

Supplement to Starting a PhD and Parenthood:  
Gendered Life-Course Trajectories in Academic  
Careers

**Table S1:** Summary statistics of the respondent researchers by gender and birth cohort

|                    |                     | before 1960     |                 | 1960-1964       |                 | 1965-1969       |                 | 1970-1974        |                 | 1975-1978        |                 |
|--------------------|---------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|-----------------|------------------|-----------------|
|                    |                     | Female          | Male            | Female          | Male            | Female          | Male            | Female           | Male            | Female           | Male            |
| PhD recipient      | Y                   | 521<br>(92.05%) | 683<br>(95.13%) | 499<br>(93.45%) | 466<br>(94.30%) | 813<br>(93.34%) | 634<br>(95.48%) | 1228<br>(94.46%) | 895<br>(96.24%) | 1177<br>(93.64%) | 740<br>(96.35%) |
|                    | N                   | 45<br>(7.95%)   | 35<br>(4.87%)   | 35<br>(6.55%)   | 23<br>(4.70%)   | 58<br>(6.66%)   | 30<br>(4.52%)   | 72<br>(5.54%)    | 35<br>(3.76%)   | 80<br>(6.36%)    | 28<br>(3.65%)   |
| Number of Children | 1                   | 130<br>(22.97%) | 123<br>(17.13%) | 135<br>(25.28%) | 104<br>(21.27%) | 240<br>(27.55%) | 144<br>(21.69%) | 353<br>(27.15%)  | 200<br>(21.51%) | 367<br>(29.20%)  | 177<br>(23.05%) |
|                    | 2                   | 307<br>(54.24%) | 378<br>(52.65%) | 293<br>(54.87%) | 240<br>(49.08%) | 488<br>(56.03%) | 359<br>(54.07%) | 737<br>(56.69%)  | 487<br>(52.37%) | 687<br>(54.65%)  | 404<br>(52.60%) |
|                    | 3+                  | 129<br>(22.79%) | 217<br>(30.22%) | 106<br>(19.85%) | 145<br>(29.65%) | 143<br>(16.42%) | 161<br>(24.25%) | 210<br>(16.15%)  | 243<br>(26.13%) | 203<br>(16.15%)  | 187<br>(24.35%) |
| Research Field     | Arts and Humanities | 58<br>(22.79%)  | 37<br>(30.22%)  | 54<br>(19.85%)  | 32<br>(29.65%)  | 73<br>(16.42%)  | 49<br>(24.25%)  | 101<br>(16.15%)  | 71<br>(26.13%)  | 73<br>(16.15%)   | 49<br>(24.35%)  |
|                    | Health Sciences     | 214<br>(22.79%) | 186<br>(30.22%) | 170<br>(19.85%) | 127<br>(29.65%) | 287<br>(16.42%) | 145<br>(24.25%) | 393<br>(16.15%)  | 217<br>(26.13%) | 420<br>(16.15%)  | 206<br>(24.35%) |
|                    | Natural Sciences    | 118<br>(22.79%) | 304<br>(30.22%) | 138<br>(19.85%) | 229<br>(29.65%) | 242<br>(16.42%) | 280<br>(24.25%) | 294<br>(16.15%)  | 361<br>(26.13%) | 341<br>(16.15%)  | 313<br>(24.35%) |
|                    | Social Sciences     | 176<br>(22.79%) | 191<br>(30.22%) | 172<br>(19.85%) | 101<br>(29.65%) | 269<br>(16.42%) | 190<br>(24.25%) | 512<br>(16.15%)  | 281<br>(26.13%) | 423<br>(16.15%)  | 200<br>(24.35%) |
| Region             | US                  | 331<br>(55.30%) | 387<br>(53.90%) | 254<br>(47.57%) | 198<br>(40.49%) | 391<br>(44.89%) | 256<br>(38.55%) | 570<br>(43.85%)  | 366<br>(39.35%) | 568<br>(45.19%)  | 313<br>(40.76%) |
|                    | UK                  | 52<br>(9.19%)   | 65<br>(9.05%)   | 54<br>(10.11%)  | 49<br>(10.02%)  | 73<br>(8.38%)   | 88<br>(13.25%)  | 100<br>(7.69%)   | 81<br>(8.71%)   | 92<br>(7.32%)    | 48<br>(6.25%)   |
|                    | Canada              | 32<br>(5.65%)   | 19<br>(2.65%)   | 28<br>(5.24%)   | 30<br>(6.14%)   | 62<br>(7.12%)   | 34<br>(5.12%)   | 101<br>(7.77%)   | 54<br>(5.81%)   | 91<br>(7.24%)    | 44<br>(5.73%)   |
|                    | Western Europe      | 33<br>(5.83%)   | 75<br>(10.45%)  | 46<br>(8.61%)   | 47<br>(9.61%)   | 75<br>(8.61%)   | 85<br>(12.80%)  | 131<br>(10.08%)  | 115<br>(12.37%) | 124<br>(9.86%)   | 105<br>(13.67%) |
|                    | Northern Europe     | 28<br>(4.95%)   | 35<br>(4.87%)   | 25<br>(4.68%)   | 28<br>(5.73%)   | 42<br>(4.82%)   | 33<br>(4.97%)   | 61<br>(4.69%)    | 48<br>(5.16%)   | 62<br>(4.93%)    | 52<br>(6.77%)   |
|                    | Southern Europe     | 23<br>(4.06%)   | 31<br>(4.32%)   | 29<br>(5.43%)   | 42<br>(8.59%)   | 67<br>(7.69%)   | 43<br>(6.48%)   | 106<br>(8.15%)   | 89<br>(9.57%)   | 68<br>(5.41%)    | 69<br>(8.98%)   |
|                    | Eastern Europe      | 17<br>(3.00%)   | 20<br>(2.79%)   | 21<br>(3.93%)   | 11<br>(2.25%)   | 27<br>(3.10%)   | 20<br>(3.01%)   | 44<br>(3.38%)    | 28<br>(3.01%)   | 61<br>(4.85%)    | 38<br>(4.95%)   |
|                    | Oceania             | 23<br>(4.06%)   | 27<br>(3.76%)   | 30<br>(5.62%)   | 26<br>(5.32%)   | 40<br>(4.59%)   | 29<br>(4.37%)   | 58<br>(4.46%)    | 33<br>(3.55%)   | 46<br>(3.66%)    | 31<br>(4.04%)   |
|                    | Asia                | 22<br>(3.89%)   | 36<br>(5.01%)   | 23<br>(4.31%)   | 37<br>(7.57%)   | 53<br>(6.09%)   | 42<br>(6.33%)   | 77<br>(5.92%)    | 63<br>(6.77%)   | 90<br>(7.16%)    | 45<br>(5.86%)   |
|                    | Latin America       | 15<br>(2.65%)   | 12<br>(1.67%)   | 16<br>(3.00%)   | 13<br>(2.66%)   | 26<br>(2.99%)   | 22<br>(3.31%)   | 33<br>(2.54%)    | 39<br>(4.19%)   | 36<br>(2.86%)    | 17<br>(2.21%)   |
|                    | Africa              | 8<br>(1.41%)    | 11<br>(1.53%)   | 8<br>(1.50%)    | 8<br>(1.64%)    | 15<br>(1.72%)   | 12<br>(1.81%)   | 19<br>(1.46%)    | 14<br>(1.51%)   | 19<br>(1.51%)    | 6<br>(0.78%)    |
|                    | Partner in academia | 152<br>(26.86%) | 184<br>(25.63%) | 169<br>(31.65%) | 136<br>(27.81%) | 257<br>(29.51%) | 187<br>(28.61%) | 360<br>(27.69%)  | 282<br>(30.32%) | 322<br>(25.62%)  | 210<br>(27.34%) |
|                    | N                   | 327<br>(57.77%) | 477<br>(66.43%) | 325<br>(53.18%) | 515<br>(66.46%) | 444<br>(59.13%) | 824<br>(66.87%) | 601<br>(63.38%)  | 861<br>(64.62%) | 532<br>(68.50%)  | 532<br>(69.27%) |
|                    | Missing             | 87<br>(15.37%)  | 57<br>(7.94%)   | 81<br>(15.17%)  | 28<br>(5.73%)   | 99<br>(11.37%)  | 33<br>(4.97%)   | 116<br>(8.92%)   | 47<br>(5.05%)   | 74<br>(5.89%)    | 26<br>(3.39%)   |
| Total              |                     | 566             | 718             | 534             | 489             | 871             | 664             | 1300             | 930             | 1257             | 768             |



**Table S2:** Cox regression models on obtaining a PhD among researchers. Control variables are gradually added from Model 0 with only gender to Model 5.

|                                    | Cox Model 0                | Cox Model 1 | Cox Model 2 | Cox Model 3 | Cox Model 4 | Cox Model 5 |
|------------------------------------|----------------------------|-------------|-------------|-------------|-------------|-------------|
| <i>Predictors</i>                  | <i>Parameter estimates</i> |             |             |             |             |             |
| Gender (Ref: Male)                 |                            |             |             |             |             |             |
| Female                             | 0.83***                    | 1.01        | 0.89        | 0.87        | 0.88        | 0.84        |
| Number of Children (Ref: 0)        |                            |             |             |             |             |             |
| 1                                  |                            | 0.41***     | 0.41***     | 0.40***     | 0.41***     | 0.41***     |
| 2                                  |                            | 0.22***     | 0.21***     | 0.22***     | 0.21***     | 0.21***     |
| 3+                                 |                            | 0.18***     | 0.18***     | 0.18***     | 0.18***     | 0.18***     |
| Female × 1                         |                            | 0.41***     | 0.41***     | 0.40***     | 0.41***     | 0.41***     |
| Female × 2                         |                            | 0.22***     | 0.21***     | 0.22***     | 0.21***     | 0.21***     |
| Female × 3+                        |                            | 0.18***     | 0.18***     | 0.18***     | 0.18***     | 0.18***     |
| Cohort (Ref: 1960)                 |                            |             |             |             |             |             |
| 1960                               |                            |             | 0.71***     | 0.73***     | 0.73***     | 0.73***     |
| 1965                               |                            |             | 0.78***     | 0.81***     | 0.83***     | 0.83***     |
| 1970                               |                            |             | 0.91*       | 0.96        | 1           | 1           |
| 1975                               |                            |             | 1.12**      | 1.19***     | 1.19***     | 1.21***     |
| Female × 1960                      |                            |             | 1.19*       | 1.17*       | 1.18*       | 1.18*       |
| Female × 1965                      |                            |             | 1.07        | 1.04        | 1.02        | 1.02        |
| Female × 1970                      |                            |             | 1.19**      | 1.15*       | 1.14*       | 1.15*       |
| Female × 1975                      |                            |             | 1.12        | 1.08        | 1.06        | 1.07        |
| Region (Ref: Eastern Europe)       |                            |             |             |             |             |             |
| Africa                             |                            |             |             | 0.66**      | 0.66**      | 0.66**      |
| Asia                               |                            |             |             | 0.89        | 0.91        | 0.91        |
| Canada                             |                            |             |             | 0.86        | 0.94        | 0.94        |
| Latin America                      |                            |             |             | 0.69***     | 0.68***     | 0.68***     |
| Northern Europe                    |                            |             |             | 0.96        | 1.03        | 1.04        |
| Oceania                            |                            |             |             | 0.81        | 0.84        | 0.84        |
| Southern Europe                    |                            |             |             | 0.92        | 0.90        | 0.90        |
| UK                                 |                            |             |             | 1.38***     | 1.48***     | 1.48***     |
| US                                 |                            |             |             | 1.25**      | 1.37***     | 1.37***     |
| Western Europe                     |                            |             |             | 1.01        | 1.06        | 1.06        |
| Female × Africa                    |                            |             |             | 1.37        | 1.47        | 1.50        |
| Female × Asia                      |                            |             |             | 1.24        | 1.29        | 1.27        |
| Female × Canada                    |                            |             |             | 1.09        | 1.03        | 1.02        |
| Female × Latin America             |                            |             |             | 1.07        | 1.08        | 1.07        |
| Female × Northern Europe           |                            |             |             | 1.13        | 1.10        | 1.10        |
| Female × Oceania                   |                            |             |             | 1.15        | 1.16        | 1.18        |
| Female × Southern Europe           |                            |             |             | 1.14        | 1.16        | 1.15        |
| Female × UK                        |                            |             |             | 0.79        | 0.78        | 0.79        |
| Female × US                        |                            |             |             | 0.98        | 0.95        | 0.94        |
| Female × Western Europe            |                            |             |             | 1.16        | 1.15        | 1.14        |
| Discipline (Ref: Natural Sciences) |                            |             |             |             |             |             |
| Arts and Humanities                |                            |             |             |             | 0.69***     | 0.69***     |
| Health Sciences                    |                            |             |             |             | 0.92*       | 0.92*       |
| Social Sciences                    |                            |             |             |             | 0.66***     | 0.66***     |
| Female × Arts and Humanities       |                            |             |             |             | 1.20*       | 1.20*       |

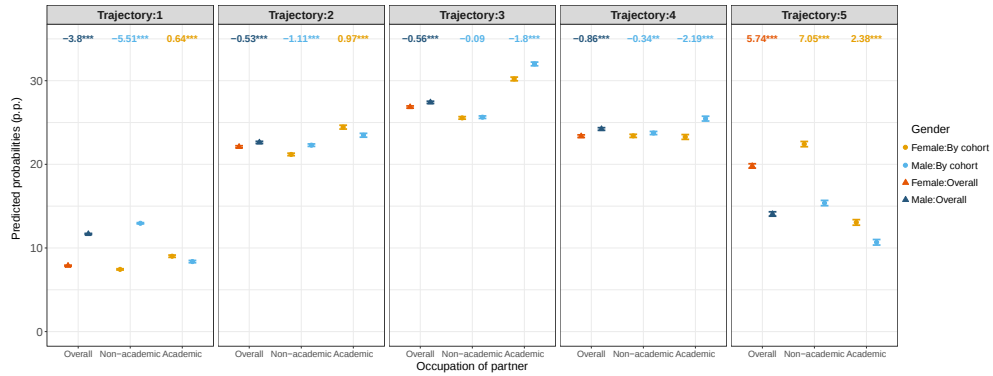
|                                                     |  |       |       |       |       |       |        |
|-----------------------------------------------------|--|-------|-------|-------|-------|-------|--------|
| Female × Health Sciences                            |  |       |       |       |       | 1.05  | 1.06   |
| Female × Social Sciences                            |  |       |       |       |       | 1.07  | 1.08   |
| Partner Occupation (Ref: Non-academics)             |  |       |       |       |       |       |        |
| Academics                                           |  |       |       |       |       |       | 1.01   |
| Female × Academics                                  |  |       |       |       |       |       | 1.14** |
| $R^2$                                               |  | 0.007 | 0.350 | 0.363 | 0.377 | 0.392 | 0.393  |
| Significance level: < 0.01 ***; < 0.05 **; < 0.1 *. |  |       |       |       |       |       |        |

## Gendered Patterns in Parenthood–Career Trajectories by Partner’s Occupation

We estimated the probabilities of researchers following different parenthood–career trajectories and how they varied by gender and by partner’s occupation (academic versus non-academic), as shown in Fig. S1. The influence of partner’s occupation is particularly pronounced in Trajectories 1, 3, and 5.

For Trajectory 1 (early PhD and early parenthood), overall probabilities are low, but men with non-academic partners were substantially more likely than women to follow this path (–5.5 p.p.). In contrast, among dual-academic couples, men’s likelihood of entering this trajectory declined, narrowing the gender gap. In Trajectory 3 (early PhD and late parenthood), researchers with academic partners were more likely to follow this path than those with non-academic partners, particularly men. Male researchers in dual-academic households showed a higher likelihood of delaying family formation, with a gender gap of 1.8 p.p. compared to their female counterparts, whereas gender differences were negligible among those partnered with non-academics. Finally, Trajectory 5 (no PhD before 40 and delayed/foregone parenthood) was disproportionately occupied by women, especially those partnered with non-academics, where the female-to-male gender gap reached 7.1 p.p.

Taken together, these results demonstrate that gender differences in family–career trajectories are deeply shaped by partner’s occupational context. Having a non-academic partner is associated with men’s greater likelihood of pursuing early and sustained parenthood, while dual-academic couples tend to narrow gender gaps in early parenthood but accentuate them in delayed and foregone parenthood trajectories.

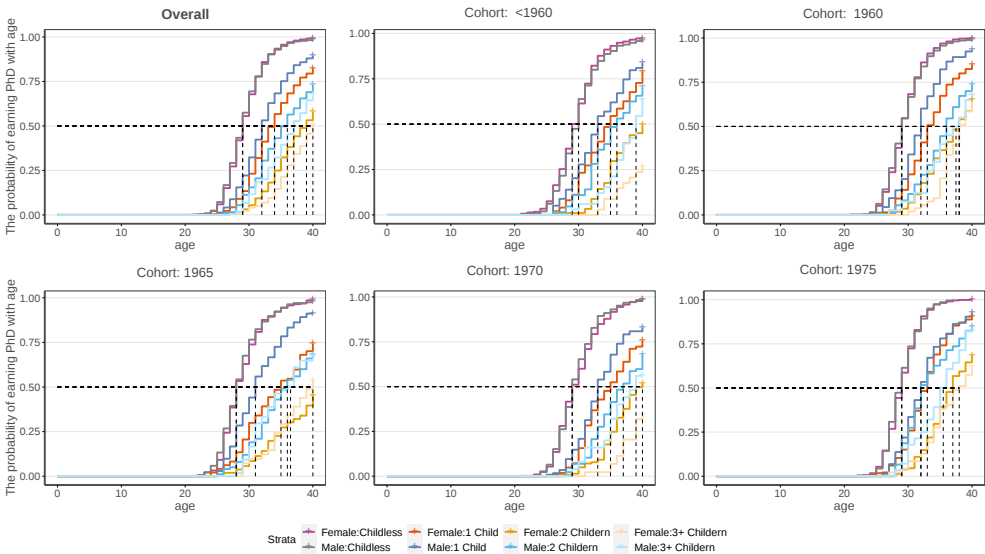


**Fig. S1** Estimated probabilities of each trajectory by gender across the full sample and disaggregated by the occupation of partner (Non-academic/Academic). The numbers on the top show the marginal effects of gender on the probabilities in each trajectory with statistical significance (Significance level: < 0.01 '\*\*\*'; < 0.05 '\*\*'; < 0.01 '\*'). Negative values (printed in blue text) indicate that outcomes are higher for men than for women.

# Timing of PhD Completion by Parenthood Status

We advanced the analysis on the timing of PhD completion by gender and number of children (Fig. S2). Parenthood was associated with delayed PhD attainment for both genders, with the magnitude of delay increasing with the number of children. The gap between childless and parent researchers widened notably for women, particularly among those with two or more children, who often completed their PhDs several years later than their male counterparts with similar family responsibilities.

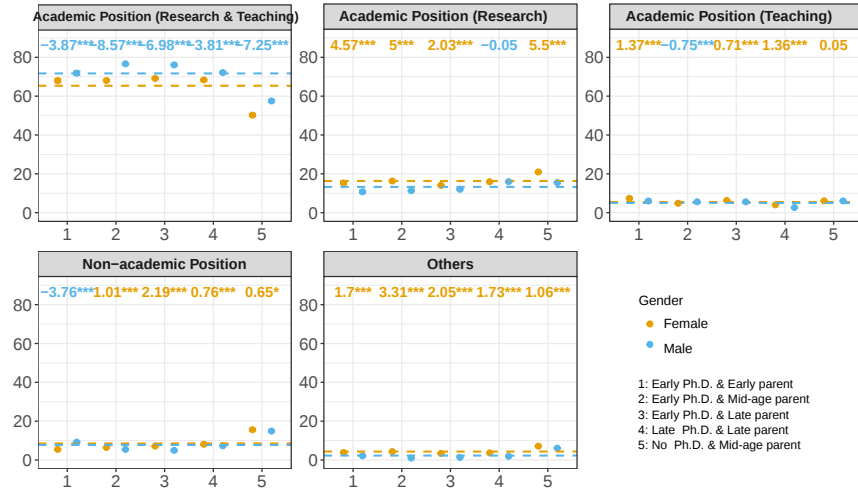
Cohort comparisons reveal that these patterns persisted over time. In earlier cohorts (<1960 and 1960), gender differences in PhD timing were somewhat muted but still evident. In more recent cohorts (1970 and 1975), the cumulative disadvantage for mothers with multiple children became more pronounced, while delays for fathers with children remained relatively modest. Overall, these results highlight that parenthood, especially motherhood, has persistent consequences for the age at which researchers obtain their PhD, contributing to gendered disparities at the very start of academic careers.



**Fig. S2** Survival curves of time to obtain a PhD for researchers separated by the interaction of gender and the number of children (0,1,2, and 3+) across cohort.

## Employment Outcomes by Family–Career Trajectories

Fig. S3 further reports the probabilities of working in research-based and teaching-based academic positions presented in the main text. Across all trajectories, men were more likely than women to obtain research–teaching roles. Women, by contrast, exhibited higher predicted probabilities of entering research-only or teaching-only academic positions, as well as non-academic employment. The only exception emerged in Trajectory 2, where men who became parents shortly after PhD completion showed a slightly higher likelihood of holding teaching-oriented academic posts, with a gender difference of 0.75 percentage points.



**Fig. S3** Estimated probabilities of employment sectors across trajectories by gender. The numbers on the top show the marginal effects of gender (reference is male) with statistical significance (Significance level: < 0.01 ‘\*\*\*’, < 0.05 ‘\*\*’, < 0.01 ‘\*’). Negative values (printed in blue text) indicate that outcomes are higher for men than for women. The horizontal lines with annotated values on the right mean the average predicted probabilities in each employment sector across trajectories by gender.