

Graph Theory & Sex



Albert R Meyer April 1, 2013

sexgraph.1

Sex in America: Men more Promiscuous?

- Univ Chicago, *The Social Organization of Sexuality*, 1994: men have 74% more women partners than women have men
- NBC News, *American Sex Survey*, 2004: men have 233% more women partners
- U.S. National Center for Health Statistics study, 2007: men have 175% more women partners



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Sex in America: Men more Promiscuous?

Studies claim different %'s
but agree that
men average many more
partners than women.

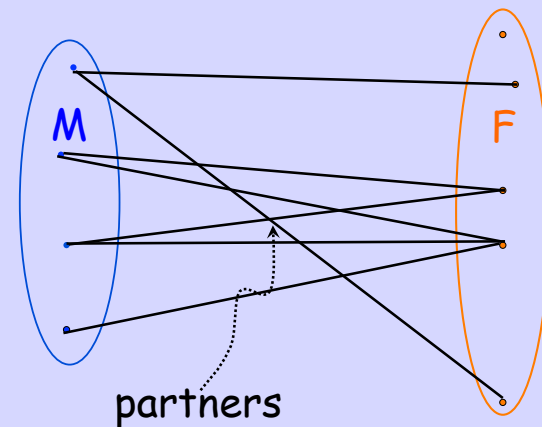
Graph theory shows
this is nonsense



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Sex Partner Graph



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Counting pairs of partners

Average number of
partners for Men

$$\frac{\text{total \#partners of males}}{\#M}$$



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Counting pairs of partners

Average number of
partners for Men

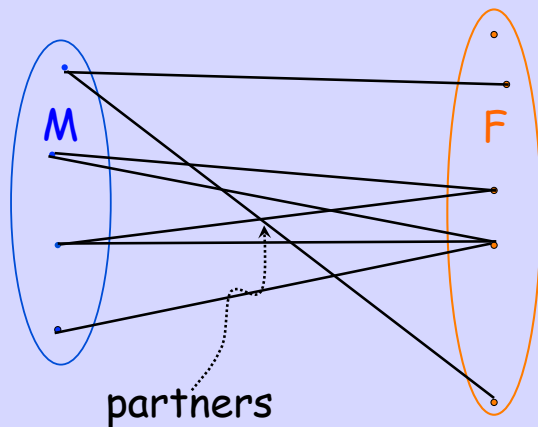
$$= \frac{\# \text{edges from Men}}{\#M}$$



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Sex Partner Graph



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Counting pairs of partners

Average number of
partners for Men

$$= \frac{\# \text{edges}}{\#M}$$



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Counting pairs of partners

Average number of partners for Women

$$\frac{\text{total \#partners of females}}{\#W}$$



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Counting pairs of partners

Average number of partners for Women

$$= \frac{\# \text{edges}}{\#W}$$



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Average number of partners

$$\frac{\text{avg for Men}}{\text{avg for Women}} = \frac{\frac{\cancel{\# \text{edges}}}{|M|}}{\frac{\cancel{\# \text{edges}}}{|W|}} = \frac{\#W}{\#M} = 1.035$$



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Average number of partners

$$\text{Male avg} = 1.035 \times \text{Female avg}$$

Averages differ solely by ratio of Females to Males.

No big difference
Nothing to do with promiscuity



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Why are surveys wrong?
Maybe people are **lying**:

- Males exaggerate?
- Females deny?

Maybe Males have partners
outside the study



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Check out
MIT 6.042J/18.062J
*Mathematics for
Computer Science*

<http://courses.csail.mit.edu/6.042>



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