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## **Social Interactions and Women's Labour Market Outcomes in Kenya**

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### **Abstract**

*We analyse labour market participation and income among 15-49-year-old women in Kenya. Our covariates are number of sexual partners, marital status, post-secondary school training, and the Program. The Program separates direct beneficiaries of Free Elementary School Education from non-beneficiaries. We utilize the 2022 Kenya Demographic and Health Survey in a fuzzy regression discontinuity design. We test for robustness using quantile regression at the 10<sup>th</sup>, 50<sup>th</sup>, and 90<sup>th</sup> labour income quantile. Program participation raises single years of schooling by 4-5 months but does not affect labour incomes significantly. Women's labour incomes decline significantly among women in the 50<sup>th</sup> labour income quantile. Post-secondary training significantly raises labour incomes. The longer the period a woman spends furthering studies beyond grade 12, the fewer the sexual partners. Reductions in women's earnings due to non-husband sexual partners are driven by unmarried women. We recommend that the Government of Kenya and its developmental partners invest in enhancing the enrolment and completion of further studies, notably; college, TVET, and university.*

**Key words:** *education, female labour force participation, labour incomes, sexual partnerships, social interactions.*

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### **1.0 Introduction**

Extant literature analyses labour market outcomes along various dimensions. These include gendered occupational alignment/career trajectory and representation (Cortés & Pan, 2020). This dimension sheds light on the under-representation of females as well as the extent to which parenting/childcare and social norms and expectations affect their outcomes on the labour market (Mijs & Roe, 2021). The second dimension considers the pay gap/wage differentials, job quality, and duration of work (Jones et al, 2023; Denier & Waite, 2019; Brown et al, 2019; Bursztyn et al, 2017). Developments along this dimension unearth how female labour market outcomes are affected by discrimination and innovations, e.g., the inception of the contraceptive pill. The third dimension focuses on marital status, sexual identity, partnerships, partnership types, and friendships (Lleras-Muney et al, 2020; Martell, 2021; Delhommer, 2020; Waite et al, 2020; Brown et al, 2019). Scholarship along this line analyses the partnership/friendship/marriage premium/penalty that females face, e.g., forgone wages due to a stay-at-home status, or housewife and househusband.

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A largely ignored area of focus has been the sociology of work, especially, how social interactions/ networks affect gendered labour market outcomes<sup>3</sup>. In this article, we focus on sexual partnerships and friendships as outcomes of social interactions. Although [not] having a partner affects labour market outcomes, the quality, and number of one's sexual partners are under-investigated. With 1 in every 2 hires being made possible via referrals and recommendations, it is fruitless to ignore network mobilization (Pedulla & Pager, 2019). Even then, individuals strategically choose with whom to socialize, and whom to have a sexual partnership<sup>4</sup> (Moeni, 2021). This is decided upon alongside the longevity of such a relationship.

Interestingly, some individuals match with their sexual partners within the job environment (Bursztyn et al, 2017). In some circumstances, sexual partnerships depend upon an individual's position on the job market. Recent labour market turbulence occasioned increments in females' participation rate (Lim & Morgan, 2021). Simultaneously, there is an ever-increasing proportion of men getting disconnected from the labour market (Halpern-Meekin & Talkington, 2022). While this disconnect reflects a general decline in hours worked, e.g., during coronavirus (COVID)-19 pandemic period, it alters the organization of family life (Halpern-Meekin & Talkington, 2022). Reductions in male labour market participation rates offsets undesirable outcomes within social networks. Halpern-Meekin & Talkington (2022) link a disconnect among males with inability to provide materially in romantic relationships. This, in turn, prolongs the time-to-marriage while rendering some men unmarriageable (Halpern-Meekin & Talkington, 2022). It is a matter of time before inability to find a romantic partner is declared a disability.

Labour market participants constantly attempt to balance between work and romantic commitments, and entanglements (e.g., marriage) (Nelson et al, 2021). A work-life imbalance paves way for conflict and discord among sexual partners (Lim & Morgan, 2021). This is further worsened because the identification of sexual partners is a highly selective process<sup>5</sup> (Mijs & Roe, 2021). However, screening for partners is often imperfect<sup>6</sup> due to distorted signals (Bursztyn et al, 2017). The authors reveal single female MBA students underreporting labour market ambition<sup>7</sup> when observed by their male counterparts. This underreporting safeguarded their marriage prospects (Bursztyn et al, 2017).

Against this background, we analyse how gendered labour market outcomes are affected by sexual partnerships in Kenya. Unlike Lleras-Muney et al (2020) that identify friendship premiums, we consider heterogenous friendship valuations that characterize heterogeneous sexual partnerships. These partnerships are assumed to be not fully reciprocal<sup>8</sup> but reflect 'friendships with benefits<sup>9</sup>.' We make two-fold contributions. First, we bridge the data gap by basing our analyses on a dataset compiled from the 2022 Kenya Demographic and Health Survey (KDHS). The KDHS was conducted by the Kenya National Bureau of Statistics (KNBS), the Ministry of Health, and the DHS Program ICF (hereafter KNBS et al, 2023). This survey contains granular data on the number of [hetero-]sexual partners (lifetime and short-term), and the frequency that a man/woman had a sexual affair. Second, we consider the number of [wo]man's sexual partners, and marital status. On average, married women have fewer non-husband sexual partners compared to unmarried women.

## **2.0 Literature Review**

This section discusses some of the key concepts, and theoretical views, alongside a review of previous studies. Key concepts are discussed under the conceptual literature whereas related studies

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<sup>3</sup> These include being employed, occupational position/career trajectories, unemployment spells, and labour earnings.

<sup>4</sup> Thus, individuals do not always look for partners for sexual gratification.

<sup>5</sup> This is dictated upon by one's position on the labour market.

<sup>6</sup> Especially among females

<sup>7</sup> i.e., lower salary expectations and lower willingness to work over extended periods

<sup>8</sup> Sometimes we identify with people who do not identify with us. Thus, perceived position in an individual's life (e.g., as a close friend) may not coincide with actual position.

<sup>9</sup> This suggestion was given by Davis Ombane.

are captured under related empirical evidence. Conceptual literature introduces existing debates that are considered relevant to this article.

## **2.1 Conceptual Literature**

Understanding gendered labour market outcomes benefits from frameworks that model the economic empowerment of women. These frameworks fall into two broad categories. The first category emphasises job market considerations and the state of the job market. These outcomes, in turn, shape extra-household networking possibilities, sexual partnerships, and other outcomes<sup>10</sup> (Heintz, 2021; Halpern-Meehin & Talkington, 2022). The second category focuses on reverse engineering. In this scholarship, job market outcomes are explained by educational reforms and attainment, and social interactions/stratification (Enfield, 2019; Lleras-Muney et al, 2020). Improved educational access raises the number of educated females. This, in turn, exerts upward pressure on the labour market while raising equality of access to opportunities (Klasen, 2019). Similarly, reforms such as job targeting<sup>11</sup> raise the participation of targeted groups in the labour market. Where job-targeting is insufficient, individuals fall back on explicit job referrals<sup>12</sup>. Referrals are also common in forging sexual partnerships whereby potential partners are matched through third-party referrers.

Existing structural rigidities necessitate an interrogation of women's shared perspectives. School systems that are entrenched in cultural norms and gender non-reversal propagate the subordination of women (Longwe, 1998). This undermines the gains in bargaining power realized through women's access to better schooling opportunities. Thus, women and men may face similar challenges and struggles, yet experience them differently. This is aggravated by physiological and psychological differences that place women at a comparative disadvantage<sup>13</sup>. When agrarian societies shifted from hand-held hoes to ox-drawn ploughs, more men and boys tilled farms (Alesina et al, 2018)<sup>14</sup>. For instance, a shift from using a hand-held hoe (which was better suited to women and girls) to an ox-drawn plough (suitable for boys and men) led to more men and boys tilling the farm (Alesina et al, 2018).

In many households, cultural norms undermine the autonomy of women in making key decisions. These include asset ownership, healthcare plans, labour market participation, and sexual partners (Jayachandran, 2021; Enfield, 2019; Olarewaju & Fernando, 2020; Olarewaju et al, 2019). Heintz (2021) indicates the burden of unpaid work falls disproportionately on women. This, in turn, reduces women's autonomy substantively relative to paid employment (Jayachandran, 2021). Women accept less autonomy to prevent male sexual partners from feeling threatened by their affluence (Cortés & Pan, 2020). As a result, women forge sexual partnerships up the socio-economic status ladder to guarantee the stability of the partnership (Karney, 2021). Some societies find it acceptable, and okay for women not to work but frown upon the idea of a woman working while the husband does not (Annan et al, 2021).

Career choice and job market aggressiveness are entrenched in societal dictates and expectations (Cifre et al, 2018). In some societies, stereotyping presents men as breadwinners while renegeing women to caregiving. These stereotypes anchor women's actions, including further studies and career advancement, on the approval of the partnering men (Cifre et al, 2018; Cortés & Pan, 2020). This stifles equal footing in the job market (Banerjee, 2019). Besides, marital politics that gag women's freedom to participate in the labour market distorts the attractiveness of marriage

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<sup>10</sup> E.g., income sources, educational attainment, and marriage

<sup>11</sup> E.g., job openings explicitly 'encouraging women to apply'

<sup>12</sup> This is affected by referral biases, e.g., qualified female candidates being less likely to be recommended by males (Pimkina & de la Flor, 2020).

<sup>13</sup> Valentine Dibondo argues that "While boys were playing, girls were seated; they were seated observing." Thus, girls may have an upper hand to boys in observational tasks.

<sup>14</sup> Women/girls and men/boys had a comparative advantage in using hoes and ploughs, respectively (Alesina et al, 2018).

(Galiè et al, 2022). At times, workplace discrimination and ‘sexism’ limit women’s participation in the labour market through the normalization of harassment (Banerjee, 2019). This is further aggravated by ringfencing certain jobs as a reserve for men, thereby locking out women.

Many labour markets and romantic relationships rely upon educational attainment as a screening tool. Higher levels of educational attainment raise an individual’s exposure to economic opportunities (Gebreyes, 2019). Through the ‘tagging effect’ and the ‘sorting effect,’ an individual’s education level dictates the operational social circle (Le & Nguyen, 2021). Moeeni (2021) and Tanaka et al (2021) argue that girls/young women are less likely to have sexual partners with comparably low levels of education<sup>15</sup>. Endogenous educational choices affect the time of entry into long-term sexual engagements, and the labour market (Sunder, 2019; Tanaka et al, 2020).

Sometimes, labour market outcomes are affected by time allocation towards household production, e.g., childcare. Cortés & Pan (2020) reveal that the entry of the first child drastically alters the household-labour market dynamics. The authors argue that mothers devote disproportionately more time towards primary caregiving, and less time working outside the home. However, it is not automatic that mothers dominate primary caregiving<sup>16</sup>. Rising female labour earnings raise the opportunity cost of caregiving, thereby raising labour hours supplied by females outside the home (Moeeni, 2021).

Households face various shocks that [in]directly affect labour market outcomes. Job losses among breadwinners coerce secondary<sup>17</sup> breadwinners to raise the labour hours supplied (Pimkina & de la Flor, 2020). This arises from the ‘added worker effect’ (Rose & Shem-Tov, 2023). When breadwinners lose jobs, secondary breadwinners are coerced.

Exposure to shocks and household financial turmoil have disruptive effects on the labour market. Negative job market shocks such as mass layoffs or job displacement characterized by sole breadwinners (e.g., husbands) losing jobs coerce secondary breadwinners (e.g., wives) to increase hours of labour supplied through the ‘added worker effect’ (Pimkina & de la Flor, 2020; Rose & Shem-Tov, 2023). Broad-based shocks, however, disincentivize secondary breadwinners from working. As a result, labour hours supplied fall (Pimkina & de la Flor, 2020). Prolonged wage unemployment spells<sup>18</sup> render wage employment less attractive (Olawaju et al, 2019).

Many individuals dedicate their adulthood to pursuing romantic relationships, working, or looking for gainful employment. Characteristic of adulthood is task-sequencing<sup>19</sup>, and exposure to perturbation<sup>20</sup>. Labour market disturbances disrupt household incomes. This, in turn, affects participation in the labour market, and the pursuit of sexual partnerships. Since individuals associate higher labour earnings with greater worker productivity, earnings serve as a screening tool in sexual partnerships. The more productive at work a man is, the likelier he is to select into marriage/sexual partnership (McDonald, 2020).

## **2.2 Related Empirical Evidence**

Mulwa & Gichana (2020) reveal that employment within the formal private sector declines significantly in educational attainment among females in Kenya. However, females’ employment within the informal or the formal public sector rises significantly in educational attainment. The authors argue that education equips females with skills needed in the labour market, thereby

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<sup>15</sup> Sapirosexuality notwithstanding, educated women attract educated men, but educated men attract [un]educated women (Sunder, 2019; Tanaka et al, 2021).

<sup>16</sup> If a wife has comparative advantage working, then the husband ends up as primary caregiver (Cortés & Pan, 2020; Borrowman & Klasen, 2020).

<sup>17</sup> In the absence of unemployment benefits, secondary breadwinners serve as insurance for breadwinners.

<sup>18</sup> In some countries, e.g., China, and North Africa, job scarcity [e.g., during recessions] elicits opposition to female employment (Ibourk & Elouaourti, 2023; Xiao & Asadullah, 2020).

<sup>19</sup> i.e., individuals seek employment prior to forging sexual partnerships.

<sup>20</sup> E.g., individuals land jobs only to leave them (Rose & Shem-Tov, 2023); and sexual partners free themselves from entanglements.

incentivizing them towards labour market participation<sup>21</sup>. The findings further suggest general employment and formal private-sector employment rising in social capital<sup>22</sup>. This arises from social gatherings facilitating the sharing of information on available job opportunities<sup>23,24</sup>. Geographically, rural residents were significantly more likely to be employed, and worked within the informal sector, compared to their urban counterparts<sup>25</sup>.

Borrowman & Klasen (2020) analyse occupational and sectoral segregation in 69 countries through the Duncan (dis)similarity index. The authors find significant reductions in sectoral segregation as female labour force participation rises. However, occupational segregation has risen significantly. Increasing female-male education ratio and average male education widens sectoral and occupational segregation, respectively. The authors argue that rigid labour market hierarchies erode gains realized via greater female labour force participation. Segregation is further widened by risk aversion and gendered preference heterogeneities.

Ibourk & Elouaouri (2023) associate reductions in labour force participation with educational attainment<sup>26</sup> within North Africa. Among the married, participation rises in female education but declines in male education. The findings are attributed to 'purity' considerations that undermine labour force participation among educated females. Among males, the authors reveal rising reservation wages among the educated, contraction of the public sector, and sluggish rate of private sector expansion. These jointly reduce the number of available jobs for educated males.

Xiao & Asadullah (2020) establish China's labour force participation is significantly rising in both good English skills and years of education. Nevertheless, female Chinese have low participation rates relative to their male counterparts. Relatedly, Tanaka et al (2020) report an ambiguous effect of years of education on labour force participation among Bangladeshi females. Over some bandwidths, an additional year of education significantly reduces female participation. Participation is insignificantly affected over other bandwidths.

A trade-off exists between childcare and labour market outcomes that are anchored on career adjustment/workplace flexibility. Cortés and Pan (2020) analyse income dynamics between men and women in the United States (US). Entry of the first child widens income gap in the early years. Although male parents' earnings remain fairly stable relative to childless males, childbirth erodes earnings among female parents. Thus, female partners experience a child penalty<sup>27</sup>. Relatedly, Klasen et al (2021) analyse cross-country heterogeneities arising from child presence. The observable differences arise from heterogeneities in returns to children's upbringing and schooling<sup>28</sup>. In Brazil where the average number of children per woman was much lower, the authors reveal a higher female labour force participation rate relative to Tanzania, Bolivia, Indonesia, India, and Jordan.

Clark et al (2019) analyse subsidized daycare in the Korogocho informal settlement within Kenya's Nairobi city. Receiving daycare vouchers<sup>29</sup> significantly raises the likelihood of a mother

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<sup>21</sup> The authors ignore initial [dis]advantages yet they matter. Enfield (2019) indicates gendered differences across Nigeria's career landscape. This is attributed to greater schooling possibilities among the affluent and low rates of primary school completion among girls relative to boys.

<sup>22</sup> Proxied by social gatherings participation

<sup>23</sup> It is questionable that information-sharing benefited only formal private sector employment. Social gatherings, e.g., funerals and weddings, are not anchored on the dissemination of job market-relevant information.

<sup>24</sup> Sometimes, workers rely on social networks. In Uganda and the Democratic Republic of Congo, well-connected women worked on high-renumeration tasks whereas the less-connected women served in less-rewarding posts in the gold mines (Rutherford & Buss, 2019).

<sup>25</sup> This could be driven by prevalence of unregistered rural farm enterprises. Tanaka et al (2020; 2021) show that non-farm job opportunities are limited in rural areas.

<sup>26</sup> Educational attainment is categorized as at least secondary or otherwise.

<sup>27</sup> This nudges females into occupations allowing intermittent labour market participation or ones with part-time option (Borrowman & Klasen, 2020).

<sup>28</sup> Characteristics of the household head also matters (Klasen et al, 2021).

<sup>29</sup> Or vouchers plus improved daycare quality.

being employed. Voucher recipients are also less likely to be unemployed. The authors argue that subsidized daycare incentivized mothers to work<sup>30</sup>.

In the literature, other factors shaping labour market outcomes include migration status (Gebreyes, 2019), religion, household size, [non] farm income source, age and age at marriage, wife's fertility, household income, retirement age (Klasen, 2019), ethnicity (Hassan et al, 2023), community social norms, and marital status. Previous studies largely ignore the importance of the number of sexual partnerships. This article leverages the number of sexual partnerships from a large representative dataset of women in Kenya.

### 3.0 Methodology

We define labour force participation based on time allocation. For a comprehensive methodology, see [https://drive.google.com/file/d/1b434iuJY3N6O\\_KAZYWfuu3i07cRfplf/view?usp=sharing](https://drive.google.com/file/d/1b434iuJY3N6O_KAZYWfuu3i07cRfplf/view?usp=sharing). An individual is in the labour force if, in a four-day period, he/she spends a minimum of one hour on any activity that generates income (Tanaka et al, 2020). For the descriptive, we categorize married women and their partners/husbands who are employed into occupations based on ISCO-08. This categorization enables us to identify segregation across occupations based on the Duncan dissimilarity index, D:

$$D = 0.5 \sum_r \left| \frac{B_r}{B} - \frac{G_r}{G} \right|, D \in [0, 1] \quad (1)$$

Where the total numbers of women and men working in sector r are  $G_r$  and  $B_r$ , respectively, and G and B are the total number of women and men in the labour force.  $D=0$  suggests absence of segregation whereas  $D=1$  indicates perfect inequality in the sectoral distribution of women and men (Borrowman & Klasen, 2020). This index is sensitive to the sectoral size (Borrowman & Klasen, 2020). Utilizing the 2022 Kenya Demographic and Health Survey (KNBS et al, 2023) dataset, we report a dissimilarity index equal to 0.15 for the sub-sample of married women and their partners/husbands<sup>31</sup>.

For the baseline, we estimate the model:

$$V_k = \beta_0 + \beta_1 Z_k^b + \beta_2 A_k + \beta_3 Z_k^b A_k + \beta_4 Z_k^E + \beta_5 P_k + \beta_6 Z_k^E P_k + \beta_7 Z_k^b Z_k^E + \beta_8 Z_k^b Z_k^E A_k P_k + \theta_k M_k + \epsilon_k \quad (2)$$

Where the labour market outcome V for woman k is explained by a woman's age (A), number of sexual partners (P), alongside interactions and other factors (M);  $\beta$  and  $\theta$  are regression coefficients, and the nuisance term  $\epsilon$  is a white noise. P and A are assignment variables, respectively, for single education years (that hint at social interactions) and age (indicative of [not] being in the free primary education). Treatment dummies are defined by:

$$Z_k^b = \begin{cases} 1(A_k \leq 37) \\ 0(A_k > 37) \end{cases} \text{ and } Z_k^E = \begin{cases} 1(P_k^E > 12) \\ 0(P_k^E \leq 12) \end{cases} \quad (3)$$

Where single years of education are captured by  $P^E$ , and dummies  $Z^b$  and  $Z^E$  denote the 1985 (and post-1985) birth cohort, and the post-secondary school education cohort, respectively. With this in mind, we centre at cut off point (37 years and 13 years, respectively, for age and single years of schooling<sup>32</sup>).

<sup>30</sup> This excludes uncompensated childcare offered by female kin.

<sup>31</sup> Potential self-selection is discarded because of low occupational segregation. Therefore, occupational choice does not explain gendered differences in labour market outcomes.

<sup>32</sup> The average and median age of an elementary school in Kenya have declined over the years. The average grade 1 in the 2010s was much younger compared to a counterpart in the early 1980s. An average grade 8 pupil is a 12-14-year-old. We add a 4-year markup to obtain an outlier whereby the oldest grade 8 pupil is 18years. Backdating this gives 1985 as a conservative year of birth for one in elementary school in 2003. The individual was 18 and 37years old,

$Z^b$  is assigned 1 for individuals that benefited from free public primary school education (hereafter, the Program), and 0 otherwise. The Program was introduced in 2003. It enabled pupils that would otherwise have dropped out due to fee-related challenges to stay in school. However, inter-pupil differences in exposure to the Program at its infancy are inevitable<sup>33</sup>.  $Z^E$  is assigned 1 for holders of at least college diploma, and 0 otherwise.  $Z^E$  captures education premium that is assumed to affect both sexual partnerships and labour market outcomes. That is, educated females attract well-connected male partners. These, in turn, raise females bargaining power on the job market<sup>34</sup>. Imperfect compliance<sup>35</sup> is addressed in a fuzzy regression discontinuity design (fuzzy-RDD).

Lastly, we employ two robust checks. In the first check, we estimate two auxiliary equations for single years of education and number of sexual partners given by:

$$P_k^E = a_0 + a_1 Z_k^b + a_2 (A_k - 37) + u_k \quad (4)$$

And

$$P_k = b_0 + b_1 Z_k^E + b_2 (P_k^E - 12) + v_k \quad (5)$$

With the treatment effect being given by  $a_1$  and  $b_1$  whereas  $u$  and  $v$  are respective disturbances. Secondly, we estimate the labour income equation using quantile regression by considering the 10<sup>th</sup>, 50<sup>th</sup>, and 90<sup>th</sup> quantiles.

## 4.0 Empirical Findings

This section presents results from the analyses alongside a discussion. The analyses entail descriptive statistics, and regression analyses. The descriptive statistics are analysed on the basis of occupational dissimilarities, and employment dynamics. Regression analyses are captured under “Main Results”.

### 4.1 Occupational Dissimilarities

We utilized the 2022 KDHS dataset (KNBS et al, 2023) on 15-49-year-old married women, and women living with partners. This constituted 18294 married Kenyan women. Occupational distribution by gender is captured in **Error! Reference source not found.**. Occupational segregation is low. However, occupational gaps exist among craft and related trade workers, and plant/machine operators and assemblers. These occupations are least pursued by married women but attract a considerable proportion of husbands/partners. Disturbingly, women are thrice as likely to be unemployed as their partners.

*Table 1: Occupational disaggregation*

Occupation	Married women/ living with partners	Husbands/ partners
Observations	18294	18225
Not working in the past 12 months	39.42	13.53
Managers	7.51	6.62
Professionals	3.33	4.95
Technicians & Associate Professionals	5.52	7.19
Clerical support workers	0.93	0.88

respectively, in 2003 and 2022. Similarly, an individual with post-secondary training has at least thirteen single years of education.

<sup>33</sup> Not all pupils benefited equally from the Program; e.g., a pupil in grade 2 at the time enjoyed 7 years of free elementary school education whereas a grade 8 counterpart only had a few months.

<sup>34</sup> Alternatively, the longer the schooling duration, the likelier an individual is to forge friendships and partnerships that directly affect labour market outcomes.

<sup>35</sup> Some pupils switch school type in response to the Program, e.g., from public to private schools, and vice versa.

Services and sales workers	11.98	11.81
Skilled agricultural, forestry & fisher	16.41	15.84
Craft & related trades workers	0.78	9.62
Plant & machine operators, & assemblers	0.39	11.31
Elementary occupations	13.73	17.95
Armed forces	0.02	0.29
<b>Dissimilarity index</b>	0.1461	

*Note 1: Those not working are excluded from the dissimilarity index*

We reconcile unemployment disparity by matching women’s employment status with the husband’s. **Error! Reference source not found.** reveals approximately one-third of married women being unemployed while their husbands/partners worked weekly. This exceeds the 1 in 10 married women that did not work and whose husbands also did not work<sup>36</sup>.

*Table 2: Wife-husband employment dynamics*

<b>Married woman/living with partner</b>	<b>Husband/ partner</b>				<b>Total</b>
	<b>Did not work</b>	<b>worked last 7 days</b>	<b>worked last 12 months</b>	<b>Do not know</b>	
<b>Working</b>					
No	10.50%	32.97%	2.29%	0.12%	45.87 %
Yes	2.97%	48.91%	2.09%	0.16%	54.13 %
<b>Total</b>	13.46%	81.88%	4.38%	0.28%	100.00%

We suspect the type of earnings contributed to unemployment. Unpaid work or in-kind payments could disincentivize unemployed women from seeking employment. **Error! Reference source not found.** indicates 19% of employed women received no payment. However, this does not infer causality.

*Table 3: Earning Type and place of work for women*

<b>Type of earnings</b>	<b>Place of work</b>			<b>Total</b>
	<b>Family</b>	<b>Someone else’s</b>	<b>self-employment</b>	
not paid	3.842%	0.877%	14.210%	18.930%
cash only	1.543%	43.159%	31.351%	76.052%
cash and in-kind	0.143%	1.955%	2.340%	4.439%
in-kind only	0.097%	0.195%	0.287%	0.579%
<b>Total</b>	5.626%	46.186%	48.188%	100.000%

**Error! Reference source not found.** regresses the wife’s unemployment against the husband’s, and vice versa. Unemployment of a married woman and that of a husband significantly cause each other. There could be potential confounders that raise the likelihood of husbands being unemployed simultaneously with their wives.

<sup>36</sup> Neither substitutability nor complementarity between women’s and husbands’ employment is inferred.

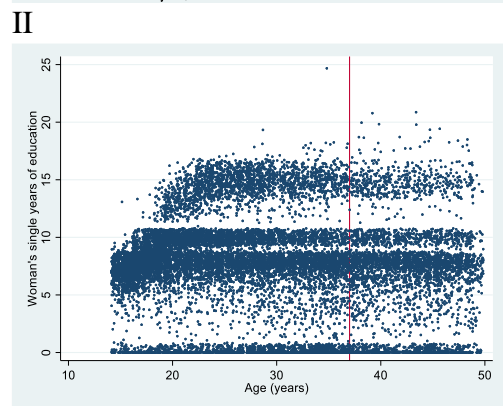
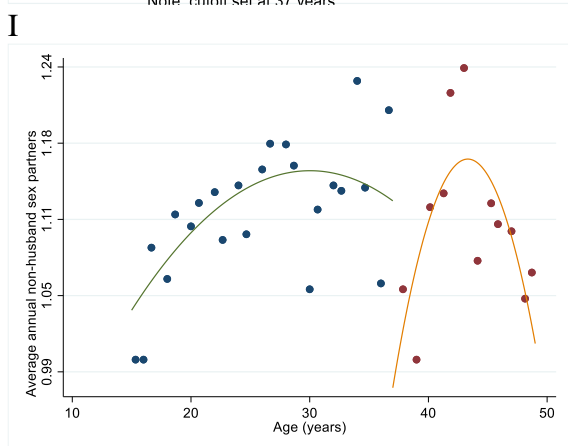
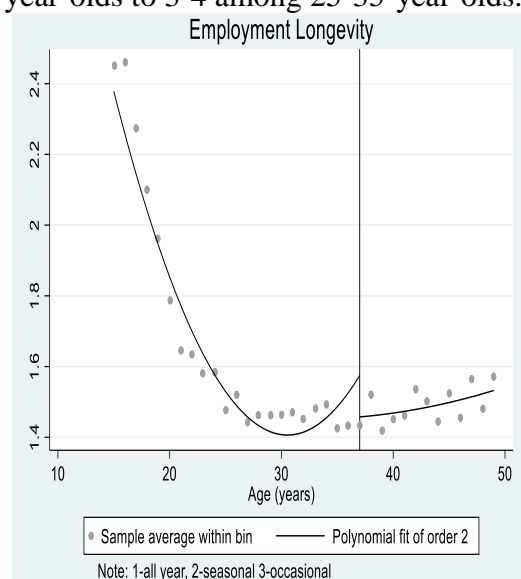
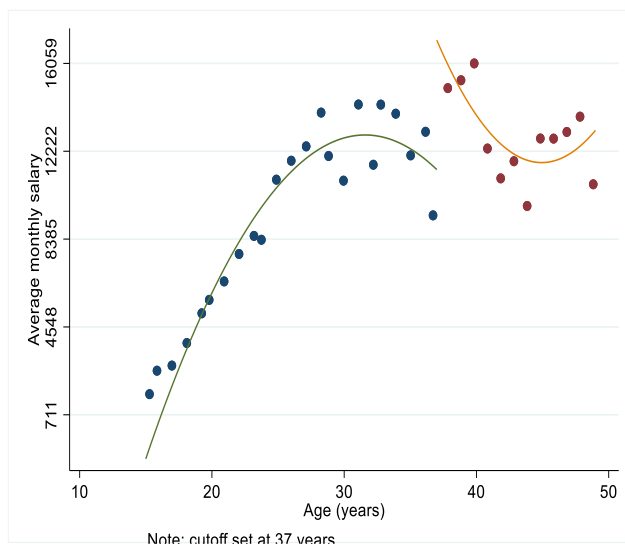


Table 4: Wife-Husband Unemployment Regressions

	(1)	(2)	(3)	(4)
	Linear probability model		Probit marginal effect	
VARIABLES	Married woman	Husband	Married woman	Husband
Husband	0.403*** (0.0102)		0.384*** (0.00929)	
Married woman		0.197*** (0.00495)		0.179*** (0.00472)
Constant	0.340*** (0.00372)	0.0572*** (0.00311)		
Observations	18,312	18,312	18,312	18,312
R-squared	0.079	0.079		

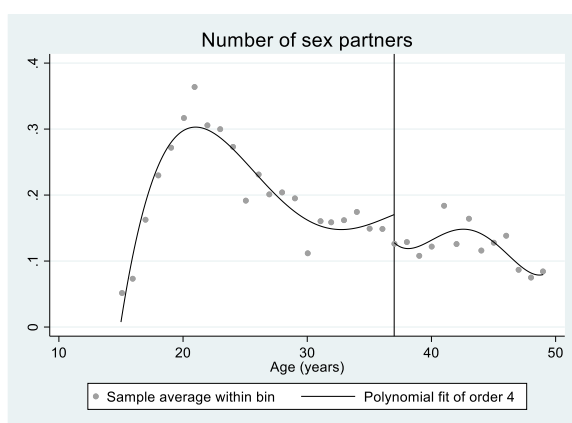
### 4.2 Main Results

**Error! Reference source not found.** utilizes a subsample of 2766 married women/living with partners. Panel I reveals higher average monthly incomes in the pre-1985 birth cohort relative to post-1985. In Panel II, the average teenage women in the 1985 birth cohort are seasonal/occasionally employed. However, adult women worked either all year or seasonally. Panel IV indicates concentration of education at 9-10 single years of schooling. In the 1985 cohort, average sexual partners rise from 1-2 among 15-19-year-olds to 3-4 among 25-35-year-olds.

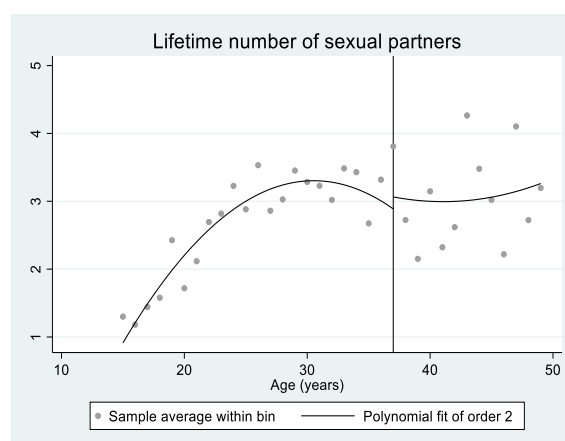


III

IV



V



VI

### 4.3 Causal Relationships

In the full women sample in **Error! Reference source not found.**, the Program significantly raises labour incomes (column 1). The effect withers away when post-secondary training is considered (column 3). Among married women (column 4), the Program insignificantly affects incomes. The statistically significant results arose from a failure to account for post-secondary training and the unmarried.

Age ambiguously affects labour income. Generally, labour incomes rose significantly with age. However, age insignificantly affects incomes among married women who benefitted from the Program. This is also true when post-secondary training is considered (columns 3 and 6).

The average woman with any post-secondary training earns at least Kenya Shilling (KSH) 23597 more compared to a counterpart with none. Married women gain KSH 2710 above the average trained woman. Post-secondary training both equips women with additional job market-relevant competencies and catalyses social interactions. The number of non-husband sexual partners insignificantly raises labour incomes. Accounting for post-secondary training, an additional non-husband sexual partner reduces incomes by KSH 3989 to KSH 4225 in the full women sample. This effect is statistically not different from zero in the married women's sample. Unmarried women offset the detrimental effect of non-husband sexual partners on women's labour incomes.

Table 5: Labour Income among Women

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
		Full women sample		Married women/ living with a partner		
1985 birth cohort	2,886*** (827.6)		8,043 (1,443)	1,960 (1,225)		-76.21 (2,024)
Age	176.1*** (35.79)		154.7 (179.3)	240.6*** (57.64)		362.9 (248.3)
Pre-1985 birth cohort's age (rf)	-		-	-		-
Age for the 1985 birth cohort	246.0*** (81.96)		178.9 (193.9)	186.6 (139.2)		-53.12 (277.8)
At least 13 single years of education		23,597*** (888.4)	23,736*** (889.2)		26,307*** (1,161)	26,553*** (1,162)
Number of non-husband sexual partners		431.7 (748.6)	1,248* (755.6)		89.17 (2,797)	945.8 (2,793)
Number of sexual partners for those with fewer than 13 years of education (rf)		-	-		-	-
Number of sexual partners for those with at least 13 years of education		-4,225***	-3,989***		-7,421	-7,449
Constant	11,972***	(1,494) 6,343***	(1,490) 7,810***	13,155***	(6,514) 6,554***	(6,496) 7,327***

	(312.8)	(432.0)	(1,248)	(453.3)	(576.0)	(1,713)
Observations	12,361	6,578	6,578	7,610	4,028	4,028
R-squared	0.005	0.110	0.117	0.004	0.115	0.121

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Note 2: the explanatory variables age and single years of education are centred. 1985 birth cohort captures those born not earlier than 1985.

#### 4.4 The Mechanism

**Error! Reference source not found.** presents quantile regression estimates for the 10<sup>th</sup>, 50<sup>th</sup>, and 90<sup>th</sup> quantiles in the distribution of labour incomes. In the full women sample, the average woman with at least thirteen single years of education earns KSH 3154 more compared to a counterpart with fewer years in the 10<sup>th</sup> quantile. This effect intensifies with the average woman's labour income in the 50<sup>th</sup> and 90<sup>th</sup> quantile, respectively, being 4.1 times and fourteen times more than in the 10<sup>th</sup> quantile. Married women with post-secondary training earn 1.14-1.28 times the average woman's earnings.

The number of sexual partners significantly erodes women's average labour incomes in the 50<sup>th</sup> quantile. Earnings lost by married women from an additional non-husband partner are 2.04 times the average woman's loss. Earnings are unaffected by a woman's age, and birth cohort.

Table 6: Quantile labour income regressions

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	10 <sup>th</sup>	Full women sample		Married women/living with partner		
		50 <sup>th</sup>	90 <sup>th</sup>	10 <sup>th</sup>	50 <sup>th</sup>	90 <sup>th</sup>
At least 13 single years of education	3,154***	12,900***	44,167***	4,000***	16,400***	50,333***
	(156.4)	(348.1)	(1,537)	(166.6)	(356.6)	(2,055)
Number of non-husband sexual partners	253.8*	1,200***	1,250	0	1,000	333.3
	(132.9)	(295.8)	(1,306)	(400.5)	(857.5)	(4,942)
Number of sexual partners for those with fewer than 13 years of education (rf)	-	-	-	-	-	-
Number of sexual partners for those with at least 13 years of education	-773.1***	-2,650***	-4,792*	250	-5,400***	-15,333
	(262.0)	(583.2)	(2,576)	(931.5)	(1,994)	(11,494)
1985 birth cohort	67.95	66.67	2,083	-62.50	-600	2,333
	(253.7)	(564.9)	(2,495)	(290.2)	(621.3)	(3,581)
Age	11.11	-33.33	416.7	18.75	0	666.7
	(31.53)	(70.19)	(310.0)	(35.61)	(76.22)	(439.4)
Pre-1985 birth cohort's age (rf)	-	-	-	-	-	-
Age for the 1985 birth cohort	8.120	83.33	-0	-18.75	0	-435.9
	(34.10)	(75.92)	(335.3)	(39.84)	(85.28)	(491.6)
Constant	566.7***	4,033***	13,750***	562.5**	3,600***	12,667***
	(219.5)	(488.7)	(2,158)	(245.7)	(525.9)	(3,031)
Observations	6,578	6,578	6,578	4,028	4,028	4,028

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Note 3: the explanatory variables age and single years of education are centred. 1985 birth cohort captures those born not earlier than 1985.

Last, we investigate suspected drivers of women's single years of education and the number of non-husband sexual partners in **Error! Reference source not found.** The Program raises a woman's single years of education by 4.8 months with the impact being domiciled among unmarried women. Older women in the 1985 birth cohort have significantly fewer single years of education compared to their pre-1985 birth cohort counterparts. Post-secondary training

insignificantly affects the number of non-husband sexual partners among married women but significantly rises in the full women sample.

As years of education rise among women with post-secondary training, the number of sexual partners significantly declines. Being unmarried provides post-secondary trained women with the impetus to have as many sexual partners as they desire<sup>37</sup>. The more time a woman spends accumulating post-secondary training, the likelier she appreciates that it is not all about having many sexual partners.

*Table 7: Education and the number of sexual partners*

VARIABLES	(1)	(2)	(3)	(4)
	Single years of education		Number of sex partners in a year	
		Married/ living with partner		Married/ living with partner
1985 birth cohort	0.401*** (0.0801)	0.114 (0.111)		
Age	-0.0353*** (0.00287)	-0.0311*** (0.00493)		
Pre-1985 birth cohort's age (rf)	-	-		
Age for the 1985 birth cohort	0.0299*** (0.00611)	0.0237** (0.0113)		
At least 13 single years of education			0.0824*** (0.0258)	-0.0137 (0.0136)
Years of education			0.0174*** (0.00112)	0.00143*** (0.000521)
Years of education fewer than 13 (rf)			-	-
Years of education for those with at least 13			-0.0354*** (0.00843)	-0.000178 (0.00433)
Constant	7.679*** (0.0329)	7.491*** (0.0428)	0.256*** (0.00683)	0.0340*** (0.00352)
Observations	32,156	18,312	16,901	9,650
R-squared	0.006	0.002	0.024	0.001

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

*Note 4: the explanatory variables age and single years of education are centred. 1985 birth cohort combines those born in 1985 and after 1985.*

## 5.0 Discussion

This article analysed how labour market outcomes among 15-49-year-old women in Kenya are affected by social interactions. Social interactions were proxied by the number of sexual partners. Post-secondary training and benefiting from free public elementary education (the Program) were used as treatment variables. Fuzzy regression discontinuity design was estimated. The model was tested for robustness in quantile regressions.

The Program mattered insignificantly when post-secondary training is considered; among married women, the Program was insufficient in driving a wedge in labour incomes. Post-secondary training significantly affected labour incomes among women. Labour incomes declined in the full women sample for an additional non-husband partner among women with at least thirteen single years of schooling. Married women's labour incomes were insignificantly affected by non-husband sexual partners. Incomes declined significantly and massively among women within the 50<sup>th</sup> quantile. The number of non-husband sexual partners declined significantly in single years of schooling among post-secondary trained women. A wife was likely to be unemployed if the husband was unemployed, and a husband was likely to be unemployed if the wife was unemployed.

Unlike Mulwa & Gichana (2020) who reveal that education in general raises the labour market participation rate, we argue that it is post-secondary training that matters a lot more. We find no

<sup>37</sup> Marriage constrains married women/women living with partners.

reason to believe that a woman's socioeconomic status during childhood was definitive. This is because the 1985 birth cohort that fairly benefitted from free public elementary school education earned almost similar wages to the pre-1985 birth cohort when post-secondary training is accounted for. While we appreciate that affluence presents an individual with initial advantages that raise the chances of schooling (Enfield, 2019), we find insignificant differences in single years of schooling between the 1985 and the pre-1985 birth cohorts.

Similarly to Ibourk & Elouaourti (2023) and Jones et al (2023), we attribute the high labour incomes reported among post-secondary trained women relative to their counterparts with lower educational attainment to high reservation wages. Besides, only a small fraction of individuals enrol in and graduate from post-secondary training (Jones et al, 2023). Hence, individuals with post-secondary training receive a labour income premium. Lastly, our hypothesis that labour market outcomes among women are affected by the number of sexual partnerships is discarded. We treat such partnerships as convenience arrangements and pleasure-seeking endeavours rather than initiatives strategically exploited to shape labour market outcomes.

## **6.0 Conclusions and Recommendations**

We conclude that education subsidies targeting lower educational levels such as the Free Public Elementary School Education in Kenya have minor effects on single years of schooling not exceeding 5 months. Similarly, the number of sexual partners drastically erodes labour incomes only for women in the 50<sup>th</sup> quantile. Much of the observed women's labour income wedge in Kenya depends on post-secondary school training and the years spent furthering a woman's study beyond grade 12. We suggest that the Government of Kenya and its developmental partners invest in enhancing the enrolment and completion of further studies, notably, college, TVET, and university.

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