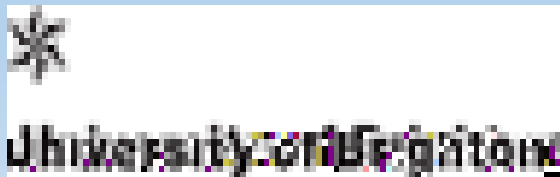


# Network analysis of England's single parent household COVID-19 control policies: a proof-of-concept study

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# INTRODUCTION

**Policy 1:** Children of single parent households (SPHs) were permitted to move between parental homes.

**Policy 2:** SPHs permitted to form a support bubble with another SPH/other household.

## **Related work:**

Network analyses of social and support bubbles look only at bubble impact and assumed exclusivity – no additional actors entering or leaving homes.

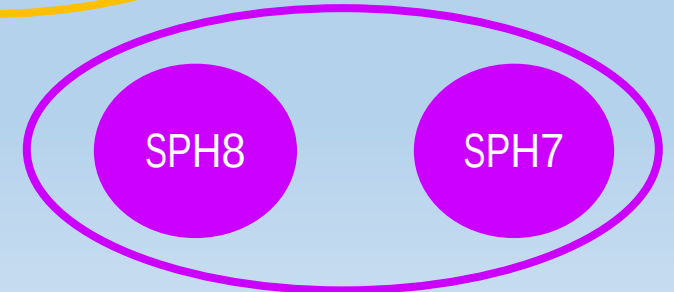
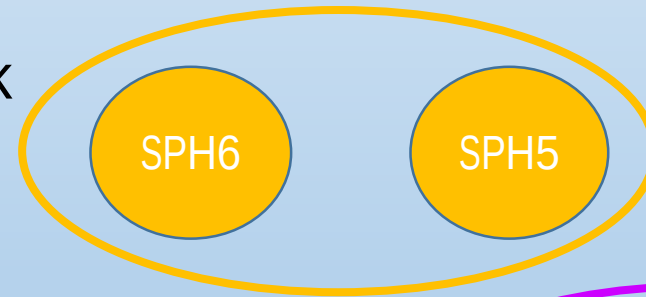
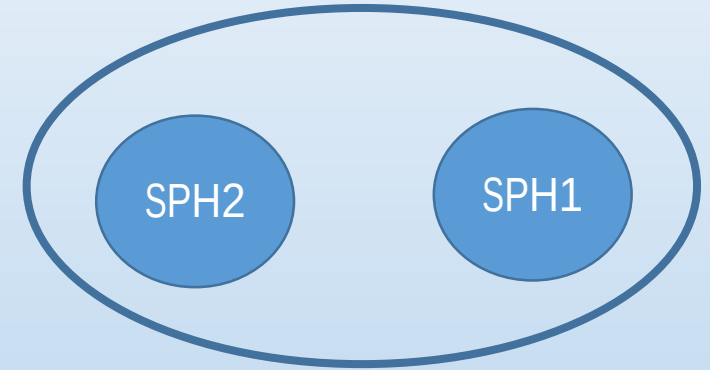
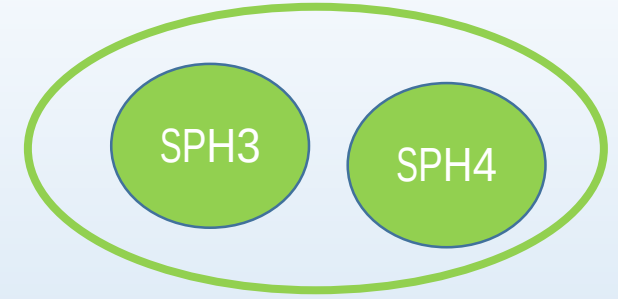
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# STUDY AIM

**Aim:** To explore the putative combined impact of these policies on Covid-19 household transmission dynamics

## **Percolation theory**

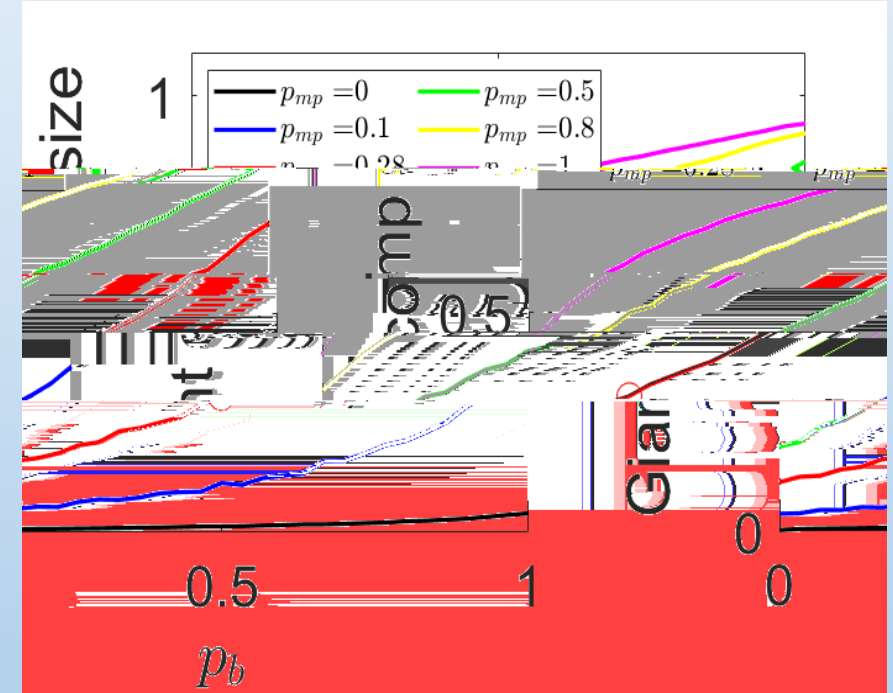
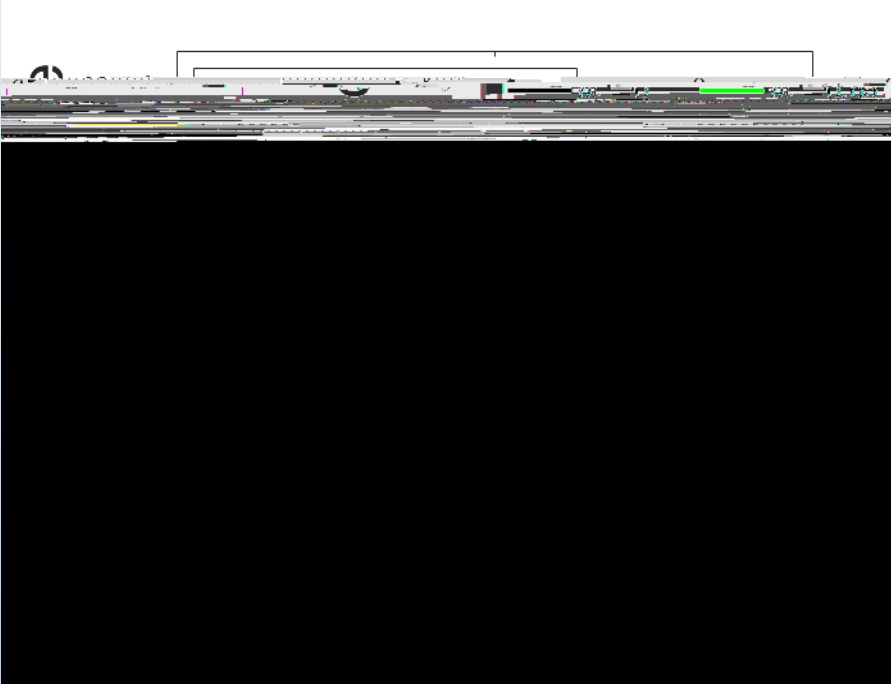
- Mathematical approach to understanding connectivity
- Examines network changes from small disconnected clusters to a 'giant component' likely to affect a large number of people

# DEFINITIONS

**Single parent** - a **primary care-giver** who does not live with the other primary caregiver of their child/children, *irrespective of whether they are living with a new partner or not*

**Discordant-Parentage Single Parent Household (DSPH)** – a SPH that includes 2+ children

# VARYING EXTENT OF BUBBLING & DSPHs



Growth of the giant component is much slower for bubbling without DSPHs than for DSPHs without bubbling.

# CONCLUSIONS

- Support bubbles between SPHs have little impact on formation of giant components that may accelerate Covid-19 transmission, even when children are moving between SPHs, *except* where one or more are DSPHs



# LIMITATIONS

- Limited estimates available
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