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Women's Labor Force Attachment in Jordan: Understanding Attrition, Retention and Re-entry

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WOMEN'S LABOR FORCE ATTACHMENT IN JORDAN: UNDERSTANDING ATTRITION, RETENTION AND RE-ENTRY

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Abstract

This paper examines women's medium-run labor force trajectories in Jordan using the 2010–2016 Jordan Labor Market Panel Survey (JLMPS). Moving beyond static participation measures, we classify women into four six-year trajectories including remaining in, entering, exiting, and remaining out of the labor force. We estimate multinomial models incorporating education, marriage, household composition, wealth, and parental background, audited against every pairwise reference category the four outcome structure allows. Four patterns emerge. First, education is linked to labor force participation in two ways: tertiary education is linked to participation at any point and also to staying in work, while secondary education is linked to the durability and acquisition of attachment. Second, marriage is linked to both entering and leaving the labor force: the predicted probability of sustained participation is 4.9% for currently married women against 32.2% for never married women, though this link to sustained attachment cannot be cleanly separated from household childcare burden. Third, parental background is linked to whether a daughter enters the labor force, not to whether she stays or leaves: both parents' education is linked to entry and to nothing else, while maternal employment is linked specifically to a daughter's exit rather than her retention or entry. Fourth, household wealth works differently across the three outcomes: women in wealthier households are steadily more likely to have remained continuously employed, only the richest households stand out among labor force entrants, and wealth shows no clear link to exiting the labor force. These findings suggest that policies aimed at improving women's labor force attachment in Jordan should treat entry and sustained attachment as separate goals, not one outcome, and should pair marriage-focused interventions with the childcare-focused ones already in place, since marriage and childcare burden move together closely in this data and addressing one alone is unlikely to be enough.

Keywords: labor force participation, Jordan, marriage, education, intergenerational transmission, gender
JEL Classifications: J13, J16, J21, O15

ملخص

تناول هذه الورقة مسارات القوى العاملة النسائية متوسطة المدى في الأردن باستخدام المسح التتبعي لسوق العمل في الأردن (JLMPS) لعام 2010–2016. وبالانتقال إلى ما هو أبعد من تدابير المشاركة الثابتة، فإننا نصنف النساء إلى أربعة مسارات مدتها ست سنوات بما في ذلك البقاء في القوى العاملة والدخول إليها والخروج منها والبقاء خارجها. نقوم بتقدير النماذج متعددة الحدود التي تتضمن التعليم والزواج وتكوين الأسرة والثروة والخلفية الأبوية، والتي يتم تدقيقها مقابل كل فئة مرجعية زوجية يسمح بها هيكل النتائج الأربعة. تظهر أربعة أنماط. أولا، يرتبط التعليم بالمشاركة في القوى العاملة بطريقتين: يرتبط التعليم العالي بالمشاركة في أي وقت وأيضا بالبقاء في العمل، في حين يرتبط التعليم الثانوي بالاستدامة واكتساب الارتباط. ثانياً، يرتبط الزواج بالدخول إلى القوى العاملة والخروج منها: إذ يبلغ الاحتمال المتوقع للمشاركة المستدامة 4.9% بالنسبة للنساء المتزوجات حالياً مقابل 32.2% بالنسبة للنساء غير المتزوجات أبداً، على الرغم من أن هذا الارتباط بالارتباط المستدام لا يمكن فصله بشكل نظيف عن عبء رعاية الأطفال في المنزل. ثالثا، ترتبط الخلفية الأبوية بما إذا كانت الابنة ستدخل سوق العمل، وليس بما إذا كانت ستبقى أو تغادر: يرتبط تعليم كلا الوالدين' بالدخول ولا يرتبط بأي شيء آخر، في حين يرتبط عمل الأم على وجه التحديد بخروج الابنة وليس احتفاظها بها أو دخولها. رابعا، تعمل ثروة الأسرة بشكل مختلف عبر النتائج الثلاث: فالنساء في الأسر الأكثر ثراء أكثر عرضة بشكل مطرد للبقاء في العمل بشكل مستمر، والأسر الأكثر ثراء فقط هي التي تبرز بين الداخلين إلى القوى العاملة، ولا تظهر الثروة أي صلة واضحة بالخروج من القوى العاملة. وتشير هذه النتائج إلى أن السياسات الرامية إلى تحسين ارتباط المرأة بالقوى العاملة في الأردن ينبغي أن تتعامل مع الدخول والارتباط المستدام باعتبارهما هدفين منفصلين، وليس نتيجة واحدة، وينبغي أن تجمع بين التدخلات التي تركز على الزواج والتدخلات التي تركز على رعاية الأطفال المعمول بها بالفعل، لأن عبء الزواج ورعاية الأطفال يتحركان معًا بشكل وثيق في هذه البيانات، ومن غير المرجح أن تكون معالجة أحدهما وحده كافية.

1. Introduction

Jordan presents one of the largest gender gaps in labor force participation in the world, despite decades of rising female educational attainment and extensive legal reforms intended to protect and encourage female labor force participation. While women now complete secondary and tertiary education at rates comparable to and often exceeding men, their participation has remained stagnant. Existing research has documented this paradox extensively, but most studies rely on cross-sectional measures of participation or unemployment and therefore cannot capture the life-cycle dynamics that shape women's long-term attachment to the labor market.

This paper provides new evidence by exploiting the longitudinal structure of the Jordan Labor Market Panel Survey (JLMPS) 2010–2016, a nationally representative household panel dataset constructed by the Economic Research Forum (ERF), to construct four medium-run labor force trajectories: remaining in the labor force, entering, exiting, or remaining persistently out. This approach moves beyond static participation rates and examines how education, marriage, fertility, wealth mobility, and parental background are jointly associated with women's sustained attachment to work over a six-year window, using multinomial logit models estimated on the panel-weighted sample and audited against every pairwise reference category the four-outcome structure allows.

Four patterns emerge from this analysis, and they do not carry equal weight or reduce to a single explanation. Education splits into two margins rather than one. Tertiary education is linked to labor force participation generally and to staying in work once already employed. Secondary education, rather than a milder version of the same pattern, is linked instead to the durability and take-up of work.

Marriage is linked to both entering and leaving the labor force, and carries the clearest numbers in the analysis: an otherwise similar woman's predicted chance of sustained participation is 32.2% if never married and 4.9% if currently married. The link on the retention side holds under some model versions and not others, and cannot be cleanly separated from household childcare burden in this data.

Parental background is linked to whether a woman enters the labor force, not to whether she stays once there. Both parents' post-secondary education is linked to daughters' entry and nothing else, while mother's employment is linked specifically to a daughter's exit rather than her staying or entering, an asymmetry this paper reports without yet

explaining.

Household wealth is linked differently to each of the three outcomes rather than following one gradient, and is treated throughout as a descriptive pattern, never a cause: a steady rise with wealth quintile on continuous participation, a link limited to the richest quintile on entry, and no link at all on exit.

Looking at labor market outcomes across this six-year window gives a fuller picture of Jordan's low participation despite rising education than a single point-in-time measure could, without forcing four differently behaving patterns into one explanation.

2. Literature Review

A body of empirical research has examined women's labor market participation, marriage, education, and household economic circumstances in Jordan. Most of this work, however, relies on cross-sectional data or measures labor market status at a single point in time. Less is known about how these factors jointly shape women's labor force trajectories over multiple years: whether women remain consistently active, exit, enter, or stay outside the labor force. This review summarizes the relevant literature across four areas; Section 3 then develops the longitudinal approach this study takes.

2.1 The persistence of low female labor force participation in Jordan

Female labor force participation in Jordan has remained among the lowest in the world for more than two decades. A 2023 World Bank assessment put it at "less than 14%, one of the lowest in the world" (World Bank, 2023). Assaad, Hendy, Lassassi, and Yassin (2020) term this the "MENA paradox": despite the closing, and in places reversal, of the gender gap in education across Algeria, Egypt, Jordan, and Tunisia, female participation has stayed low and stagnant, and where increases have occurred they have largely taken the form of rising unemployment rather than employment. Using multinomial models estimated on labor force survey data, they argue that demand-side constraints, particularly the contraction of public-sector hiring, historically the main formal employer of educated women, play a central role, without a corresponding expansion of formal private-sector opportunities to absorb it.

Kasoolu, Hausmann, O'Brien, and Santos (2019), drawing on Jordanian Employment and Unemployment Surveys (2008–2018) alongside the JLMPS 2010–2016, find that the drivers of exclusion differ by education level. Among women with secondary schooling or less, participation itself is extremely low, with evidence pointing to traditional social norms and inadequate public transportation as major barriers. Among university graduates, the binding constraint is not participation but unemployment, which the authors attribute to

a small, undiversified private sector unable to absorb educated women's need for work compatible with family responsibilities.

2.2 Marriage, norms, and women's labor market attachment

Marriage has been identified as a central constraint on Jordanian women's employment. Using an instrumental-variable strategy to address the endogeneity of the marriage decision, Assaad, Krafft, and Selwaness (2022) find that marriage by the median age reduces the probability of working for women by 47% in Jordan, the largest effect among the three countries they study (30% in Tunisia, 16% in Egypt), concentrated mainly in private wage work.

Gauri, Rahman, and Sen (2019) identify several dimensions of social norms relevant to women's labor market participation in Jordan, including expectations surrounding childcare and domestic work, women's visibility in mixed-gender public spaces, occupational segregation, and women's decision-making power within households, and develop survey-based measures of these norms and beliefs.

2.3 Education's uneven effect on participation versus employment outcomes

Rising educational attainment has not translated uniformly into improved employment outcomes for Jordanian women. Kasoolu et al. (2019) find that education changes the nature of the exclusion problem rather than resolving it: at lower education levels the binding constraint is norm-driven non-participation, while at the university level it becomes unemployment, driven by a private sector too small to absorb demand from educated women. Assaad, Hendy, Lassassi, and Yassin (2020) reach a compatible conclusion by a different route: as public-sector hiring has contracted, the relationship between education and participation in the region has weakened over time, so a given level of education no longer predicts labor force engagement as reliably as it once did.

2.4 Household economic position and remittances

International remittances constitute one important dimension of household economic resources affecting labor supply. Al-Assaf (2022), using JLMPS 2010 data and an instrumental-variable approach to address the endogeneity of remittance receipt, finds that international remittances reduce labor supply for both women and men in Jordan, though by different magnitudes: women in remittance-receiving households are about 5 percentage points less likely to perform any market work (3 points less likely to hold wage employment, 8 points less likely to be self-employed), compared with a 25-percentage-point reduction in any

market work among men in the same households.

While these studies provide evidence on the determinants of women's labor market participation and employment in Jordan, some make use of longitudinal data, but none of the reviewed studies examine dynamic labor force attachment by modeling transitions between labor force states over time: that is, whether women remain consistently active, enter, exit, or remain outside the labor force across multiple years. Using longitudinal JLMPS data, this study examines the determinants of these labor force trajectories directly.

2.5 Intergenerational effects

Evidence from Turkey, the United States, and other settings (Durmaz-Aslan 2020; Binder 2021) shows strong intergenerational transmission of female labor force participation: daughters of working mothers are significantly more likely to participate themselves. Maternal employment is understood as an observable form of role modeling, reflecting deeper preferences, norms, and negotiation patterns within households, and these effects often persist after accounting for daughters' education and other household characteristics.

In Jordan, intergenerational mechanisms remain understudied, particularly within a structural context of marriage-related exits, constrained job opportunities, and declining public-sector employment. Existing JLMPS-based research has not yet incorporated maternal background into models of women's labor market trajectories.

2.6 Gaps in the literature and contribution of this study

Across these strands, three gaps stand out.

First, existing research has not examined medium-run labor force trajectories: whether women remain in, enter, exit, or stay out of the labor force over a sustained period. Most work studies participation as a static outcome, overlooking the life-cycle dynamics that determine long-run attachment.

Second, no study has jointly analyzed marital transitions, fertility changes, wealth mobility, and maternal role modeling within a single empirical framework. These life-cycle events are central to women's labor market behavior in Jordan, yet they have been treated separately in the literature.

Third, the literature has not connected Jordan's "MENA paradox" of high education but low participation to intergenerational influences and wealth dynamics, nor explored how these factors interact with marriage to shape women's entry and exit patterns.

This paper addresses these gaps using the longitudinal structure of the JLMPS 2010–2016 to construct four labor force trajectories and examine how education, marriage, fertility, wealth mobility, and parental characteristics are jointly associated with women's medium-run labor market attachment. This approach moves beyond static participation

models to situate women's trajectories within the broader sequence of life-cycle events.

3. Data and Sample

3.1 Data source and panel structure

This study draws on the Jordan Labor Market Panel Survey (JLMPS) for 2010 and 2016, a nationally representative longitudinal survey implemented by the Economic Research Forum (ERF) and Jordan's Department of Statistics. The JLMPS collects detailed socioeconomic, demographic, and labor market information for individuals and households across all Jordanian governorates. Its longitudinal structure allows original 2010 households to be tracked into 2016, along with split households formed by members who left the original household between waves.

The 2010 baseline wave interviewed 25,953 individuals across 5,102 households. Of the 15,357 individuals from 2010 households still eligible for tracking to their original (or split) household at the fielding stage, 14,502 were successfully located (a fielding-stage recontact rate of 94.4%), with 13,235 ultimately confirmed in their original households in the final data.

Table 3.1: Sample Size

Analytic Panel Dataset	**Freq.**
2010 Baseline Sample	
Individuals Interviewed	25,953
Households Interviewed	5,102
2016 Follow-up Tracking	
Original 2010 Households Recontacted	3,058
Split Households Identified	1,221
Individuals from 2010 still in original households at fielding	**14,502**

Source: Authors' calculations using JLMPS 2010 and 2016 waves; Krafft and Assaad (2021), Tables 4–5.

3.2 Sample restrictions and the two analytic samples

Age eligibility is anchored to the 2010 wave throughout this paper: an individual qualifies as working-age if they were 15–64 years old in 2010.

Beyond this shared age restriction, the paper uses two deliberately different analytic samples, sized for two different purposes:

The descriptive transition sample requires only that a person be working-age in 2010 and have non-missing labor force status in both 2010 and 2016: the minimum information

needed to place someone on a transition tree or life-cycle graph. This yields 7,455 individuals: 3,743 women (50.2%) and 3,712 men (49.8%). It does not require any of the additional covariates the regression models use.

The regression analytic sample additionally requires non-missing values on every baseline covariate used in the multinomial specification including own education, marital status, age at first marriage, household childcare burden, and wealth quintile, plus (in extended specifications) parental education and employment. This is the more restrictive sample and comprises 3,732 women. Parental variables carry minor additional missingness beyond this (N = 3,708–3,730 depending on specification), noted at each table.

The attrition analysis in Section 3.3 below works from a third women's count (7,608 in the 2010 baseline, 4,131 tracked to 2016) which is a broader definition than the 3,743-women transition sample: 4,131 counts any woman aged 15–64 in 2010 with a non-missing panel weight, i.e. successfully located and interviewed in 2016 at all, regardless of whether her labor force status was actually recorded in either wave.

3.3 Panel attrition

Of the 25,953 individuals interviewed in the 2010 baseline, 14,502 were tracked to 2016. This is consistent with the survey's documented attrition patterns, which report household-level (Type I) attrition of 38.1% and split-household (Type II) attrition of 50.5%, attributed primarily to Jordan's relatively high residential mobility and large non-national population and fieldwork-related issues at the fielding stage (Krafft and Assaad 2021).

Because attrition of this magnitude could bias the trajectory estimates if it is systematically related to the characteristics underlying women's labor force behavior, we assess its pattern directly rather than relying solely on the panel weights. Men and women were tracked at statistically indistinguishable rates (56.4% and 55.4%, respectively; $\chi^2(1) = 2.78$, $p = 0.095$), so restricting the analysis to women does not itself introduce differential attrition by sex.

Restricting to women aged 15–64 (7,608 in the 2010 baseline, 4,131 tracked to 2016), the most reassuring finding is that baseline labor force participation, the characteristic most directly related to the outcome of interest, does not differ significantly between tracked and attrited women (16.9% versus 18.2%; $z = 1.50$, $p = 0.134$). Attrition is, however, selective on several demographic characteristics: tracked women were on average 2.7 years older than attrited women (33.5 versus 30.8; $t = -9.23$, $p < 0.001$), more likely to have been married at baseline (60.1% versus 51.7%; $z = -7.36$, $p < 0.001$), and differed significantly in education, wealth quintile, and governorate (all $p < 0.001$). A logistic regression of attrition on these baseline characteristics (see Appendix C) jointly returns a pseudo-R^2 of only 0.047, indicating that observable characteristics explain only a modest share of attrition, consistent with Krafft and Assaad's (2021) conclusion that most of the variation

in JLMPS panel attrition is not explained by observed characteristics.

Marital status deserves closer attention given its role in the analysis. Contrary to the concern that currently married women are disproportionately lost to follow-up, never-married women show substantially *lower* tracking rates than women already married at baseline (49.2% versus 58.0%; $\chi^2(3) = 59.76$, $p < 0.001$), and young never-married women (34 or younger) account for 39.6% of attrited women but only 30.3% of tracked women ($\chi^2(1) = 72.09$, $p < 0.001$): a pattern consistent with marriage-related household formation contributing to higher attrition among younger women.

Taken together, attrition in the JLMPS panel is concentrated among younger, never-married, and more educated women, but is not related to baseline labor force participation itself. Because this group is more likely to experience marital transitions during the panel period, attrition may somewhat reduce the representation of women likely to undergo such transitions, though the absence of a participation-attrition relationship is reassuring for the trajectory estimates that are the outcome of interest. All regression models therefore apply the JLMPS panel weight, which adjusts for differential probability of remaining in the panel based on observed characteristics; the possibility of residual bias from unobserved determinants of attrition cannot be fully ruled out (see Appendix C).

3.4 Weighting strategy

The JLMPS provides cross-sectional weights for each wave (for point-in-time representativeness) and a panel weight, normalized to 1, for analyses spanning both waves. All regression models and both life-cycle line graphs (participation by age and sex; proportion ever-worked by age and sex) and the marriage-rate graph use the panel weight, since these are intended to represent population-level rates. The transition-tree diagrams (Section 4) instead report unweighted, raw counts and percentages.

3.5 Key variables

Outcome variable: each woman aged 15–64 in 2010 is assigned to one of four mutually exclusive trajectories based on her labor force status in 2010 and 2016: *remain in the labor force* (in both waves), *exit the labor force* (in 2010, out in 2016), *enter the labor force* (out in 2010, in by 2016), or *remain out of the labor force* (out in both waves), which serves as the reference category throughout. A complementary binary retention variable (equal to 1 if a woman is in the labor force in both waves, 0 otherwise) is used in a subsample regression restricted to women economically active in 2010, to isolate the determinants of sustained attachment directly (Section 6).

Own education: entered as indicators for secondary and tertiary-or-above attainment. The omitted category is women with no more than basic education: never described here

as an illiterate or no-education group, since a clear majority of that category (53.50%, weighted) has completed basic schooling; 21.42% are illiterate and 25.09% can read and write only.

Marital status, 2010: entered as indicators for currently married and formerly married (widowed or divorced); the omitted category is never-married women.

Age at first marriage: is defined for ever-married women.

Household composition: captured at baseline by the share of the household aged 6 or under (referred to throughout as the childcare burden) and, in extended specifications, the share aged 65 or over (eldercare burden).

Household wealth: entered as quintile indicators (Q2–Q5) constructed from the JLMPS wealth index; the omitted category is the poorest quintile (Q1), measured in 2010.

Parental background: entered in extended specifications as indicators for mother's and father's education (secondary; post-secondary/university, omitted category: illiterate or read-and-write only) and an indicator for whether each parent had ever been employed.

Geographic controls: governorate fixed effects and an urban/rural indicator.

Variables realized during the panel window: used in place of the corresponding baseline measures in a subset of specifications: marital transition category (stayed non-married, married during the panel, divorced/widowed during the panel; omitted category: married throughout), wealth mobility category (moved down, no change; omitted category: moved up), the change in number of children, an indicator for the birth of a new child, and the age of the youngest child in 2010. The "stayed non-married" label is used here rather than "remained never-married," since the underlying variable is built from a binary married/not-married indicator and does not distinguish never-married women from women already divorced or widowed in 2010 who remained unmarried through 2016. Because these transition/mobility variables are realized over the same window as the outcome, their relationship with the trajectory is necessarily one of joint occurrence rather than a directional effect, and they are flagged as such wherever they appear (Section 5).

4. Descriptive Statistics

This section presents two related but distinct exhibits, each built for a different purpose and each retaining its own sample and weighting convention (Section 3.2). The transition trees and life-cycle graphs in 4.1–4.2 use the tree/graph sample (3,743 women and 3,712 men, tracked with valid labor force status in both waves) and are reported unweighted. The outcome-variable distribution and covariate summary statistics in 4.3 use the regression sample (3,732 women), the exact estimation sample the multinomial models are built on, and are reported weighted by the panel weight, since the regressions that follow are themselves weighted.

4.1 Labor force transitions, 2010–2016

4.1.1 Women

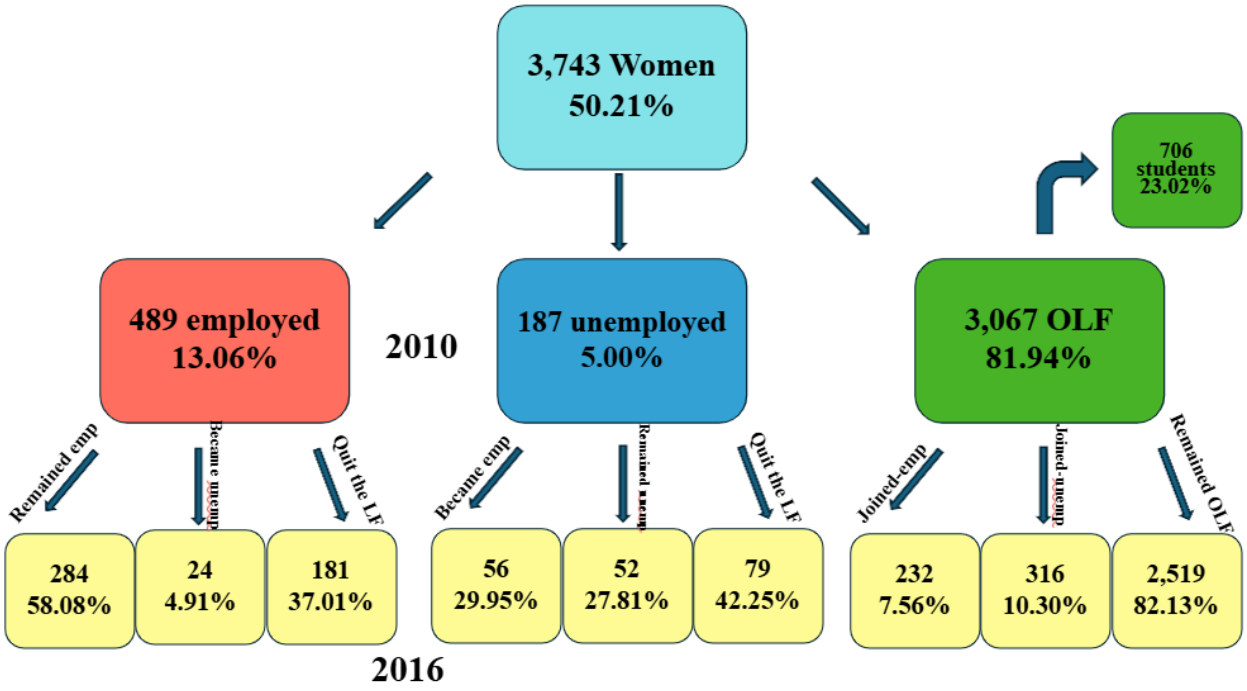


Figure 1: Transition tree: women's labor force status, 2010 vs. 2016

Of the 3,743 women in the tree sample, the overwhelming majority, 81.94% (3,067), were out of the labor force (OLF) in 2010; 13.06% (489) were employed and 5.00% (187) were unemployed and searching for work. This is consistent with Jordan's well-documented position among the lowest rates of female labor force participation recorded anywhere.

Tracking each 2010 starting group to 2016:

From employed ($N = 489$): 58.08% (284) remained employed, 4.91% (24) became unemployed, and 37.01% (181) quit the labor force entirely. Over a third of women employed in 2010 had left the labor force by 2016, a substantial exit rate that motivates the paper's interest in the Exit trajectory.

From unemployed ($N = 187$): 29.95% (56) became employed, 27.81% (52) remained unemployed, and 42.25% (79) quit the labor force. Leaving the labor force altogether was the single most common outcome for this group, more common than finding work.

From OLF ($N = 3,067$): 7.56% (232) joined as employed, 10.30% (316) joined as unemployed/searching, and 82.13% (2,519) remained OLF. Combined, 17.86% of the 2010-OLF group showed some labor force engagement by 2016.

Within the 2010 OLF group, 706 women (23.02% of the OLF group; 18.86% of all women in the sample) were still enrolled in school. Tracking this sub-group specifically: of the 130

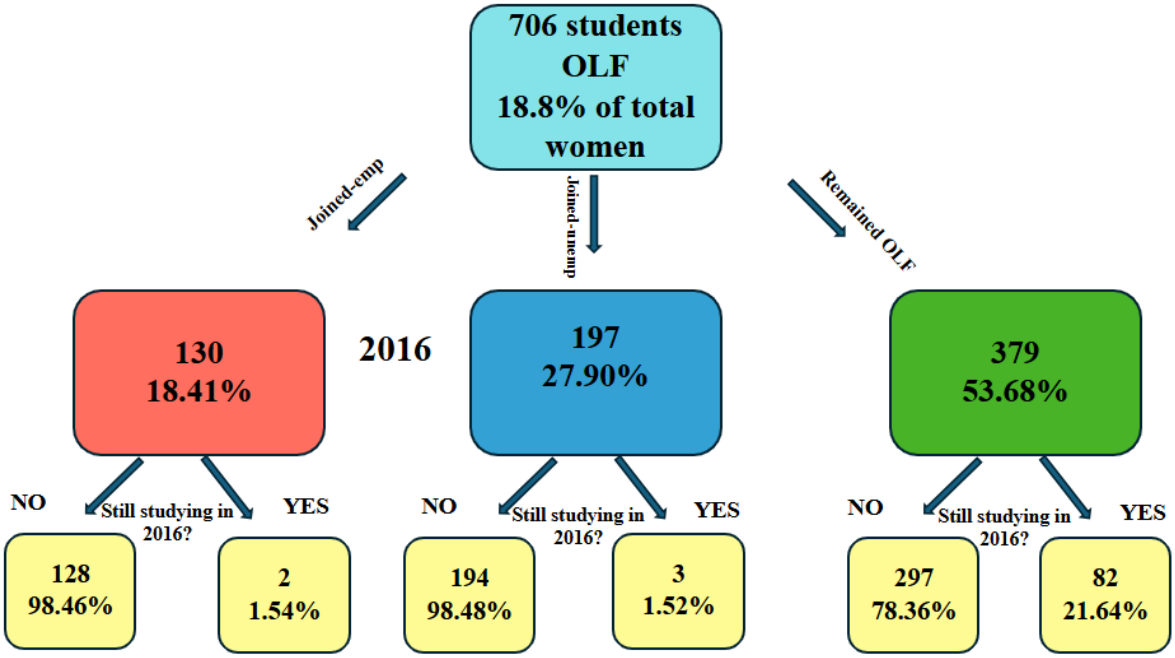


Figure 2: Transition tree: 2010 OLF women, by school enrollment status

who became employed by 2016, 98.46% had finished their studies; of the 197 who became unemployed/searching, 98.48% had finished; and of the 379 who remained OLF, 21.64% were still enrolled in 2016, a group whose non-participation reflects ongoing schooling rather than labor market withdrawal or discouragement.

4.1.2 Men, for contrast

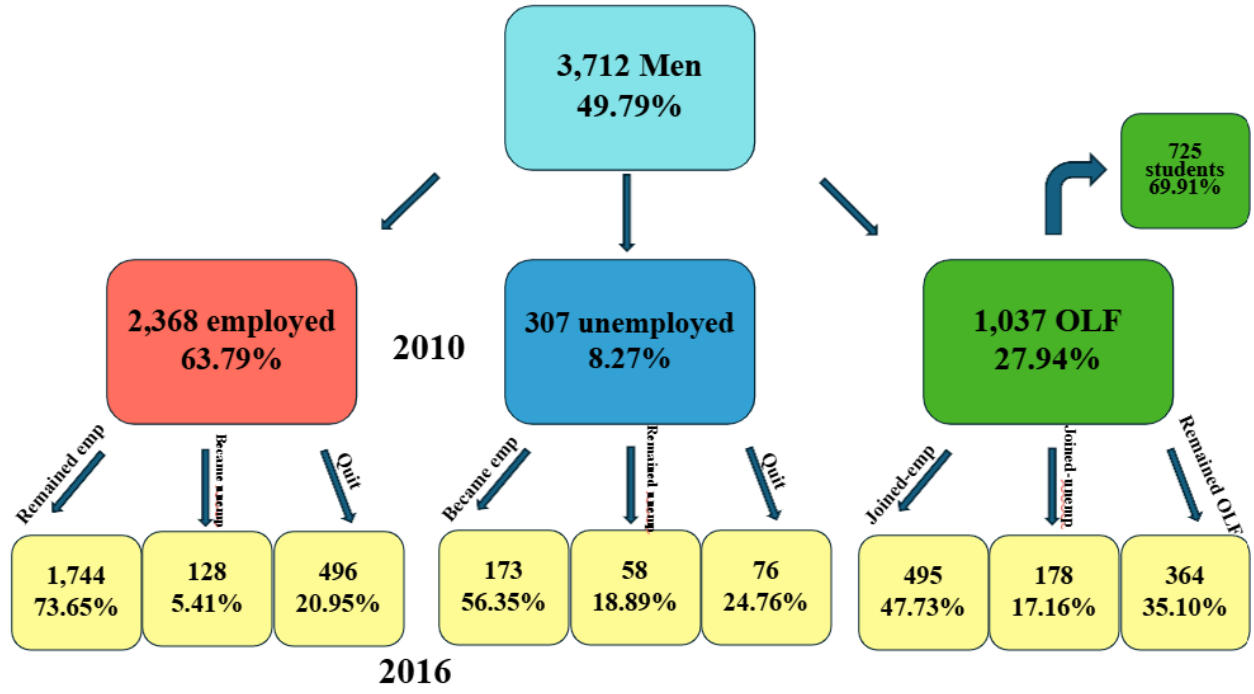


Figure 3: Transition tree: men's labor force status, 2010 vs. 2016

Of the 3,712 men in the tree sample, 63.79% (2,368) were employed in 2010, 8.27% (307) were unemployed, and 27.94% (1,037) were OLF, a starkly different starting distribution from women's.

From employed ($N = 2,368$): 73.65% (1,744) remained employed, 5.41% (128) became unemployed, 20.95% (496) left the labor force.

From unemployed ($N = 307$): 56.35% (173) became employed, 18.89% (58) remained unemployed, 24.76% (76) left the labor force.

From OLF ($N = 1,037$): 47.73% (495) joined as employed, 17.16% (178) joined as unemployed, 35.10% (364) remained OLF; 64.89% combined engagement, versus 17.86% for women in the same starting position.

Within the male 2010-OLF group, students make up a much larger share than among women (725 of 1,037 (69.91%), representing 19.53% of all men in the sample — nearly identical to the 18.86% figure for women: enrollment itself is similar across sexes, but what happens to non-student OLF adults differs dramatically). Of the 194 male 2010-students who remained OLF in 2016, 67.01% were still studying, versus 21.64% for the equivalent female group, suggesting male students in this sample take longer, on average, to complete their education before labor market entry.

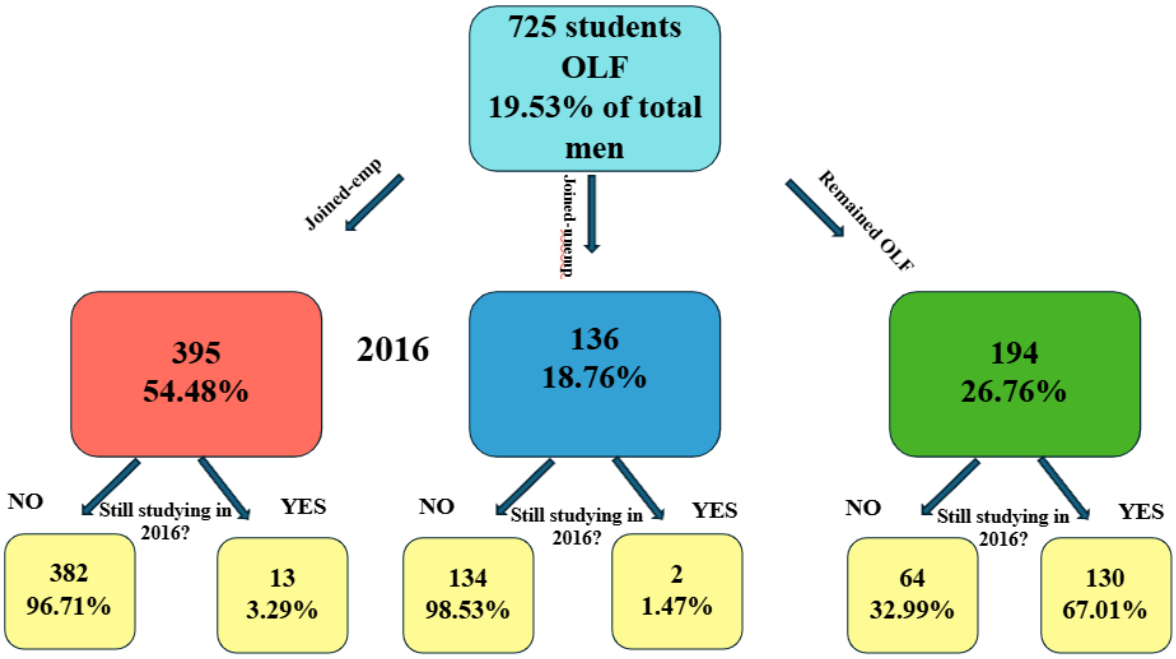


Figure 4: Transition tree: 2010 OLF women, by school enrollment status

4.2 Life-cycle graphs

Three graphs extend the transition-tree evidence across the life cycle, using the same 3,743/3,712 tree sample but weighted by the panel weight.

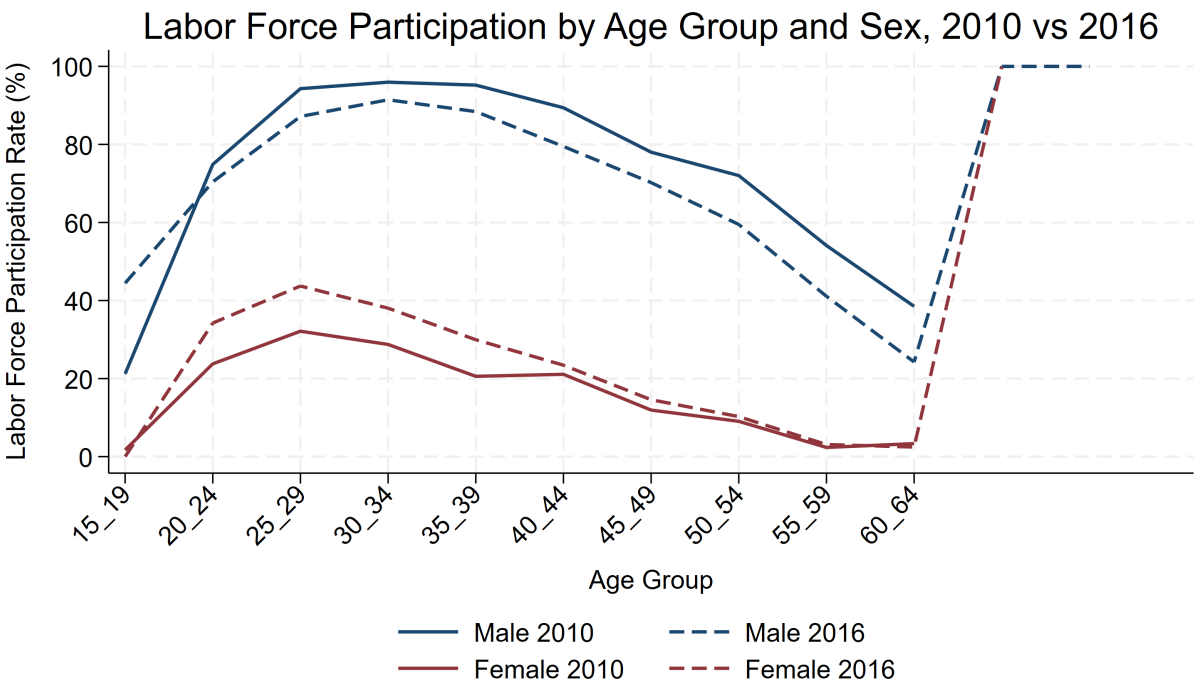


Figure 5: Labor force participation by age and sex (2010 vs. 2016)

Labor force participation by age and sex (2010 vs. 2016): Individuals are grouped into 5-year age bins separately for each wave. Because the sample is anchored to age 15–64 in 2010, the "25–29" bin in 2010 and the "25–29" bin in 2016 do not represent the same people. Male participation rises steeply from the youngest age group, peaks around ages 25–39 (roughly 90–96%), and declines gradually thereafter. Female participation follows a similar but far lower-amplitude shape, peaking around 25–29 (roughly 32–44%) and declining more gradually. At nearly every age group, female participation is visibly higher in 2016 than in 2010, consistent with a modest overall rise in women's labor force engagement over the period, though the level remains far below male participation throughout. (Edge bins 15–19 and 60–64 in 2016, and 60–64 in 2010, rest on small cell counts and should be read cautiously.)

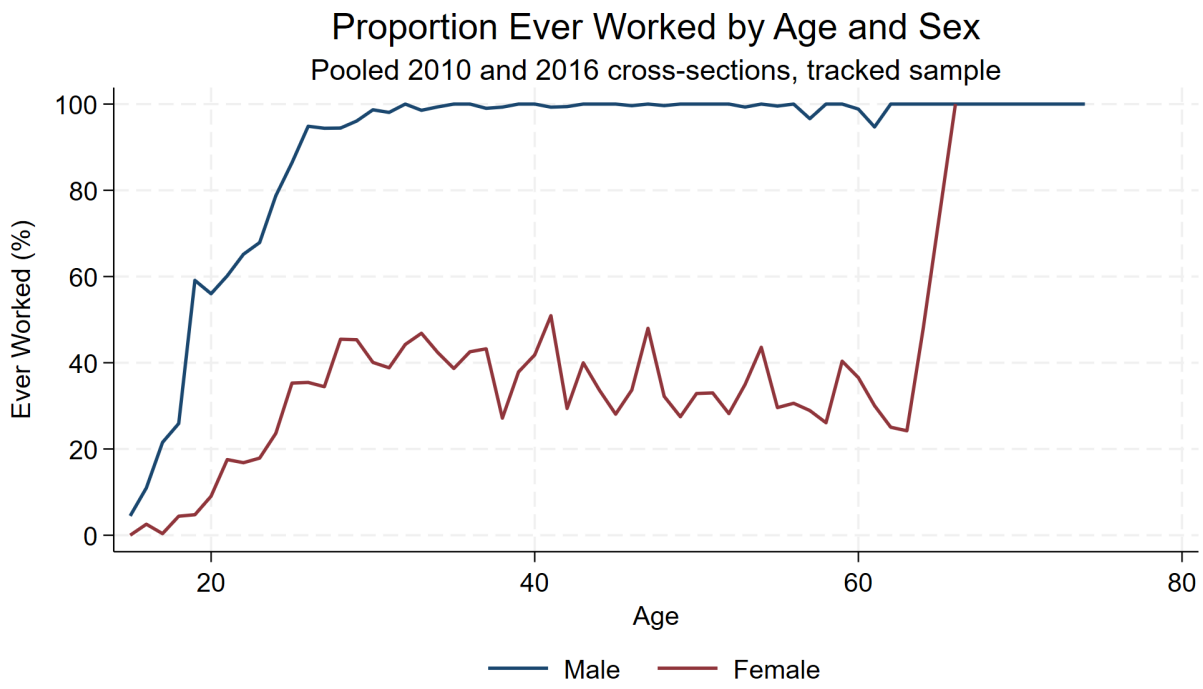


Figure 6: Proportion ever worked, by age and sex

Proportion ever worked, by age and sex: The male ever-worked rate rises steeply from the mid-teens and reaches roughly 95% or higher by the mid-20s, remaining near 100% thereafter. The female rate rises far more gradually and plateaus much lower, roughly 30–50% through most of the working-age range.

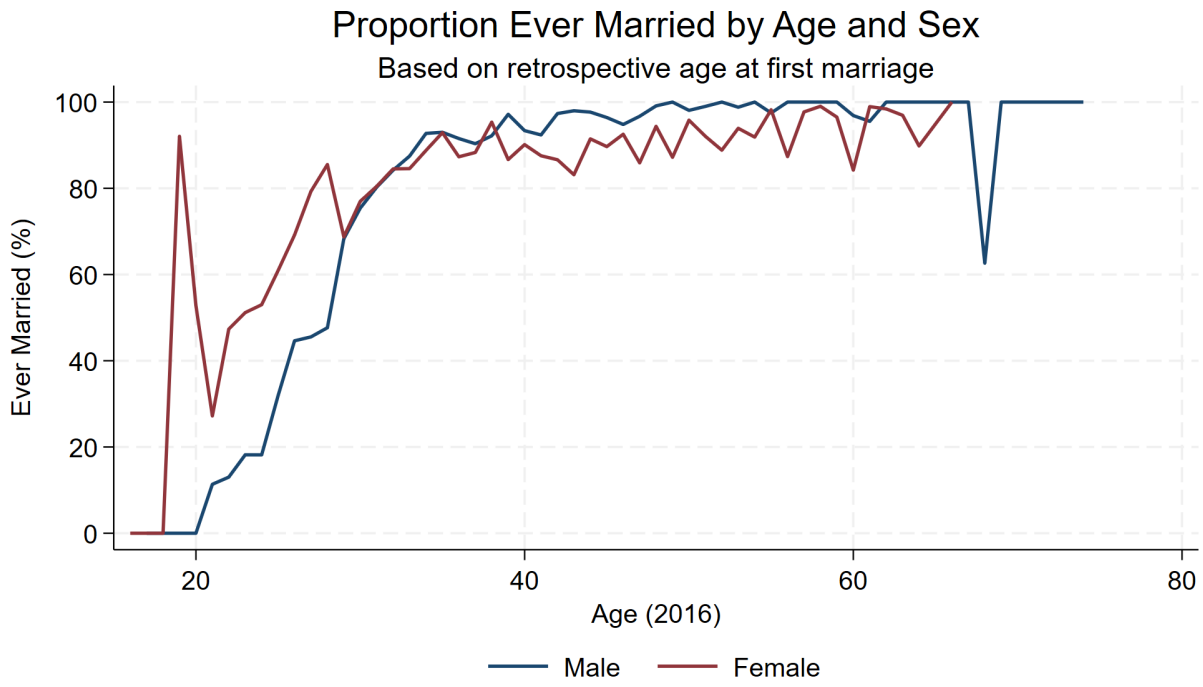


Figure 7: Proportion ever married, by age and sex

Proportion ever married, by age and sex: Women marry substantially earlier than men. The female curve reaches roughly 90% by the early 30s, while the male curve does not reach a comparable level until the mid-to-late 30s. Both converge near 100% by middle age.

4.3 The regression analytic sample: outcome distribution and covariates

Table 4.1: Outcome variable distribution

Trajectory (2010–2016)	Weighted %	Weighted N
Remain in the LF	10.06	375.4
Exit the LF	7.24	270.2
Enter the LF	14.35	535.7
Out of the LF, both waves	68.35	2,550.7
Total	**100**	**3,732**

$N = 3,732$ women. Weighted by the panel weight.

This collapsed four-category distribution is the direct outcome variable the multinomial models estimate, and is distinct from the raw Employed/Unemployed/OLF transition counts in Section 4.1 above. The two are related (both describe 2010→2016 labor force

movement) but are built on different samples, different weighting, and a different level of categorical granularity.

Table 4.2: Summary statistics

Variable	Mean	SD	Min	Max	N
Age (2010)	31.497	11.747	15	63	3,732
Education (1=Low, 2=Secondary, 3=Tertiary+)	1.695	0.830	1	3	3,732
Marital status (1=Never, 2=Currently, 3=Formerly married)	1.658	0.551	1	3	3,732
Household fraction aged ≤ 6 (`frac_young`)	0.135	0.183	0	0.714	3,732
Wealth quintile (1=poorest, 5=richest)	3.051	1.362	1	5	3,732
Mother's education (1=Low, 2=Secondary, 3=Tertiary+)	1.255	0.602	1	3	3,728
Father's education (1=Low, 2=Secondary, 3=Tertiary+)	1.397	0.730	1	3	3,730
Mother employed (2010)	0.075	0.264	0	1	3,727
Father employed (2010)	0.956	0.205	0	1	3,712

Table 4.3: Analytic sample vs. full 2010 baseline (women aged 15–64)

Characteristic (2010)	Full baseline (unweighted)	Analytic sample (panel-weighted)	Difference
N	**4,024**	**3,732**	**−292**
Mean age	33.520	31.497	−2.023
Currently married (%)	60.04	57.91	−2.13 pp
Low education (%)	61.08	54.32	−6.76 pp
Secondary education (%)	18.46	21.88	+3.42 pp
Tertiary+ education (%)	20.45	23.81	+3.36 pp
Wealth Q1 – poorest (%)	19.33	16.49	−2.84 pp
Wealth Q2 (%)	24.23	21.06	−3.17 pp
Wealth Q3 (%)	23.83	23.17	−0.66 pp
Wealth Q4 (%)	19.71	19.48	−0.23 pp
Wealth Q5 – richest (%)	12.90	19.81	+6.91 pp

The full-baseline column is unweighted (JLMPS has no standalone 2010 cross-sectional weight; the panel weight is documented as applicable only to panel analyses). The analytic-sample column is weighted.

The analytic sample is somewhat younger and slightly less likely to have been married in 2010 than the full baseline, skews toward higher educational attainment, and is somewhat wealthier at the top of the distribution; the richest quintile is nearly 7 percentage points larger in the analytic sample than in the full baseline. The attrition analysis (Section 3.3) speaks to part of this: tracked women are on average older and more likely to be married than attrited women, which cuts in the opposite direction from the age and marital-status gaps shown here, meaning these particular shifts are more likely attributable to item non-response on the regression covariates than to attrition itself. The

wealth-quintile shift toward the top has not yet been fully diagnosed. It may reflect the panel weight's correction for wealth-related attrition, item non-response on wealth or other covariates being wealth-correlated, or some combination, and is noted here as an open question rather than an explained one; it may warrant a caveat sentence in the limitations discussion once the mechanism is confirmed.

5. Empirical Methodology

5.1 Outcome definition and the base-category framework

Each woman aged 15–64 in 2010 is classified into one of four mutually exclusive trajectories based on her labor force status in 2010 and 2016: Remain in the labor force (in both waves), Exit the labor force (in 2010, out by 2016), Enter the labor force (out in 2010, in by 2016), or Out of the labor force in both waves, which serves as the reference category throughout.

The four categories form two pairs, each sharing a common 2010 starting point, not four independent destinations. Remain and Exit both require labor force participation in 2010; Enter and Out-both both require being out of the labor force in 2010. This has a direct interpretive consequence: a coefficient on Remain or Exit measured against the base is a *composite*; it mixes the association with having participated in 2010 at all with the association with what happened afterward, and cannot be read as "this variable causes women to stay" or "to leave." Two contrasts isolate a clean behavioral margin because the two groups compared share the same 2010 starting state: Remain vs. Exit (the retention margin, among women in the labor force in 2010) and Enter vs. Out-both (the entry margin, among women out of the labor force in 2010). The remaining contrasts, Enter vs. Remain and Enter vs. Exit, compare women who began the window in different states and are compositional rather than behavioral: they describe how a characteristic is distributed across groups, not how it operates on a decision, and are worded accordingly wherever they appear.

A complementary binary retention variable equal to 1 if a woman is in the labor force in both waves, 0 otherwise is estimated on the subsample of women economically active in 2010 (674 women), directly targeting the same retention margin as the Remain-vs-Exit contrast above, as a within-subsample check on that reading.

5.2 Econometric specification

The outcome is estimated with multinomial logistic regression. For woman i with covariate vector X_i, the probability of trajectory $j \in \{\text{Remain}, \text{Exit}, \text{Enter}\}$ relative to the base category (out of the labor force in both waves) is

$$P(Y_i = j \mid X_i) = \frac{\exp(X_i'\beta_j)}{1 + \sum_{k=1}^{3} \exp(X_i'\beta_k)}, \qquad j = 1, 2, 3, \tag{1}$$

$$P(Y_i = 0 \mid X_i) = \frac{1}{1 + \sum_{k=1}^{3} \exp(X_i'\beta_k)}, \tag{2}$$

with the base-category probability given by the complement. The vectors β_j are estimated by maximum likelihood; for each non-base outcome, the coefficients summarize how a covariate shifts the log-odds of that trajectory relative to remaining persistently out of the labor force.

Why multinomial logit? The object of interest is a six-year trajectory, not a 2016 point-in-time state. A binary model of 2016 status alone would pool a woman who exited from continuous work together with a woman who was never in the labor force, discarding exactly the information the panel structure was collected to provide. The four-category specification keeps these histories distinct.

The reference-category audit. Some of the models are re-run, switching which of the four groups is treated as the comparison group. This gives all six possible comparisons between the groups, instead of just the three that compare each group to "never worked." This is not a separate check meant to confirm the original results; it is the same model, looked at from a different angle. Nothing about the fit changes. What this extra step actually gives us is a fair way to test whether a difference between two coefficients is real, since simply looking at two separate numbers and their margins of error side by side is not a reliable way to judge whether they are truly different from each other. Because of this, when a result holds up when compared to "never worked" but not when compared to another working group, Section 6 describes it as applying to that one specific comparison, not as something that "failed" or "did not hold up." Nothing about the model was weaker or worse in that second comparison; it is simply a harder, less certain comparison to make, since it involves smaller groups.

5.3 Identification and limitations

The multinomial models are descriptive: they characterize which observed characteristics sort women into different medium-run trajectories, not the causal effect of any one characteristic. Education, marriage, fertility, and wealth are jointly determined over the life course and may respond to unobserved preferences or constraints that also affect labor force trajectories; labor demand conditions may simultaneously influence household wealth, marriage timing, and women's willingness to search for work. With the exception of the transition/mobility variables, every regressor is measured at the 2010 baseline, fixed

before the outcome window opens: a deliberate design choice that lets the coefficients describe trajectories *from* a baseline state, but does not by itself deliver causal identification, and no claim in this paper should be read as asserting that it does.

6. Results

6.1 Education

6.1.1 The baseline result

Table 1: Baseline multinomial estimates of women's labour force trajectories

	Remain in LF	Exit LF	Enter LF
Own education			
Secondary	0.653**	-0.462	0.819***
	(0.302)	(0.289)	(0.185)
Tertiary+	3.241***	1.667***	1.342***
	(0.254)	(0.229)	(0.285)
Marital status, 2010			
Currently married	-5.027***	-3.319***	-2.537***
	(0.699)	(0.530)	(0.624)
Formerly married	-3.205***	-2.197***	-2.438***
	(0.825)	(0.671)	(0.779)
Age at first marriage	0.121***	0.073***	0.077***
	(0.029)	(0.023)	(0.028)
Share of household aged $\leq$6 (childcare burden)	-0.195	-1.359**	-0.780
	(0.792)	(0.657)	(0.496)
Wealth quintile, 2010			
Q2	0.583*	0.166	0.049
	(0.299)	(0.269)	(0.224)
Q3	0.708**	-0.339	0.081
	(0.329)	(0.320)	(0.218)
Q4	0.904***	0.294	0.115
	(0.309)	(0.287)	(0.238)
Q5 (richest)	0.972**	0.161	0.861***
	(0.381)	(0.339)	(0.257)
Governorate FE	Yes		
Urban control	Yes		
Age, age^2	Yes		
Observations	3,732		
Pseudo R^2	0.273		

Base outcome: out of the labour force in both waves. * p<0.10, ** p<0.05, *** p<0.01.

Table 1 gives the core estimates. Relative to women with no more than basic education, and relative to persistent non-participation. Tertiary education is positive and significant on all three margins. The ordering is the substantive point: the coefficient on remaining is 1.9 times the coefficient on exiting and 2.4 times the coefficient on entering. Read through the base-category framework (Section 5.1), this is consistent with tertiary education being, above all, the strongest correlate of having participated in the labor force in 2010 at all, since both Remain and Exit require that starting point. The retention-margin evidence in 6.1.3 below shows this is not the whole story: tertiary education *additionally* predicts staying rather than leaving among women already working, so it operates on both the selection-into-participation margin and the durability-of-participation margin, and both are separately estimated here.

The economic content of this is unsurprising in the Jordanian context: formal employment opportunities for women concentrate heavily in credentialed occupations, notably the public sector and education/health. Below the tertiary threshold there is comparatively little formal-sector demand for female labor, and the available informal alternatives are unlikely to clear the reservation wage implied by transport costs, childcare costs, and prevailing norms about respectable work. On this reading, the tertiary coefficient reflects access to a specific labor-market segment more than a general return to human capital.

6.1.2 Stability of the tertiary result

Across the twenty-plus full-sample specifications, the tertiary coefficient on remaining sits in a narrow band wherever the marital control is held fixed: 3.241 (baseline, Table 1), 3.258 (combined parental, Table 2), 3.243, 3.257, and 3.234 (household age-structure specifications, Appendix Table 8). Significance is uniform on remaining and exiting ($p < 0.001$ in every non-interaction specification). On entry, tertiary education is significant at $p < 0.001$ in every non-interaction specification and at $p < 0.01$ without exception, including the interaction models. Tabulated entry coefficients run from 1.245 to 1.342 in the main specifications, rising to 1.989–2.053 in the transition models (Table 3); exit coefficients run 1.505–1.585 in the childcare-timing models (Appendix Table 6), 1.647–1.678 in the age-structure models (Appendix Table 9), and 1.797–1.858 in the transition models (Appendix Table 7).

6.1.3 The full contrast set for tertiary education

Re-basing the baseline model recovers all six pairwise contrasts (Appendix Tables 11–13):

Five of six contrasts are significant at the 0.1% level. The single null is the comparison between the two transitional states, Enter vs. Exit, which, per the base-category framework, is precisely the contrast with the least behavioral content, since it compares women who began the window in opposite states. The point estimate (-0.325) should not be read

directionally; with a standard error of the same magnitude it is indistinguishable from zero.

The retention contrast (Remain vs. Exit) is the most informative of the six: conditional on having been in the labor force in 2010, a tertiary-educated woman was significantly more likely than a woman with at most basic education to still be in it six years later. Hence, tertiary education is associated with engagement on every margin the panel identifies: entry among women who started out of the labor force, retention among women who started in it, and the single largest coefficient in the model on continuous attachment across both waves. The one comparison it does not inform is the distinction between the two transitional states.

6.1.4 Secondary education is a different pattern

On entry, secondary education is as consistent as tertiary. It is positive and significant at $p < 0.001$ in every full-sample specification: 0.819 (baseline), 0.822, 0.792, 0.756 (age-structure models, Appendix Table 10), 0.762 (combined parental, Table 2), 1.081 and 1.072 (transition models, Table 3), and 0.788 and 0.752 in the full-sample comparison columns of Table 5. By consistency of significance on this margin, secondary education matches tertiary.

On exit, secondary education carries the opposite sign to tertiary. It is negative in every specification in which it appears, reaching conventional significance in the childcare-timing models (-0.637, $p = 0.042$; -0.634, $p = 0.039$; -0.599, $p = 0.042$; -0.567 marginal at $p = 0.058$; Appendix Table 6).

On remaining, secondary education is positive throughout but sits near the significance threshold (and where it falls depends on the control set): 0.653 (baseline, $p = 0.031$), 0.650, 0.651 ($p \approx 0.033$), 0.555 ($p = 0.069$), 0.571 ($p = 0.060$). Specifications carrying paternal background alongside baseline marital status push it toward the 0.06–0.07 range; specifications using marital transitions instead strengthen it.

The mirror-image contrast set makes the pattern sharpest (Tables 11–13):

Tertiary education separates continuous attachment from everything else and fails only on Enter-vs-Exit. Secondary education does close to the opposite: it separates exit from both other active states, strongly, and fails only on the comparison between remaining and entering (-0.166, SE 0.329).

In other words, the two education levels appear to be doing different things. Tertiary education is associated with the *level* of participation (the dominant correlate of being in the labor force at all) and additionally with retention. Secondary education has little net association with 2010 participation itself (its coefficients on remaining and exiting are similar in size and opposite in sign, so they roughly cancel), but a strong association with the *durability* and *acquisition* of attachment: among women working in 2010 it predicts staying, and among women outside the labor force in 2010 it predicts entering. One

plausible reading, offered as such: secondary schooling is not sufficient to open the credentialed segment of the labor market that drives the tertiary result, but is associated with a different margin: the capacity to take up and hold work when the opportunity arises, perhaps through literacy, numeracy, or the kind of employment that requires them without requiring a full degree.

6.1.5 Educational mobility and the stable-subsample check

The main models classify women according to their education recorded in 2010. Because educational attainment can legitimately increase over the six-year panel, some women classified in lower education categories in 2010 complete additional schooling by 2016. The weighted cross-tabulation (weighted $N = 3,978$) shows substantial upward mobility: 23.29% of women in the lowest education category move to a higher category, and 36% of women with secondary education are recorded as tertiary by 2016. Some recorded downward transitions are, however, impossible for completed educational attainment and likely reflect measurement or coding error. Overall, 73.03% of women remain in the same education category across waves (73.98% within the estimation sample, 2,761 of 3,732), providing the basis for a stable-education robustness check.

To examine whether this affects our findings, we re-estimate all models using only women whose recorded education category is identical in both waves ($N = 2,761$ / 2,757 / 2,748 across the baseline, maternal, and paternal pairings). This provides a simple robustness check based on respondents whose educational attainment appears stable throughout the panel.

The results differ by education level. The tertiary education coefficient remains statistically significant at $p < 0.001$ in all three pairings, with a larger point estimate in the stable-education subsample than in the full sample: 1.728 versus 1.342 in the baseline pairing, 1.679 versus 1.319 in the maternal pairing, and 1.638 versus 1.251 in the paternal pairing. The stable subsample is nested within the full sample rather than drawn independently from it, so the two coefficients are not statistically independent, and a standard test of the difference between them would not be valid without explicitly modeling that overlap; this comparison is therefore reported descriptively rather than as a formal test. Two explanations are consistent with a smaller full-sample coefficient, and this comparison cannot distinguish between them: some women classified in lower education categories in 2010 attained tertiary education by 2016, introducing measurement error into the baseline measure; or women whose education category changed during the panel differ systematically from those who remained stable, in ways that independently affect their labor-force trajectories. Independent of which explanation applies, one fact is not in question: the tertiary coefficient does not shrink when the sample is restricted to women with stable education. If anything it moves in the opposite direction, so the main tertiary result does not depend on within-panel educational mobility.

The secondary education coefficient on labor-force entry does not show the same pattern. Across the three pairings, the point estimate declines from 0.819 to 0.078, from 0.788 to 0.088, and from 0.752 to 0.063, and is no longer statistically significant ($p = 0.816$, 0.795, and 0.855). The same two explanations apply: measurement error from the baseline classification, or systematic differences between women whose education changed and those who did not, and the data cannot separate them.

This sensitivity is specific to labor-force entry. Secondary education's association with durable attachment (remaining in the labor force conditional on prior participation) remains statistically significant in the stable-education subsample. The robustness check therefore supports a clear, three-part conclusion: the tertiary coefficient is robust; the secondary coefficient on durable attachment is robust; the secondary coefficient on entry is not.

6.2 Marriage

Two marriage constructs appear in this analysis: *marital status in 2010* [never married (omitted category), currently married, formerly married (widowed or divorced)], which is pre-determined with respect to the outcome window; and *marital transitions across the window* (Section 6.2.6), which are not pre-determined: they are realized over the same period as the outcome, cannot support a causal reading, and are measured against a different reference category (women married throughout the window, not never-married women).

6.2.1 The baseline result

Table 1 gives the baseline estimates, all six large, negative, and significant:

	Remain	**Exit**	**Enter**
Currently married	-5.027^{***}	-3.319^{***}	-2.537^{***}
	(0.699)	(0.530)	(0.624)
Formerly married	-3.205^{***}	-2.197^{***}	-2.438^{***}
	(0.825)	(0.671)	(0.779)

$p < 0.001$ throughout except formerly-married on exit ($p = 0.001$) and on entry ($p = 0.002$).

Within the currently-married row the ordering is monotone and steep: the largest penalty is on continuous attachment (-5.03), the intermediate one on exit (-3.32), the smallest on entry (-2.54). Relative to never-married women, married women are less likely to be observed in any active state than in persistent non-participation, but the gap is widest for the state that requires attachment to be *sustained*. These are the largest coefficients anywhere in the analysis.

6.2.2 *Magnitudes, from predicted probabilities*

We translate the marriage coefficients into predicted probabilities in the table below.

Outcome	Never married	Currently married	Formerly married
Remain in LF	0.322 (0.059)	0.049 (0.004)	0.127 (0.034)
Exit LF	0.156 (0.045)	0.041 (0.004)	0.078 (0.029)
Enter LF	0.181 (0.036)	0.060 (0.013)	0.050 (0.035)
Out of LF, both waves	0.342 (0.035)	0.850 (0.014)	0.745 (0.041)

All estimates are significant at the 1% level except formerly-married women's entry margin ($p = 0.152$). A currently-married woman's predicted probability of sustained labor force participation is 4.9%, against 32.2% for an otherwise-similar never-married woman (a gap of 27.3 percentage points). The predicted probability of remaining outside the labor force in both waves is 85.0% for currently-married women, against 34.2% for never-married women (a gap of 50.8 percentage points, and the single contrast that carries most of this arc).

6.2.3 *The contrast set: where the marital penalty is concentrated*

All six pairwise contrasts for currently-married women (re-based specifications):

Contrast	b	SE	p
Remain vs. base	-5.027	0.699	0.000
Exit vs. base	-3.319	0.530	0.000
Enter vs. base	-2.537	0.624	0.000
Exit vs. remain (retention margin)	$+1.708$	0.744	0.022
Enter vs. remain	$+2.489$	0.843	0.003
Enter vs. exit	$+0.782$	0.738	0.289

Five of six contrasts are significant. The positive signs on the two Remain-based contrasts mean that, relative to never-married women, currently-married women are more likely to be found among exiters and among entrants than among continuous participants: the marital penalty is concentrated on sustained attachment, not spread evenly across active states. The retention contrast (Exit vs. Remain) is the behavioral one: among women working in 2010, married women were more likely to have left by 2016. The entry-vs-remain contrast, by contrast, compares two groups that started 2010 in opposite positions, so it describes how married women are distributed between them, not a behavior: married women are over- or under-represented in one group, not caused into it. The null on entry-vs-exit matches the pattern found for tertiary education (Section 6.1.3): marital status simply carries no information for that specific comparison. Baseline marital status tells us

whether a woman sustains labor force participation once she has it, not which direction she was moving when she crossed the participation line.

The finding about retention holds under some conditions, not all. The comparison between entering the labor force and staying in it continuously holds up in all five versions of the model we tested ($p = 0.002$ to 0.003). The comparison between staying employed and quitting holds up in four of the five versions, but breaks in the version that also controls for the age of a woman's youngest child. The separate, smaller binary model (Table 4) agrees with this: currently married status is not statistically significant in either version of that model ($p = 0.178$ and $p = 0.209$), and formerly married status is not significant in either version either.

So marriage clearly separates women who never work from women who do, and it clearly separates entering the labor force from staying in it continuously, in every version of the model we tested. It only separates quitting from staying in the original, simplest version of the model. That result does not hold once we control for the age of the youngest child, and the separate retention model does not confirm it either.

Two things explain this. First, this specific comparison is calculated using the smallest group in the whole analysis, about 17% of the sample, so it is harder to detect a real pattern even if one exists. Second, the model version where the finding breaks down adds a variable, the age of the youngest child, that Section 6.2.7 already shows overlaps heavily with marriage in this data, so adding it makes the result less clear rather than proving anything wrong.

6.2.4 Formerly-married women: a genuine asymmetry

Formerly-married women look very different depending on what we compare them to. Compared to women who never worked at all, their numbers are large and statistically meaningful. But compared to other working women, the numbers are small and not statistically meaningful: compared to staying employed, $p = 0.291$; compared to entering work, $p = 0.438$; compared to leaving work, $p = 0.797$. None of these three comparisons show a real difference, in any version of the model we tested.

This means the marriage finding that married women are less likely to stay continuously employed cannot be extended to formerly-married women. The only claim the data support here is weaker: formerly-married women are less likely than never-married women to be actively engaged with the labor force at all. We cannot say which type of engagement (staying, leaving, or entering) they lean toward.

The reason these comparisons are not statistically meaningful is that formerly-married women are a small group in this sample, so the numbers carry more uncertainty. For the same reason, we are not splitting this group further into widows and divorced women, since that group would be even smaller and any result from it would be unreliable.

6.2.5 Marital transitions during the panel

We also look at what happened to a woman's marriage over the six years of the study, not just her status at one point in time. Three groups are compared to women who were married the entire time: women who stayed single the whole time, women who got married at some point during the study, and women whose marriage ended through divorce or widowhood during the study. This check uses a smaller sample, between 3,220 and 3,234 women.

Two results are solid. Compared to women married the entire time, both women who stayed single and women who got married during the study are much more likely to be actively working, whether entering or leaving work. This matches and confirms the earlier finding that being married the entire time is linked to the lowest work engagement.

One result is less certain. Women whose marriage ended during the study show up more often among people who entered the workforce than among people who never worked at all. This has not been tested against a stricter comparison group, so unlike the two results above, it should not yet be described as holding up under closer scrutiny.

6.2.6 Marriage and childcare burden are not separable

A natural question about the marriage result is whether it is really capturing the effect of having young children rather than marriage itself. The two are closely linked in this data: the correlation between being currently married and household childcare burden is 0.42. On average, the share of young children in the household is 0.040 for never married women, 0.199 for currently married women, and 0.030 for formerly married women. Married women carry a much heavier childcare burden than unmarried women in this sample.

We also reran the main model without marital status, to see how the childcare variable behaves on its own. Without marital status in the model, childcare burden is significant on both exit (coefficient -2.121, $p = 0.001$) and entry (coefficient -1.109, $p = 0.021$). The two variables are closely correlated, and this correlation makes it difficult to isolate the independent contribution of either one from the model alone.

We are not able to say from this data whether it is marriage or childcare burden that is doing the work, and no claim in either direction is supportable. What we can say is narrower: marriage remains a statistically significant predictor even when childcare burden is included in the same model. That is a fact about the regression, not a claim that we have separated the two effects. The two variables remain too closely linked in this data to draw that conclusion.

6.2.7 *Childbearing during the panel*

Having more children during the panel is linked to leaving the labor force, and this holds even on the strictest test: among women already working in 2010, an increase in the number of children is associated with having left by 2016 (0.428, $p = 0.005$), and this association is stronger on this comparison than against women who never worked at all. Other related measures point in the same direction (a new child born during the panel, an increase in the share of young children in the household) but lose statistical significance on the stricter test, most likely from reduced precision in a smaller comparison group rather than a real change in the pattern. Because all of these variables are measured over the same period as the outcome, we cannot say whether having children caused women to leave work, or leaving work made further childbearing more likely, or both.

The household share aged 65 or over showed no relationship with any outcome, under any comparison.

6.3 Intergenerational Transmission

6.3.1 *Testing mothers and fathers together*

Mother's and father's education are correlated ($r = 0.48$), so we test them separately before combining them. Mother's and father's employment are not correlated ($r = 0.01$), so that concern does not apply there.

The clearest test is a single model that includes all four parental variables at once (Table 2, $N = 3,708$):

Three of the four survive this joint test. Only father's employment does not. We treat this combined model as the main result for this section.

One point matters for interpretation. All these estimates already control for the woman's own education. So this is not measuring how parents pass on schooling itself. It is measuring what parents contribute beyond that, such as information about the job market, family expectations about women working, or access to useful contacts.

6.3.2 *Maternal education: entry only*

Mother's post secondary education is linked to daughters entering the labor force, and only to entering. Across separate models this coefficient ranges from about 0.8 to 1.07, always significant at $p < 0.001$. In the fullest model, which also controls for the father's characteristics, the coefficient is smaller (0.826, $p = 0.001$) but still clearly significant.

On the other two outcomes, staying employed and leaving work, the coefficient is small and never significant, though it points the same direction every time: positive for staying, negative for leaving. This is a consistent pattern, not random noise, and is reported as such.

Table 2: Intergenerational determinants of women's labour force trajectories

	Remain in LF	Exit LF	Enter LF
Own education			
Secondary	0.571*	-0.431	0.762***
	(0.304)	(0.287)	(0.190)
Tertiary+	3.258***	1.648***	1.263***
	(0.260)	(0.228)	(0.299)
Marital status, 2010			
Currently married	-4.995***	-3.284***	-2.398***
	(0.706)	(0.544)	(0.621)
Formerly married	-2.945***	-2.477***	-2.300***
	(0.805)	(0.691)	(0.771)
Age at first marriage	0.123***	0.075***	0.070**
	(0.029)	(0.024)	(0.028)
Share of household aged $\leq$6 (childcare burden)	-0.303	-1.333**	-0.739
	(0.738)	(0.665)	(0.495)
Wealth quintile, 2010			
Q2	0.489	0.147	-0.100
	(0.305)	(0.267)	(0.216)
Q3	0.680**	-0.293	-0.088
	(0.338)	(0.317)	(0.219)
Q4	0.844***	0.354	-0.179
	(0.324)	(0.292)	(0.237)
Q5 (richest)	0.928**	0.120	0.410
	(0.377)	(0.356)	(0.258)
Mother's education			
Secondary	0.088	-0.166	0.414
	(0.433)	(0.455)	(0.253)
Post-secondary/university	0.261	-0.104	0.826***
	(0.465)	(0.530)	(0.260)
Father's education			
Secondary	0.222	-0.630*	0.248
	(0.311)	(0.353)	(0.228)
Post-secondary/university	-0.100	-0.112	0.625***
	(0.311)	(0.389)	(0.207)
Mother's employment			
Employed	0.007	0.809***	-0.516*
	(0.399)	(0.289)	(0.303)
Father's employment			
Employed	0.523	-0.221	-0.212
	(0.391)	(0.456)	(0.335)
Governorate FE	Yes		
Urban control	Yes		
Age, age^2	Yes		
Observations	3,708		
Pseudo R^2	0.284		

Base outcome: out of the labour force in both waves. * p<0.10, ** p<0.05, *** p<0.01.

Variable	Outcome	b	SE	p	Survives together?
Mother's post secondary education	Enter	0.826	0.260	0.001	Yes
Father's post secondary education	Enter	0.625	0.207	0.003	Yes
Mother's employment	Exit	0.809	0.289	0.005	Yes
Father's employment	Remain	0.523	0.391	0.181	No

Testing all pairwise comparisons directly ($N = 3,727$): mother's post secondary education distinguishes entrants from women who left work and from women who never worked, but does not clearly distinguish entrants from women who stayed continuously employed.

6.3.3 Paternal education: entry only

The same pattern holds for father's education. The entry coefficient ranges from about 0.84 to 0.87 across separate models, always significant at $p < 0.001$, and stays significant in the fullest model (0.625, $p = 0.003$). On the other two outcomes it is close to zero and never significant.

Testing all pairwise comparisons ($N = 3,712$): father's education distinguishes entrants from all three other groups: women who left work, women who never worked, and women who stayed continuously employed. This is one comparison more than mother's education clears. That difference reflects which specific tests passed, not that one parent matters more (see 6.3.4).

In the subsample of women whose recorded education did not change between 2010 and 2016, both the maternal (0.504, $p = 0.414$) and paternal (0.608, $p = 0.086$) entry coefficients lose significance. This matches what happens to the woman's own secondary education in the same subsample (Section 6.1.5): both parental and own secondary education lose significance on entry once the sample is restricted to women with stable education records.

6.3.4 Comparing the two parents

Both parents show the same basic pattern: a real, significant link to entering the labor force, and no link to staying or leaving. Both survive the combined model. The only difference is that father's education passes one more statistical test than mother's education. This is not evidence that fathers matter more. It reflects which specific comparisons happened to clear significance.

Table 4 supports this from another angle. Among women who were already working in 2010, no parental variable (mother's education, father's education, mother's employment, or father's employment) predicts whether she was still working in 2016. Family background is linked to whether a woman starts working. It is not linked to whether she

keeps working.

In this same fullest model, the wealth finding on entry (Section 6.4) also weakens, from 0.861 to 0.410, no longer significant ($p = 0.112$), while its standard error barely changes. This pattern (a coefficient shrinking while its precision stays about the same) suggests the parental variables and the wealth variable are capturing some of the same underlying pattern, since richer parents also tend to be better educated. This connection is stated on both sides, here and in Section 6.4.5, so it is not left for a reader to notice alone.

6.3.5 Maternal employment: linked to exit

Having an employed mother has no link to staying continuously employed. The coefficient is close to zero in every model tested. Having an employed mother is, however, linked to leaving the labor force, consistently, in every non-interaction model tested (coefficients from 0.79 to 0.90, p always below 0.02), including the fullest model with all other parental variables included.

In the two mechanism-check models that interact mother's employment with marriage or with mother's education (Section 6.3.7), the coefficient is less stable, ranging from 0.72 to 1.16, reaching $p = 0.042$ in one specification. Having an employed mother is negative in every specification on entry as well, though it does not reach conventional significance in the main models (coefficients around -0.51 to -0.55, $p = 0.07$–0.09), and reaches $p = 0.018$ in one interaction specification. The difference between the exit and entry results is itself highly significant ($p < 0.001$). Put together: daughters of employed mothers are more likely to be found among women who left work than among women who never worked, look no different from other women among those who stayed continuously employed, and look different from women who entered work after not working.

A natural first guess is that daughters of employed mothers were simply more likely to be working already in 2010. But that alone would raise both the staying and leaving numbers together, and the staying number does not move. So something else is going on: among these daughters, whatever work they had in 2010 was more likely to end by 2016.

One exploratory check fits this reading. Exit rates are noticeably higher among daughters of self-employed or unpaid family working mothers than among daughters of waged or non-employed mothers. The groups here are small, so this is worth mentioning once as a possible lead, not as a confirmed pattern.

One caveat applies throughout: only about 6.5% of mothers in this sample were employed (6.5% unweighted, 7.5% weighted). This is a small group, and the standard errors above reflect that.

6.3.6 *Paternal employment: not a reliable result*

Father's employment is mostly not significant on any outcome, in almost every model tested. It does not survive any of the direct pairwise comparisons either. We treat this as a fragile result that does not hold up, and mention it briefly rather than build any conclusion on it.

6.3.7 *Two mechanism checks*

We tested whether mother's education matters more or less depending on whether the mother worked. It does not. All six interaction terms are small and not significant. This is a clean, simple result (see Appendix).

6.4 Household Wealth

Wealth is described here in terms of which group a woman is found in, never as a cause of any outcome.

6.4.1 *Three different patterns*

Quintile	Remain	Exit	Enter
Q2	0.583, $p = 0.052$	0.166, $p = 0.539$	0.049, $p = 0.826$
Q3	0.708, $p = 0.032$	-0.339, $p = 0.289$	0.081, $p = 0.709$
Q4	0.904, $p = 0.003$	0.294, $p = 0.307$	0.115, $p = 0.628$
Q5	0.972, $p = 0.011$	0.161, $p = 0.634$	0.861, $p = 0.001$

Wealth does not behave the same way across the three outcomes.

On staying continuously employed, there is a clear step up by quintile. Each richer group is more likely to be found here than the poorest group, and this becomes significant from the third quintile up.

On entering the labor force, only the richest quintile stands out. The second, third, and fourth quintiles look the same as the poorest group. Only the fifth, richest, group is different.

On leaving the labor force, there is no pattern at all. Every quintile looks statistically the same as the poorest group.

Two explanations fit the staying pattern equally well, and the data cannot separate them. Richer families may also be the families whose daughters reach the education levels that open up stable jobs, or richer families may simply be better able to afford the things that make working easier, such as transport or childcare. Both are offered as possible explanations, not as tested findings.

6.4.2 *How stable these patterns are*

The staying pattern for the third, fourth, and fifth quintiles holds up across every model we tested. The second quintile is weaker and inconsistent, and should not be treated as part of the same pattern. The lack of any pattern on leaving the labor force also holds up across every model tested. The richest quintile's link to entering the labor force is significant in most models, but not all. It weakens in the subsample of women with stable education, likely just a smaller, less precise sample, and it weakens further, becoming non-significant, once we also control for the mother's and father's education and employment together (Section 6.4.5).

6.4.3 *Comparing wealth groups directly*

Contrast	**Q2**	**Q3**	**Q4**	**Q5**
Remain vs base	$p = 0.052$	$p = 0.032$	$p = 0.003$	$p = 0.011$
Exit vs base	$p = 0.539$	$p = 0.289$	$p = 0.307$	$p = 0.634$
Enter vs base	$p = 0.826$	$p = 0.709$	$p = 0.628$	$p = 0.001$
Exit vs Remain (retention margin)	$p = 0.218$	$p = 0.007$	$p = 0.081$	$p = 0.052$
Enter vs Remain	$p = 0.121$	$p = 0.078$	$p = 0.023$	$p = 0.779$
Enter vs Exit	$p = 0.722$	$p = 0.243$	$p = 0.602$	$p = 0.060$

Two comparisons hold up cleanly: women in the third quintile are significantly more likely to have stayed employed than to have left, and women in the fourth quintile are significantly more likely to have stayed employed than to have entered. In both cases, this reflects the middle quintiles clustering among steady workers rather than moving in or out.

The richest quintile does not behave this way. It shows no clear difference between entering and staying, or between entering and leaving.

In short, wealth does not describe one single boundary. At the top of the distribution, richer households are simply more linked to being engaged with work in any active form. In the middle of the distribution, richer households are specifically linked to staying employed. Reporting only the richest quintile's result would miss this.

6.4.4 *Wealth changes during the panel*

Table 3: Marital transitions, household mobility, and labour force entry

	Maternal controls	Paternal controls
Own education		
Secondary	1.081***	1.072***
	(0.214)	(0.219)
Tertiary+	2.053***	1.989***
	(0.314)	(0.316)
Age at first marriage	0.022	0.019
	(0.028)	(0.028)
Maternal education		
Secondary	0.563**	
	(0.267)	
Post-secondary/university	0.922***	
	(0.254)	
Maternal employment		
Employed	-0.386	
	(0.333)	
Marital transition, 2010–2016		
Remained never-married	1.986***	1.911***
	(0.575)	(0.574)
Married during panel (entered marriage)	1.195*	1.209*
	(0.664)	(0.671)
Divorced/widowed during panel (exited marriage)	1.473**	1.360**
	(0.634)	(0.681)
Change in number of children, 2010–2016	-0.173	-0.204
	(0.137)	(0.138)
Wealth mobility, 2010–2016		
Moved Down	-0.064	-0.108
	(0.229)	(0.225)
No Change	0.083	0.112
	(0.170)	(0.164)
Paternal education		
Secondary		0.365
		(0.233)
Post-secondary/university		0.849***
		(0.203)
Paternal employment		
Employed		-0.021
		(0.339)
Governorate FE	Yes	Yes
Urban control	Yes	Yes
Age, age^2	Yes	Yes
Observations	3,234	3,220
Pseudo R^2	0.296	0.298

Entry into the labour force relative to remaining out of it in both waves. * p<0.10, ** p<0.05, *** p<0.01.

We also looked at whether a household's wealth position moved up or down between 2010 and 2016, instead of just its 2010 level. Households that moved down are consistently more likely to be found among women who left the labor force, across every model tested. The link to staying employed is weaker and inconsistent, and there is no link to entering at all.

When tested directly, moving down does not distinguish women who left work from women who stayed employed. This does not contradict the earlier result. It explains it: since moving down is similarly linked to both staying and leaving, the difference between those two groups ends up close to zero. Households that moved down are linked to being engaged with the labor force in general, not specifically to leaving it.

6.4.5 Wealth and family background overlap

In the fullest model, which adds both parents' education and employment, the richest quintile's link to entering work roughly halves, from 0.861 to 0.410, and is no longer significant ($p = 0.112$), while its standard error barely moves.

This fits a simple fact: richer families and better educated parents tend to be the same families. So part of what the wealth result was capturing on its own is also captured by parental education once both are included together. This is stated on both sides, here and in Section 6.3.4, so the connection is clear either way a reader arrives at it.

This one result not holding up should not be read as a sign the whole wealth section is fragile. Everything else in the main wealth results still holds in this same fuller model: the staying pattern for the third, fourth, and fifth quintiles, tertiary education's link to staying and entering, secondary education's link to entering, and marriage's link to staying.

6.4.6 The retention logit as an independent check

Table 4: Binary logit estimates of labour force retention

	Maternal controls	Paternal controls
Marital status, 2010		
Currently married	-1.192	-1.123
	(0.885)	(0.894)
Formerly married	-0.012	-0.609
	(0.862)	(0.964)
Own education		
Secondary	1.097***	1.027**
	(0.424)	(0.424)
Tertiary+	1.734***	1.649***
	(0.311)	(0.319)
Age at first marriage	0.022	0.020
	(0.037)	(0.037)
Wealth quintile, 2010		
Q2	-0.081	-0.104
	(0.375)	(0.385)
Q3	0.624	0.673
	(0.424)	(0.435)
Q4	0.014	0.089
	(0.388)	(0.398)
Q5 (richest)	0.132	0.057
	(0.457)	(0.452)
Maternal education		
Secondary	0.353	
	(0.543)	
Post-secondary/university	0.261	
	(0.556)	
Maternal employment		
Employed	-0.532	
	(0.424)	
Share of household aged $\leq$6 (childcare burden)	1.157	1.135
	(0.805)	(0.794)
Share of household aged $\geq$65 (eldercare burden)	0.110	0.326
	(1.264)	(1.257)
Paternal education		
Secondary		0.728
		(0.459)
Post-secondary/university		0.061
		(0.405)
Paternal employment		
Employed		0.467
		(0.548)
Governorate FE	Yes	Yes
Urban control	Yes	Yes
Age, age^2	Yes	Yes
Observations	674	674
Pseudo R^2	0.186	0.184

Binary logit on remaining in the labour force, estimated on women economically active in 2010. * p<0.10, ** p<0.05, *** p<0.01.

Table 4 estimates a binary logit for remaining in the labor force among the 674 women economically active in 2010 (the same retention margin as the Remain-vs-Exit contrast above, Section 6.1.3), estimated on a restricted sample with a different model. The two agree closely:

The education coefficients replicate almost exactly, and the childcare-burden coefficient replicates closely, positive and non-significant in both. (The marriage coefficient in this table keeps its sign but loses significance on the smaller sample, taken up in Section 6.2.) The paternal version of the retention logit gives essentially the same picture for education (secondary 1.027, $p = 0.016$; tertiary 1.649, $p = 0.000$). With 674 observations, governorate fixed effects, and roughly seventeen regressors, this model is thin and is cited here as a complementary check on the retention margin rather than as an independent result on its own footing.

6.5 Sensitivity to the Choice of Comparison Group

A result that looks strong when compared only to women who never worked can look weaker when compared directly to other working women. This does not always mean the result is wrong. It can also mean the comparison group is smaller and less precise. The way to tell these apart is simple. If the coefficient itself shrinks toward zero, the result is genuinely weaker. If the coefficient stays about the same size but its standard error grows, the result is just harder to pin down precisely, not actually weaker.

6.6 Men, for Comparison

We ran the same model on men, for comparison only. Three things limit how far this comparison can go, and apply to everything below.

First, the comparison group is not the same for both sexes. For women, never working is the largest group and includes homemakers, students, and discouraged workers. For men it is a small group, mostly students, the disabled, or long-term inactive men. A coefficient measured against this group is answering a different question for men than for women. Second, the exact set of control variables is not identical across all three columns of the men's results, so this is not a clean side-by-side comparison. Third, these results should be read as a simple comparison, not a formal test of whether an effect differs by sex. A real test of that would need a single combined model with both sexes and a sex interaction term, which we did not run. With those limits in mind, four patterns are still worth noting because they hold up despite these differences.

Education matters much less for men staying employed. Tertiary education gives men a coefficient less than half the size of women's. Secondary education is not significant for men at all, where it is significant for women. On entering the labor force, though, men and

women look similar. Marriage is the single biggest factor for women. For men it is a minor one.

Young children in the household are linked to men entering the labor force, the opposite pattern from women, where young children show no link to entering at all. This is the clearest sign in the whole paper that men and women play different roles at home.

Wealth runs in the opposite direction for men. Richer households are linked to men being less likely to be in any active state, the reverse of the pattern for women, where richer households are linked to staying continuously employed.

7. Discussion

7.1 What the four arcs establish, together

Marriage is linked to both entering and leaving the labor force. The predicted probability of persistent non-participation is 85.0% for currently married women against 34.2% for never married women (Section 6.2.2). Married women outside the labor force are less likely to enter it, and married women inside it are more likely to leave, though this second link only holds in some model versions, not all (Section 6.2.3). Marriage and household childcare burden move together closely in this data and cannot be separated (Section 6.2.7).

Education is linked to labor force participation in two separate ways. Tertiary education is linked to participation at any point, and to staying in work among women already working (Sections 6.1.1 to 6.1.3). Secondary education shows little link to participation on its own, but a clear link to staying in work and to starting work (Section 6.1.4).

Wealth is linked differently to each of the three outcomes. Staying continuously employed rises steadily with wealth quintile. Entering the labor force is linked only to the richest quintile. Leaving the labor force shows no link to wealth (Section 6.4.1). These are associations between household wealth and where a woman is found, not effects of wealth on her choices.

Family background (mother's and father's education and employment) is linked to whether a daughter enters the labor force, and to nothing else. It is not linked to whether she stays in work or leaves it (Section 6.3). Mother's employment is a separate case: it is linked specifically to a daughter leaving work, not to staying or entering (Section 6.3.5).

Wealth and family background overlap in what they explain about entering the labor force. Once mother's and father's education are included together with wealth, the wealth quintile's link to entry becomes weaker and no longer significant (Sections 6.3.4, 6.4.5), consistent with richer families and better educated families often being the same families.

These four topics do not combine into one explanation. Each shows a different pattern, and the data do not support reducing them to a single cause.

7.2 What this analysis does not show

First, none of the relationships reported are causal effects. All of them are associations (Section 7.3). Second, marriage and childcare burden cannot be separated in this data. Neither "it is marriage" nor "it is children" is supported on its own (Section 6.2.7). Third, marital breakdown's link to entering work, and downward wealth mobility's link to leaving work, both hold only when compared to women who never worked. Neither holds when compared directly to other working women (Sections 6.2.6, 6.4.4, 6.5). Fourth, the comparison with men (Section 6.6) is descriptive. It does not test whether an effect differs by sex.

7.3 Limitations

No result in this paper is a causal effect. All are associations. Fixing covariates at their 2010 values rules out the outcome causing the covariates, but does not address omitted variables, selection into the panel, or unmeasured differences between women.

Three sets of variables are not fixed at a starting point: marital transitions, wealth mobility, and changes in household composition. For these, the direction of the relationship is not identified. They are reported as occurring together with the outcome.

The comparison group used throughout (women out of the labor force in both waves) is a mixed group of students, homemakers, and discouraged workers. Comparing findings against several reference groups (Section 6.5) reduces this problem but does not remove it.

Some comparison groups are small. About 6.5% of mothers in the sample were employed. Formerly married women have standard errors between 0.89 and 1.30 on comparisons among working women. The retention model is estimated on 674 women.

Sample sizes differ across models, by up to about 500 observations, mainly from missing data on the transition variables. The relevant sample size is given with each estimate that uses them.

7.4 Policy Implications

The findings suggest that policies to increase women's labor force participation should distinguish between labor market entry and sustained attachment rather than treating participation as a single outcome. Measures that expand access to formal, credentialed employment may be particularly effective for tertiary-educated women, while interventions targeting women with secondary education should be evaluated primarily on retention and re-entry rather than overall participation. The results also indicate that marriage- and childcare-related constraints should be addressed jointly but evaluated separately, as the present data cannot disentangle their independent effects. In practice, this suggests

complementing childcare policies with interventions that directly target marriage-related barriers to women's employment, such as promoting flexible work arrangements for married women, strengthening workplace protections against marriage- or family-status discrimination, and encouraging employer practices that facilitate balancing paid work with family responsibilities, while evaluating these measures independently of childcare-focused programs. Finally, future pilot programs should incorporate mechanism-testing alongside outcome evaluation to identify whether improvements arise from reducing family-related constraints, expanding employment opportunities, or other pathways.

8. Conclusion

This paper used the JLMPS 2010 to 2016 panel to study women's labor force trajectories in Jordan over six years, grouping women into four paths: remaining in the labor force, exiting, entering, or staying persistently out, rather than relying on a single point-in-time measure.

Four patterns stand out, each different in kind. First, education is linked to labor force participation in two separate ways: tertiary education is linked to participation at any point, and to staying in work among women already working. Secondary education shows little link to participation on its own, but a clear link to staying in work and to starting work.

Second, marriage is linked to both entering and leaving the labor force. The predicted probability of sustained participation is 4.9% for currently married women against 32.2% for never married women. This link holds on both the entry and retention sides, though the retention link only holds in some model versions, not all, and marriage cannot currently be separated from household childcare burden in this data.

Third, family background is linked to whether a daughter enters the labor force, not to whether she stays or leaves. Both parents' post secondary education are linked to entry and to nothing else. Mother's employment is linked specifically to a daughter's exit and to nothing else, a pattern this paper does not explain.

Fourth, household wealth is linked differently to each outcome, described here as a pattern in the data, not a cause of it: a steady rise with wealth quintile on staying continuously employed, a link to entry only at the richest quintile, and no link at all to leaving work.

These four patterns overlap in one place. The richest quintile's link to entry and the link between parental education and entry substantially describe the same women, once both are included in the same model together. Beyond that overlap, the four patterns do not combine into a single explanation, and this paper does not claim they do. Some results hold up under every comparison tested. Others hold up only when compared to women

who never worked, and are reported as such.

Every result in this paper is an association, not a causal effect. Covariates are measured at the 2010 starting point, which rules out the outcome causing the covariates, but does not address other possible explanations such as omitted variables or unmeasured differences between women. Marital transitions, wealth mobility, and changes in household composition are measured over the same years as the outcome and are reported only as occurring together with it, not as a cause of it. A percentage or probability estimate exists only for marital status. Education, wealth, and family background are reported by direction and statistical significance only. These findings point to the importance of designing policies that distinguish between enabling women to enter the labor force and enabling them to remain in it, while accounting for the interconnected roles of marriage, childcare responsibilities, and household constraints in shaping women's labor market trajectories.

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Appendix A: Data Cleaning

The analytic sample is anchored to age 15–64 as of the 2010 wave; this restriction is applied consistently across the descriptive tables, the attrition analysis, and every regression in this paper, rather than allowing the age criterion to vary by wave. The 2016 wave includes a refresher sample added to the original panel households, plus any new households formed by members who split off from an original household between waves; both are incorporated using the tracking rules built into the JLMPS panel weight. The sample is restricted to women using a corrected sex variable (`sex_corrected`), applied in place of the raw sex indicator: an observation reported as female in 2010 (`sex_10==2`) is also coded as female in 2016 (`sex_16==2`), correcting cases where the raw variable reported an inconsistent sex across waves.

Marital transition categories (stayed non-married, married during the panel, divorced or widowed during the panel; reference category: married throughout) are constructed from a binary married/not-married indicator recorded separately in each wave, then combined across the two waves.

Wealth mobility categories (moved down, no change; reference category: moved up) are constructed by comparing each household's wealth quintile in 2010 against its quintile in 2016.

Paternal and maternal employment status is collapsed from the original multi-category classification into a binary employed/non-employed indicator; unpaid family work is classified as employed, not non-employed.

The ever-worked life-cycle measure (Section 4.2) uses a retrospective ever-worked indicator recorded in each wave. Since this indicator should only accumulate over time, an observation coded as having ever worked (`ever_worked==1`) in 2010 but not in 2016 is corrected to `ever_worked==1` in 2016 as well, using the underlying work-status variable to resolve the inconsistency.

A small number of implausible values were set to missing prior to analysis, including reported ages at first marriage below 12 years.

Appendix B: Regression Tables

This appendix reports the full specifications summarized in Section 6. Table numbers match their in-text citations.

Table 5: Robustness to education mobility: education-stable subsample

	Baseline	Maternal	Paternal	Maternal, full sample	Paternal, full sample
Own education					
Secondary	0.078	0.088	0.063	0.788***	0.752***
	(0.336)	(0.337)	(0.344)	(0.185)	(0.191)
Tertiary+	1.728***	1.679***	1.638***	1.319***	1.251***
	(0.302)	(0.312)	(0.322)	(0.292)	(0.296)
Marital status, 2010					
Currently married	-1.877***	-1.890***	-1.791**	-2.445***	-2.434***
	(0.728)	(0.713)	(0.735)	(0.618)	(0.632)
Formerly married	-1.806**	-1.755**	-1.756**	-2.333***	-2.339***
	(0.780)	(0.761)	(0.788)	(0.770)	(0.780)
Age at first marriage	0.068**	0.068**	0.062*	0.074***	0.070**
	(0.031)	(0.031)	(0.031)	(0.028)	(0.029)
Share of household aged $\leq$6 (childcare burden)	-1.094*	-1.041*	-1.005	-0.820*	-0.720
	(0.615)	(0.613)	(0.634)	(0.495)	(0.492)
Wealth quintile, 2010					
Q2	-0.007	-0.009	-0.179	0.023	-0.082
	(0.301)	(0.303)	(0.272)	(0.224)	(0.217)
Q3	-0.111	-0.135	-0.151	-0.026	-0.034
	(0.287)	(0.285)	(0.281)	(0.218)	(0.219)
Q4	-0.412	-0.453	-0.528	-0.064	-0.094
	(0.368)	(0.352)	(0.354)	(0.237)	(0.237)
Q5 (richest)	0.520	0.429	0.366	0.569**	0.536**
	(0.376)	(0.373)	(0.373)	(0.257)	(0.256)
Mother's education					
Secondary		0.408		0.516**	
		(0.450)		(0.251)	
Post-secondary/university		0.504		1.051***	
		(0.617)		(0.255)	
Mother's employment					
Employed		-0.501		-0.512*	
		(0.514)		(0.304)	
Father's education					
Secondary			0.386		0.332
			(0.384)		(0.223)
Post-secondary/university			0.608*		0.860***
			(0.353)		(0.201)
Father's employment					
Employed			-0.450		-0.188
			(0.439)		(0.339)
Governorate FE	Yes	Yes	Yes	Yes	Yes
Urban control	Yes	Yes	Yes	Yes	Yes
Age, age^2	Yes	Yes	Yes	Yes	Yes
Observations	2,761	2,757	2,748	3,727	3,712
Pseudo R^2	0.272	0.274	0.276	0.280	0.280

Entry into the labour force relative to remaining out of it in both waves. Columns 1-3 restrict the sample to women whose completed-education category did not change between 2010 and 2016 (the "education-stable" subsample); columns 4-5 use the full sample for comparison. * p<0.10, ** p<0.05, *** p<0.01.

Table 6: Robustness of labour force exit to childcare timing — new-child and age-of-youngest-child models

	New child, mat.	New child, pat.	Age youngest, mat.	Age youngest, pat.
Own education				
Secondary	-0.637**	-0.567*	-0.634**	-0.599**
	(0.314)	(0.299)	(0.307)	(0.295)
Tertiary+	1.505***	1.525***	1.576***	1.585***
	(0.248)	(0.249)	(0.240)	(0.241)
Marital status, 2010				
Currently married	-3.809***	-3.905***	-4.482***	-4.606***
	(0.701)	(0.688)	(0.799)	(0.797)
Formerly married	-2.480***	-2.588***	-3.592***	-3.733***
	(0.878)	(0.863)	(1.001)	(1.004)
Age at first marriage	0.080**	0.084**	0.093***	0.097***
	(0.035)	(0.034)	(0.033)	(0.032)
Share of household aged $\leq$6 (childcare burden)	-1.197	-1.117	-0.089	0.022
	(0.767)	(0.746)	(0.776)	(0.765)
Wealth quintile, 2010				
Q2	0.244	0.256	0.254	0.259
	(0.290)	(0.290)	(0.287)	(0.288)
Q3	-0.267	-0.309	-0.163	-0.184
	(0.356)	(0.356)	(0.339)	(0.338)
Q4	0.387	0.375	0.402	0.396
	(0.307)	(0.309)	(0.310)	(0.312)
Q5 (richest)	0.258	0.358	0.258	0.341
	(0.379)	(0.373)	(0.364)	(0.362)
Mother's education				
Secondary	-0.282		-0.172	
	(0.485)		(0.473)	
Post-secondary/university	-0.454		-0.377	
	(0.542)		(0.524)	
Mother's employment				
Employed	0.871***		0.815***	
	(0.305)		(0.296)	
Any new child born, 2010–2016=1	0.542**	0.564**		
	(0.240)	(0.241)		
Father's education				
Secondary		-0.696*		-0.565
		(0.369)		(0.355)
Post-secondary/university		-0.227		-0.105
		(0.383)		(0.373)
Father's employment				
Employed		-0.377		-0.416
		(0.491)		(0.466)
Age of youngest child (2010)			0.060*	0.064*
			(0.034)	(0.035)
Governorate FE	Yes	Yes	Yes	Yes
Urban control	Yes	Yes	Yes	Yes
Age, age^2	Yes	Yes	Yes	Yes
Observations	3,337	3,323	3,562	3,547
Pseudo R^2	0.298	0.298	0.289	0.290

Exit from the labour force relative to remaining out of it in both waves. Models E use a dummy for having had a new child; models F use the age of the youngest child instead. * p<0.10, ** p<0.05, *** p<0.01.

Table 7: Robustness of labour force exit to childcare timing — marital and wealth transition models

	Transitions, mat.	Transitions, pat.	Transitions, mat. (alt.)
Own education			
Secondary	-0.583*	-0.494	-0.370
	(0.334)	(0.317)	(0.290)
Tertiary+	1.797***	1.850***	1.858***
	(0.241)	(0.240)	(0.216)
Age at first marriage	0.010	0.010	0.011
	(0.020)	(0.020)	(0.015)
Mother's education			
Secondary	-0.115		-0.455
	(0.489)		(0.468)
Post-secondary/university	-0.249		-0.238
	(0.494)		(0.452)
Mother's employment			
Employed	0.854***		0.901***
	(0.323)		(0.292)
Marital transition, 2010–2016			
Remained never-married	2.039***	2.021***	1.545***
	(0.331)	(0.325)	(0.280)
Married during panel (entered marriage)	1.944***	1.982***	1.875***
	(0.455)	(0.457)	(0.382)
Divorced/widowed during panel (exited marriage)	0.673	0.647	0.491
	(0.599)	(0.608)	(0.515)
Change in number of children, 2010–2016	0.241**	0.234*	
	(0.117)	(0.121)	
Wealth mobility, 2010–2016			
Moved Down	0.683**	0.668**	0.596**
	(0.288)	(0.292)	(0.264)
No Change	0.021	0.062	-0.007
	(0.220)	(0.220)	(0.197)
Change in share of HH aged $\leq$6, 2010–2016	1.746**	1.659*	1.964***
	(0.875)	(0.866)	(0.726)
Change in share of HH aged $\geq$65, 2010–2016	-1.050	-0.985	0.093
	(1.205)	(1.217)	(1.037)
Father's education			
Secondary		-0.510	
		(0.341)	
Post-secondary/university		-0.263	
		(0.389)	
Father's employment			
Employed		-0.170	
		(0.533)	
Governorate FE	Yes	Yes	Yes
Urban control	Yes	Yes	Yes
Age, age^2	Yes	Yes	Yes
Observations	3,234	3,220	3,725
Pseudo R^2	0.300	0.302	0.283

Exit from the labour force relative to remaining out of it in both waves. Models K replace the childcare-timing dummies with marital and wealth transitions between waves; the third column omits the fertility level control. * p<0.10, ** p<0.05, *** p<0.01.

Table 8: Household age structure and women's labour force trajectories — Panel A: remaining in the labour force

	Age structure only	+ mother's background	+ father's background
Own education			
Secondary	0.650**	0.651**	0.555*
	(0.304)	(0.306)	(0.305)
Tertiary+	3.243***	3.257***	3.234***
	(0.253)	(0.256)	(0.255)
Marital status, 2010			
Currently married	-5.045***	-5.006***	-5.042***
	(0.709)	(0.711)	(0.716)
Formerly married	-3.223***	-2.967***	-3.211***
	(0.840)	(0.817)	(0.845)
Age at first marriage	0.121***	0.120***	0.123***
	(0.029)	(0.029)	(0.029)
Wealth quintile, 2010			
Q2	0.585*	0.583*	0.493
	(0.300)	(0.301)	(0.304)
Q3	0.705**	0.683**	0.690**
	(0.329)	(0.331)	(0.335)
Q4	0.902***	0.868***	0.861***
	(0.309)	(0.314)	(0.320)
Q5 (richest)	0.967**	0.937**	0.926**
	(0.382)	(0.370)	(0.382)
Share of household aged $\leq$6 (childcare burden)	-0.196	-0.231	-0.273
	(0.793)	(0.782)	(0.745)
Share of household aged $\geq$65 (eldercare burden)	-0.167	-0.126	-0.090
	(1.073)	(1.074)	(1.082)
Mother's education			
Secondary		0.083	
		(0.441)	
Post-secondary/university		0.240	
		(0.441)	
Mother's employment			
Employed		0.002	
		(0.401)	
Father's education			
Secondary			0.262
			(0.332)
Post-secondary/university			0.026
			(0.293)
Father's employment			
Employed			0.505
			(0.397)
Governorate FE	Yes	Yes	Yes
Urban control	Yes	Yes	Yes
Age, age^2	Yes	Yes	Yes
Observations	3,732	3,727	3,712
Pseudo R^2	0.274	0.280	0.281

Remaining in the labour force relative to remaining out of it in both waves. Base outcome: out of the labour force in both waves. * p<0.10, ** p<0.05, *** p<0.01.

Table 9: Household age structure and women's labour force trajectories — Panel B: exit from the labour force

	Age structure only	+ mother's background	+ father's background
Own education			
Secondary	-0.469	-0.463	-0.436
	(0.289)	(0.292)	(0.284)
Tertiary+	1.672***	1.647***	1.678***
	(0.230)	(0.230)	(0.229)
Marital status, 2010			
Currently married	-3.396***	-3.340***	-3.406***
	(0.539)	(0.555)	(0.539)
Formerly married	-2.271***	-2.529***	-2.284***
	(0.677)	(0.697)	(0.672)
Age at first marriage	0.074***	0.073***	0.076***
	(0.023)	(0.024)	(0.023)
Wealth quintile, 2010			
Q2	0.183	0.155	0.180
	(0.270)	(0.267)	(0.271)
Q3	-0.347	-0.315	-0.333
	(0.321)	(0.318)	(0.320)
Q4	0.296	0.323	0.320
	(0.288)	(0.290)	(0.293)
Q5 (richest)	0.153	0.056	0.231
	(0.339)	(0.350)	(0.348)
Share of household aged $\leq$6 (childcare burden)	-1.347**	-1.360**	-1.268*
	(0.660)	(0.675)	(0.651)
Share of household aged $\geq$65 (eldercare burden)	-0.756	-0.571	-0.572
	(0.999)	(1.006)	(1.008)
Mother's education			
Secondary		-0.294	
		(0.468)	
Post-secondary/university		-0.183	
		(0.481)	
Mother's employment			
Employed		0.798***	
		(0.291)	
Father's education			
Secondary			-0.625*
			(0.353)
Post-secondary/university			-0.056
			(0.341)
Father's employment			
Employed			-0.199
			(0.454)
Governorate FE	Yes	Yes	Yes
Urban control	Yes	Yes	Yes
Age, age^2	Yes	Yes	Yes
Observations	3,732	3,727	3,712
Pseudo R^2	0.274	0.280	0.281

Exit from the labour force relative to remaining out of it in both waves. Base outcome: out of the labour force in both waves. * p<0.10, ** p<0.05, *** p<0.01.

Table 10: Household age structure and women's labour force trajectories — Panel C: entry into the labour force

	Age structure only	+ mother's background	+ father's background
Own education			
Secondary	0.822***	0.792***	0.756***
	(0.185)	(0.185)	(0.191)
Tertiary+	1.337***	1.310***	1.245***
	(0.286)	(0.293)	(0.297)
Marital status, 2010			
Currently married	-2.517***	-2.412***	-2.416***
	(0.622)	(0.613)	(0.625)
Formerly married	-2.425***	-2.312***	-2.325***
	(0.777)	(0.765)	(0.775)
Age at first marriage	0.077***	0.075***	0.071**
	(0.028)	(0.027)	(0.028)
Wealth quintile, 2010			
Q2	0.037	0.006	-0.094
	(0.222)	(0.222)	(0.215)
Q3	0.087	-0.020	-0.026
	(0.218)	(0.218)	(0.219)
Q4	0.118	-0.064	-0.089
	(0.238)	(0.237)	(0.237)
Q5 (richest)	0.863***	0.566**	0.541**
	(0.257)	(0.254)	(0.254)
Share of household aged $\leq$6 (childcare burden)	-0.748	-0.777	-0.679
	(0.489)	(0.487)	(0.484)
Share of household aged $\geq$65 (eldercare burden)	0.821	1.183	0.904
	(1.184)	(1.167)	(1.147)
Mother's education			
Secondary		0.531**	
		(0.251)	
Post-secondary/university		1.073***	
		(0.255)	
Mother's employment			
Employed		-0.511*	
		(0.304)	
Father's education			
Secondary			0.313
			(0.218)
Post-secondary/university			0.863***
			(0.201)
Father's employment			
Employed			-0.176
			(0.330)
Governorate FE	Yes	Yes	Yes
Urban control	Yes	Yes	Yes
Age, age^2	Yes	Yes	Yes
Observations	3,732	3,727	3,712
Pseudo R^2	0.274	0.280	0.281

Entry into the labour force relative to remaining out of it in both waves. Base outcome: out of the labour force in both waves. * p<0.10, ** p<0.05, *** p<0.01.

Table 11: Robustness of the baseline model across reference categories — Panel A: exit relative to remaining

	Base: remain in LF
Own education	
Secondary	-1.116***
	(0.406)
Tertiary+	-1.574***
	(0.295)
Marital status, 2010	
Currently married	1.708**
	(0.744)
Formerly married	1.008
	(0.955)
Age at first marriage	-0.048
	(0.030)
Share of household aged $\leq$6 (childcare burden)	-1.164
	(0.928)
Wealth quintile, 2010	
Q2	-0.417
	(0.338)
Q3	-1.047***
	(0.390)
Q4	-0.610*
	(0.350)
Q5 (richest)	-0.812*
	(0.418)
Governorate FE	Yes
Urban control	Yes
Age, age^2	Yes
Observations	3,732
Pseudo R^2	0.273

Exit from the labour force relative to remaining in it. * p<0.10, ** p<0.05, *** p<0.01.

Table 12: Robustness of the baseline model across reference categories — Panel B: entry relative to exit

	Base: exit LF
Own education	
Secondary	1.281***
	(0.322)
Tertiary+	-0.325
	(0.325)
Marital status, 2010	
Currently married	0.782
	(0.738)
Formerly married	-0.241
	(0.938)
Age at first marriage	0.003
	(0.032)
Share of household aged $\leq$6 (childcare burden)	0.579
	(0.751)
Wealth quintile, 2010	
Q2	-0.116
	(0.327)
Q3	0.421
	(0.360)
Q4	-0.178
	(0.342)
Q5 (richest)	0.700*
	(0.373)
Governorate FE	Yes
Urban control	Yes
Age, age^2	Yes
Observations	3,732
Pseudo R^2	0.273

Entry into the labour force relative to exiting it. * p<0.10, ** p<0.05, *** p<0.01.

Table 13: Robustness of the baseline model across reference categories — Panel C: remaining relative to entry

	Base: enter LF
Own education	
Secondary	-0.166
	(0.329)
Tertiary+	1.899***
	(0.328)
Marital status, 2010	
Currently married	-2.489***
	(0.843)
Formerly married	-0.767
	(0.989)
Age at first marriage	0.044
	(0.035)
Share of household aged $\leq$6 (childcare burden)	0.585
	(0.873)
Wealth quintile, 2010	
Q2	0.533
	(0.344)
Q3	0.626*
	(0.356)
Q4	0.789**
	(0.346)
Q5 (richest)	0.112
	(0.398)
Governorate FE	Yes
Urban control	Yes
Age, age^2	Yes
Observations	3,732
Pseudo R^2	0.273

Remaining in the labour force relative to entering it. * p<0.10, ** p<0.05, *** p<0.01.

Table 14: Robustness of the childcare-burden result across reference categories

	Age structure only	+ age of youngest child, mat.	+ marital & wealth transitions, mat.	Age structure, no marital control
Own education				
Secondary	-1.118***	-1.278***	-1.493***	-1.070***
	(0.408)	(0.426)	(0.456)	(0.400)
Tertiary+	-1.570***	-1.665***	-2.194***	-1.533***
	(0.292)	(0.308)	(0.329)	(0.278)
Marital status, 2010				
Currently married	1.649**	1.185		
	(0.755)	(1.052)		
Formerly married	0.952	-0.175		
	(0.966)	(1.269)		
Age at first marriage	-0.048	-0.052	-0.037	0.018
	(0.030)	(0.041)	(0.024)	(0.017)
Wealth quintile, 2010				
Q2	-0.403	-0.395		-0.402
	(0.339)	(0.346)		(0.329)
Q3	-1.052***	-1.009**		-1.002***
	(0.390)	(0.403)		(0.381)
Q4	-0.606*	-0.524		-0.580*
	(0.349)	(0.368)		(0.338)
Q5 (richest)	-0.815*	-0.812*		-0.824**
	(0.417)	(0.424)		(0.402)
Share of household aged $\leq$6 (childcare burden)	-1.151	-0.025		-0.864
	(0.930)	(1.204)		(0.948)
Share of household aged $\geq$65 (eldercare burden)	-0.589			
	(1.058)			
Mother's education				
Secondary		-0.343	-0.454	
		(0.558)	(0.592)	
Post-secondary/university		-0.603	-0.487	
		(0.600)	(0.611)	
Mother's employment				
Employed		0.806*	0.630	
		(0.438)	(0.469)	
Age of youngest child (2010)		0.063		
		(0.051)		
Marital transition, 2010–2016				
Remained never-married			-1.467***	
			(0.443)	
Married during panel (entered marriage)			-1.119*	
			(0.589)	
Divorced/widowed during panel (exited marriage)			-0.428	
			(0.896)	
Change in number of children, 2010–2016			0.428***	
			(0.151)	
Wealth mobility, 2010–2016				
Moved Down			0.141	
			(0.353)	
No Change			0.271	
			(0.280)	
Change in share of HH aged $\leq$6, 2010–2016			1.201	
			(1.149)	
Change in share of HH aged $\geq$65, 2010–2016			-0.306	
			(1.262)	
Governorate FE	Yes	Yes	Yes	Yes
Urban control	Yes	Yes	Yes	Yes
Age, age^2	Yes	Yes	Yes	Yes
Observations	3,732	3,562	3,234	3,732
Pseudo R^2	0.274	0.289	0.300	0.252

All columns estimated with remaining in the labour force as the base outcome; coefficients are exit relative to remaining. * p<0.10, ** p<0.05, *** p<0.01.

Table 15: Robustness of intergenerational effects across reference categories — Panel A: entry relative to remaining

	Maternal background	Paternal background
Own education		
Secondary	0.133	0.194
	(0.332)	(0.332)
Tertiary+	-1.937***	-1.982***
	(0.334)	(0.336)
Marital status, 2010		
Currently married	2.542***	2.595***
	(0.846)	(0.856)
Formerly married	0.614	0.857
	(0.979)	(0.996)
Age at first marriage	-0.046	-0.053
	(0.036)	(0.036)
Share of household aged $\leq$6 (childcare burden)	-0.588	-0.449
	(0.869)	(0.819)
Wealth quintile, 2010		
Q2	-0.557	-0.572
	(0.345)	(0.349)
Q3	-0.709**	-0.725**
	(0.358)	(0.363)
Q4	-0.932***	-0.956***
	(0.352)	(0.359)
Q5 (richest)	-0.371	-0.395
	(0.392)	(0.403)
Maternal education		
Secondary	0.429	
	(0.446)	
Post-secondary/university	0.803*	
	(0.441)	
Maternal employment		
Employed	-0.510	
	(0.425)	
Paternal education		
Secondary		0.073
		(0.352)
Post-secondary/university		0.835***
		(0.300)
Paternal employment		
Employed		-0.682
		(0.434)
Governorate FE	Yes	Yes
Urban control	Yes	Yes
Age, age^2	Yes	Yes
Observations	3,727	3,712
Pseudo R^2	0.280	0.280

Entry into the labour force relative to remaining in it. * p<0.10, ** p<0.05, *** p<0.01.

Table 16: Robustness of intergenerational effects across reference categories — Panel B: entry relative to exit

	Maternal background	Paternal background
Own education		
Secondary	1.246***	1.183***
	(0.324)	(0.321)
Tertiary+	-0.323	-0.425
	(0.330)	(0.332)
Marital status, 2010		
Currently married	0.830	0.916
	(0.740)	(0.749)
Formerly married	0.134	-0.110
	(0.937)	(0.932)
Age at first marriage	0.001	-0.006
	(0.032)	(0.033)
Share of household aged $\leq$6 (childcare burden)	0.552	0.558
	(0.773)	(0.747)
Wealth quintile, 2010		
Q2	-0.119	-0.250
	(0.323)	(0.323)
Q3	0.284	0.292
	(0.357)	(0.361)
Q4	-0.385	-0.414
	(0.341)	(0.345)
Q5 (richest)	0.510	0.296
	(0.387)	(0.382)
Maternal education		
Secondary	0.800	
	(0.488)	
Post-secondary/university	1.227**	
	(0.487)	
Maternal employment		
Employed	-1.317***	
	(0.359)	
Paternal education		
Secondary		0.976**
		(0.381)
Post-secondary/university		0.917***
		(0.353)
Paternal employment		
Employed		0.021
		(0.510)
Governorate FE	Yes	Yes
Urban control	Yes	Yes
Age, age^2	Yes	Yes
Observations	3,727	3,712
Pseudo R^2	0.280	0.280

Entry into the labour force relative to exiting it. * p<0.10, ** p<0.05, *** p<0.01.

Table 17: Mechanism checks: maternal employment timing and maternal education — Panel A: remaining in the labour force

	Mother's employment × ever married	Mother's education × mother's employment
Own education		
Secondary	0.920***	0.653**
	(0.302)	(0.306)
Tertiary+	3.730***	3.279***
	(0.243)	(0.259)
Age at first marriage	-0.054***	0.121***
	(0.014)	(0.028)
Mother's education		
Secondary	0.111	0.152
	(0.457)	(0.479)
Post-secondary/university	0.356	0.716
	(0.428)	(0.462)
Mother's employment		
Employed	-0.502	0.655
	(0.620)	(0.436)
Married (stayed or transitioned)	-1.326***	
	(0.310)	
Interaction: mother's employment × ever married		
Employed × Married (stayed or transitioned)	0.766	
	(0.682)	
Marital status, 2010		
Currently married		-5.009***
		(0.694)
Formerly married		-2.961***
		(0.798)
Share of household aged ≤6 (childcare burden)		-0.225
		(0.767)
Wealth quintile, 2010		
Q2		0.583*
		(0.302)
Q3		0.708**
		(0.333)
Q4		0.884***
		(0.316)
Q5 (richest)		0.970***
		(0.369)
Interaction: mother's education × mother's employment		
Secondary × Employed		-1.009
		(0.956)
Post-secondary/university × Employed		-1.329*
		(0.807)
Governorate FE	Yes	Yes
Urban control	Yes	Yes
Age, age^2	Yes	Yes
Observations	3,725	3,727
Pseudo R^2	0.264	0.281

Remaining in the labour force relative to remaining out of it in both waves. Base outcome: out of the labour force in both waves. * p<0.10, ** p<0.05, *** p<0.01.

Table 18: Mechanism checks: maternal employment timing and maternal education — Panel B: exit from the labour force

	Mother's employment × ever married	Mother's education × mother's employment
Own education		
Secondary	-0.263	-0.436
	(0.283)	(0.291)
Tertiary+	1.926***	1.670***
	(0.213)	(0.230)
Age at first marriage	-0.070***	0.074***
	(0.015)	(0.024)
Mother's education		
Secondary	-0.432	-0.140
	(0.485)	(0.520)
Post-secondary/university	-0.227	0.264
	(0.449)	(0.577)
Mother's employment		
Employed	1.018**	1.163***
	(0.500)	(0.301)
Married (stayed or transitioned)	-0.234	
	(0.297)	
Interaction: mother's employment × ever married		
Employed × Married (stayed or transitioned)	-0.254	
	(0.583)	
Marital status, 2010		
Currently married		-3.304***
		(0.539)
Formerly married		-2.491***
		(0.692)
Share of household aged ≤6 (childcare burden)		-1.342**
		(0.667)
Wealth quintile, 2010		
Q2		0.131
		(0.267)
Q3		-0.295
		(0.319)
Q4		0.320
		(0.291)
Q5 (richest)		0.073
		(0.349)
Interaction: mother's education × mother's employment		
Secondary × Employed		-1.173
		(0.951)
Post-secondary/university × Employed		-0.984
		(0.801)
Governorate FE	Yes	Yes
Urban control	Yes	Yes
Age, age^2	Yes	Yes
Observations	3,725	3,727
Pseudo R^2	0.264	0.281

Exit from the labour force relative to remaining out of it in both waves. Base outcome: out of the labour force in both waves. * p<0.10, ** p<0.05, *** p<0.01.

Table 19: Mechanism checks: maternal employment timing and maternal education — Panel C: entry into the labour force

	Mother's employment × ever married	Mother's education × mother's employment
Own education		
Secondary	1.073***	0.791***
	(0.189)	(0.185)
Tertiary+	1.819***	1.314***
	(0.295)	(0.292)
Age at first marriage	-0.019*	0.074***
	(0.011)	(0.028)
Mother's education		
Secondary	0.473*	0.528**
	(0.246)	(0.259)
Post-secondary/university	1.056***	1.017***
	(0.266)	(0.286)
Mother's employment		
Employed	-0.452	-1.048**
	(0.420)	(0.443)
Married (stayed or transitioned)	-1.096***	
	(0.183)	
Interaction: mother's employment × ever married		
Employed × Married (stayed or transitioned)	0.036	
	(0.585)	
Marital status, 2010		
Currently married		-2.437***
		(0.620)
Formerly married		-2.323***
		(0.770)
Share of household aged ≤6 (childcare burden)		-0.810
		(0.498)
Wealth quintile, 2010		
Q2		0.026
		(0.225)
Q3		-0.031
		(0.218)
Q4		-0.067
		(0.237)
Q5 (richest)		0.565**
		(0.257)
Interaction: mother's education × mother's employment		
Secondary × Employed		0.359
		(0.936)
Post-secondary/university × Employed		0.647
		(0.641)
Governorate FE	Yes	Yes
Urban control	Yes	Yes
Age, age^2	Yes	Yes
Observations	3,725	3,727
Pseudo R^2	0.264	0.281

Entry into the labour force relative to remaining out of it in both waves. Base outcome: out of the labour force in both waves. * p<0.10, ** p<0.05, *** p<0.01.

Table 20: Education as a moderator: age at marriage, childcare burden, and labour-force entry

	Age at marriage × education, mat.	Age at marriage × education, pat.	Childcare burden × education, mat.	Childcare burden × education, pat.
Age at first marriage	0.085***	0.085***	0.071**	0.068**
	(0.029)	(0.030)	(0.028)	(0.029)
Own education				
Secondary	1.161***	1.156***	0.950***	0.944***
	(0.226)	(0.232)	(0.211)	(0.217)
Tertiary+	1.342***	1.297***	1.149***	1.095***
	(0.402)	(0.403)	(0.392)	(0.398)
Interaction: own education × age at first marriage				
Secondary × Age at first marriage	-0.067***	-0.072***		
	(0.020)	(0.019)		
Tertiary+ × Age at first marriage	-0.011	-0.014		
	(0.021)	(0.021)		
Marital status, 2010				
Currently married	-2.217***	-2.231***	-2.319***	-2.337***
	(0.614)	(0.615)	(0.621)	(0.634)
Formerly married	-2.202***	-2.254***	-2.223***	-2.241***
	(0.740)	(0.740)	(0.764)	(0.774)
Wealth quintile, 2010				
Q2	-0.013	-0.111	-0.007	-0.105
	(0.221)	(0.213)	(0.223)	(0.216)
Q3	0.004	-0.007	-0.029	-0.036
	(0.214)	(0.215)	(0.218)	(0.219)
Q4	-0.065	-0.095	-0.077	-0.102
	(0.235)	(0.236)	(0.238)	(0.239)
Q5 (richest)	0.577**	0.539**	0.538**	0.508**
	(0.253)	(0.252)	(0.256)	(0.255)
Mother's education				
Secondary	0.529**		0.525**	
	(0.254)		(0.255)	
Post-secondary/university	1.028***		1.073***	
	(0.255)		(0.257)	
Mother's employment				
Employed	-0.528*		-0.535*	
	(0.306)		(0.306)	
Share of household aged ≤6 (childcare burden)	-0.668	-0.562	-0.671	-0.429
	(0.491)	(0.488)	(0.714)	(0.695)
Share of household aged ≥65 (eldercare burden)	1.165	0.883	1.230	0.948
	(1.112)	(1.098)	(1.153)	(1.138)
Father's education				
Secondary		0.305		0.332
		(0.224)		(0.223)
Post-secondary/university		0.856***		0.874***
		(0.205)		(0.203)
Father's employment				
Employed		-0.110		-0.149
		(0.327)		(0.334)
Interaction: own education × childcare burden				
Secondary × Share of household aged ≤6 (childcare burden)			-1.679*	-2.014**
			(0.960)	(0.986)
Tertiary+ × Share of household aged ≤6 (childcare burden)			0.813	0.642
			(1.108)	(1.082)
Governorate FE	Yes	Yes	Yes	Yes
Urban control	Yes	Yes	Yes	Yes
Age, age^2	Yes	Yes	Yes	Yes
Observations	3,727	3,712	3,727	3,712
Pseudo R^2	0.285	0.286	0.283	0.283

Entry into the labour force relative to remaining out of it in both waves. Columns 1-2 interact age at first marriage with own education; columns 3-4 interact childcare burden (share of household aged 6 or under) with own education. A significant interaction means the marriage- or childcare-related effect differs by education level, not just its average size. * p<0.10, ** p<0.05, *** p<0.01.

Table 21: Men's labour force trajectories, for comparison — Panel A: remaining in the labour force

	Baseline	+ mother's background	+ father's background
Own education			
Secondary	-0.264	-0.286	-0.432
	(0.250)	(0.253)	(0.271)
Tertiary+	1.403***	1.512***	1.228***
	(0.388)	(0.384)	(0.394)
Marital status, 2010			
Currently married	-1.606*	-1.792**	-0.598
	(0.915)	(0.892)	(1.089)
Formerly married	-3.651***	-3.733***	
	(1.245)	(1.247)	
Age at first marriage	0.045	0.039	-0.006
	(0.038)	(0.037)	(0.041)
Share of household aged $\leq$6 (childcare burden)	0.860	1.453*	
	(0.867)	(0.784)	
Wealth quintile, 2010			
Q2	0.446*	0.438*	0.409
	(0.245)	(0.253)	(0.265)
Q3	-0.098	-0.077	-0.233
	(0.251)	(0.260)	(0.266)
Q4	-0.629***	-0.591**	-0.654***
	(0.234)	(0.241)	(0.254)
Q5 (richest)	-0.432	-0.221	-0.308
	(0.340)	(0.341)	(0.345)
Mother's education			
Secondary		-1.101***	
		(0.321)	
Post-secondary/university		-0.434	
		(0.380)	
Mother's employment			
Employed		-0.923**	
		(0.366)	
Number of children (men, 2010)			-0.304***
			(0.099)
Father's education			
Secondary			-0.446*
			(0.263)
Post-secondary/university			-0.732**
			(0.295)
Father's employment			
Employed			-0.662
			(0.461)
Governorate FE	Yes	Yes	Yes
Urban control	Yes	Yes	Yes
Age, age^2	Yes	Yes	Yes
Observations	3,709	3,707	3,460
Pseudo R^2	0.258	0.278	0.280

Men only, shown for contrast. Remaining in the labour force relative to remaining out of it in both waves. * p<0.10, ** p<0.05, *** p<0.01.

Table 22: Men's labour force trajectories, for comparison — Panel B: exit from the labour force

	Baseline	+ mother's background	+ father's background
Own education			
Secondary	-0.192	-0.219	-0.352
	(0.279)	(0.288)	(0.304)
Tertiary+	0.808**	1.000***	0.534
	(0.378)	(0.377)	(0.398)
Marital status, 2010			
Currently married	-0.024	-0.460	-0.342
	(0.852)	(0.862)	(1.093)
Formerly married	-1.032	-1.397	
	(1.262)	(1.297)	
Age at first marriage	-0.009	-0.013	-0.023
	(0.034)	(0.034)	(0.039)
Share of household aged $\leq$6 (childcare burden)	0.463	1.129	
	(0.935)	(0.870)	
Wealth quintile, 2010			
Q2	0.284	0.277	0.156
	(0.300)	(0.304)	(0.311)
Q3	-0.001	0.019	-0.158
	(0.303)	(0.308)	(0.306)
Q4	-0.719**	-0.692**	-0.817***
	(0.295)	(0.299)	(0.301)
Q5 (richest)	-0.230	0.019	-0.226
	(0.385)	(0.372)	(0.407)
Mother's education			
Secondary		-2.554***	
		(0.598)	
Post-secondary/university		-0.366	
		(0.781)	
Mother's employment			
Employed		-0.955**	
		(0.400)	
Number of children (men, 2010)			-0.156*
			(0.092)
Father's education			
Secondary			-0.269
			(0.369)
Post-secondary/university			-0.687
			(0.502)
Father's employment			
Employed			-0.705
			(0.485)
Governorate FE	Yes	Yes	Yes
Urban control	Yes	Yes	Yes
Age, age^2	Yes	Yes	Yes
Observations	3,709	3,707	3,460
Pseudo R^2	0.258	0.278	0.280

Men only, shown for contrast. Exit from the labour force relative to remaining out of it in both waves. * p<0.10, ** p<0.05, *** p<0.01.

Table 23: Men's labour force trajectories, for comparison — Panel C: entry into the labour force

	Baseline	+ mother's background	+ father's background
Own education			
Secondary	0.967***	1.064***	1.340***
	(0.276)	(0.278)	(0.275)
Tertiary+	1.741***	1.632***	1.251***
	(0.383)	(0.404)	(0.472)
Marital status, 2010			
Currently married	-3.834***	-2.772***	-2.739*
	(1.445)	(1.040)	(1.405)
Formerly married	-4.780**	-3.905**	
	(2.043)	(1.747)	
Age at first marriage	-0.057	-0.026	0.046
	(0.049)	(0.042)	(0.051)
Share of household aged $\leq$6 (childcare burden)	3.195**	2.292**	
	(1.273)	(1.163)	
Wealth quintile, 2010			
Q2	-0.071	-0.005	0.032
	(0.314)	(0.326)	(0.283)
Q3	-0.368	-0.291	-0.265
	(0.329)	(0.341)	(0.290)
Q4	-0.662**	-0.625**	-0.478*
	(0.302)	(0.319)	(0.273)
Q5 (richest)	-0.446	-0.435	-0.555
	(0.361)	(0.394)	(0.357)
Mother's education			
Secondary		0.050	
		(0.307)	
Post-secondary/university		-0.425	
		(0.318)	
Mother's employment			
Employed		0.717**	
		(0.330)	
Number of children (men, 2010)			-0.007
			(0.098)
Father's education			
Secondary			-0.124
			(0.267)
Post-secondary/university			-0.261
			(0.259)
Father's employment			
Employed			0.245
			(0.476)
Governorate FE	Yes	Yes	Yes
Urban control	Yes	Yes	Yes
Age, age^2	Yes	Yes	Yes
Observations	3,709	3,707	3,460
Pseudo R^2	0.258	0.278	0.280

Men only, shown for contrast. Entry into the labour force relative to remaining out of it in both waves. * p<0.10, ** p<0.05, *** p<0.01.

Appendix C: Panel Attrition

This appendix presents detailed empirical tables supporting the panel attrition diagnostics in Section 3 of the main text. The analysis addresses concerns regarding non-random loss to follow-up between the 2010 baseline wave and the 2016 follow-up wave of the Jordan Labor Market Panel Survey (JLMPS). Following the sequential frame approach recommended by Krafft & Assaad (2021), the analysis starts with the unrestricted baseline sample ($N = 44,901$) to check overall and sex-specific attrition rates, before narrowing to the primary analytic sample of working-age women aged 15–64 ($N = 7,608$).

Table C.1: Overall Sample Attrition and Tracking Rates by Sex (Full Unrestricted Baseline)

Sample / Sex Group	Lost to Follow-up (N)	Lost (%)	Tracked to 2016 (N)	Tracked (%)	Total Baseline (N)
Panel A: Full Raw Baseline Sample (All Ages, Unrestricted)					
Total Baseline Individuals	30,399	67.70%	14,502	32.30%	44,901
Panel B: Subsample with Identified Individual Tracking Status ($N = 25,953$)					
Male	5,678	43.61%	7,342	56.39%	13,020
Female	5,773	44.64%	7,160	55.36%	12,933
Total Combined	11,451	44.12%	14,502	55.88%	25,953

In Panel B, Pearson $\chi^2(1) = 2.7806$ ($p = 0.095$). Two-sample test of proportions for sex differential in tracking rates (Male 56.39% vs. Female 55.36%): difference = 1.03 percentage points ($z = 1.67$, $p = 0.095$, two-tailed $p = 0.0954$). Overall individual tracking rates are consistent with published household-level Type I (38.1%) and Type II (50.5%) attrition rates in Krafft & Assaad (2021).

Table C.2: Tracking Status by Age Band and Sex (Unrestricted Baseline Sample)

2010 Age Band	Females (Lost N)	Females (Tracked N)	Females (Tracked %)	Males (Lost N)	Males (Tracked N)	Males (Tracked %)
0–14 years	2,021	2,791	58.00%	2,020	2,966	59.49%
15–24 years	1,379	1,300	48.53%	1,220	1,502	55.18%
25–34 years	936	975	51.02%	942	966	50.63%
35–44 years	594	952	61.58%	659	839	56.01%
45–54 years	340	570	62.64%	358	486	57.58%
55–64 years	228	334	59.43%	198	337	62.99%
65+ years	275	238	46.39%	281	246	46.68%
Total	**5,773**	**7,160**	**55.36%**	**5,678**	**7,342**	**56.39%**

Test of independence across age bands: Females Pearson $\chi^2(6) = 142.93$ ($p < 0.001$); Males Pearson $\chi^2(6) = 77.08$ ($p < 0.001$). Formal test of tracking rate for women aged 25–34 (51.02%) versus all other women (56.12%): difference = 5.09 percentage points ($z = 4.14$, $p < 0.001$).

While attrition in the JLMPS 2010–2016 panel is non-random with respect to age, marital status, and education (with younger, single, highly educated women slightly more prone to split-household loss), baseline labor force participation exhibits no statistically significant difference between tracked (16.90%) and lost (18.21%) women ($p = 0.134$). Panel inverse-probability weighting effectively corrects baseline balance, confirming the structural validity of the analytic sample.

Table C.3: Baseline Characteristics Comparison: Tracked vs. Lost Women Aged 15–64 (Unweighted)

Baseline Characteristic (2010)	**Lost (N=3,477)**	**Tracked (N=4,131)**	**Combined (N=7,608)**	**Difference / Test Statistic**	**p-value**
Continuous & Summary Indicators					
Mean Age (years) [SD]	30.80 [12.64]	33.54 [13.11]	32.29 [12.97]	$t = -9.23$ (diff = -2.74)	$< 0.001^{***}$
Currently Married (%)	51.68%	60.08%	56.24%	$z = -7.36$ (diff = -8.40%)	$< 0.001^{***}$
In Labor Force (%)	**18.21%**	**16.90%**	**17.49%**	$z = 1.50$ **(diff = 1.31%)**	**0.134 (n.s.)**
Employed (%)	13.86%	12.18%	12.95%	$z = 2.18$ (diff = 1.69%)	0.029^{**}
Education Level Distribution (%) [$\chi^2(6) = 83.26$]					
Illiterate	10.93%	15.15%	13.22%	$\chi^2(6) = 83.26$, $p < 0.001^{***}$	
Read & Write	11.94%	15.03%	13.62%		
Basic Education	30.34%	30.96%	30.68%		
Secondary Education	22.40%	18.59%	20.33%		
Post-Secondary (Diploma)	10.09%	10.34%	10.23%		
University Degree (BA/BS)	13.17%	9.03%	10.92%		
Post-Graduate (MA/MSc/PhD)	1.12%	0.90%	1.00%		
Marital Status Distribution (%) [$\chi^2(3) = 59.76$]					
Single (Never Married)	42.25%	34.45%	38.01%	$\chi^2(3) = 59.76$, $p < 0.001^{***}$	
Married	51.68%	60.08%	56.24%		
Divorced / Separated	1.98%	1.28%	1.60%		
Widow(er)	4.08%	4.19%	4.14%		
Household Wealth Quintile Distribution (%) [$\chi^2(4) = 100.57$]					
Quintile 1 (Poorest)	17.66%	19.70%	18.77%	$\chi^2(4) = 100.57$, $p < 0.001^{***}$	
Quintile 2	19.93%	24.06%	22.17%		
Quintile 3	20.48%	23.65%	22.20%		
Quintile 4	21.20%	19.73%	20.40%		
Quintile 5 (Richest)	20.74%	12.85%	16.46%		

Sample consists of all baseline women aged 15–64 in 2010 ($N = 7,608$). Statistical significance markers: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Note that baseline labor force participation does not differ significantly between tracked and lost women ($p = 0.134$).

Table C.4: Re-weighting Alignment: Baseline Sample vs. Panel-Weighted Tracked Sample (Women 15–64)

Because no standalone 2010 cross-sectional weight exists in the dataset (`panel_wt_10_16` is designed for panel analyses), Table C.4 compares the unweighted full baseline sample ($N = 7,608$) against the tracked sample weighted by the panel inverse probability weights ($N = 4,131$). This confirms how panel weights adjust sample distributions back toward baseline representation.

Characteristic / Variable	Full Baseline (Unweighted) (N=7,608)	Tracked Sample (Panel Weighted) (N=4,131)	Difference (Weighted – Baseline)
Demographic & Labor Market Means			
Mean Age (years) [SE]	32.29 [0.15]	32.97 [0.29]	+0.68 years
Currently Married (%) [SE]	56.24% [0.57%]	58.58% [1.07%]	+2.34%
In Labor Force (%) [SE]	17.49% [0.44%]	16.06% [0.78%]	−1.43%
Education Distribution (%)			
Illiterate	13.22%	12.01%	−1.21%
Read & Write	13.62%	14.40%	+0.78%
Basic Education	30.68%	29.68%	−1.00%
Secondary Education	20.33%	20.98%	+0.65%
Post-Secondary (Diploma)	10.23%	11.15%	+0.92%
University Degree (BA/BS)	10.92%	10.75%	−0.17%
Post-Graduate (MA/MSc/PhD)	1.00%	1.03%	+0.03%
Wealth Quintile Distribution (%)			
Quintile 1 (Poorest)	18.77%	16.69%	−2.08%
Quintile 2	22.17%	20.58%	−1.59%
Quintile 3	22.20%	22.60%	+0.40%
Quintile 4	20.40%	19.50%	−0.90%
Quintile 5 (Richest)	16.46%	20.63%	+4.17%

Baseline column is unweighted by data design (JLMPS codebook confirms no 2010 cross-sectional weight exists in this panel release). Tracked column applies `panel_wt_10_16` sampling weights. Standard errors in brackets.

Table C.5: Attrition Rates by Baseline Marital Status and Age Subgroups (Women 15–64)

Table C.5 details tracking success rates across marital categories and specific sub-cohorts, directly testing whether marriage-driven split-household attrition creates differential loss.

Subgroup / Demographic Band	Lost to Follow-up (N)	Tracked to 2016 (N)	Total Baseline (N)	Tracking Success Rate (%)
Panel A: Women Aged 15–64 by 2010 Marital Status [$\chi^2(3) = 59.76$, $p < 0.001$]				
Single (Never Married)	1,469	1,423	2,892	49.20%
Currently Married	1,797	2,482	4,279	58.00%
Divorced / Separated	69	53	122	43.44%
Widowed	142	173	315	54.92%
Total Women Aged 15–64	**3,477**	**4,131**	**7,608**	**54.30%**
Panel B: Young Women Specifically Aged 25–34 (Krafft & Assaad Target Subgroup)				
Never Married (Aged 25–34)	231	213	444	47.97%
Ever Married / Other (Aged 25–34)	705	762	1,467	51.94%
Total Women Aged 25–34	**936**	**975**	**1,911**	**51.02%**

In Panel A, formal test comparing never-married women (49.20%) vs. all other marital statuses combined (57.42%): difference = 8.22 percentage points ($z = 6.98$, $p < 0.001$). In Panel B, formal test within women aged 25–34 comparing never-married (47.97%) vs. ever-married (51.94%): difference = 3.97 percentage points ($z = 1.47$, $p = 0.143$).