

THE BUDGETED VACCINATION PROBLEM

- ✦ Given:
 - ✦ Graph $\mathbf{G} = (\mathbf{V}, \mathbf{E})$ (*contact network*)
 - ✦ Integer budget \mathbf{B} (*vaccinations*)
 - ✦ Diffusion model \mathbf{M} (*disease spread behavior*)
- ✦ $\mathbf{U}_M(\mathbf{S})$ – expected number of **uninfected** individuals in $\mathbf{G} \setminus \mathbf{S}$ after disease spread according to \mathbf{M} from a single random infected individual
- ✦ Find: \mathbf{B} -size subset \mathbf{S} that **maximizes** \mathbf{U}_M