

# Pull Gossip: Analysis

- In all forms of gossip, it takes  $O(\log(N))$  rounds before about  $N/2$  processes get the gossip
  - Why? Because that's the fastest you can spread a message – a spanning tree with fanout (degree) of constant degree has  $O(\log(N))$  total nodes
- Thereafter, pull gossip is faster than push gossip
- After the  $i$ th, round let  $p_i$  be the fraction of non-infected processes. Let each round have  $k$  pulls. Then

$$p_{i+1} = (p_i)^{k+1}$$

- This is super-exponential
- Second half of pull gossip finishes in time  $O(\log(\log(N)))$