

# Misperceived Social Norms about Women Working Outside the Home and Its Effect on Women in Saudi Arabia\*

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First sentence. Second sentence. Third sentence. Fourth sentence.

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\*Code and data are available at: <https://github.com/ScarletWu/Misperceived-Social-Norms-Women-Working-Outside-the-Home-in-Saudi-Arabia>. Replication on Social Science Reproduction platform available at: <https://www.socialsciencereproduction.org/reproductions/1461/>

# 1 Introduction

Barriers to hiring women exert a significant influence on female labor and present a constraint to increasing economic opportunities for women (Claudia Eger 2022). Saudi Arabia is a recognizable example of a country with a low rate of female labor force participation. In 2022, the female labor force participation rate, defined as the percentage of the female population aged 15+ that is employed, is only 27.8% in Saudi Arabia. This is notably lower than the global average of 47.3%, while the male labor force participation rate in Saudi Arabia is relatively high at 80% (“Labor Force Participation Rate”).

The prevailing societal norms in Saudi Arabia, characterized by a low rate of women working outside the home and the customary practice of husbands’ guardianship with decision-making authority, contribute to the perception that Saudi men are unwilling to allow their wives to work (Bursztyn, González, and Yanagizawa-Drott 2020). This perception is often considered the primary reason behind the low rates of female employment, especially female working outside the home (WWOH). The paper ‘Misperceived Social Norms: Women Working Outside the Home in Saudi Arabia’ by Leonardo Bursztyn, Alessandra L. González, and David Yanagizawa-Drott delves into this social norm, as well as Saudi men’s perceptions of opinions regarding WWOH.

Drawing from survey responses and experiments results, they find that a large portion of young married men in Saudi Arabia privately support women working outside the home, and they greatly underestimate the proportion of support by other similar men (Bursztyn, González, and Yanagizawa-Drott 2020). The study population is young married husbands in Saudi Arabia. We aim to replicate the estimand that focuses on the proportion of husbands signing up job matching for their wives and the subsequent employment of wives a few months after the experiment. Their findings suggest that men who are given the actual proportion of their peers supporting WWOH are more likely to support their wives’ labor supply, and their wives are more likely to apply for job, attend interviews, be employed and enrol in driving lessons. Correcting misperceived beliefs manifests positive impacts on females, and the lack of communication emerges as a primary factor contributing to these misperceptions.

Our paper will follow a reproduction of Leonardo Bursztyn, Alessandra L. González, and David Yanagizawa-Drott’s findings. We seek to replicate two claims, (1) There is a wedge between the actual and perceived proportion of men supporting women working outside the home, and (2) Most Saudi men who privately support WWOH fail to understand that others do as well, and they are more likely to help their wives find jobs when they know the actual portion of men supporting WWOH. The experiments and surveys results we will try to replicate are (1) the actual portion of support of WWOH from young husbands, (2) the existence of misperception, and (3) the effects of correcting beliefs on wives in Saudi Arabia. Our reproduction used the programming language R (R Core Team 2022), the analysis used the following packages: Haven(Wickham, Miller, and Smith 2023), Dplyr (Wickham et al. 2023), Ggplot2 (Wickham 2016), Readr (Wickham, Hester, and Bryan 2024), Here (Müller 2020), Janitor (Firke 2023), KableExtra (Zhu 2024), Knitr (Xie 2014).

In the next section, we will discuss data including data source, methodology and features. After that, we will create a reproduction of the selected results to verify their data and their findings based on the data. In the last section, we will discuss our findings, including .... We will also conclude potential bias and weaknesses, as well as a push for future research

## **2 Data**

### **2.1 Source**

The paper used for replication is from American Economic Association, American Economic Review. The replication package is downloaded from Misperceived Social Norms: Women Working Outside the Home in Saudi Arabia webpage, under Additional Materials.

Our reproduction seeks to address two findings written in the original paper, using results they collected from the main experiment, its follow-up and online survey.

### **2.2 Methodology and Features**

#### **2.2.1 Main experiment and Follow-up**

The original study recruited 500 married Saudi males aged 18 to 35 from Riyadh as participants. Initial contacts were established using a recruiter database, with further recruitment using a combination of snowball sampling and random street intercept (Bursztyn, González, and Yanagizawa-Drott 2020).

Participants were organized into 17 sessions, each comprising 30 individuals. The survey, administered through Qualtrics, encompassed questions about demographic information, opinions, agreement with statements, and estimations regarding the agreement of other 29 participants with each statement. Particularly, there were two statements about female labor participation. Following this, half of the participants were assigned to a treatment group randomly. Those in the treatment group were provided with information on the proportion of respondents who agreed or disagreed with each statement, while participants in the control group received no information. Respondents were then asked to make an incentivized choice between a five-dollar Amazon gift card and the opportunity to sign up their wives for a job matching platform (Bursztyn, González, and Yanagizawa-Drott 2020). Follow-up calls were conducted 3-5 months after the main experiment. These calls collected information about whether the wife was employed during the main experiment, whether the wife was currently employed, and if she was currently employed, whether the job was outside the home (Bursztyn, González, and Yanagizawa-Drott 2020).

The main experiment dataset contains 500 observations and 36 variables. Variables include age, level of education, number of children, whether this man and his wife are employed now,

number of people known in the group and other variables related to WWOH statements. The follow-up dataset contains similar demographic data and information about wives’ employment, interviews and driving lessons. There are 33 variables in the follow-up dataset. Details and explanations using visualization will be further discusses in the next section.

### 2.2.2 Online survey

The online survey included approximately 1500 married Saudi men aged 18 to 35, randomly assigned to either a treatment or control group. In the control group, participants were presented with statements that were contentious but not stigmatized. In the treatment group, participants received an identical list of items with an additional, potentially stigmatized item for which the experimenters would like to elicit beliefs. All participants were then asked to indicate the number of statements they agree with, and the respondents from the control group were asked if they agreed with a WWOH statement individually (Bursztyn, González, and Yanagizawa-Drott 2020). Finally, the experimenters asked participants in the control condition to estimate the percentage of other participants who reported agreeing with the same statement, and asked participants from the treatment group to estimate the percentage of other participants who would privately agree with the WWOH statement (Bursztyn, González, and Yanagizawa-Drott 2020).

The dataset resulting from online survey comprises 1460 observations and 21 variables. These variables include condition, age, employed\_now, employed\_wife, employed\_out\_wife, children, and the responses to the survey questions for both groups as indicated above, along with participants’ confidence levels in some of the answers. Details and explanations using visualization will be further discusses in the next section.

## 3 Results

The authors calculated “wedges” which represent the difference between what participants guessed and the actual percentage of agreement among their session peers regarding women working outside the home (WWOH). The negative wedge indicates that the participant underestimated the support for WWOH. Conversely, a positive wedge suggests that the participant overestimated the support for WWOH. We replicate the histograms to check the distribution of the wedges between participants’ beliefs about the support for WWOH among their session participants and the actual levels of support. Figure 1 specifically maps the distribution of these “wedges” – the differences between each participant’s guess and the actual percentage of session participants who agreed with the pro-WWOH statement. It was found that more than half of participants underestimated the support for WWOH. There is a clear gap between perceived and actual social norms regarding women’s work outside the home. The left skew of the histogram would indicate that a majority of participants underestimated the true level of support for WWOH.



Figure 1: Histogram of Perceptual Gaps in Beliefs About Women Working Outside the Home

By using the regression analysis, we examine the treatment effect on the participants' likelihood to sign up for a job matching service for their wives. The treatment variable is significant across all model specifications, with coefficients ranging from 0.0853 to 0.0899. The constant term varies considerably across different model specifications, suggesting differing baseline propensities for signing up absent the treatment. The p-values for the treatment effect, under various robustness checks such as robust standard errors, wild bootstrap, and permutation test, all indicate significance, ranging from 0.008 to 0.038. These results reinforcing the treatment's positive impact on sign-up rates (Table 1).

Figure 2 illustrates the difference in job matching service sign-up rates between the control and treatment groups. The bar for the treatment group would be higher than the control group's, showing a clear increase in the likelihood of signing up due to the treatment. The specific values of 23.48% for the control group and 32.02% for the treatment group, along with a p-value of 0.0424, would be represented, indicating a statistically significant effect of the information intervention on the participants' actions.

The combination of Table 1 and Figure 2 demonstrates the efficacy of the information treatment in altering the participants' behavior towards women's labor market participation, revealing not only a statistical significance but also practical importance in the context of social norms and labor supply outcomes in Saudi Arabia.

Table 1: Summary Statistics (Main Experiment)

	All	Control	Treatment
Observations	500	247	253
Age	24.78 (4.21)	24.64 (3.99)	24.91 (4.41)
Number of Children	1.71 (1.72)	1.64 (1.7)	1.77 (1.74)
College Degree (%)	56.2	55.06	57.31
Employed (%)	86.6	87.45	85.77
Wife Employed (%)	65.2	65.59	64.82
Wife Working Outside the Home (% retrospective follow-up)	8.4	7.89	8.9
Other Participants Known (%)	51.19 (38.24)	49.68 (38.6)	52.66 (37.92)
Other Participants with Mutual Friends (%)	38.64 (34.94)	37.62 (34.62)	39.63 (35.29)

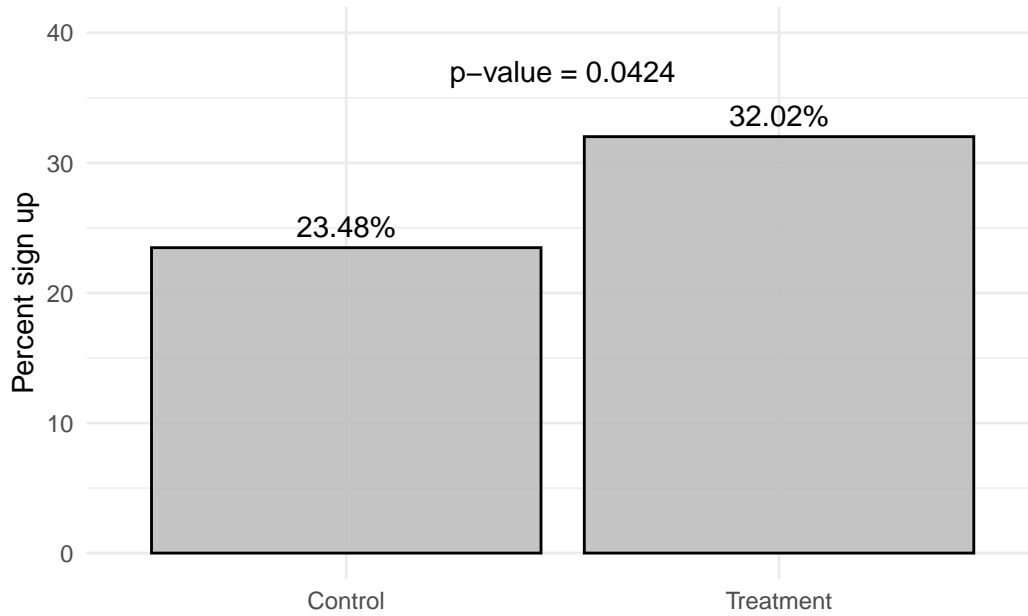


Figure 2: Job Matching Service Sign Up (Main Experiment)

The the longer-term outcomes of the treatment are shown in Figure 3 with error bars indicating the 95% confidence intervals for these proportions.

The job matching service sign-up rates is presented in Figure 3 a. In the control group, 6.04% of participants chose to sign their wives up for the job service instead of taking a gift card payment while 16.74% participants in the treatment group chose the job service (p-value = 0.001). The increased sign-up rate in the treatment group more young men accepted the idea of WWOH after the correction of misperceptions.

In Figure 3 b, the informational intervention has impact on participants' wives were interviewed for a job outside the home. After the intervention, there was a statistically significant increase in interviews, with the percentage of wives who interviewed for a job outside the home rising from 1.1% to 5.95%. This more than fivefold increase (p-value = 0.013) suggests that the treatment had a notable effect on the interview rates for jobs outside the home.

Similarly, the informational intervention effects on the employment rate of participants' wives in jobs outside the home according to Figure 3 c. The employment rate post-intervention increased from 7.69% to 9.73%. Although this represents an increase, it is not statistically significant (p-value = 0.456), implying that while the intervention might have had an encouraging effect on job-seeking behavior, it did not translate into a significant difference in actual employment within the study period.

Besides, Figure 3 d indicates that the change in husbands' willingness to sign their wives up for driving lessons as a result of the informational intervention. There is a significant increase from 68.13% to 78.38% in the proportion of husbands who reported they would sign their wives up for driving lessons (p-value = 0.03). This result indicates that the informational intervention not only had an impact on labor supply outcomes but also potentially affected broader social norms and attitudes toward women's rights and autonomy in Saudi Arabia, as evidenced by the increased openness to women's mobility through driving.

Overall, the treatment has a significant impact on both immediate and longer-term outcomes related to women's labor market participation and related behaviors (Figure 3).

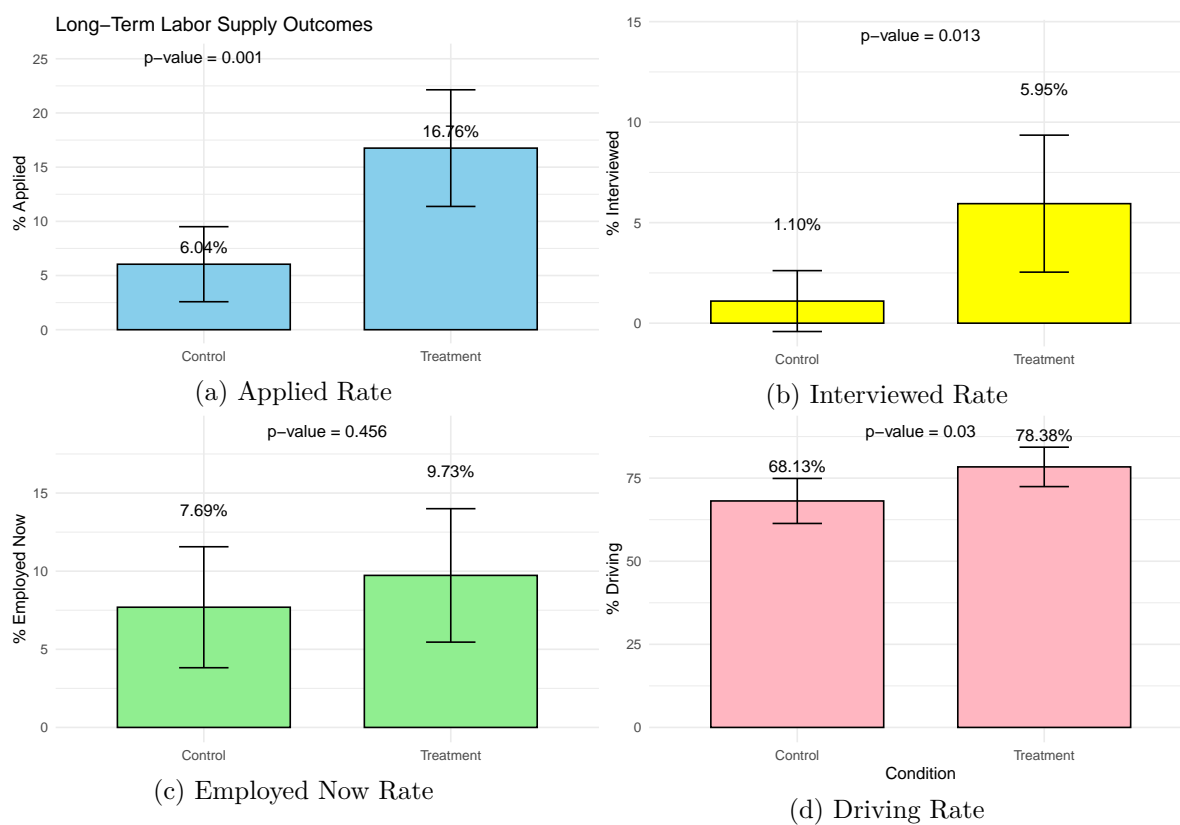


Figure 3: Histogram of Perceptual Gaps in Beliefs About Women Working Outside the Home



Figure 4 is made to illustrate the result of the first national survey. There are two vertical lines that represent the actual proportion of respondents who agreed with the statement in Figure 4, showing more than 80% of men underestimated the true proportion. The black line is for the control group and the red dashed line is for the treatment group. The lines reflect perceptions of participants about others' beliefs. The graph shows the support level of treatment group is mostly higher than control. This figure underscores a significant discrepancy between personal beliefs and perceived societal norms. The larger sample size of this national survey strengthens the evidence that men privately support women's employment outside the home more than they assume others do, suggesting widespread misperceptions about societal norms.

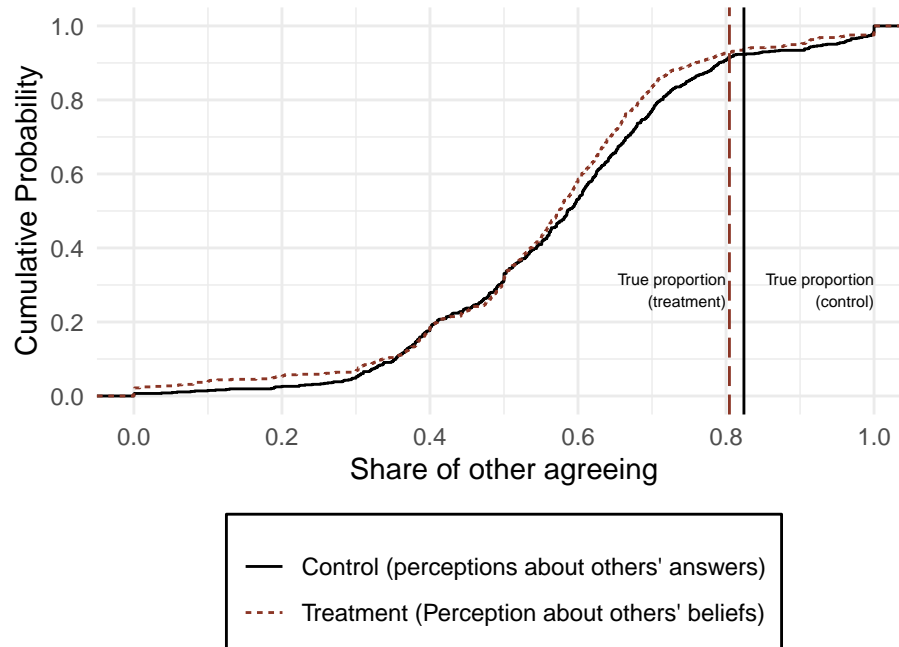


Figure 4: Misperceptions about Others' Beliefs (National Survey)

## **4 Discussion**

### **4.1 First discussion point**

### **4.2 Second discussion point**

### **4.3 Third discussion point**

### **4.4 Bias and Weaknesses**

The authors, Leonardo Bursztyn, Alessandra L. González, and David Yanagizawa-Drott, implemented many modifications to the questions and weights in an attempt to minimize bias in the survey. However, it is acknowledged that bias is an inherent challenge when conducting experiments. The main experiment survey has a participant pool of 500 married men from Riyadh. Since Riyadh is the capital and the largest city in Saudi Arabia, the sample size might be relatively small and potentially biased. The reward offered, typically a five-dollar or twenty-dollar gift card, could be another factor contributing to potential biases considering the GDP in Saudi Arabia. The paper focuses on married men aged 18 to 35 with some level of education. It is noted that, for the majority of individuals, the expected age range for completing college or university education is between 20 and 24. Therefore, setting the age range from 18 to 35 might be a weakness in the experiment.

There is a potential correlation between individuals who did not participate in the follow-up and those who do not support Women Working Outside the Home, also introducing the possibility of bias.

### **4.5 Next steps**

Although there is a customary practice of husbands' guardianship with decision-making authority in Saudi Arabia, gaining insights into the opinions of Saudi women regarding employment and working outside the home is essential for future study. The authors mentioned that 'expanding the scale and observing how information spreads in networks, and how it affects a large set of outcomes is an important topic for future work' (Bursztyn, González, and Yanagizawa-Drott 2020). Considering the potential biases and the experiment result stating correcting misperceived beliefs increase husbands' support in WWOH, future research could greatly benefit from the extension of scale to enhance generalizability and actual effects on female employment in Saudi society.

Figure 9 in the original paper reveals that males who often engage in discussions about the WWOH exhibit perceived support only four percent smaller than the actual proportion. For those who rarely or very rarely discuss about the WWOH, their perceived support for WWOH

is around forty percent smaller than the actual proportion. If the lack of communication facilitates misperceptions, one would expect a correlation between the frequency of communication and perceptions (Bursztyn, González, and Yanagizawa-Drott 2020). Consequently, future studies could delve into strategies in preventing misperceived opinions from influencing social norms, and explore decision-making in the presence of collective misperceptions.

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