

A mathematical model of Bieber Fever: The most infectious disease of our time?

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Abstract: Recently, an outbreak of Bieber Fever has blossomed into a full pandemic, primarily among our youth. This disease is highly infectious between individuals and is also subject to external media pressure, further strengthening the infection. Symptoms include time-wasting, excessive purchasing of useless merchandise and uncontrollable crying and/or screaming. We develop a mathematical model to describe the spread of Bieber Fever, whereby individuals can be susceptible, Bieber-infected or bored of Bieber. We analyse the model in both the presence and the absence of media, and show that it has a basic reproductive ratio of 24, making it perhaps the most infectious disease of our time. In the absence of media, Bieber Fever can still propagate. However, when media effects are included, Bieber Fever can reach extraordinary heights. Even an outbreak of Bieber Fever that would otherwise burn out (driven by fans becoming bored within two weeks) can still be sustained if media events are staggered. Negative media can rein in oversaturation, but continuous negative media (the Lindsay Lohan effect) is the only way to end Bieber Fever. It follows that tabloid journalism may be our last, best hope against this fast-moving and highly infectious disease. Otherwise, our nation's children may be in a great deal of trouble.