

The Impact of Survival Gains to the Duration of Coresidence with Mothers in Brazil

Mariana Cunha

Cassio Turra

Simone Wajnman

1. Introduction

One of the most noted demographic trends of the last few decades has been the delaying, by young people, of leaving their parent's homes – which constitutes one of the ways a person can transition into adulthood. This postponement is usually explained by changes to social, cultural and economic factors, but it is important to keep in mind that demographic factors play an important role in dictating coresidence habits as well.

As discussed by Ruggles (1986, 1993, 1994), the determinants of coresidence can be separated between the availability of relatives and the propensity to coreside with such relatives. The first one refers to the survival of such relative, while the second refers to the sociocultural and economic norms that will dictate what kind of coresidence is allowed or desirable.

In the last few decades changes to the marriage and job market, as well as the increasing importance of acquiring higher education, have made it more acceptable for young people to live with their parents for a longer period of time, leading to changes in the propensity to coreside with mothers and fathers. At the same time, demographic changes have led people to live longer lives, affecting the availability of relatives, but also the survival of the individual in question. As people live longer, they have more years available for coresidence themselves. Therefore, the extension of the life cycle can affect the way people plan their lives and the way they perceive each of its phases (childhood, adulthood, etc.), which will, in turn, affect their coresidence decisions.

Considering the importance of the mother-child relationship and the vast literature debate over the changes in the transition into adulthood, this paper has two main objectives. First, to calculate and analyze the changes in average time lived in coresidence with mothers in Brazil between 1960 and 2010. Second, to calculate how the changes to survival of the child and of the mother have affected their coresidence in an attempt understand how much of the delaying of entry into adulthood is connected to changes to demographic factors.

2. Propensity, availability and the transition to adulthood

The typical life course follows the usual milestones of birth, childhood, adulthood, birth of own children, children's departure of the household, death of the spouse and finally their own death. However, the number of phases, and the sequence and the timing of entering and leaving each phase can vary (Krishnamoorthy, 1979). Over the decades, following the demographic transition, there was a change not only to population size and composition but also to kinship relations and, consequently, to the types of coresidence observed in the population.

More specifically, the determinants of coresidence can be separated into (i) the availability of kin and (ii) the propensity to coreside with them. The availability of kin is directly connected to demographic factors such as fertility, mortality and nuptiality, which define the number and types of relatives a person may have during their life course. Changes to life expectancy, mean age at marriage and mean age at childbearing affect the number of generations that coexist with each other, the number of years they can coreside and the timing of entering and leaving each life phase (Connidis, 2009). On the other hand, the propensity to coreside, while indirectly affected by demographic factors, is mostly influenced by social norms and other institutions such as the labor and the housing market.

Ruggles (1986, 1993, 1994, 2015) discusses how both propensity and availability interact to shape observed household structure. The author shows that multigenerational households were not common in the U.S. until the 19th century, despite being the preferred household type by white Americans, because of limitations caused by high mortality levels and the cultural norm of late marriage. With time, the mortality, fertility and marriage transitions made the multigenerational households more attainable. However, at the same time, urbanization, industrialization, and higher wages led to the fall of the traditional family economy model and the adoption of new behaviors and social norms, reducing the preference for multigenerational households while increasing the preference for nuclear households.

In modern times, propensity and availability continue to shape household structure and coresidence. For example, with the mortality decline, a growth in the proportion of children and teenagers living with their parents would be expected as there would be more relatives – in this case, the parents – available for coresidence (Ruggles & Heggeness, 2008). However, at the same time, cultural changes such as the rise in unmarried childbearing and divorce could also lead to a reduction in coresidence, with fathers especially.

In addition, some events that used to happen earlier in life can now occur later due to the extension of the life cycle, such as the death of a grandparent. According to Murphy (2011)

an increase in life expectancy would increase the diversity of family structures, including higher prevalence of unconventional kinships such as stepparents and stepchildren, half-siblings and ex-spouses. In Brazil, the decline in mortality and fertility resulted in the “verticalization” of the family, increasing the prevalence of multigenerational families (Jesus & Wajnman, 2014), increasing coresidence with grandparents and grandchildren during childhood.

One of the events affected by these changes to the mortality, fertility and nuptiality patterns is the transition to adulthood. Many studies discuss how the transition to adulthood – usually seen as either finishing school, getting a job, leaving home, getting married or having children – is being delayed in the recent years (Jesus & Wajnman, 2014; Vieira, 2008; Furstenberg, 2010; Stone et al., 2011; Gerson & Torres, 2015). In the 19th century, because most families depended on agricultural work, the youngsters would need to wait until they inherit a land before they were economically independent and able to marry. In the 20th century, however, industrialization and changes to economic conditions allowed young adults to secure a job earlier in life, accelerating the transition into full adulthood (Settersten & Ray, 2010). These days, the process has been postponed again due the higher demand for education, affecting the age at job market entry and marriage (Furstenberg, 2010; Settersten & Ray, 2010).

There is a consensus in the literature that transition to adulthood is being delayed mostly because of the postponing of the age at first marriage, the uncertainty regarding the job market and the increase in women’s labor force participation (Aquilino, 1990; Glick, 1988; Furstenberg, 2010; Kahn et al., 2013). Guerra (2017) also argues that the demographic transition has changed the social, economic and cultural contexts imposing new obstacles to the independence of young adults. This process of delaying adulthood entry can vary among socioeconomic groups (Camarano, 2006; Fustenberg, 2010; Oliveira et al. 2006; Vieira, 2008).

Most of these studies, however, failed to consider how the extension of the life cycle, brought on by the decline in mortality, has also impacted the timing of life course transitions. A longer life expectancy means that all life cycle phases will also be stretched. Therefore, it is possible that the increase in years lived coresiding with parents may be compensated by the years gained throughout the life cycle, in a way that, proportionally, this transition isn’t actually being delayed.

Therefore, this study uses data from Brazil to calculate the duration of coresidence with own mother, separating the impact of the changes to life expectancy and to propensity for coresidence, in an effort to contribute to the debate over the delaying of the transition to adulthood. Moreover, a delay in the adoption of adult roles can create a ripple effect, and impact

the timing of all subsequent life transitions, such as getting married, having children and possibly grandchildren, making it imperative to understand the mechanisms behind it.

3. Data and Methods

The life expectancy of coresidence can be described as the average time lived in coresidence throughout an individual's life. It was calculated based on methods of Wolfbein (1949) and Sullivan (1971) for calculating active and healthy life expectancy, respectively. The data required was taken from the Brazilian demographical censuses from 1960 to 2010. This data is gathered by the *Instituto Brasileiro de Geografia e Estatística* (IBGE) and the version utilized was harmonized and made available by IPUMS International.

This method requires the period proportion of people living in coresidence by age and a period life table. Firstly, the person-years lived in coresidence is calculated by multiplying the proportion of people in coresidence at each age (${}_n C_x$) by the person-years lived of the total life table for the same ages (${}_n L_x$). From there, the life expectancy of coresidence (LEC) can be calculated in an analogous form of the total life expectancy, by dividing the person-years lived in coresidence above age x by the numbers of survivors at age x (l_x):

$$LEC = \frac{\sum {}_n C_x \cdot {}_n L_x}{l_x} \quad (1)$$

The life tables used were constructed by the United Nations (UN), adapted to correspond to the census years.

After calculating the life expectancy of coresidence, they can be decomposed to show how much of the change in coresidence between 1960 and 2010 are due to an increase life expectancy of the individual or due to non-demographic factors affecting the proportion of persons in coresidence. That was done by applying the period proportions of people in coresidence of 1960 to the life table of 2010:

$$\frac{\sum ({}^{1960}{}_n C_x \cdot {}^{2010}{}_n L_x)}{l_y} \quad (2)$$

Where ${}^{1960}{}_n C_x^i$ is the proportion of persons in the coresidence between ages x and $x+n$ in 1960, ${}^{2010}{}_n L_x$ are the person-years lived between ages x and $x+n$ in 2010 and l_y is the radix of the life table.

This creates a counterfactual scenario of what would have happened to the observed rates of coresidence if the proportions of people coresiding at each age stayed the same, but the experiences of mortality at each age changed through the years.

A third step after calculating the life expectancy of coresidence with mothers is to understand how the availability of mothers and the propensity to coreside with them is affecting these measures.

To calculate the availability for coresidence with a relative is necessary to know if this relative is alive. This information is not provided in all the censuses, therefore a household sample survey with national representation was used. The *Pesquisa Nacional por Amostra de Domicílios* (PNAD) of 1993 and 2013 were chosen for this analysis.

Considering that the rate of coresidence is the result of the interaction between the availability and the propensity, the latter can be calculated by dividing the observed coresidence rates by the availability:

$${}_n\rho_x = \frac{{}_nC_x}{{}_n\alpha_x} \quad (3)$$

Where ${}_n\rho_x$ is the propensity to coreside between ages x and $x+n$, ${}_nC_x$ is the proportion of people in the coresidence between ages x and $x+n$ and ${}_n\alpha_x$ is the availability of the relative, meaning, the proportion of people with a live mother between ages x and $x+n$.

Having these three components, a decomposition between availability and propensity can be done by estimating what would be the expected value of the coresidence rates if the propensity (ρ) had stayed the same between two periods and only the availability (α) had varied. By comparing the estimated rates of coresidence with the observed ones, it is possible to say how much of the variation between the coresidence rates in the two periods was because of the propensity or because of the availability changes:

Part of the variation explained by availability (here called $\Delta {}_n\alpha_x$):

$$\Delta {}_n\alpha_x = \frac{({}_n\alpha_x^{year B} \cdot {}_n\rho_x^{year A}) - {}_nC_x^{year A}}{{}_nC_x^{year A}} \quad (4)$$

Part of the variation explained by propensity (here called $\Delta {}_n\rho_x$):

$$\Delta({}_n\rho_x) = \frac{{}_nC_x^{year B} - ({}_n\alpha_x^{year B} \cdot {}_n\rho_x^{year A})}{{}_nC_x^{year A}} \quad (5)$$

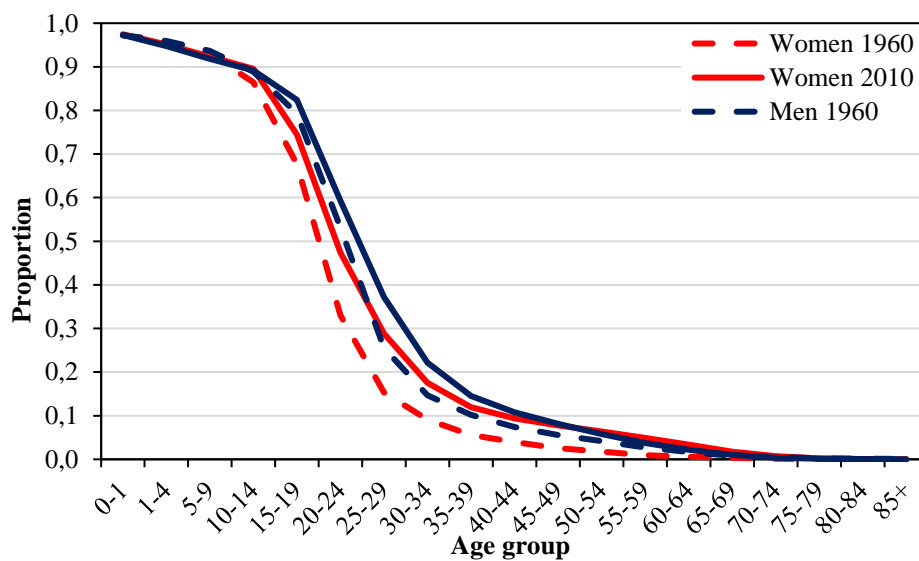
4. Results and discussion

4.1. Time of coresidence with mothers

In 1960, there were 32.5 million persons residing with their mothers in Brazil (around 54% of the total population). In 2010, this number increased to about 79 million, although it represented a lower proportion of the total population (approximately 41%).

Figure 1 shows that the proportion of persons residing with own mother by age and sex in 1960 and 2010. A higher percentage of men reside with their mothers, which suggests that they leave their parents' houses at older ages than women. These results are in line with the literature on the transition to adulthood that argues that women make earlier household transitions because of marriage (Cohen et al., 2003; Costa-Ribeiro, 2014; Allendorf et al, 2017). Another possible explanation is that men are more likely than women to return to their parents' houses after having left it.

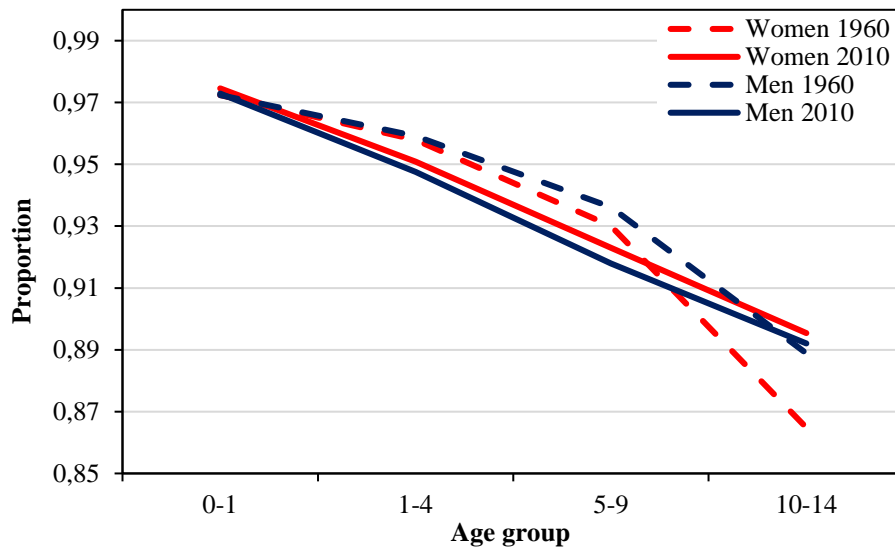
Figure 1
Proportion of persons residing with own mother, by age and sex, Brazil, 1960 and 2010



Source: IPUMS; IBGE, Demographic Census, 1960 and 2010.

For both men and women, however, this proportion increased for all ages above 15. For the ages 0-15, there was a decline in the proportion of coresidence with mothers (Figure 2), which may be related to the increase in the prevalence of skipped-generation households (children living with grandmothers without the presence of parents) in Brazil and other countries (Wajnman, 2012; Jesus, 2015).

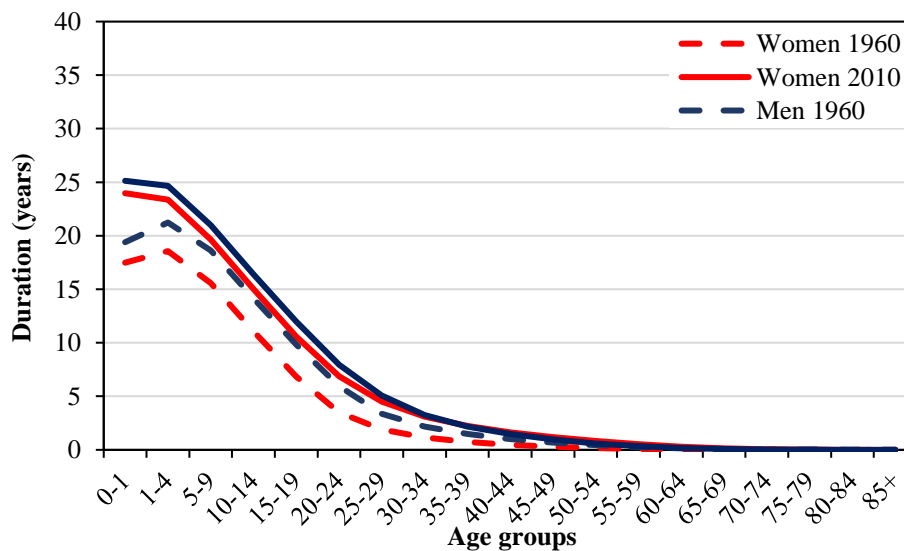
Figure 2
Proportion of persons residing with own mother, ages 0-15, by sex, Brazil, 1960 and 2010



Source: IPUMS; IBGE, Demographic Census, 1960 and 2010.

As previously discussed, two factors affect the life expectancy of coresidence: (i) the proportion of persons in coresidence and (ii) the individual's survival rates. By utilizing this information and the method presented in the previous section, the mean duration of coresidence with mothers for 1960 and 2010 was calculated, and the results are presented in Figure 3. The figure shows that the expected time to be lived in coresidence with own mother at birth increased by more than 5 years:

Figure 3
Mean duration of coresidence with own mother, by age and sex, Brazil, 1960 and 2010

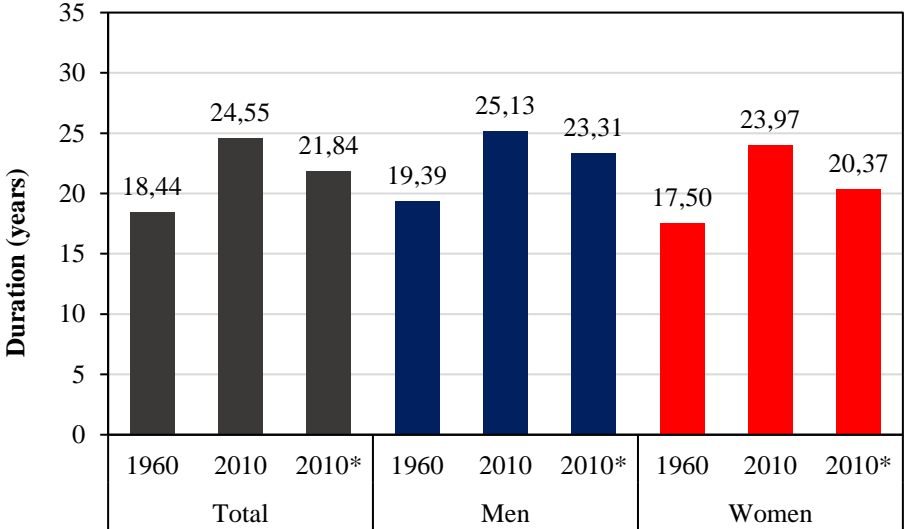


Source: IPUMS; IBGE, Demographic Census, 1960 and 2010.

Not surprisingly, the mean duration of coresidence with own mother is longer for men than women. The duration of coresidence is higher in the first 15-20 years of life, after which it starts to rapidly decrease until around ages 35-40, when the expected time to be lived in coresidence is only about 1 year. While the time lived in coresidence with mothers seems to have increased, it is important to stress that life expectancy at birth has also increased because of mortality gains (from 1960 to 2010, life expectancy at birth for women increased from around 56 to 77 years, and for men it went up from 52 to 70 years).

Therefore, to isolate the impact of the changes to life expectancy from the duration of coresidence we estimated what would be the average duration of coresidence if the age-sex-profiles of coresidence from 1960 had remained the same in 2010 and only mortality had changed:

Figure 4
Actual and counterfactual average duration of coresidence with mother, measured at birth, by sex, Brazil, 1960 and 2010



* Counterfactual measure using the proportion of persons in coresidence from 1960
 Source: IPUMS; IBGE, Demographic Census, 1960 and 2010.

As shown in Figure 4, both the actual and counterfactual average duration of coresidence with own mother increased from 1960 to 2010. The fact that the 2010 counterfactual measure is higher than the actual duration for 1960 (21.84 versus 18.44 for both sexes) indicates that mortality gains helped to increase the time spent in coresidence. The even higher actual duration for 2010 (24.55 years) suggests that in addition to mortality changes, there was an increase in

the age-specific proportion of the population residing with mothers that made duration even longer. These patterns are similar to men and women.

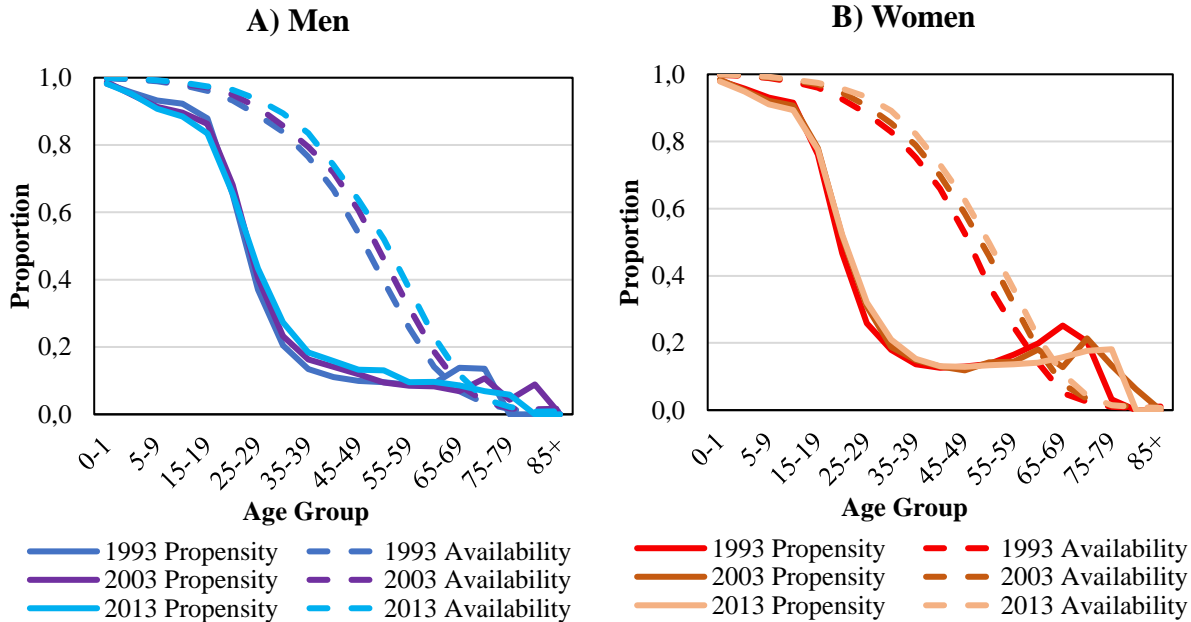
These findings show that one should be careful before concluding that teenagers are residing for a longer time with their parents today than in the past because of behavioral changes, since some of the time added is due to survival gains.

4.2. Propensity vs availability

In addition to the effect of the changes to the survival of the individual, there’s still the impact of the changes to the survival of the mother, which translates into her availability for coresidence. In this section we disentangle the effects of the propensity to reside with mothers from the availability of mothers for coresidence. Did the proportion of coresidence increase because mothers were living longer and therefore, were more available, or it happened because the coresidence preferences changed, making coresidence with mothers more acceptable and desirable?

Figure 5 shows the measures of propensity and availability for men and women in the years 1993, 2003 and 2013:

Figure 5
Availability of mothers and propensity to coreside with mothers, by age groups and sex, Brazil, 1993, 2003, 2013



Source: IBGE, PNAD, 1993, 2003, 2013.

Both the propensity of coresidence and the availability of mothers increased between 1993 and 2013 in Brazil, although the variation in availability appears to be larger. The patterns

of availability by sex are similar, which is not surprising, assuming that the survival status of mothers are independent of the child's sex. Therefore, the sex differences in the proportions of coresidence that we stressed before (higher among men between ages 15 and 35) are due to sex differences in the propensity to coreside with mothers. In addition, during childhood, there are no differences in the propensity of coresidence between men and women, probably because the decisions of coresidence at these ages aren't made by the children.

Decomposing the variation in the age-specific proportions of coresidence between 1993 and 2013 (table 1) shows that the variation in propensity was negative at youngest ages, being only partly compensated by higher availability of mothers. Therefore, the decline in the proportion of young people residing with mothers until age 20 is mostly because of a stronger force not to coreside. Eventually, the variation in the propensity to reside with mothers becomes positive (late childhood or early adulthood). That, coupled with the increase in availability of mothers, which grows with age, results in an increase of the proportion of coresidence.

Table 1
Decomposition of the changes in the proportion of persons residing with mothers
between propensity and availability, by age group and sex, Brazil, 1993, 2013

| Age group | Men | | | Women | | |
|-----------|------------------------------------|-----------------------------------|-------------------------------------|------------------------------------|-----------------------------------|-------------------------------------|
| | 1993-2013 variation in coresidence | Variation explained by propensity | Variation explained by availability | 1993-2013 variation in coresidence | Variation explained by propensity | Variation explained by availability |
| 0-1 | 0,000 | 0,000 | 0,000 | -0,001 | -0,002 | 0,001 |
| 1-4 | -0,003 | -0,005 | 0,001 | -0,007 | -0,009 | 0,002 |
| 5-9 | -0,024 | -0,026 | 0,003 | -0,018 | -0,022 | 0,004 |
| 10-14 | -0,034 | -0,042 | 0,007 | -0,016 | -0,023 | 0,007 |
| 15-19 | -0,037 | -0,051 | 0,014 | 0,034 | 0,020 | 0,014 |
| 20-24 | 0,037 | 0,003 | 0,034 | 0,158 | 0,123 | 0,034 |
| 25-29 | 0,232 | 0,179 | 0,053 | 0,308 | 0,252 | 0,056 |
| 30-34 | 0,421 | 0,357 | 0,065 | 0,263 | 0,188 | 0,075 |
| 35-39 | 0,497 | 0,405 | 0,092 | 0,221 | 0,128 | 0,093 |
| 40-44 | 0,583 | 0,473 | 0,110 | 0,151 | 0,043 | 0,108 |
| 45-49 | 0,579 | 0,396 | 0,184 | 0,174 | -0,014 | 0,188 |
| 50-54 | 0,800 | 0,483 | 0,317 | 0,313 | -0,035 | 0,348 |
| 55-59 | 0,584 | 0,122 | 0,462 | 0,202 | -0,252 | 0,454 |
| 60-64 | 0,713 | 0,086 | 0,627 | 0,096 | -0,442 | 0,537 |
| 65-69 | 0,062 | -0,650 | 0,712 | 0,332 | -0,789 | 1,120 |
| 70-74 | -0,296 | -0,688 | 0,392 | 0,492 | -0,236 | 0,728 |
| 75-79 | 0,000 | 0,000 | 0,000 | 7,041 | 6,644 | 0,397 |
| 80-84 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |
| 85+ | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 | 0,000 |

Source: IBGE, PNAD, 1993, 2013.

This means that the demographic effect of higher survival of mothers is preventing the proportion of coresidence from decreasing even more during childhood and helping it to increase at older ages. The propensity effect, however, is the most important factor for the increase in coresidence.

Comparing the results for men and women, the major differences are in the variation of propensity. Among men, the variation in propensity was negative until the age group 15-20, but for women, it was negative only up to ages 10-15.

The variation in propensity was negative also at some adult ages. For men, this pattern happens at ages 65-70, and for women it happens earlier, at ages 45-50. A possible explanation for this difference between the sexes is the growing independency of the elderly parents, who are now choosing to live alone instead of residing with children. Considering that the great majority of caretakers are daughters, the increase in the prevalence of elderly living alone could explain the larger decline in propensity among women. Yet, the increase in availability of mothers compensates negative changes in propensity, leading to the growth in coresidence at these ages.

In conclusion, the results of this decomposition show that the main factor influencing coresidence with mothers is the change in propensity to coreside, not the survival gains among mothers. These results reinforce the hypothesis that young adults have delayed their entry into adulthood by choosing to stay longer with their mothers, although the larger availability of mothers and also changes in individual's survival affected the time trends. This may very well be connected to the fact that people are living longer and, therefore, plan their life course differently. With the extension of the life cycle, having 18 years now doesn't mean the same as having 18 years 50 years ago. The socioeconomic changes that accompanied the demographic transition have allowed, and even required, that a person obtains more formal education before they can find a good job or start a new family. This leads to people extending their time spent at a parent's house.

5. Concluding remarks

This article aimed to calculate how the duration of coresidence with mothers in Brazil had changed over the years, separating how much of these changes were due to increased survival of the child and of the mother. The results showed that the time of coresidence with mothers increased between 1960 and 2010.

A decomposition of this duration showed that both total time lived in coresidence with own mother as well as the percentage of time lived in coresidence with own mother increased

in these 50 years. Part of this increase is due to social, cultural and economic factors that dictate the proportion of people in coresidence. However, the increased duration of coresidence is also due to the fact that people are living longer and, therefore, have more years available to coreside with their mothers.

When analyzing the results it is important to keep in mind the distinction between an increase in the proportion of time spent in coresidence and an increase in total time spent in coresidence. The first is connected to changes to coresidence habits, meaning that people are spending more of their life in coresidence, either because they chose to or because they have to. The second is connected to a lengthening of the life cycle. People may be living longer, having more years available to them for coresidence, but that doesn't necessarily mean they'll spend more of this total time in coresidence.

The proportion of people in coresidence with own mother were also decomposed between availability of mothers, which is connected to the mother's survival, and propensity to coreside with them. The results showed that propensity is acting as a negative force for coresidence during childhood. During adult age, the propensity becomes positive and, alongside the positive force of availability of mothers, it leads to an increase in coresidence. Later in life, the propensity returns to having a negative effect. Comparing men and women, the availability of mothers is similar for both, as the fact that a mother survives to a certain age isn't connected to the sex of her child. The propensity, which is higher for men between ages 15 and 35, is the one responsible for the differences of coresidence with mothers between the sexes.

When the literature discusses how people are taking longer to leave their parents' houses or marrying later in life, it alludes to a change in coresidence habits. However, it is important to consider the changes to survival. People are living longer, which means that even when the proportion of the time spent in coresidence decreases, this is compensated by an increase of the total time lived in coresidence. Therefore, while it is correct to say that people are delaying entry into adulthood by taking longer to leave their parents' houses, it is important to keep in mind that this is not because the youth of today is necessarily running away from the responsibilities of adulthood, as the subject seems to be discussed when brought up in news articles. This delaying is strongly connected to the fact that a longer life expectancy leads to an adjustment of the transitional ages, in a way that the proportion of time spent in each life cycle phase can even stay somewhat constant.

The method utilized in this research are also easily replicable for other countries and can help us better understand not only the demographical determinants of the transition into adulthood, but how those have changed over time, allowing for a cross-country comparison.

6. References

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