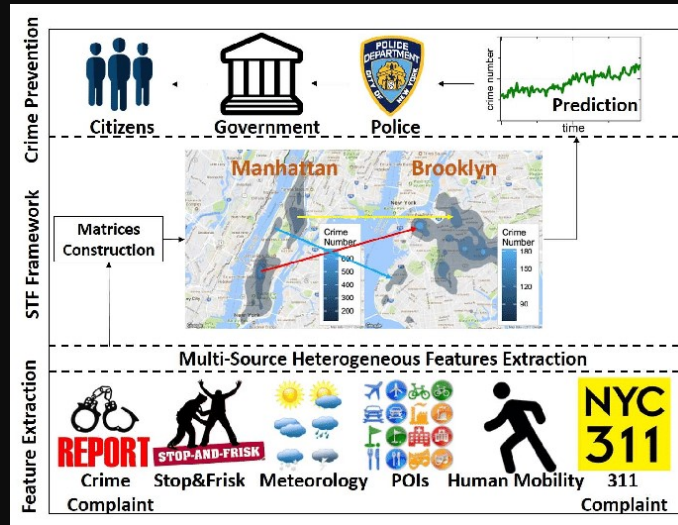
THE AFFECTED AREA MIGHT BE:

- Warm to the Touch
- Accompanied by a Fever
- Full of Pus or Other Drainage

MRSA Remains a CONCERN IN HOSPITALS, where it Can Attack Those Most Vulnerable - Older Adults and People with Weakened Immune Systems







BRAZIL TWIN SCHOOL SHOOTING SHOOTER CAUGHT ON CAMERA

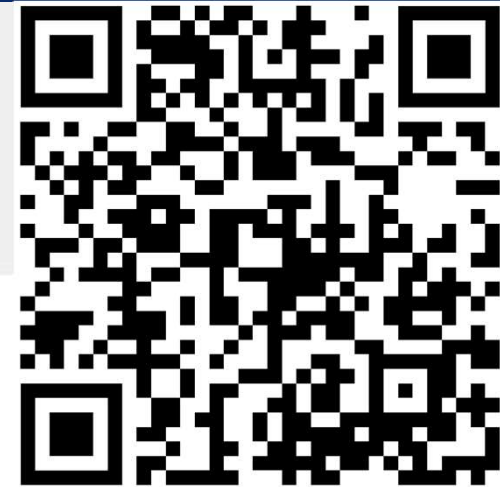


Oneindia English

ADOLESCENT

SUICIDE
PREVENTION

FOR SCHOOLS
AND COMMUNITIES



 OPEN ACCESS  PEER-REVIEWED

RESEARCH ARTICLE

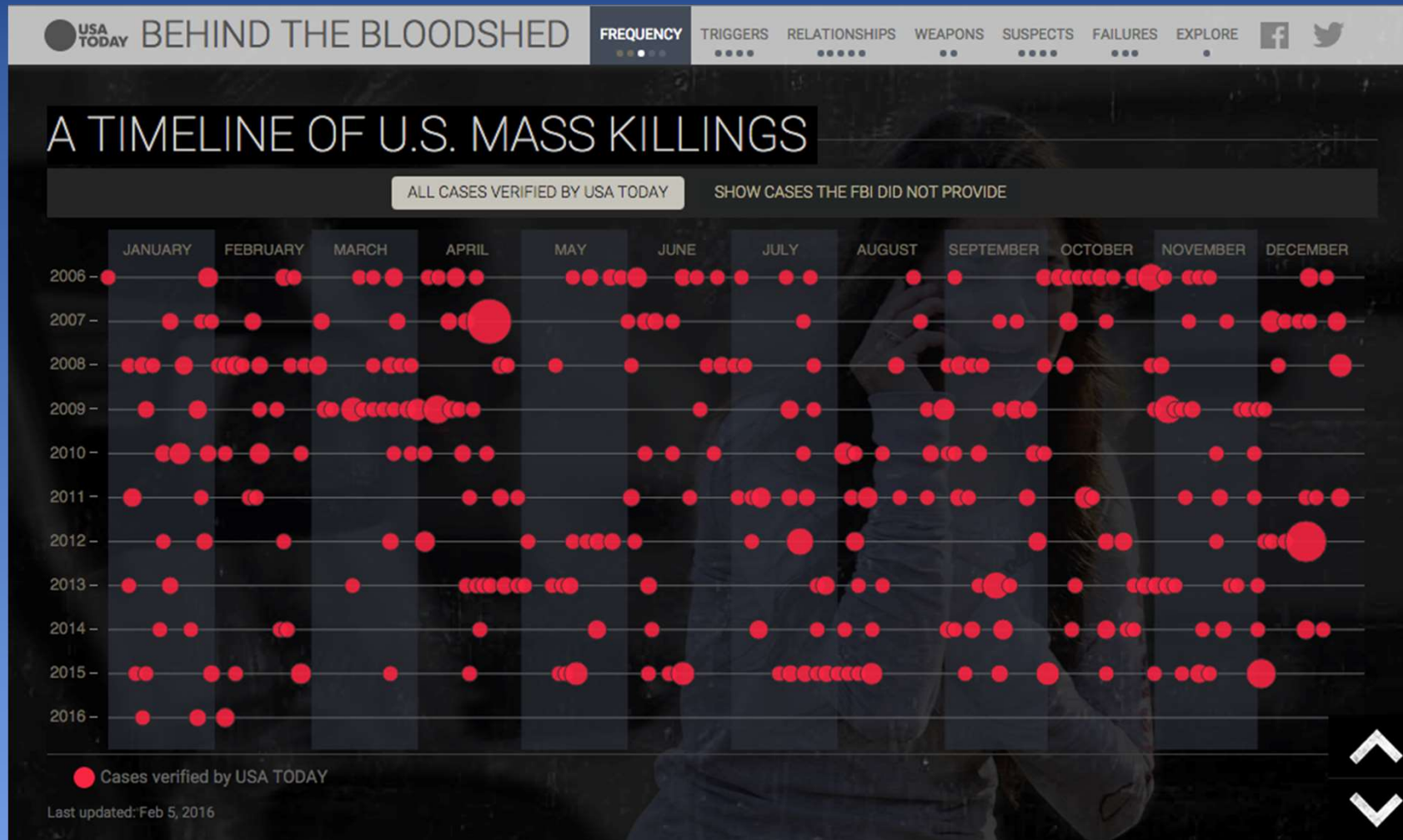
Contagion in Mass Killings and School Shootings

Sherry Towers , Andres Gomez-Lievano, Maryam Khan, Anuj Mubayi, Carlos Castillo-Chavez

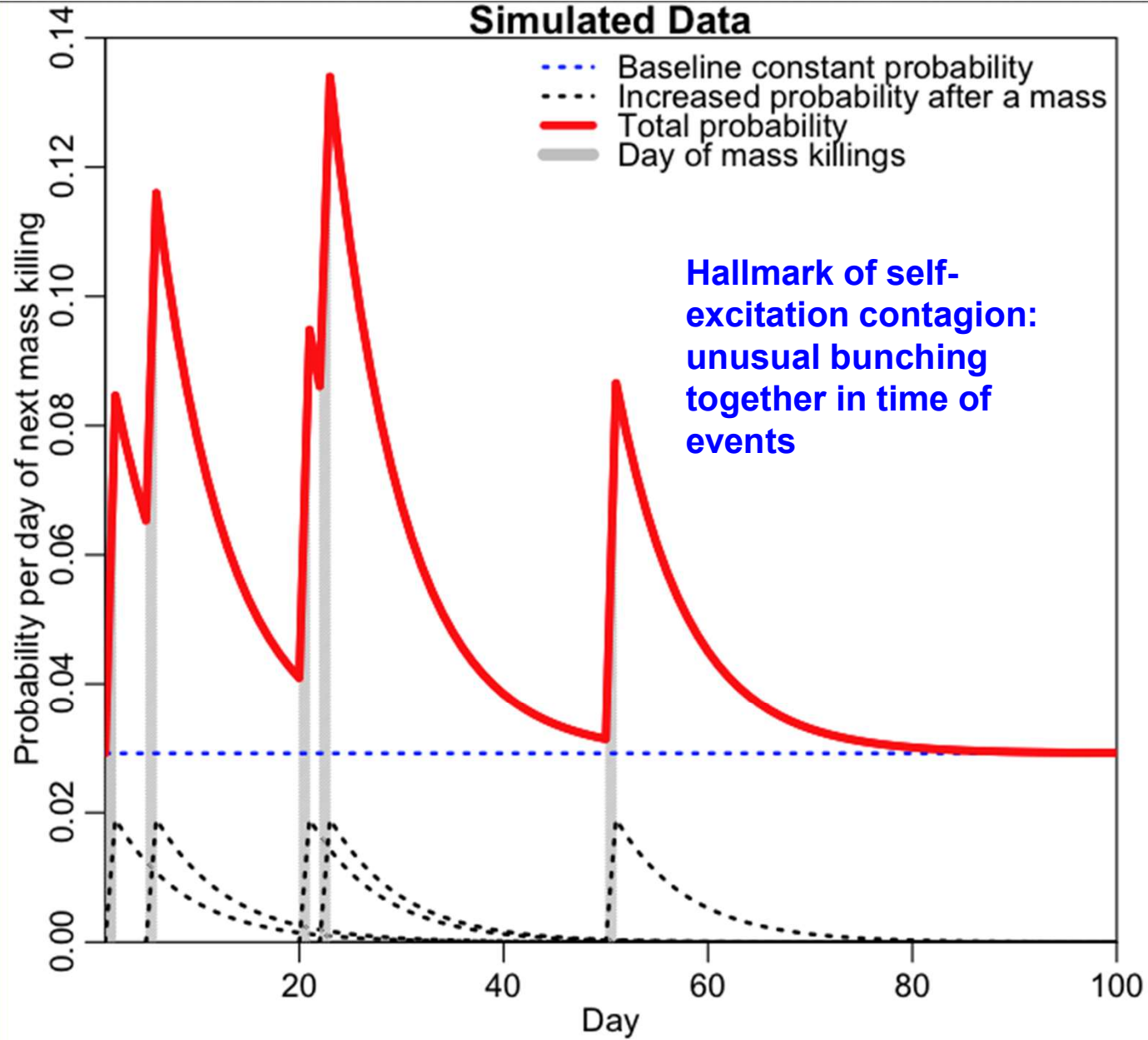
Published: July 2, 2015 • DOI: [10.1371/journal.pone.0117259](https://doi.org/10.1371/journal.pone.0117259)



USAToday, mass killings 4 or more people killed masskillings.usatoday.com/. On average every two weeks (N=232)



Simulated Data



Results (detalhes chatos)

Sample	Nsecondary	Texcite Avg length of contagion (days)	P-value
USA Today full (N=232)	0.28 [0.10,0.56]	13 [5,59]	0.004
USA Today w/ firearms (N=176)	0.30 [0.12,0.56]	13 [4,47]	0.002
USA Today w/o firearms (N=56)	0.23 [0.04,0.64]	12 [3,90]	0.037
Brady school shootings (N=188)	0.22 [0.10,0.42]	13 [5,53]	<0.001
Brady mass shootings ≤ 3 (N=373)	0.28 [0.00,0.62]	38 [0,90]	0.18

Ataques a escolas no Brasil e nos EUA, 2001 a 2023

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[Página principal](#) [Sobre este aplicativo](#)

Painel interativo de dados analisando ataques a escolas no Brasil e nos EUA

https://peace.shinyapps.io/brasil_escola/

- Mostrar dados do Brasil em vez de dados dos EUA
- Mostrar número total de mortos+feridos

Sobreposições de mapas:

- Ataques com armas de fogo
- Ataques de facção/faca/bomba

Demográfico para mostrar no mapa:

Densidade populacional por região

Intervalo de anos

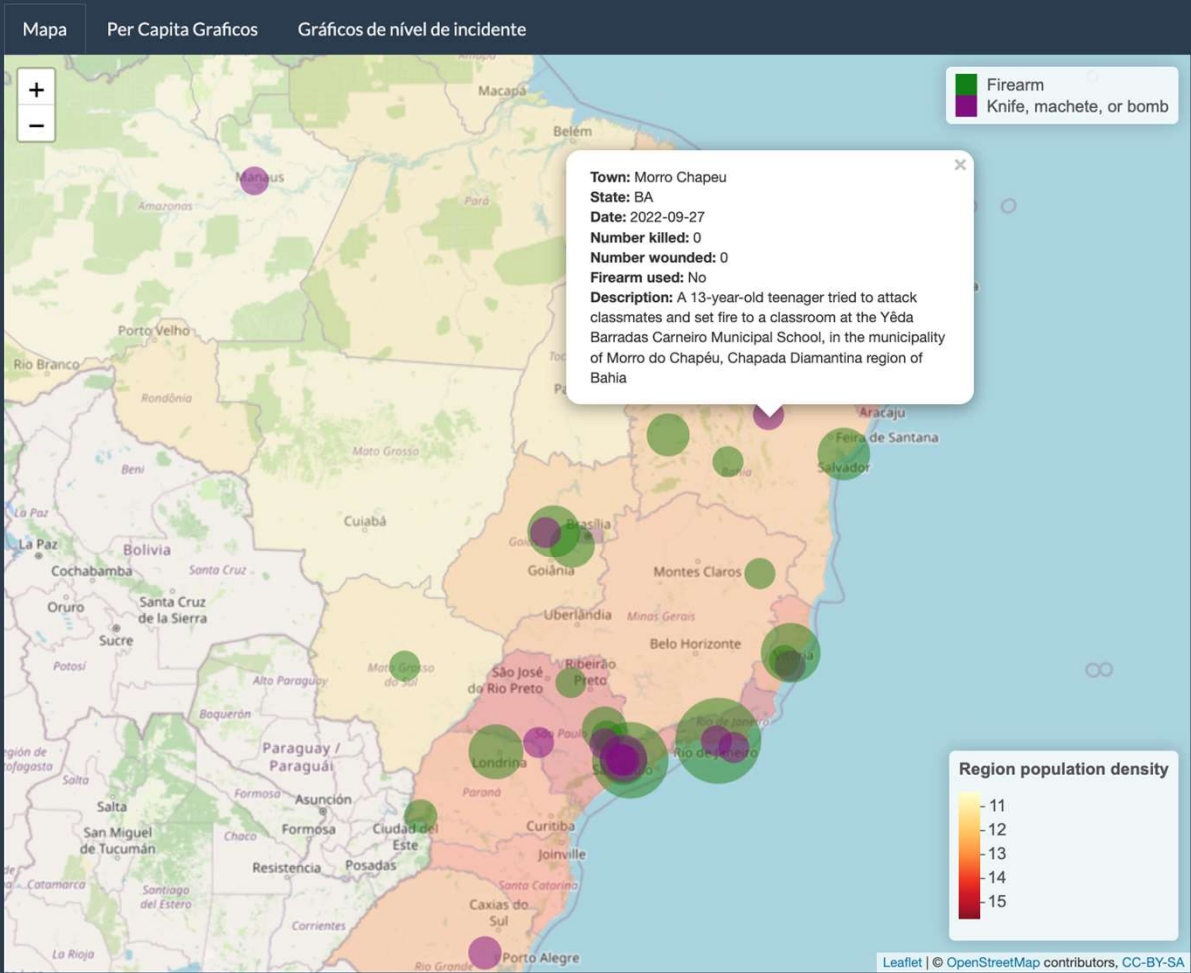
2001 2023

2001 2004 2007 2010 2013 2016 2019 2022/2023

Age of attacker

0 100

0 10 20 30 40 50 60 70 80 90 100



Ataques a escolas no Brasil e nos EUA, 2001 a 2023

Painel interativo de dados analisando ataques a escolas no Brasil e nos EUA

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Página principal Sobre este aplicativo

Mostrar dados do Brasil em vez de dados dos EUA

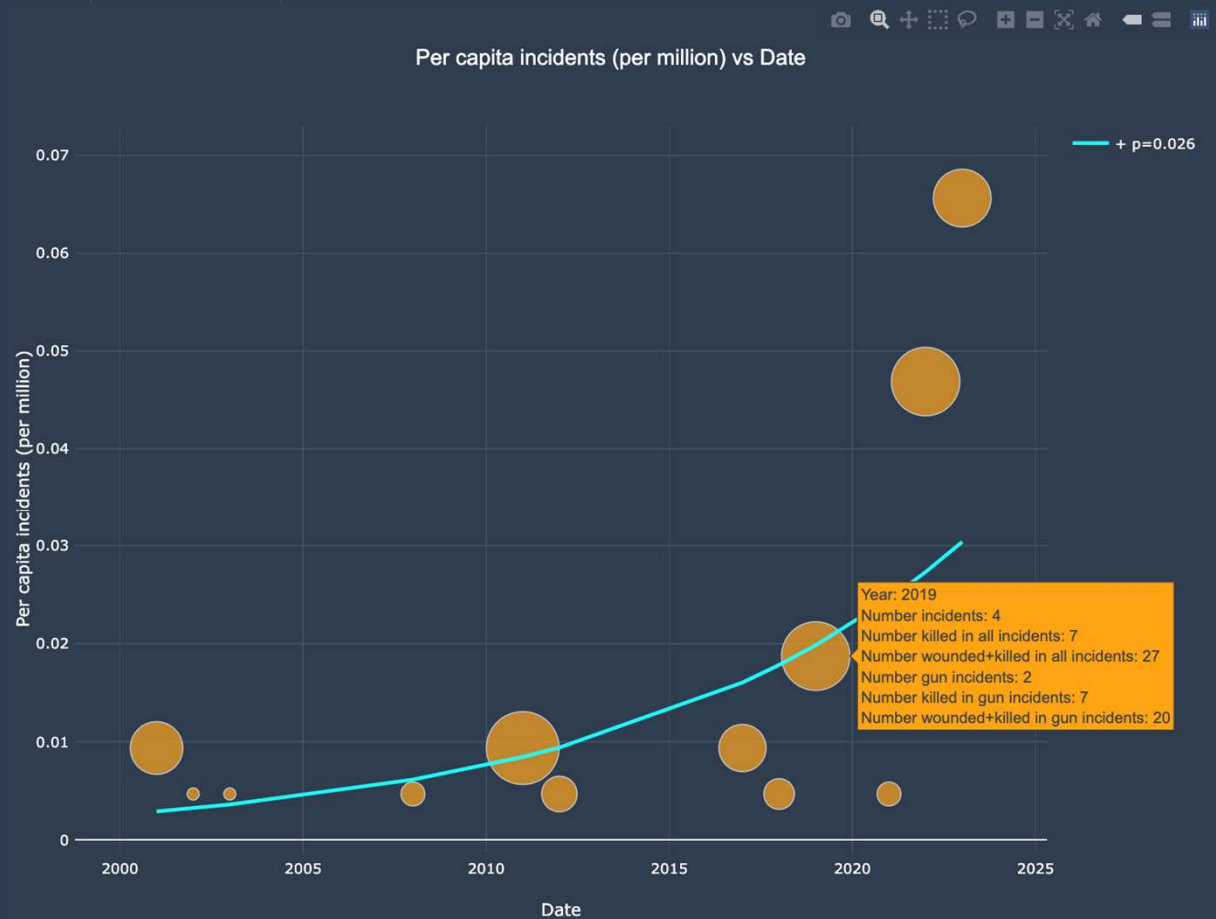
Eixo vertical do gráfico:
Per capita # incidentes

Eixo horizontal do gráfico:
Ano

Intervalo de anos
2001 2023



Mapa Per Capita Graficos Gráficos de nível de incidente



https://peace.shinyapps.io/brasil_escola/?w_d6385815/#tab-179



 OPEN ACCESS  PEER-REVIEWED

RESEARCH ARTICLE

Meios de comunicação de massa e o contágio do medo

Mass Media and the Contagion of Fear: The Case of Ebola in America

Sherry Towers , Shehzad Afzal, Gilbert Bernal, Nadya Bliss, Shala Brown, Baltazar Espinoza, Jasmine Jackson, Julia Judson-Garcia, Maryam Khan, Michael Lin, Robert Mamada, Victor M. Moreno, Fereshteh Nazari, Kamaldeen Okuneye, Mary L. Ross, Claudia Rodriguez, Jan Medlock, David Ebert, Carlos Castillo-Chavez [[view less](#)]

Published: June 11, 2015 • <https://doi.org/10.1371/journal.pone.0129179>



Article	Authors	Metrics	Comments	Media Coverage
∨				

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Painel interativo de dados analisando ataques a escolas no Brasil e nos EUA

https://peace.shinyapps.io/brasil_escola/

Mostrar dados do Brasil em vez de dados dos EUA

Eixo vertical do gráfico:
Per capita # incidentes

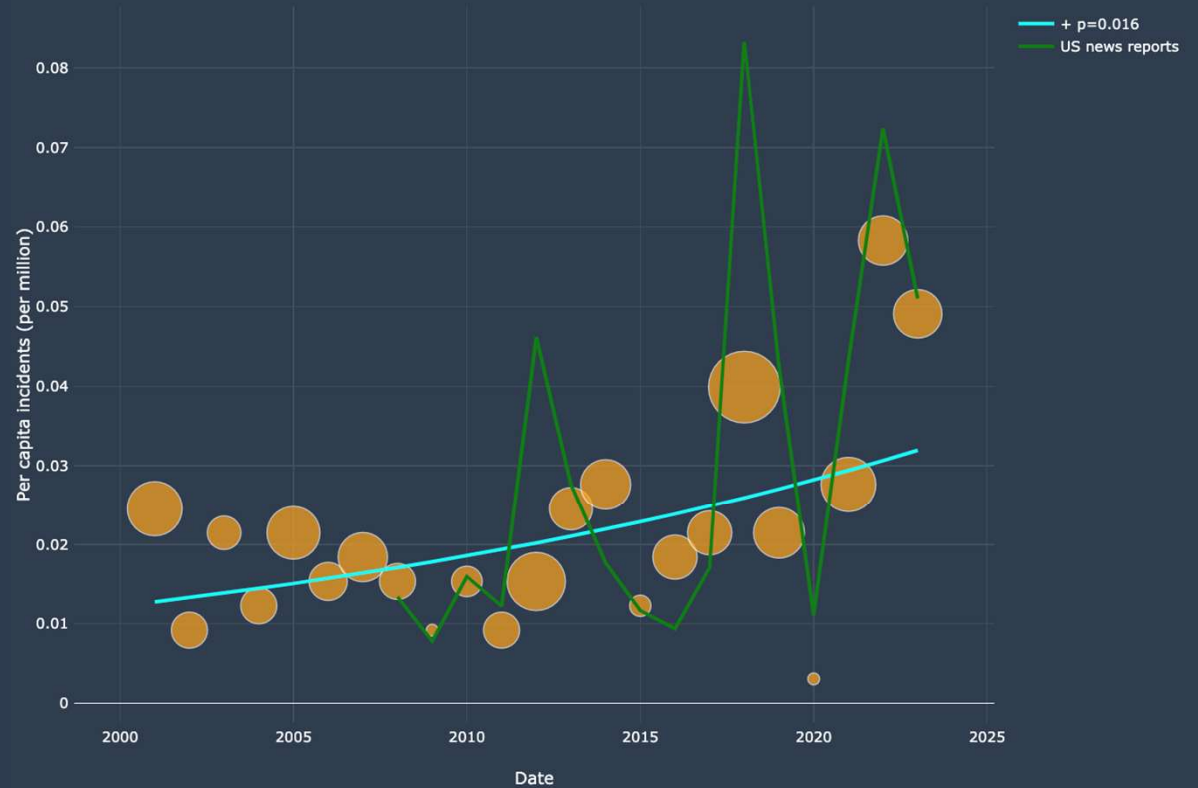
Eixo horizontal do gráfico:
Ano

Intervalo de anos
2001 2023



Mapa **Per Capita Graficos** Gráficos de nível de incidente

Per capita incidents (per million) vs Date



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Painel interativo de dados analisando ataques a escolas no Brasil e nos EUA

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Mostrar dados do Brasil em vez de dados dos EUA

Eixo vertical do gráfico:

Per capita # (mortos+feridos) em todos os incidentes

Eixo horizontal do gráfico:

Ano

Intervalo de anos



Mapa **Per Capita Graficos** Gráficos de nível de incidente

Per capita # wounded+killed (per million) vs Date





A mídia informa o agressor sobre “itinerários
culturais”
Media informs attacker ”cultural scripts”

The Columbine Effect

KNOWN COPYCAT CASES

74

53 21

PLOTS OR THREATS THWARTED BY LAW ENFORCEMENT

ATTACKS

THE OVERALL TOLL

89
KILLED

126
WOUNDED

9

SHOOTER SUICIDES

95%

OF THE PLOTTERS WERE MALE. ONLY 4 CASES INVOLVED WOMEN ACTING ALONE—NONE RESULTED IN ATTACKS.

THEIR AVERAGE AGE WAS

17

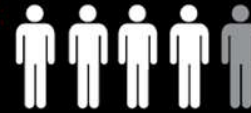
13

CASES INVOLVED PLOTTERS WHO HOPED TO SURPASS THE CARNAGE OF THE COLUMBINE SHOOTING. PLOTTERS IN AT LEAST 10 CASES CITED THE COLUMBINE SHOOTERS AS HEROES, IDOLS, MARTYRS, OR GOD.

 3

PLOTTERS MADE PILGRIMAGES TO COLUMBINE WHILE PLANNING ATTACKS. 2 OF THEM LATER LAUNCHED ATTACKS. THE THIRD PLOT WAS THWARTED.

4 OUT OF 5 WERE WHITE (IN CASES IN WHICH RACE OR ETHNICITY WAS KNOWN).



14

ATTACKS WERE PLANNED FOR AN ANNIVERSARY OF THE COLUMBINE ATTACK. 12 OF THESE PLOTS WERE THWARTED. 2 WERE ULTIMATELY CARRIED OUT ON DIFFERENT DATES.

53%
OF THE CASES INVOLVED GUNS.

18%
INVOLVED BOMBS OR EXPLOSIVES.

14%
INVOLVED KNIVES.

April 1999 Columbine March 2019 Suzano



Guilherme Taucci, one of the perpetrators of the massacre in Suzano, and the Columbine characters Dylan Klebold and Eric Harris portrayed in the film 'Elephant' (Facebook/Reproduction/Disclosure)



Ax taken by one of the Suzano shooters and knives seized in the Columbine massacre: sharp weapons in both incidents (Reproduction/Courtesy of Jefferson County Sheriff/Getty Images)

Incendiary artifacts



Molotov cocktails prepared by the shooter duo in Suzano and fuel seized after the Columbine massacre (Reproduction/Karl Gehring/The Denver Post/Getty Images)



Comparison of the characterization of one of Suzano's shooters with a scene from the series American Horror Story (Facebook/Reproduction/FX Networks/Disclosure)



Guilherme Taucci poses like the character Tate, from the series 'American Horror Story', which is a reference to the Columbine shooters (Facebook/Reproduction/FX Networks/Disclosure)

April 2007 Virginia Tech
April 2011 Rio de Janeiro



Como controlar ataques escolares?
How to control school attacks?

SUSCEPTIBLE

Susceptible individuals are at risk of illness if they interact with infectious individuals



EXPOSED

Exposed individuals have interacted with infectious individuals and are infected but not yet infectious



INTERVENTION

Interventions such as vaccines, medications, or behavioral changes may help provide protection

RECOVERED

After recovery, individuals may experience infection-conferred immunity for a period of time



INFECTIOUS

Once infectious, individuals may require medical care or experience complications




Cinco etapas do atirador ativo

Five stages of the active shooter



Fantasy	Detection and mental health support, media discretion
Planning	Vigilance, detection and mental health support
Preparation	Gun control and restricted access to weaponry, vigilance
Approach	School security
Implementation	School security, police response

Fantasia	Detecção e apoio à saúde mental, discricção da mídia nas reportagens
Planejamento	Vigilance, detection, and mental health support
Preparação	Vigilância, detecção e apoio à saúde mental
Abordagem	Segurança escolar
Implementação	Segurança escolar, resposta policial



**WHAT TO DO
DURING AN
ACTIVE-
SHOOTING
INCIDENT**



"This is the world we live in now, I thought.

This is the fractured world I'm raising my children in."

Esté é o mundo em que
vivemos agora, pensei.
Este é o mundo
fragmentado em que
estou criando meus
filhos.

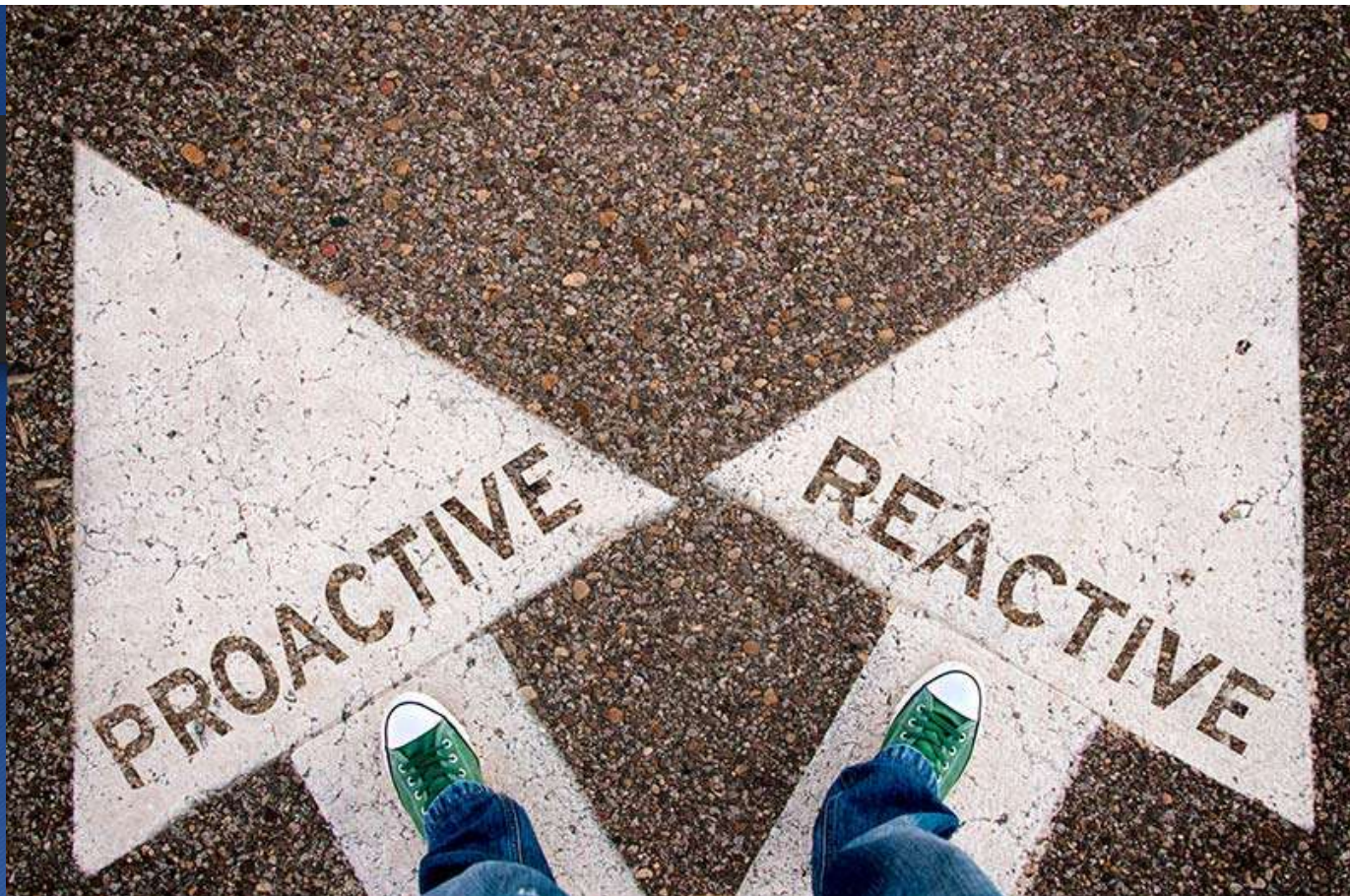




Uma maneira melhor... A better way...

Accurate prediction of who is most at risk of attacking schools enables proactive rather than reactive response

Optimizes resource utilization and enhances community resilience



A previsão precisa de quem corre maior risco de atacar as escolas permite uma resposta proativa em vez de reativa

Otimiza a utilização de recursos e aumenta a resiliência da comunidade

**Sem detalhes do “itinerário cultural”
(roupas do agressor, fotos das redes
sociais do agressor, etc)**





Alava S, Frau-Meigs D, Hassan G. Youth and violent extremism on social media: mapping the research. UNESCO Publishing; 2017 Dec 4.



Youth Suicide Awareness and Prevention

NATIONAL YOUTH VIOLENCE PREVENTION WEEK



Gangs and youth violence

Why might children become involved with a gang?

- Seeking a sense of belonging
- Groomed/exploited
- Status, power and protection
- Poverty

How can schools prevent and intervene?

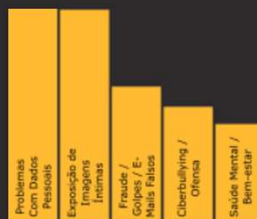
 safeguarding
network
safeguarding.network/gangs



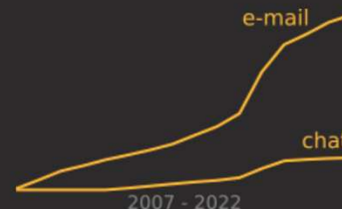
LOCAL CONTENT DETAILS



helpline



MAIN TOPICS IN 2022



TOTAL COUNSELLING PER YEAR



COUNSELLING BY STATE

AT THE SAFERNET HELPLINE YOU GET HELP BY A PROFESSIONAL, WITH RESPECT, ANONYMITY, AND STRICT CONFIDENTIALITY ABOUT EVERYTHING THAT IS SAID.

PROFILE | Helpline

COUNSELLING

HOW DOES IT WORK

FAQS

HOW CAN WE HELP?



Chat Chat counselling is on Mondays, Wednesdays and Fridays from 14 BRT to 18 BRT and on Tuesdays and Thursdays from 9 BRT to 13 BRT.

O chat está encerrado hoje. Por favor, entre em contato conosco através do e-mail.



E-mail [Counselling by e-mail](#)

SaferNet Brasil offers an anonymous and confidential counseling related to technology-facilitate violence against vulnerable groups. We are a specialized professionals team on how to prevent online violence, what to do to report it and, if necessary, assist how to access the protection and mental health system, as close as possible to your city/region.

[PRIVACY AND SECURITY](#)

Vigilância em saúde pública





A violência e o medo são
contagiosos, mas a fé, a
esperança e o amor também
o são

Violence and
fear are
contagious.
But so are faith,
hope and love.



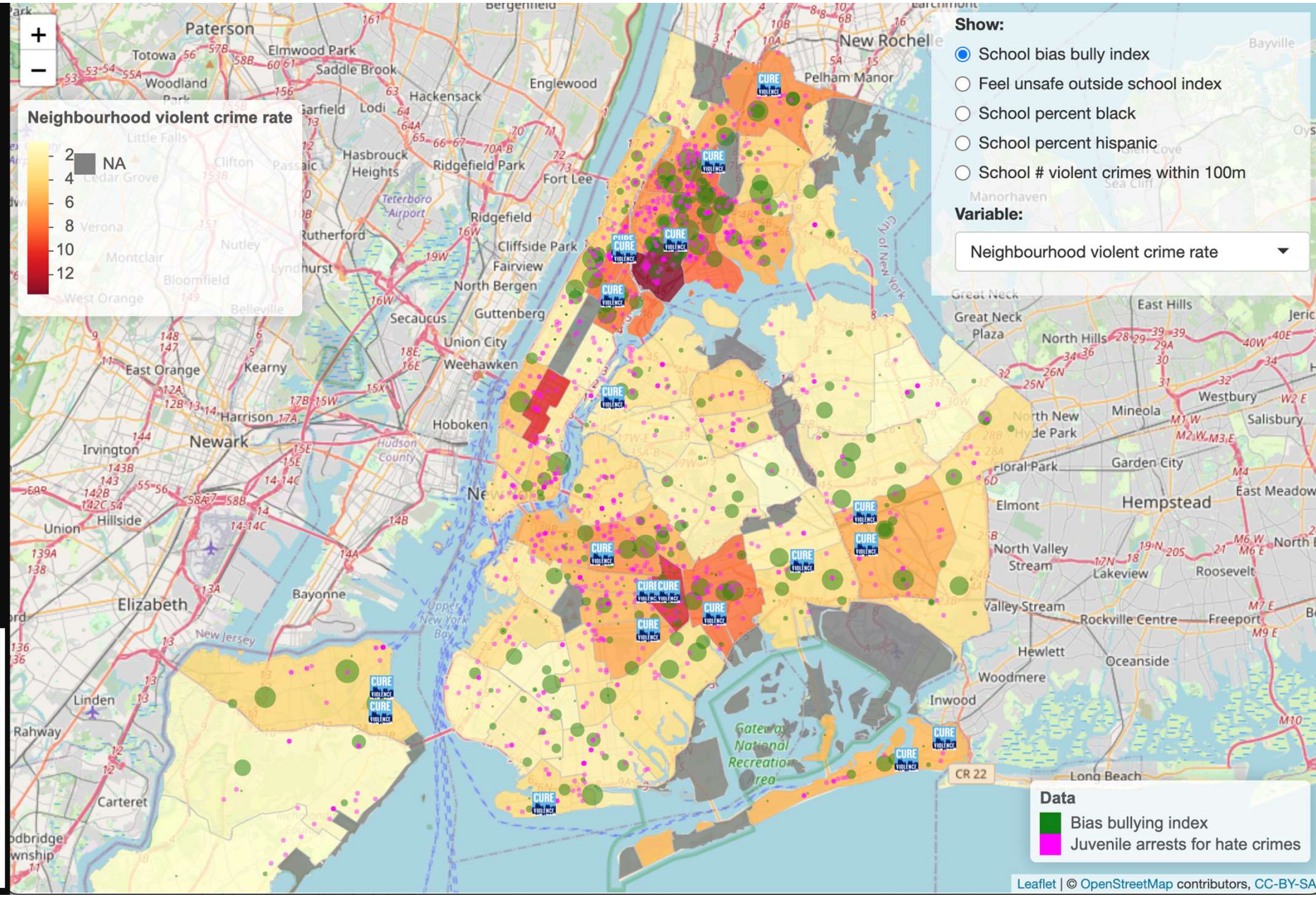
Muito obrigado!
Thank you!





Project with NYC Mayor's office: Relationship of youth hate crime, neighbourhood violent crime and school bullying

Projeto com o gabinete do prefeito de Nova York: Relação entre crimes de ódio juvenil, crimes violentos na vizinhança e bullying escolar



Data
■ Bias bullying index
■ Juvenile arrests for hate crimes

Jan 21, 2014
Purdue University



SUSCEPTIBLE

Susceptible individuals are at risk of illness if they interact with infectious individuals



EXPOSED

Exposed individuals have interacted with infectious individuals and are infected but not yet infectious



INTERVENTION

Interventions such as vaccines, medications, or behavioral changes may help provide protection

RECOVERED

After recovery, individuals may experience infection-conferred immunity for a period of time



INFECTIOUS

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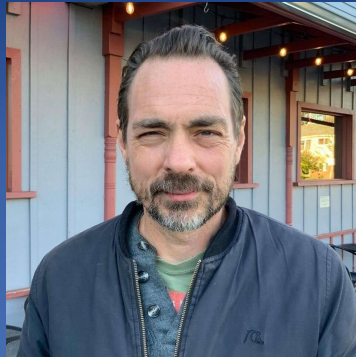
Preventing extremist violence in the PNW: Our team



Karen Volker
Executive Vice
President
CVG



Cassandra Paschall
Senior Research Associate
and Project Manager
CVG



Prof Randy Blazak
Sociologist
Right-wing extremism
expert



Dr Saskia Hostetler
Lippy
Psychiatrist



Amy Sommers
Advisor Organizer



Elizabeth Wilson
Peace Village Global



Ryan Lo'Ree
Parallel Networks
(former Skinhead)



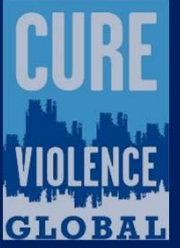
Dr Sherry Towers
Towers Consulting
Quantitative and
Visual Analytics

ctrl
alt
delete
~~hate~~

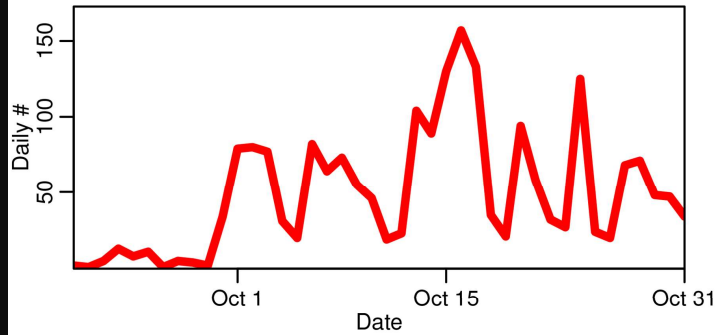
PDX

Ctrl+Alt+Del-Hate:PDX

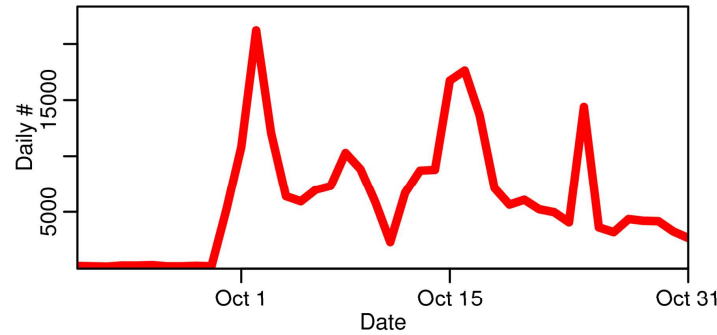
Applying the Epidemic Playbook to
Toxic Polarization, Radicalization,
and Violent Extremism in Portland &
the Pacific Northwest



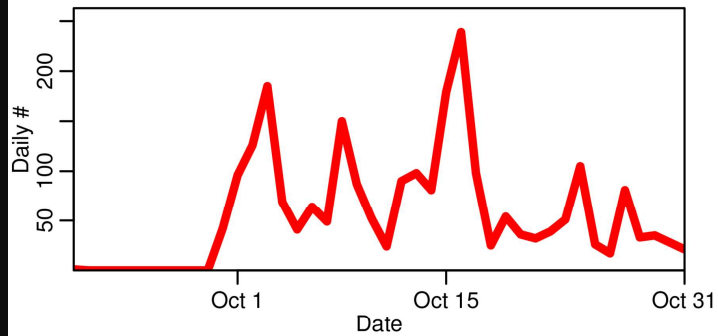
Ebola-related news videos



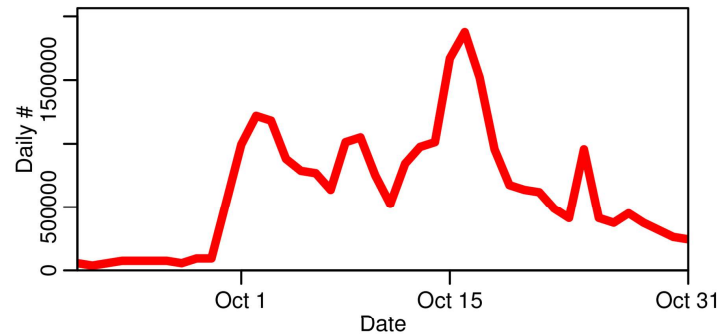
Tweets: keyword ``Ebola``



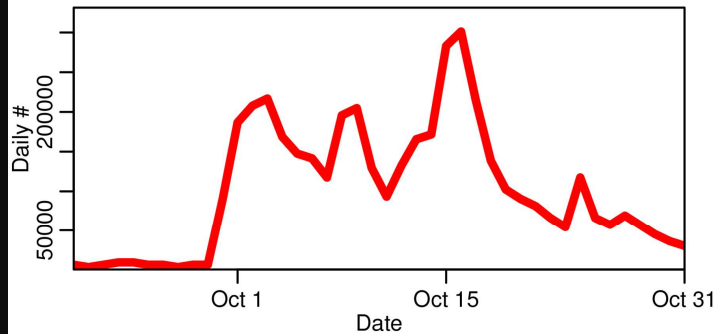
Tweets: keywords ``Ebola`` and ``symptoms``



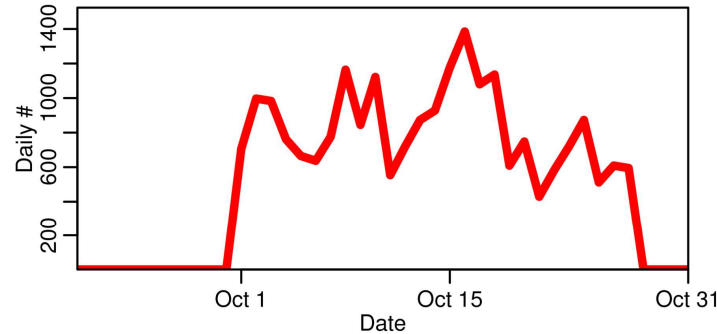
Google searches: ``Ebola``



Google searches: ``Ebola symptoms``



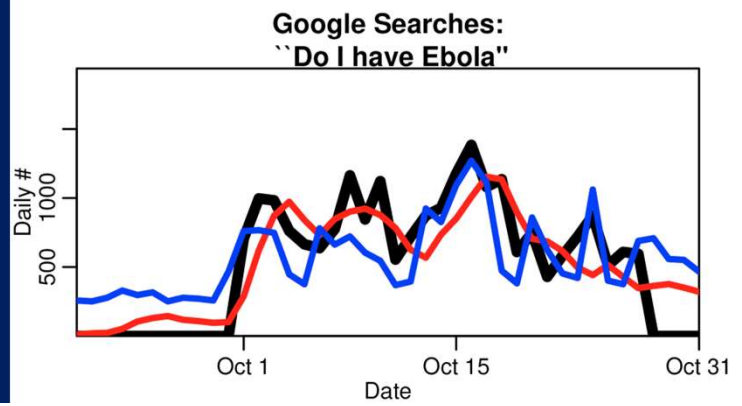
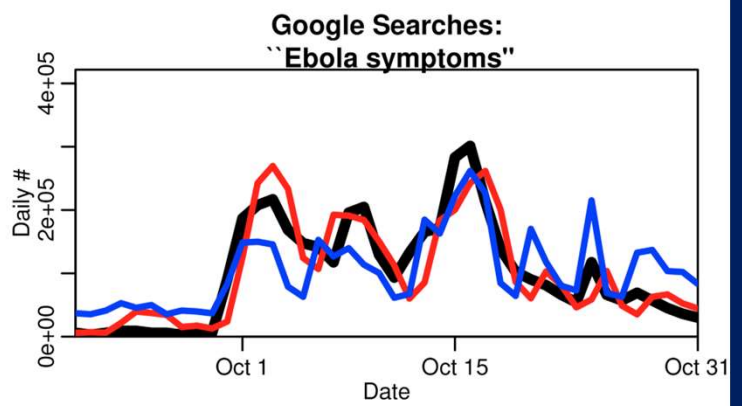
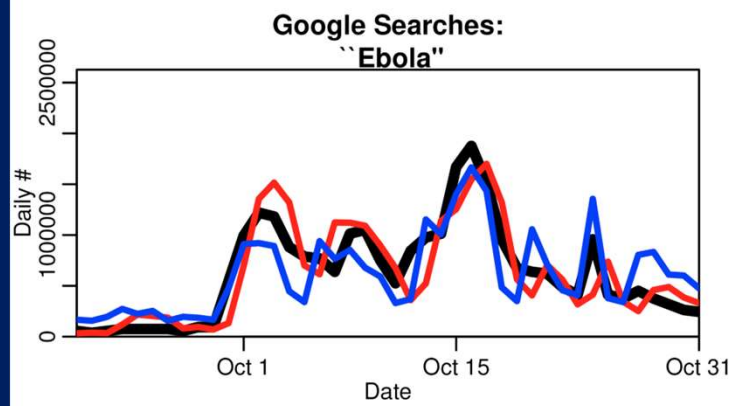
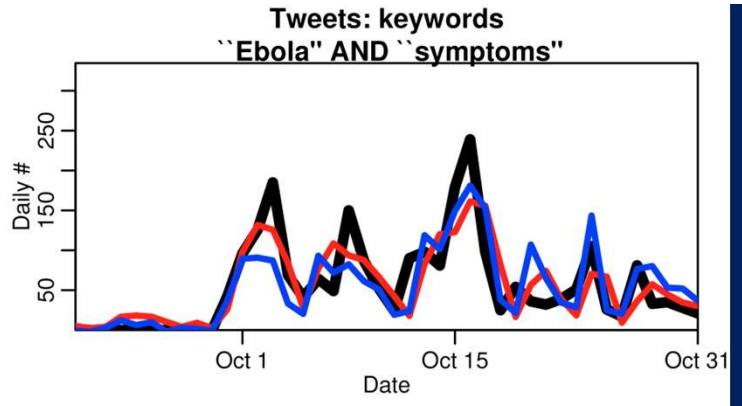
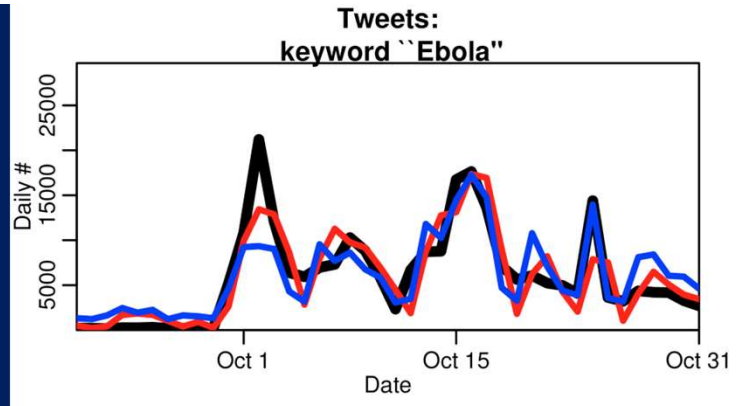
Google searches: ``Do I have Ebola``



Fit mathematical model where public response inspired by media stories, with "boredom effect"

Compare to fit with simple "Granger causality" statistical model with trends in media and public response, but no boredom effect

$$\begin{aligned}
 \frac{dS}{dt} &= -\beta VS/N - \mu SI/N + \alpha R \\
 \frac{dI}{dt} &= +\beta VS/N + \mu SI/N - \gamma I \\
 \frac{dR}{dt} &= +\gamma I - \alpha R,
 \end{aligned}$$



- Data
- Linear regression model
- Contagion model

Rapid communications

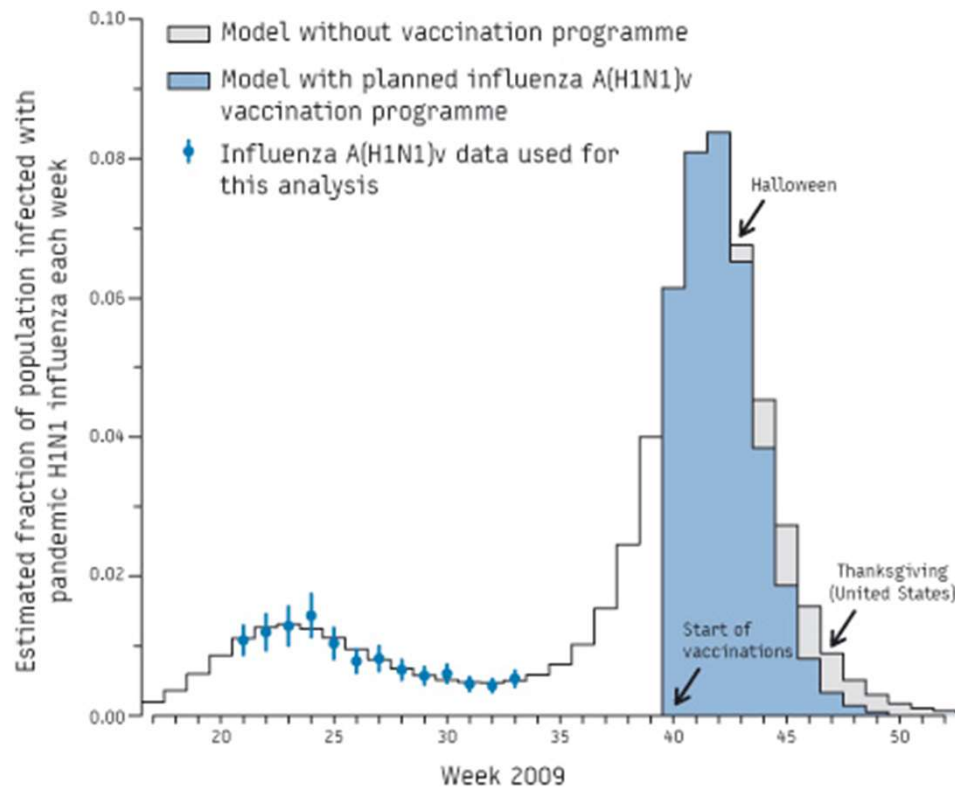
PANDEMIC H1N1 INFLUENZA: PREDICTING THE COURSE OF A PANDEMIC AND ASSESSING THE EFFICACY OF THE PLANNED VACCINATION PROGRAMME IN THE UNITED STATES

S Towers (stowers@purdue.edu)¹, Z Feng²



FIGURE 2

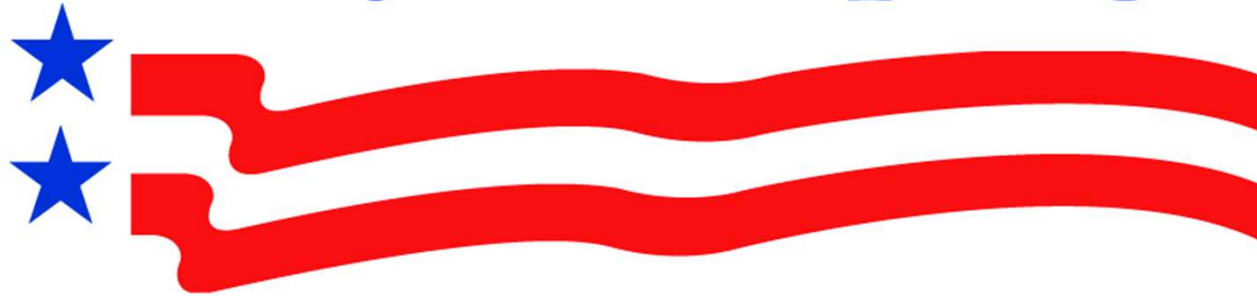
Model of the H1N1 influenza pandemic in the United States and prediction for autumn 2009



- Seasonally forced SIR model
- Inverse problem to fit model parameters to data; high-performance computing resources used with MCMC approach
- Biases in surveillance early in pandemic

Model correctly predicted the timing of the autumn wave

Brady Campaign



To Prevent Gun Violence

SENSIBLE GUN LAWS SAVE LIVES

School shootings since 1996. On average once a month (N=188)

Mass shootings (three or more people shot, not necessarily killed) since 2005. On average more than once a week (N=477). Excluded mass killings (N=373)

$$P(t_j|t_i, T_{\text{excite}}) = \int_{t_j-t_i-1}^{t_j-t_i} dx \frac{e^{-x/T_{\text{excite}}}}{T_{\text{excite}}},$$

$$P(t_j|t_i, T_{\text{excite}}) = e^{-(t_j-t_i-1)/T_{\text{excite}}} - e^{-(t_j-t_i)/T_{\text{excite}}}.$$

$$N^{\text{exp}}(t_n) = N_0(t_n) + N_{\text{secondary}} \sum_{\forall t_i < t_n} P(t_n|t_i, T_{\text{excite}}),$$

