Infectious disease outbreaks can inflict enormous social and economic disruption

This dimension of epidemic risk is not new, but until now, it has been difficult to measure. The Pathogen Sentiment Index was designed to fill this gap: it ranks pathogens by their likelihood of causing public fear leading to social and economic disruption.

The Pathogen Sentiment Index provides an objective and rigorous methodology to quantify public fear and anxiety towards infectious diseases, and it can be used to:

- Spotlight potential economic and societal impacts of outbreaks
- Identify gaps between real and perceived risk
- Enable insurance product development for novel business interruption policies
- Estimate outbreak risk on a country, region or territory level

Public fear and panic magnify the social and economic effects of an outbreak

People adapt their behavior to reduce their risk of getting sick. The potential result: empty workplaces and public transit systems, canceled trips, rapid shifts in consumer behavior. The consequences can ripple out from sectors with high vulnerability to disruption - such as travel and tourism - to impact whole economies.

Photo: 2015, during the MERS outbreak in Seoul. According to the Globe and Mail in June, 2015: The Ministry of Culture, Sports and Tourism said more than 100,000 people had canceled trips and estimated that the country lost $900-million in revenue. Tourist visits were down 20 percent due to the outbreak.
A tool for insurance to estimate public sentiment and respond to a changing environment.

The Index is designed to be flexible and extensible: it can be rapidly updated to incorporate novel and emerging pathogens in order to quickly estimate fear for emerging outbreaks and infectious disease events. Similarly, it is regularly updated to reflect potential developments that can influence public fear, for example the development of a new vaccine, or the discovery of a new disease symptom, such as Zika’s link with birth defects.

The Index has been robustly backtested and validated against over a decade of media reporting on historical infectious disease outbreaks. It is currently deployed for both government and insurance customers, including MunichRe, Marsh, and to government agencies.

<table>
<thead>
<tr>
<th>FEAR RANK</th>
<th>GERMANY</th>
<th>JAPAN</th>
<th>MEXICO</th>
<th>UNITED STATES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nipah virus</td>
<td>Nipah virus</td>
<td>Nipah virus</td>
<td>Marburg virus</td>
</tr>
<tr>
<td>2</td>
<td>Lujo virus</td>
<td>Marburg virus</td>
<td>Marburg virus</td>
<td>Lujo virus</td>
</tr>
<tr>
<td>3</td>
<td>Marburg virus</td>
<td>Lujo virus</td>
<td>Lujo virus</td>
<td>Nipah virus</td>
</tr>
<tr>
<td>4</td>
<td>Ebola viruses</td>
<td>Ebola viruses</td>
<td>Ebola viruses</td>
<td>Chandipura and Vesicular stomatitis viruses</td>
</tr>
<tr>
<td>5</td>
<td>Hendra virus</td>
<td>Hendra virus</td>
<td>Hendra virus</td>
<td>Ebola viruses</td>
</tr>
</tbody>
</table>

- Each pathogen is scored on a 0-100 scale
- Scores are available for multiple countries, across 3 continents
- Integrates data across a range of disease attributes, including symptoms and mortality
- Incorporates disease transmission and availability of treatment
- Measured from a unique blend of population survey data and scientific information

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