Measures of the Average Time Lived in Coresidence with Relatives in Brazil

Mariana Cunha
Simone Wajnman
Cássio Turra
Abstract

The typical life cycle starts with people being taken care of by their parents. At least in western societies, as people grow older, they leave their parent’s homes to start their own, getting married and having children. Eventually, these children will also leave. During this period, they can divorce/separate, became widowed or remarry. Finally, if they survive to the old age, people may decide to live alone or return to coresiding with their adult children or close relatives until death. In the last few decades, however, the duration and timing of coresidence with these different types of relatives has been changing, which can affect various life course decisions that in turn affect the population dynamics as a whole. With that in mind, the main objective of this paper is to analyze how the time spent living coresidence with relatives throughout the life cycle has changed in Brazil between 1960 and 2010. Specifically, we aim to show the importance of demographic factors for the changes in coresidence, separating them from non-demographic factors. Data from the censuses of 1960 through 2010 and from the PNADs of 1993, 2003 and 2013 were used. Firstly, the time of coresidence with mother, father, spouse, at least one child, grandmother and at least one grandchild were calculated using a method based on the works of Wolfbein (1949) and Sullivan (1971). The results showed that time of coresidence has been growing with all types of relatives, except for fathers with their children. A decomposition of the time lived in coresidence showed that the growth in the time of coresidence was actually due to higher survival of the individual in question, which increased the time they had available for coresidence. At the same time, the changes in coresidence per se, which dictate what proportion of the total life expectancy is lived in coresidence, were contributing to reduce the time of coresidence. The only exceptions were the coresidence with mothers and grandmothers, were both factors were contributing to an increase of time of coresidence. The results showed that, for mothers, this was mostly due to an increase in the propensity to coreside during adult ages. Therefore, this research supports the literature discussion that children have delayed their entry into adulthood by living longer with their parents. However, it also cautions for the importance of analyzing demographic and non-demographic factors separately when trying to understand changes in coresidence.
1. Introduction

In the last half-century, there has been a change in the average household composition in Brazil, which implies a change in the ways people coreside. As argued by Ruggles (1986, 1993, 1994), it is possible to separate the drivers of these changes between demographic and non-demographic factors: one the one hand, fertility, mortality and nuptiality will dictate the size and composition of a population and, consequently, the number and types of relatives a person will have available for coresidence throughout their lives. On the other hand, household composition is also affected by the incentives a person has to coreside with those available relatives.

The impact of these demographic factors, however, are not always so clear. For example, the increase in life expectancy leads to an increase of surviving relatives who are available for coresidence and that may lead to an increase in coresidence. Even the increase in divorces, which seem to be primarily connected to social and cultural changes, can be connected to the demographic dynamics: as people live longer, the number of marriages that end due to widowhood are reduced, which could lead to an increase of divorce, as Keyfitz (1987) points out. The increase of life expectancy, however, has another important impact: the survival of the person in question. As people live longer, they have more years available for coresidence. Therefore, the extension of the life cycle could 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.

Although there have been studies on the development of coresidence in Brazil, there is little literature on changes of coresidence patterns along the life course, and even fewer studies on how the demographic factors affect them. By employing unique demographic tools, it is possible to quantify the mean time spent residing with different types of relatives, how it has changed over the years, and the role of demographic factors for these news patterns.

With that in mind, the main objective of this paper is to calculate and analyze the changes in average time lived in coresidence with different types of relatives in Brazil between 1960 and 2010. Considering the demographic and socioeconomic changes the country has gone through during these decades, we also aim to identify the role of the demographic components – specifically the changes to life expectancy – in the observed changes in coresidence with relatives, by separating them from the non-demographic factors.
2. The Demographic Transition and household structure

The demographic transition is characterized by the decline in mortality and fertility rates that lead to lower population growth and rapidly population aging. However, the demographic transition affects not only population size and composition but also kinship relations and, therefore, the types of coresidence observed in a population. For example, low fertility has replaced the role of high mortality as the main source of limitation for the number of siblings in adulthood and old age in more recent years (Murphy, 2011). In addition, changes to fertility and mean age of the mother at birth of the first child have affected both the number of generations that coexist and the number of years of coresidence (Connidis, 2009).

Ruggles (1986, 1993, 1994, 2015) discusses how demographic factors can have a great impact on 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 the case of Brazil, both the decline in fertility and the increase in the prevalence of smaller households led to the reduction of the mean household size (Alves 2004). Over the decades, there has been a rise in the prevalence of one-person households, single parent households and of couples with children (Nascimento, 2006). In opposition to the most developed countries, there has also been a noticeable growth in the proportion of extended family households (Medeiros & Osorio, 2001; Wajnman, 2012; Marcondes, 2016). Among the elderly, despite the large number of relatives available for coresidence, which is a consequence of mortality declines in the past (Guerra et al., 2016), there is an increasing number of older people living alone which is mostly related to changes in the preference to live alone (Wajnman 2012).

3. Coresidence through the life cycle

The demographic transition affects the life course phases, changing the types of coresidence a person will experience throughout their life. When thinking of
coresidence during infancy, childhood and teenage years, a decline in mortality should lead to a higher availability of kin for coresidence and, consequently, a rise in the proportion of children and teenagers living with their parents.

In this context, one important transition in someone’s life is the passage from young adult to full 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 (Vieira, 2008; Furstenberg, 2010; Stone et al., 2011; Jesus & Wajnman, 2014; Gerson & Torres, 2015). In the 19th century, because most families depended on agricultural work, the young 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). In more recent years, however, 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). Guerra (2017) argues that the demographic transition has changed the social, economic and cultural contexts imposing new obstacles to the independence of young adults.

The delay in the adoption of adult roles may affect the duration of coresidence with parents, with future spouse and children, and possibly grandchildren. Cultural changes surrounding marriage and divorce are also important in that regard, as the increase of acceptable alternatives to formal marriage have changed the ways people plan their future (Goldstein & Kenney, 2001; Gerson & Torres, 2015; Oliveira et al., 2015; Guerra, 2017).

During the adult phase, social changes such as the increasing economic autonomy of women and the greater acceptance of less stable forms of unions, such as cohabitation, have also led to changes in coresidence. Higher life expectancy has increased the chances for divorce and allowed people to have multiple unions throughout their lives. In the US, for example, since 1980, divorce rates have been increasing rapidly, but most of the divorces eventually become remarriages, although this trend has been losing momentum (Glick, 1984).

A decline in mortality and fertility also means a growing share of the population at older ages. When analyzing this last phase of the life cycle, several studies point to a growing number of elderly living alone (Bongaarts, 2001; Ruggles & Heggeness,
2008; Willekens, 2009). This is usually linked to historical improvements in health status and income levels, which allowed more independence and autonomy at older ages (Connidis, 2009; Kahn et al., 2013; Marcondes, 2016). It is possible that the increasing number of elderly living alone just reflects individual preferences that only recently became social acceptable and economically viable (Keyfitz, 1987; Ruggles, 1994; Ruggles & Heggeness, 2008).

There are also studies that have examined the importance of older people in providing support to their adult children, through income transfers or by helping to take care of grandchildren (Murphy & Grundy, 2003; Villegas et al., 2014; Maia & Sakamoto, 2016; Marcondes, 2016; Guerra, 2017). In a context of higher female labor force participation rates, the possibility of the elderly to transfer time can increase the frequency of coresidence of adult children and their parents (Ruggles and Heggeness; 2008, p.271-272).

4. Data and methods

To analyze the changes to coresidence, this study calculates the life expectancy of coresidence, which can be interpreted 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 20101.

To examine coresidence we use six categories: I) coresidence with mother; II) coresidence with father; III) coresidence with spouse; IV) coresidence with at least one child V) coresidence with grandmother VI) coresidence with at least one grandchild. We define both the biological and stepparents as parents (mother and fathers). The definition of spouses include spouses from both formal marriages and consensual unions, since in Brazil consensual unions receive similar legal recognition than formal marriages, and are socially accepted among all socioeconomic groups (Lopez-Gay et al., 2014; Couvre-Sussai, 2016). The term “children” refers to both biological and stepchildren, and we calculate coresidence with own children and grandchildren as a binary variable, independent of the number of (grand)children in the household.

1 The census is gathered by the Instituto Brasileiro de Geografia e Estatística (IBGE) and the version utilized here was harmonized and made available by the Integrated Public Use Microdata Series International (IPUMS), of the Minnesota Population Center.
The method for calculating the life expectancy of coresidence 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 \( nC_x \) by the person-years lived in the total life table for the same ages \( nL_x \). 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 \( x \) \( l_x \):

\[
LEC = \frac{\sum nC_x \cdot nL_x}{l_x} \quad (1)
\]

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

This method was chosen over other options because it is not only of simple application and requires easily obtainable data (allowing replication), but it also provides a summary measure for analyzing changes in coresidence: number of years and percentage of the total life expectancy lived in coresidence.

The life expectancy of coresidence is affected by: I) changes in the proportion of persons in coresidence and II) changes in survival rates. Here we are considering these two things to be independent from each other. Therefore, even when there are no changes in the proportion of persons in coresidence, the average duration of coresidence can still vary because of mortality gains. We try to disentangle the role of each effect by applying a standardization procedure. We use 1960 proportion of persons in coresidence as standard in 2010 to estimate a counterfactual measure of what would have happened if this proportion had not changed over the five decades:

\[
\sum_{i} \frac{1960nC^i_x \cdot 2010nL_x}{l_y} \quad (2)
\]

Where \( \frac{1960nC^i_x}{l_y} \) is the proportion of persons in the coresidence type \( i \) between ages \( x \) and \( x+n \) in 1960, \( \frac{2010nL_x}{l_y} \) are the person-years lived between ages \( x \) and \( x+n \) in 2010 and \( l_y \) is the radix of the life table.

By disentangling demographic and non-demographic factors, we can identify the exact role of the changes in the proportion of persons in coresidence.
5. Results and Discussion

5.1. Duration of coresidence

Between 1960 and 2010, Brazil went through significant socioeconomic and demographic changes. The population grew from less than 60 million to more than 190 million showing also a great change in age structure. The number of households grew faster than the population, leading to a reduction of household mean size: from around 6.5 in 1960 to 4.1 in 2010 (IBGE). These were accompanied by changes to the age and sex profiles and the duration of coresidence with different types of relatives:

A) Mother

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

Figure 1.A shows that the proportion of persons in coresidence with own mother grew between 1960 and 2010 for those aged 15 or older. There is a decline for those aged below 15 which 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 (Jesus, 2015; Wajnman, 2012).

The duration of coresidence also grew in these 50 years and it is higher for men than women. Figure 1.B shows that, at birth, an average person in Brazil is expected

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2 Here, we present only the results for 1960 and 2010 to allow a better visualization of the age profiles. A full set of results can made available by the authors upon request.
to live around 24 years in coresidence with his or her mother in 2010. In 1960, this duration was only around 18 years.

**B) Father**

**Figure 2** - Proportion of persons residing with and mean duration of coresidence with own father, by age and sex, Brazil, 1960 and 2010

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**A) Proportion in coresidence**

- **Women**
  - 1960
  - 2010

**B) Duration of coresidence**

- **Women 1960**
- **Women 2010**
- **Men 1960**
- **Men 2010**

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

Figure 2.A shows that the proportion of persons in coresidence with fathers suffered a great decline during childhood and adolescence between 1960 and 2010. This result may be related to an increase in the prevalence of single-parent families headed by women, as a consequence of higher social acceptance of having a child outside of a union and greater union dissolution rates in Brazil, among all educational levels (Minamiguchi, 2017).

As for the duration of coresidence, at birth, the mean duration of coresidence with fathers increased by two years between 1960 and 2010. The age pattern of duration is comparable to the case of coresidence with mothers: higher at younger ages with a rapid decline with age. The duration is longer for men than women. Yet, the variation between 1960 and 2010 and the total duration of coresidence with own father is much smaller than in the case of mothers.

**C) Spouse**

The proportion of persons in coresidence with a spouse shows a great difference between men and women. Among women, coresidence with a spouse begins earlier than among men, but shows a much larger decline after age 40. The
difference in the age profiles by sex may be related to differences in marriage patterns, as men tend to marry older than women (Allendorf et al., 2017). At the older ages, the sex gap in mortality makes so that women outlive their husbands (Goldman & Lord, 1983; Carr & Bodnar-Deren, 2009). There are also differences in the marriage market at older ages, since men tend to (re)marry younger women, whereas older women (either single, divorced or widowed) end up remaining unmarried (Mindelt, 1979; England & McClintock, 2009).

Figure 3 - Proportion of persons residing with and mean duration of coresidence with own spouse, by age and sex, Brazil, 1960 and 2010

A) Proportion in coresidence

B) Duration of coresidence

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

In addition, Figure 3.A shows that the age profiles have changed during the 50-year period: the proportion of persons residing with a spouse has decreased at the younger ages, but increased after age 60. This finding may be related to mortality gains, which reduced the prevalence of widowhood. Another possibility is that changes in the social meaning of marriage and divorce may have increased the chances of widows and divorcees to remarry at older ages.

According to Figure 3.B, the average duration of coresidence with a spouse for men in 1960 (33 years) was longer than the time spent by women with a spouse both in 1960 (29.2) and in 2010 (32.9). However, between 1960 and 2010, the average duration of coresidence with a spouse at age 15 increased by 2.7 years among men and 3.4 years among women, indicating that this sex gap is getting narrower.
D) At least one child

Figure 4 - Proportion of persons residing with and mean duration of coresidence with at least one own child, by age and sex, Brazil, 1960 and 2010

A) Proportion in coresidence

B) Duration of coresidence

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

Figure 4.A shows that the proportion of persons in coresidence with at least one own child peaks at ages 30-45 (0.8) for both men and women, when probably most of their children are already born. Then it declines, but it seems to increase slightly after age 80. This could be due to both children returning to parents’ house to help take care of them, or elderly moving into a child’s house to help with household services, to take care of grandchildren or even to complement household income.

Between 1960 and 2010, there was a decline in the proportion of both men and women living with their children, which may be related to lower fertility rates or an increase in the proportion of adults living alone (due to higher autonomy). It is important to note, however, that these trends vary whether we examine the children’s or the parents’ perspective (Preston, 1976; Wajnman, 2012). From the children’s perspective, there was an increase in the availability of parents in Brazil, because of the decline in adult mortality. On the other hand, from parents’ perspective, the fertility declined reduced the availability of children despite the substantial survival gains during infancy.

Figure 4.B shows that the duration of coresidence increased for women, going from around 33 years to around 37 years of expected coresidence from birth. For men, the duration actually decreased from 31 to around 28 years.
E) Grandmother

Figure 5 - Proportion of persons residing with and mean duration of coresidence with own grandmother, by age and sex, Brazil, 1960 and 2010

A) Proportion in coresidence

B) Duration of Coresidence

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

Figure 5.A shows that the proportion of persons in coresidence with their grandmother increased significantly between 1960 and 2010 and it is highest in the early years of life. This could be connected to the higher survival of grandmothers and cultural changes that led to an increase in the number of multigenerational households in Brazil.

Figure 5.B shows that, while the number of years expected to be lived in coresidence with own grandmother is much smaller than the other relatives analyzed, there was an important increase for both sexes in these 50 years: from 1.2 years at birth in 1960 to 3.3 years at birth in 2010.

F) At least one grandchild

Comparatively, the proportion of persons in coresidence with at least one grandchild decreased between 1960 and 2010, as shown in figure 6.A. This is an analogous situation to the mother-child patterns discussed previously: grandmothers are more available in 2010 than in 1960 due to an increase of survival, while grandchildren are less available due to the fertility decline. The proportion is higher for women (meaning, the grandmothers) in both years.
As for the duration of coresidence, figure 6.B shows an increase for both sexes, but the increase, as well as the total duration, was higher for women.

Figure 6 - Proportion of persons residing with and mean duration of coresidence with at least one grandchild, by age and sex, Brazil, 1960 and 2010

A) Proportion in coresidence

B) Duration of Coresidence

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

4.2. The impact of the changes to survival

The previous topic showed that the duration of coresidence was increasing, meaning people are now spending more years in coresidence than they did in the past. However, it is crucial to remember that in these 50 years there have also been changes to mortality that have increased the length of the life cycle, which gives people more years available to co-reside.

As life expectancy increases, the average number of years lived in each phase of the life cycle may also change, since survival gains are not uniformly distributed across the life course. Of course, the distribution of survival gains affects the duration of coresidence by type of relative.

For these reasons we should not only measure the mean duration of coresidence, but also the proportion of the individual’s life expectancy to be spent residing with each type of relative. Figure 7 shows the average duration of coresidence with the relatives previously analyzed, for the years of 1960, 2010 and a counterfactual measure for 2010 (2010*), standardized using the age-sex-specific proportion of the population residing with mothers from 1960. This allows us to see how much the changes to the survival of the individual have affected the duration of coresidence.
Figure 7 - Actual and counterfactual average duration of coresidence with own mother, father and grandmother measured at birth; with a spouse at least one child measured at age 15; and with at least one grandchild measured at age 30, 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.
Figure 7 shows that the coresidence with mothers and grandmothers were the only types of coresidence where the standardized measure is higher than the observed one for 2010. This means that if the proportion of persons in coresidence stayed constant from 1960 to 2010, the duration of coresidence with mothers and grandmothers would have been smaller than the observed one for 2010, but higher for the other types of coresidence.

The fact that the 2010 counterfactual measure of coresidence with mothers (21.84 years) is lower than the actual duration for 2010 (24.55 years) suggests that there was an increase in the age-specific proportion of the population residing with mothers that made duration longer. In addition, the fact that the counterfactual measure for 2010 is higher than the actual duration for 1960 (18.44 years) indicates that mortality gains also helped to increase the time spent in coresidence.

The same can be said for grandmothers. Even though the duration of coresidence is much smaller than the other types of coresidence (3.3 years in 2010), the counterfactual measure for 2010 is only 1.4 years, showing the importance of the changes to the age-patterns of coresidence with grandmothers for the duration of coresidence.

For the other types of coresidence, the fact that the counterfactual measure of coresidence for 2010 is higher than the observed one for 2010 indicates that the changes to the proportion of persons in coresidence were contributing to reduce the duration of coresidence. Therefore, the observed increase in the duration of coresidence between 1960 and 2010 was actually due to changes in survival. Specifically for the coresidence with at least one child for men, the reduction in the duration of coresidence indicates that the negative force of the changes to the proportion of persons in coresidence was more than enough to compensate for the gains in mortality.

These results mean that only the duration of coresidence with mothers and grandmothers increased because of both higher age-specific proportions of coresidence and lower mortality. For the other types of coresidence, if it wasn’t for the increase length of the life cycle between 1960 and 2010, giving people more years available for coresidence, this observed increase in the duration of coresidence wouldn’t have happened.
6. Conclusions

The main objective of this research was to estimate the changes in the average duration of coresidence with different types of relatives in Brazil throughout the life cycle. By utilizing a modification of the Wolfbein (1949) and Sullivan (1971) methods for calculating active and healthy life expectancy respectively, the mean duration of coresidence with different types of relatives was calculated.

An important result of this research was that, while the duration of coresidence with relatives grew in Brazil between 1960 and 2010, it was being affected not only by the proportion of the time lived in coresidence, but also by total time available for coresidence, meaning, the total life expectancy. Therefore, the results showed that this growth in the duration of coresidence was mostly due to an increase in life expectancy, as the age-sex profiles of coresidence were actually contributing to a decrease of this duration.

Between 1960 and 2010, the total time spent in coresidence increased for all phases of the life cycle due to increases in the duration of coresidence with different types of relatives. For mothers, fathers and spouses, duration of coresidence grew for both men and women, although it was higher for men. Duration of coresidence with own children grew for women but decreased for men.

The results highlight important differences in the coresidence patterns of women and men. During childhood, women spend less time in coresidence with their parents than men, but during adulthood, they spend more time with their children. In addition, although women marry earlier, they spent less time residing with their spouses than men, as they tend to outlive their husbands or stay divorced for longer.

Another important finding was the different behavior of the coresidence with mothers and grandmothers. Of the types of coresidence analyzed, these two were the only ones were both changes to life expectancy and to the proportion of persons in coresidence were contributing positively to increase the life expectancy of coresidence.

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, the results show that coresidence in itself is going opposite to the expected direction. The age-sex profiles of coresidence were, in most cases, contributing to a reduction of coresidence. The duration of coresidence, however, is increasing for coresidence with most types of relatives. This was explained in the results by the increase in total life expectancy that led to the stretching of the phases of the life cycle.
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 lime lived in coresidence.

So, 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 much more connected to the fact that a longer life expectancy leads to an adjustment of the transitional ages, so that the proportion of time spent in each life cycle phase stays somewhat constant.

The results point to the importance of considering demographic factors separated from non-demographic ones. In the literature on changes to household structure and coresidence, much attention is brought to the socioeconomic and cultural factors that may be affecting coresidence, and not enough credit is given to the demographic ones. As Ruggles (1986, 1993, 1994) and DeVos & Palloni (1989) point out, mortality, fertility and nuptiality are central to determining household structure, directly and indirectly.

This research also presented other important limitations that lay the ground for future research. Some are due to the data available, such as period information being used to calculate life cycle measures. Something that wasn’t tested here, but is also important to keep in mind, is that coresidence can also affect life expectancy. People that leave their parents’ houses too early may be exposed to poor conditions that may affect their health and well-being. The same can be said for older people that don’t have any familial support. With the data available, however, it wasn’t possible to measure this here. Brazil is also a very diverse country and a more in-depth analysis separating by geographical regions would probably uncover many interesting nuances of coresidence.

7. References


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