LAST CHANCES - *FINDING LOVE IN A HOPELESS PLACE*

SABIN HART, RYAN REBNE, ELLIE BOYD, ALEX CRAIG, DAVY APPLETON, GARY JIANG. LOGOUT.

Your picks are kept private until you match. Matches are done by a computer program - no one else will see your crushes or matches. Concerns? Questions? **QSS 30.04 Evolutionary Game Theory** 📪

Professor Feng Fu, TA Caroline Hammond

This year, Last Chances will end on May 25th.

Next year, Last Chances will be hosted on this URL: https://lastchances24s.herokuapp.com/

HOW TO USE:

1. **Enter names (not email addresses)** as they appear on blitz, confirm you're not a robot, and press **submit**!
2. Suggestions for full names will appear underneath each box.
3. If no suggestion is found, remember to **click the reCaptcha box** and to use legal names as they appear on blitz.
4. For each crush, click their full name, click the reCaptcha box again, then the **submit** button once more!

Crush entries cannot be deleted. Choose carefully!

VIEW YOUR MATCHES 😉

You've crushed on 69 people. Show

Contemporary Context

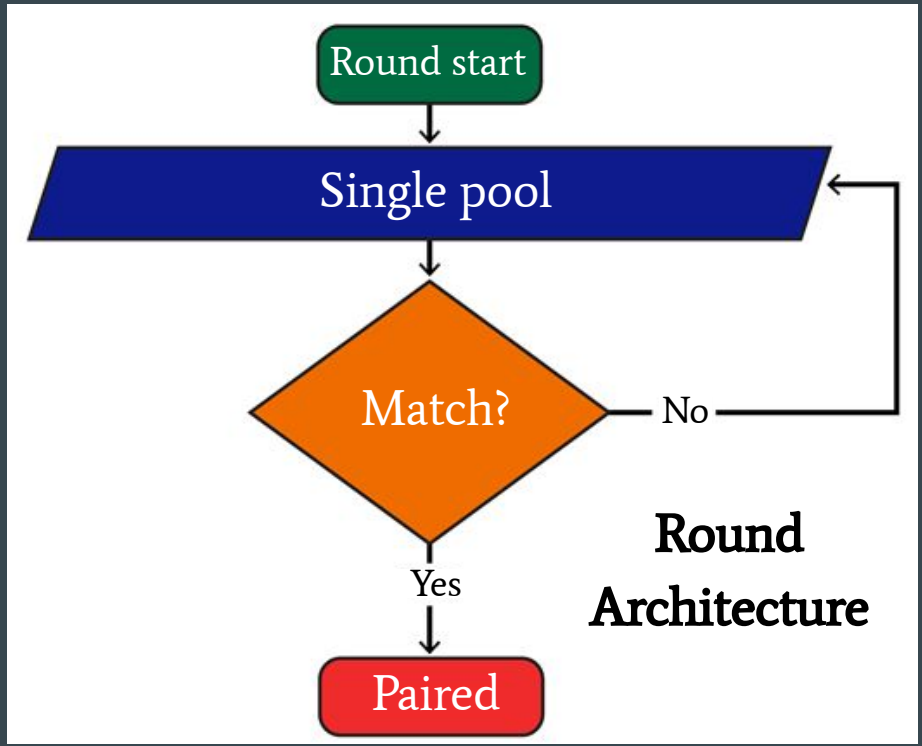
- 2020: **44%** of millennials ages (23 to 38) were unmarried
  - **81%** of members of the silent generation

- In the past 20 years, average age at first marriage has increased by nearly 4 years

- 1st marriage: **37%** divorce rate (2019); 2nd marriage: 60-67%.

Methods: Theory

- Motivation (optimal stopping problem)
  - Life as chance encounters
- Agent-based simulation
  - Agent-pairing rounds
  - Thresholds for attraction → Match
- Iterative process
  - Cycling through different thresholds
- Output
  - Proportion of coupled agents



Model and Simulation

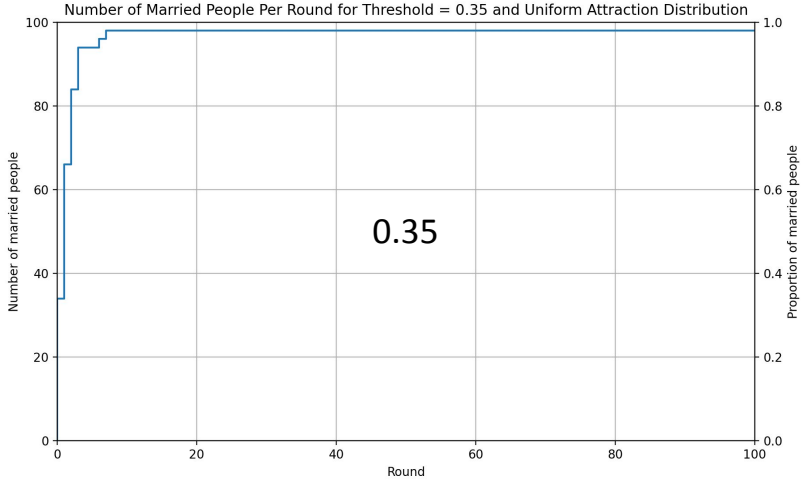
Pair population → if both pass threshold, married

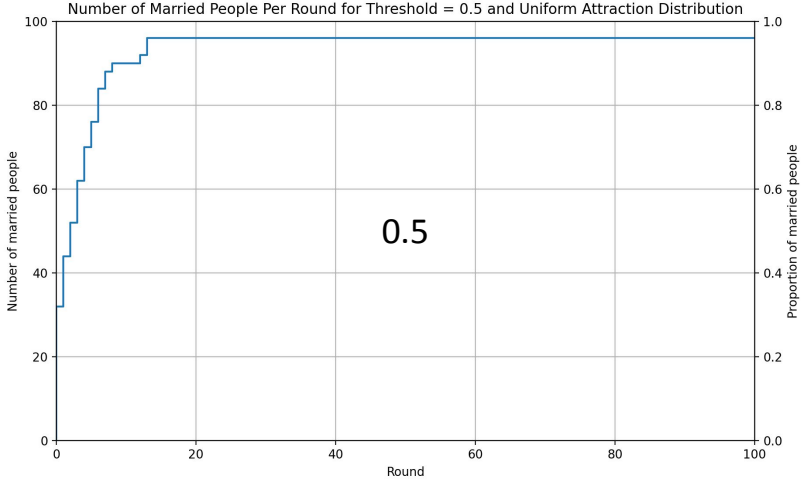
→ otherwise back to single pool

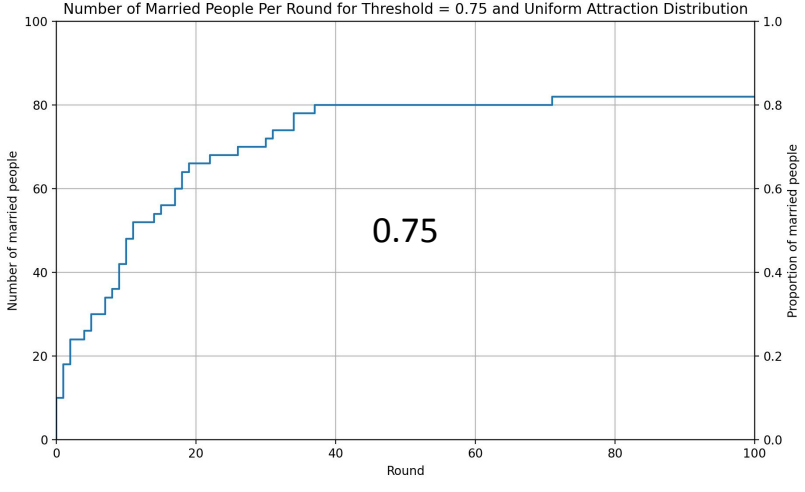
Repeat until all members are married or exceed number of rounds

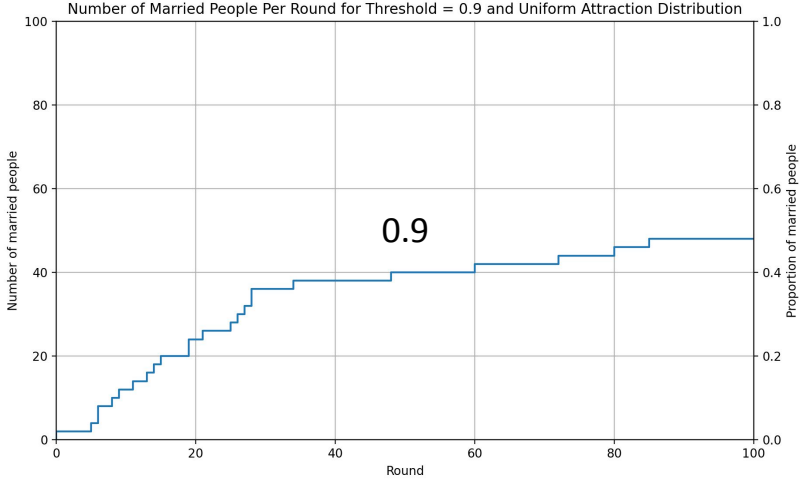
Types of attraction thresholds (and reason for dismissal):

- Uniform (equal chance 0-1)
- Normal (Bell curve centered at 0)
- Exponential (accelerating and decreasing)


Number of Married People Per Round for Threshold = 0.35 and Uniform Attraction Distribution
0.35
Number of married people
Proportion of married people
Round


Number of Married People Per Round for Threshold = 0.5 and Uniform Attraction Distribution
0.5
Number of married people
Proportion of married people
Round


Number of Married People Per Round for Threshold = 0.75 and Uniform Attraction Distribution
0.75
Number of married people
Proportion of married people
Round


Number of Married People Per Round for Threshold = 0.9 and Uniform Attraction Distribution
0.9
Number of married people
Proportion of married people
Round

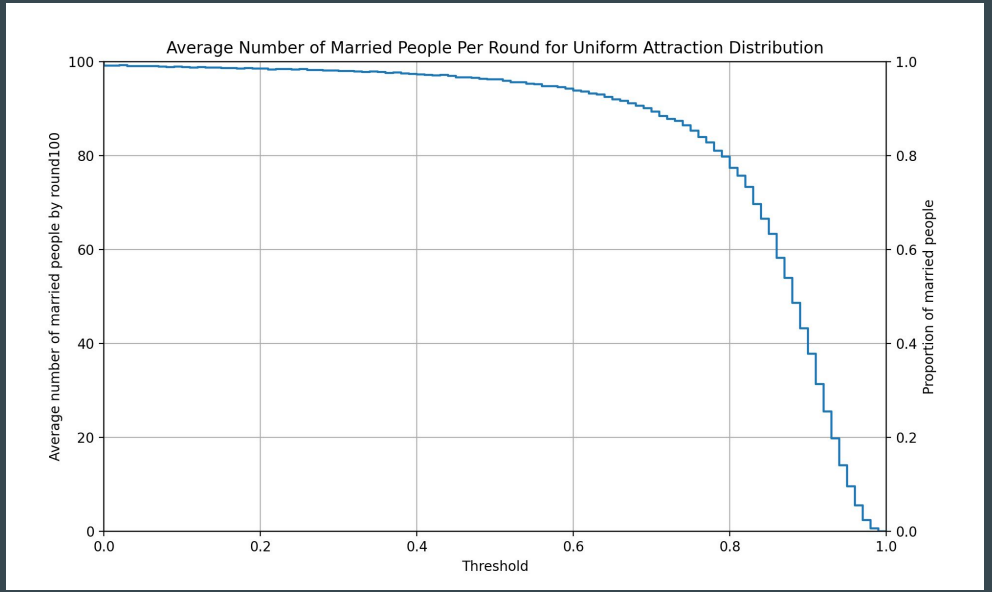
Simulation Aggregation

Run simulation 100 times at all threshold values 0.01-1.

Plot the proportion married at the end

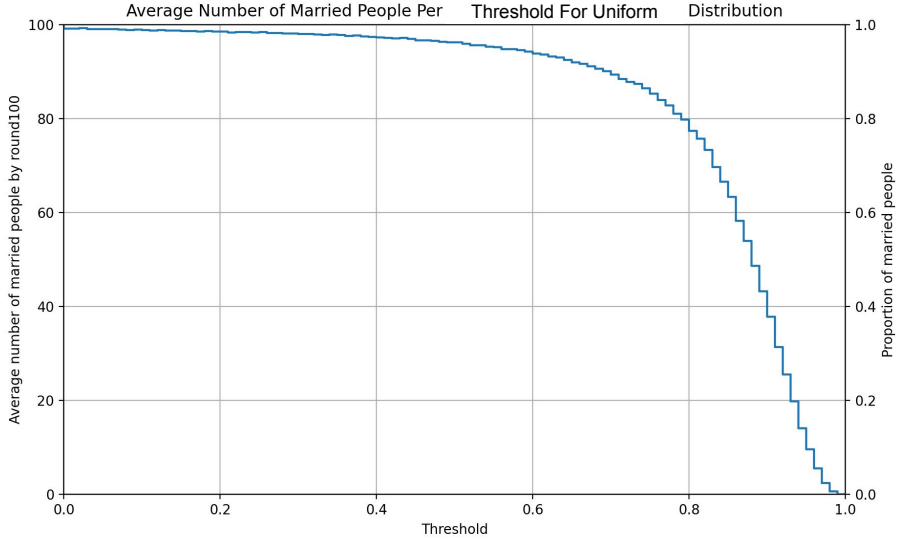
→ decreasing function as threshold ↑

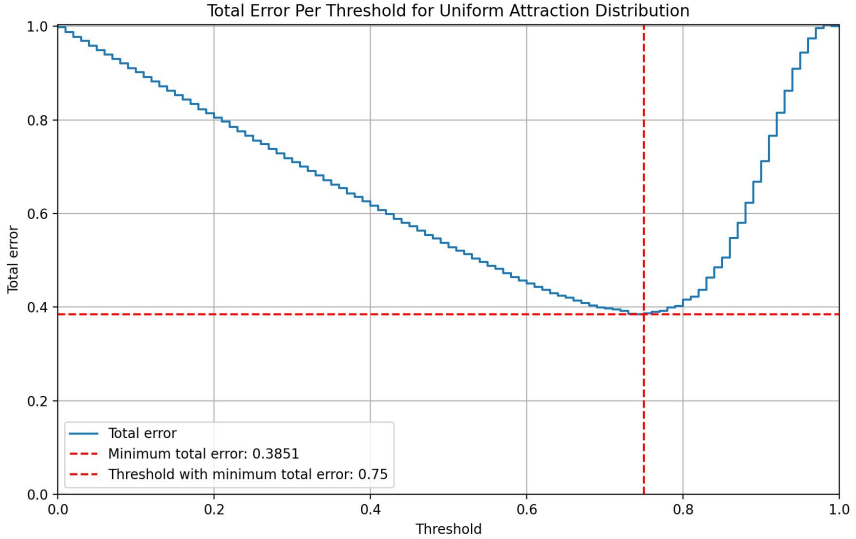
The decrease seems to be exponential



Total Error

$$TE = w_t(1-t) + w_m(1-m)$$

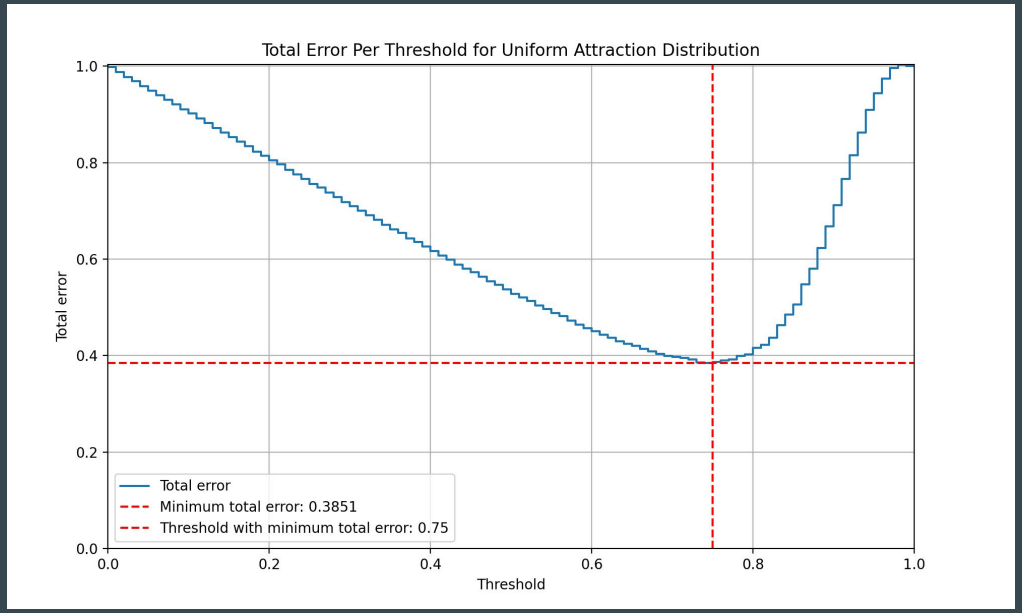




Results & Interpretation

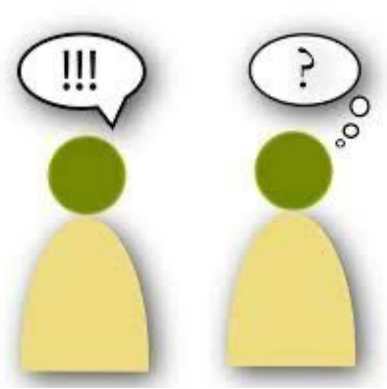
100 People, 100 Rounds

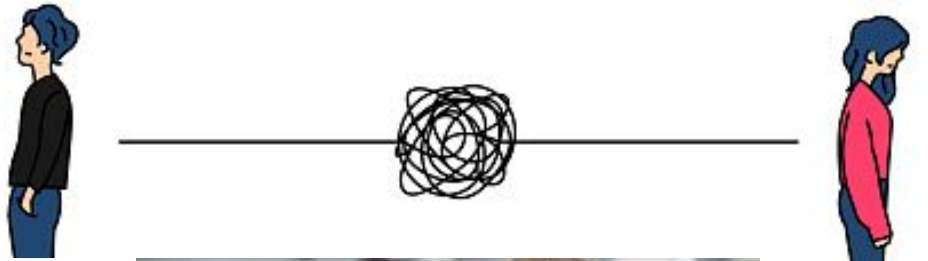
- Optimal threshold converges to 0.75 (marry 25% of eligible population)
- Population size effect



Limitations

- Rounds
  - Continuous not discrete
- No control over external factors
- Attraction's many layers
- Quantifying attraction
- Polygamy





Next Steps & Conclusion

Areas for improvement/increased realism:

- Decrease threshold error weight each round
- Increase marriage error weight each round
- Realistic temporal element
- Dating periods before marriage and potential breakups
- Stochastic matching processes
- Thresholds adjusted for rejection by round