

Homework V: Affiliation Networks

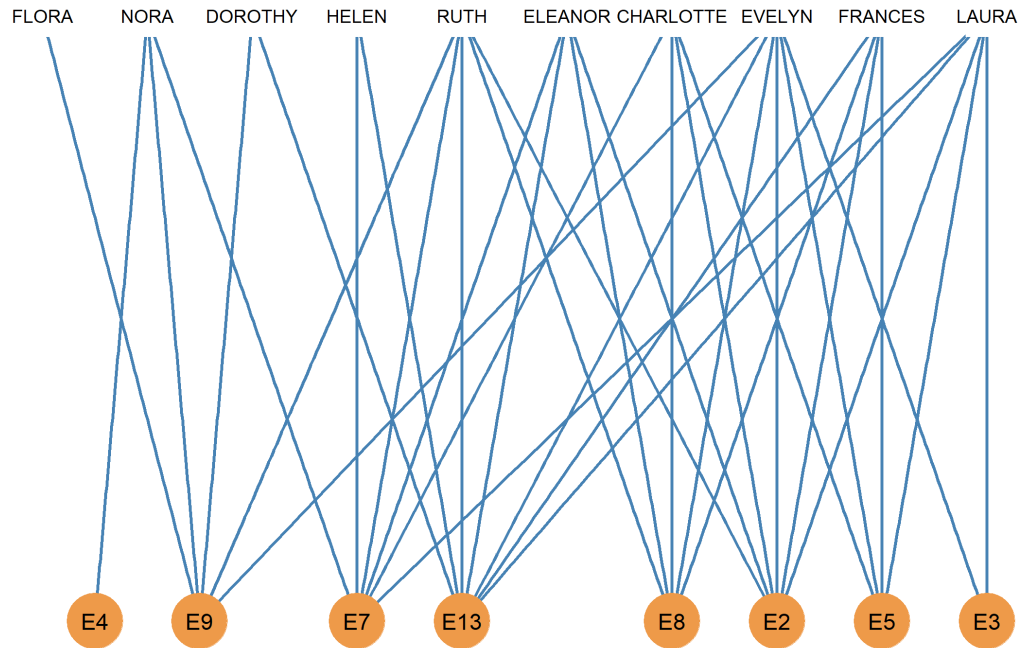


Figure 1: Southern women bipartite graph.

The Figure above shows the **bipartite graph** corresponding to (part of) the *Southern Women Events Data* a classic social network data set collected in the 1930s by the sociologist Allison Davis and collaborators and included in book *Deep South*. The graph represents observed attendance at 8 social events by 10 Southern “high society” women from the South.

- Write down the **affiliation matrix** corresponding to the Southern women network bipartite graph.

	E9	E7	E13	E2	E8	E5	E3	E4
RUTH								
FRANCES								
EVELYN								
LAURA								
NORA								
ELEANOR								
FLORA								
DOROTHY								
CHARLOTTE								
HELEN								

1. Which women attend the most events?
 2. Which women attend the least events?
 3. What is the average number of events attended by the women?
 4. Which are the largest event(s)?
 5. Which are the smallest event(s)?
 6. What is the average event size?
- Write down the *transpose* of the **affiliation matrix** corresponding to the Southern women network bipartite graph.

	RUT.	FRA.	EVE.	LAU.	NOR.	ELE.	FLO.	DOR.	CHA.	HEL.
E9										
E7										
E13										
E2										
E8										
E5										
E3										
E4										

Using the information in the previous tables and what you know about **matrix multiplication**:

- Write down the entries corresponding to the **co-membership matrix** of the Southern women.

	RUT.	FRA.	EVE.	LAU.	NOR.	ELE.	FLO.	DOR.	CHA.	HEL.
RUT.										
FRA.										
EVE.										
LAU.										
NOR.										
ELE.										
FLO.										
DOR.										
CHA.										
HEL.										

- Write down the entries corresponding to the **group overlap matrix** of the Southern women.

	E9	E7	E13	E2	E8	E5	E3	E4
E9								
E7								
E13								
E2								
E8								
E5								
E3								
E4								

