

Machine Learning Classification Models

Predicting Contraceptive Method Choice

Tara Mullin, Flatiron Part-Time Data Science Bootcamp

Question

Can a woman's **demographic** and **socio-economic** characteristics predict current **contraceptive method choice**?

1. No use
2. Long-term methods
3. Short-term methods

Dataset

- 1987 National Indonesia Contraceptive Prevalence Survey
- 1,473 participants
- Available from Center for Machine Learning and Intelligent Systems

Factors Used to Predict Contraceptive Method

1. Wife's age (numerical)
2. Wife's education (categorical): 1=low, 2, 3, 4=high
3. Husband's education (categorical) 1=low, 2, 3, 4=high
4. Number of children ever born (numerical)
5. Wife's religion (binary) 0=Non-Islam, 1=Islam
6. Wife now working? (binary) 0=Yes, 1=No
7. Husband's occupation (categorical) 1, 2, 3, 4
8. Standard-of-living index (categorical) 1=low, 2, 3, 4=high
9. Media exposure (binary) 0=Good, 1=Not good

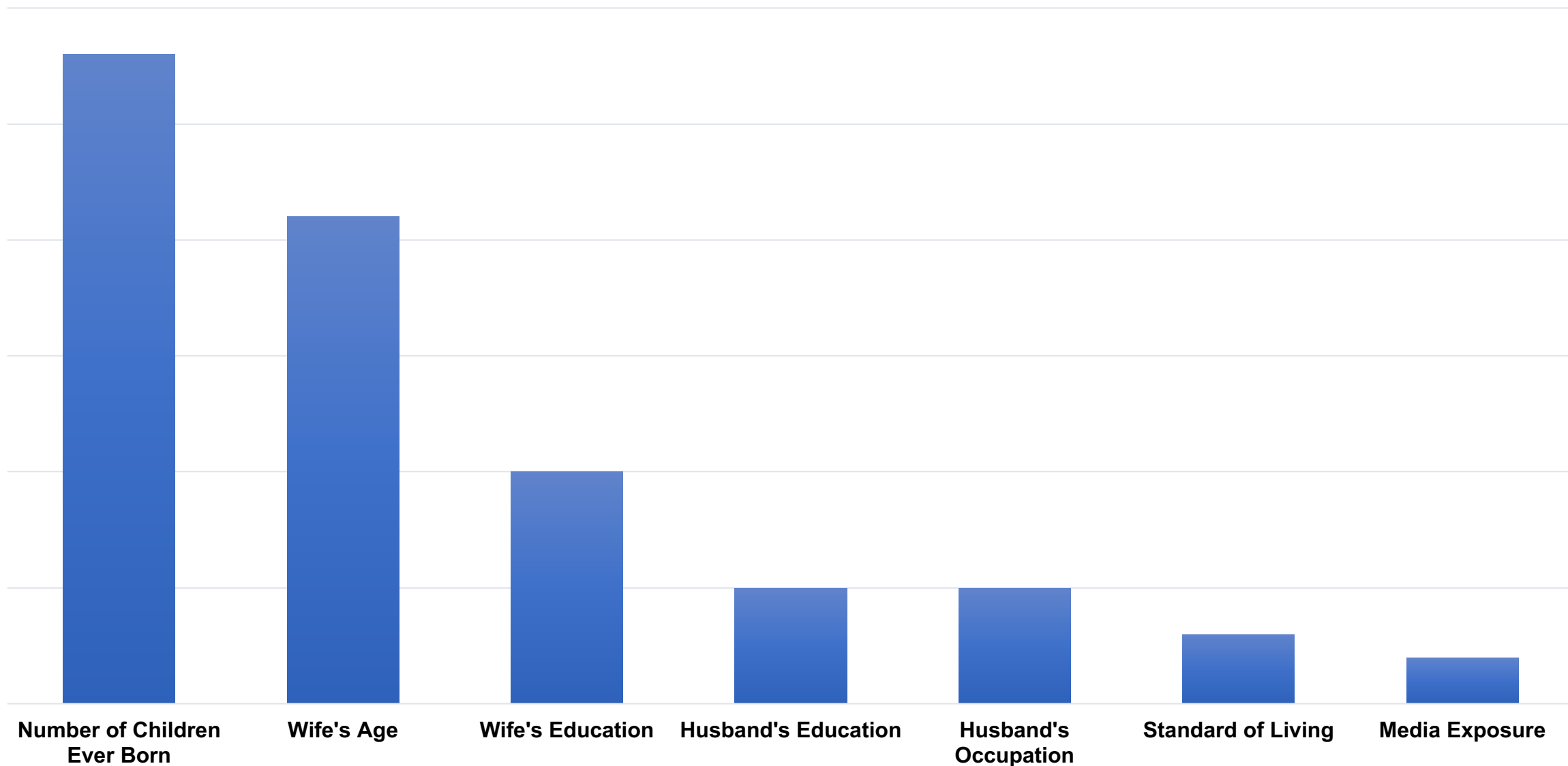
Hypotheses

1. Wife's age (numerical)
- 2. Wife's education (categorical): 1=low, 2, 3, 4=high**
- 3. Husband's education (categorical) 1=low, 2, 3, 4=high**
4. Number of children ever born (numerical)
5. Wife's religion (binary) 0=Non-Islam, 1=Islam
- 6. Wife now working? (binary) 0=Yes, 1=No**
7. Husband's occupation (categorical) 1, 2, 3, 4
8. Standard-of-living index (categorical) 1=low, 2, 3, 4=high
- 9. Media exposure (binary) 0=Good, 1=Not good**

Findings

- These demographic and socio-economic factors can ***somewhat*** predict contraceptive method choice
- Several different algorithms were used – **55% accuracy**

Top Predictors



Recommendations

1. Educate women & girls

Recommendations

2. Educate men & boys

Recommendations

3. Public health media campaigns

Limitations & Future Work

Limitations:

- Old data - 1987
- Findings only relevant to Indonesia
- Self-selection bias?

Future work:

- Tune parameters in machine learning algorithms
- More recent data
- Data from other countries

Thank you!

Questions?