

Biomathematics and Social Justice: Reinventing Models of Disease Spread to Study Efficacy of Bystander Violence Prevention

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Interpersonal violence on college campuses has received much attention in recent years, and when you see the numbers, you can understand why. It has been reported that many as 1 in 4 women and 1 in 30 men will experience sexual violence at least once during their four years in college. These numbers are both outrageous and unacceptable. But what can be done? At the University of Portland, and other colleges across the nation, we have adopted the Green Dot bystander violence prevention program, which challenges the culture of interpersonal violence and trains students to stand up for one another. In the Mathematics Department at the University of Portland, we are applying knowledge and methods of modeling infectious diseases to create agent-based models of this bystander violence prevention program to further investigate the philosophies of the Green Dot program and seek additional mechanisms to strengthen its effectiveness on campus. Here I will provide details of our model and results as well as some background on how this research began, how it has opened doors for students in both mathematics and biology, and how agent-based modeling can not only be a tool for investigating issues of social justice, but also how its use in the classroom and in undergraduate research has the potential to level the playing field for students of diverse backgrounds.

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