

# The Stability of Children's Post-Separation Residential Arrangements

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## Abstract

Surprisingly very little research has been done on the (in)stability of children's post-separation residential arrangements, i.e. *de facto* physical custody arrangements. Using interval-censored data on a cohort of children born in Quebec (Canada) in 1997-1998, we explore the dynamic nature of those arrangements with a multi-state model that allows us to estimate hazards of transition between four types of arrangements as well as the effect of covariates on those hazards. We find that dual-residence arrangements are less stable than other kinds of arrangements, but that fathers who did share physical custody at least for some months maintain more frequent contact with their children, especially their sons, throughout their childhood. Parents' education level is associated with increased father-child contact and with more stable dual- and father-residence arrangements. Other relevant covariates – like parents' quality of communication with each other – will be added to the final multi-state model.

While numerous aspects of child custody decisions made by parents and judges during the divorce process have attracted a lot of attention from researchers in the fields of sociology, psychology, law, demography and family studies, very little research has been done on such decisions at later periods in the children's life course (Nielsen, 2011; Smyth and Moloney, 2008). Only a handful of studies have actually looked into the dynamics of formal and informal changes made to children's residential arrangements through out the post-separation years (Berger et al., 2008; Cloutier and Jacques, 1998; Maccoby and Mnookin, 1992; Smyth et al., 2008).

Moreover, results from the few existing studies do not always agree. For instance, in their seminal book *Dividing the Children*, Maccoby and Mnookin (1992) observed that more than half of children who originally lived in shared physical custody arrangement had changed residential arrangement after a few years and started to reside solely with either the mother or the father. In contrast, a more recent study found that after three years of shared placement, most children spent as much time with the father as they did when the divorce was finalized (Berger et al., 2008).

Most studies that examine the stability of post-separation residential arrangements over time have however some important limitations. First, they usually take into account only the separations of married parents who actually divorce. They by design exclude the separations of married parents who didn't go through with divorce nor the separations

of cohabiting biological parents. Because of that, they might not be representative of the general population (Juby et al., 2005). Second, the observation period of those studies is generally limited to two or three years, a rather short time frame to be able to draw firm conclusions about the relative (in)stability of different parenting arrangements. Finally, they sometimes assess the stability of arrangements using legal indicators of where children are supposed to be living (physical custody arrangements) which quite often do not correspond to children's actual residential arrangements (Maccoby and Mnookin, 1992: 166).

We address these theoretical and methodological issues by using nationally representative longitudinal survey data that allow us to study how children's actual residential arrangements evolve during the years following their (married or cohabiting) parents' separation. As our objective is to provide a dynamic portrait of children's post-separation parenting arrangements we examine complete arrangement trajectories and ask questions such as: How frequent are transitions between arrangements? Are some arrangements more stable than others? And what factors are associated with specific transitions between arrangements? We build a multi-state model of arrangement transitions to help us answer those questions.

## METHOD

### Data

The Quebec Longitudinal Study of Child Development (QLSCD) is an ongoing panel survey that follows a cohort of 2120 children born in the Canadian province of Quebec in 1997-1998. The children's parents were interviewed annually until they reached the age of eight, and every two years thereafter. We use data collected during the first eleven waves of the survey, i.e. until the children were about 12 year-old. Information about post-separation residential arrangements was collected at each survey wave while a detailed retrospective questionnaire recorded dates of separation and union formation for both parents every other year.

At the wave where the parental separation was first declared, the person most knowledgeable about the child (PMK), usually the mother, was asked with whom the child lived just after separation and what type of contacts the child had with the other parent at that moment. From these questions, we identified four categories of initial parenting arrangements: (1) mother residence with little or no contact with the father (less than once a month); (2) mother residence with regular father-child contact (from once a month to a few days a fortnight at the father residence); (3) dual residence (about 50% of nights with each parent); and (4) father residence with various level of mother-child contact. These four categories thus differ mainly by the level of father-child contact at or just after separation.

Moreover, at each wave starting from the one where the separation was first declared the same two questions (residence and frequency of contact with the non-resident parent)

were also asked regarding the situation at the time of the survey. From answers to these questions and using the categories previously defined, we were able to reconstruct a child’s parenting arrangement trajectory from the separation up to the survey’s eleventh wave – or up to when the child is lost to follow-up.

Note that we are interested only in the post-separation residential arrangements made by couples who coresided at their child’s birth and we therefore exclude from our analysis children born out of a union. These children almost always live at their mother’s residence after birth as well as in the years that follow. An analysis that would include them would bias upwards the proportion and stability of mother-residence arrangements.

We had to exclude from the analytical sample 3.4% of the 593 children whose parents’ separation was observed before the eleventh wave of the survey. As these children had only one or no available measure of residential arrangements, we were unable to reconstruct a residential trajectory for them. For the other children, residential arrangements were measured on an average of 5.6 occasions (min = 2; max = 12).

Right after separation, just over a quarter of children (28%) were living in a dual-residence arrangement and only 5% were living solely or mainly with their father. The remaining children were living with their mother and either saw their father on a regular basis (51%) or had little or no contact with him (16%).

### **Interval censoring**

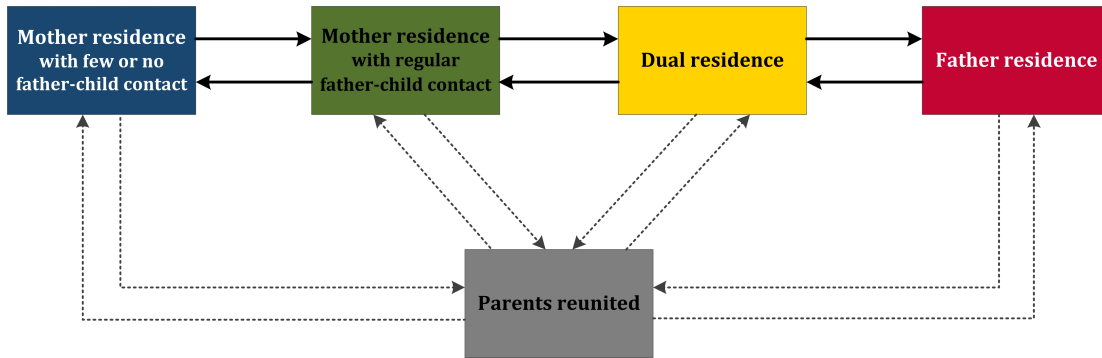
The arrangement trajectories that we reconstructed are interval-censored by design. Like most panel or cohort surveys, the QLSCD fails to observe the phenomenon of interest continuously, but does so only at discrete time points – the moment of separation and the survey waves. If the residential arrangement in effect at a given wave is different from that at the previous wave, it is impossible to know precisely when the change occurred; we only know that it happened somewhere between the two waves. This particular form of censoring is called interval censoring. It differs from the usual right censoring – when a transition is yet to occur at the end of observation – that most survival analysis methods have been developed for.

The average length of the time intervals between two measurement occasions is 16.5 months (SD = 10; median = 12). Interval length’s variance is a result of wave partial non-response, but also and mainly of two changes made to the QLSCD’s collection schedule – a first shift from an age-based collection calendar to an end-of-school-year calendar between the fourth and fifth waves, and a second shift from an annual collection calendar to a biannual one after the ninth wave. Because intervals are not of the same length across waves and across children, standard discrete-time survival analysis tools cannot be utilized. We thus rely on techniques developed specifically for interval-censored data, i.e. multi-state models for panel data.

**Multi-state Models**

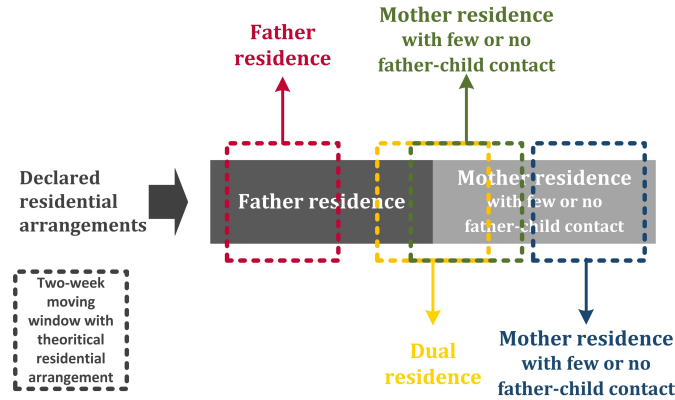
To account for the structure of data collection, we build a multi-state model with states corresponding to the four post-separation residential arrangement plus a fifth state representing children living with both their biological parents after they got back together. We estimate the five-state model depicted in Figure 1 for the period ranging from separation to the end of survey observation. Even if transitions to and fro the *parents reunited* state are allowed for each of the four post-separation residential arrangements (grey dotted lines), our main concern is with the other six transitions rates between the residential arrangements themselves (large black lines). Each one of these six arrows represents a hazard-based equation analogous to those found in standard survival models like the Cox model. A baseline hazard is estimated for each transition along with a series of coefficients corresponding to the effect of relevant covariates. Covariates can be the same or differ between transitions.

FIGURE 1 – Estimated five-state model with transitions between post-separation residential arrangements



In our model, transitions are only allowed between adjacent arrangements along a continuum of arrangements ordered according to the frequency of father-child contact (Figure 1). This assumption may seem overly restrictive at first sight but is theoretically easy to sustain. Residential arrangements cannot be defined or measured instantaneously but are necessarily relative to a given time interval, typically a two-week period. Hence, even seemingly drastic changes – say from a father-residence arrangement to a mother-residence arrangement with few or no father-child contact – can be decomposed into a series of smaller changes along this continuum (see Figure 2). We assume that those smaller transitions have actually taken place even if the complete process has not been entirely observed due to data collection restrictions. The multi-state model was estimated using the *msm* package (Jackson, 2011) in R (R Core Team, 2013).

FIGURE 2 – COMPARISON OF DECLARED AND THEORETICAL POST-SEPARATION RESIDENTIAL ARRANGEMENTS WITH A TWO-WEEK MOVING WINDOW



## PRELIMINARY FINDINGS

### Descriptive statistics of trajectories

To estimate the distribution of children according to their residential situation at any given month (Figure 3), we made the assumption that transitions happened at the mid-point of the interval in which they were observed. As in the multi-state model, children here are right-censored at their last measurement occasion.

If the proportion of children living with their mother but keeping regular contact with their father is quite stable through out the first ten years following separation, the same is not true of other arrangements. Dual-residence arrangements gradually lose the favour of parents and become only as frequent as father residence. On the opposite end of the continuum, the proportion of mother-residence arrangements with low father-child contact increases slightly but steadily during the same period.

FIGURE 3 – Residential arrangements of all children according to time since separation

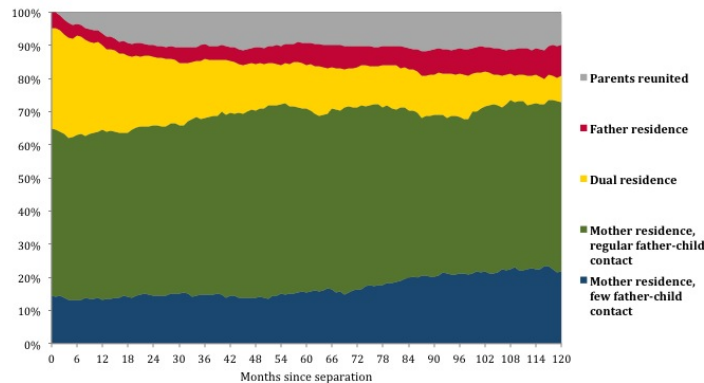


FIGURE 4 – Residential arrangements of children initially in mother residence with few or no father-child contact according to time since separation

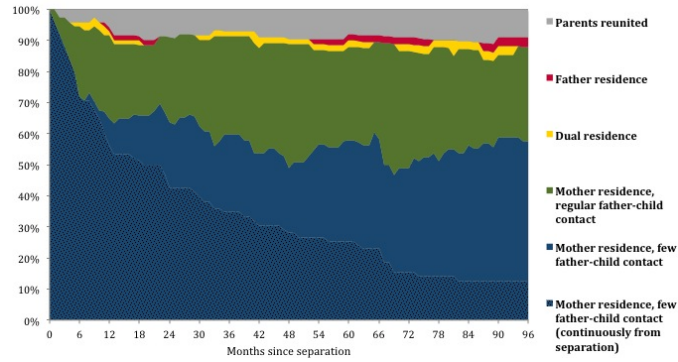


FIGURE 5 – Residential arrangements of children initially in mother residence with regular father-child contact according to time since separation

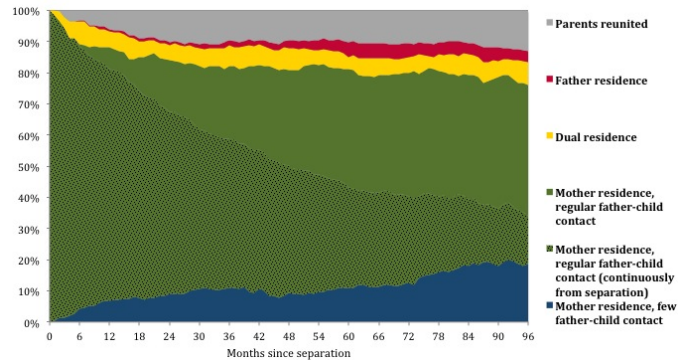
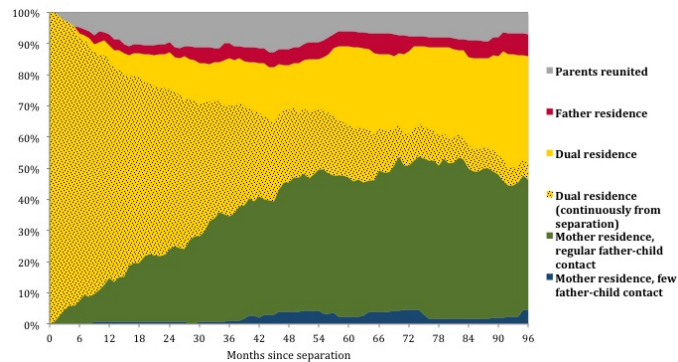


FIGURE 6 – Residential arrangements of children initially in dual residence according to time since separation



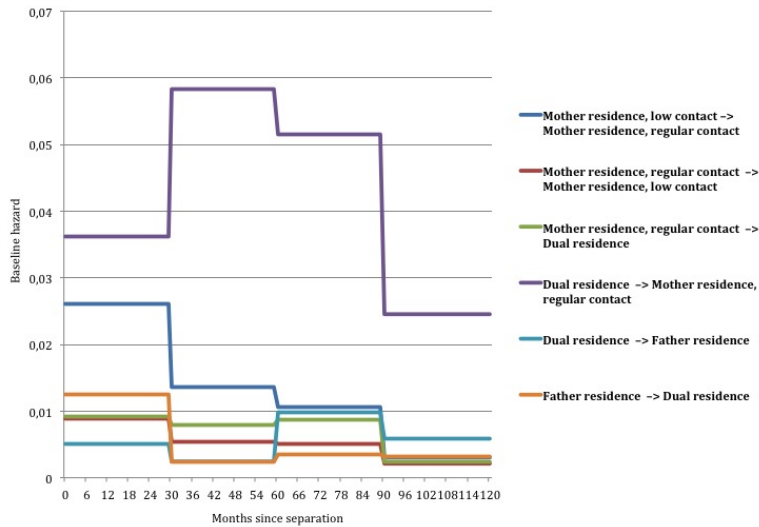
Looking at the three most frequent types of initial arrangements separately (Figures 4 to 6), we can once more notice that very few children who were living in dual residence right after separation did so continuously in the following years (black-dotted yellow area of Figure 6). But the same could actually be said of mother-residence arrangement with few or no father-child contact (Figure 4). Even the apparent stability of mother-residence arrangements with regular father-child contact noted at Figure 3 seems less obvious when we consider only continuously kept arrangements in Figure 5. If this arrangement dominates the post-separation landscape it is because many other arrangements transform into it.

Note also that very few children initially living in dual residence eventually end up having few or no contact with their father. Conversely, very few children initially living with their mother and having little contact with their father end up in dual- or father-residence arrangements at any point during their childhood.

**Multi-state model**

We present estimates for six transitions along the continuum of residential arrangements identified by the thick black arrows in Figure 1. For the time being, multi-state models for panel data can only be estimated with piecewise-constant baseline hazards and are thus not as flexible as is the semi-parametric Cox model with an undefined baseline hazard.

FIGURE 7 – Estimated piecewise-constant baseline hazards for six post-separation residential arrangement transitions of the multi-state model



To facilitate the convergence of the maximum likelihood estimation, we restricted our study to the first ten years after separation and chose only three time points where baseline hazards – or transition rates – could change: 30, 60 and 90 months. Estimated baseline hazards are plotted on Figure 7. The transition rate from dual- to mother-residence arrangements (regular father-child contact) is much higher than the other rates through out the period and the transition rate from mother residence with low contact to mother residence with regular contact is also noticeably higher during the first 60 months. The four other baseline hazards are of low, similar magnitude.

From these transition rates, we can estimate the mean length of stay in each residential arrangement. Once children entered a dual-residence arrangement, they remain in this situation for an average of 23.9 months. The equivalent statistic was 38.3 months for mother residence with low father-child contact, 52.1 months for mother residence with regular father-child contact, and 79.8 months for father-residence arrangements. That is to say that dual-residence arrangements, on average, last half as long as mother-residence arrangements with regular father-child contact, and a third of the time of father-residence arrangements.

TABLE 1 – Hazard ratios (95% confidence intervals) for covariates in six post-separation residential arrangement transitions of the multi-state model

	MR(LC) -> MR(RC)	MR(RC) -> MR(LC)	MR(RC) -> DR	DR -> MR(RC)	DR -> FR	FR -> DR
<b>Gender [Girl]</b>						
<b>Boy</b>	1,75 (1.15; 2.68)	1,10 (0.75; 1.62)	1,00 (0.67; 1.50)	0,83 (0.60; 1.16)	1,34 (0.57; 3.13)	1,24 (0.49; 3.15)
<b>Number of parents with postsecondary education [One]</b>						
<b>None</b>	0,79 (0.48; 1.28)	0,91 (0.58; 1.43)	1,32 (0.80; 2.18)	1,85 (1.19; 2.88)	4,50 (1.71; 11.80)	5,04 (1.33; 19.20)
<b>Two</b>	1,93 (1.11; 3.38)	0,94 (0.56; 1.57)	1,18 (0.72; 1.93)	0,84 (0.56; 1.26)	0,47 (0.14; 1.64)	1,42 (0.33; 6.11)

MR(LC): Mother residence, with low father-child contact  
 MR(RC): Mother residence, with regular father-child contact  
 DR: Dual residence  
 FR: Father residence

Shaded hazard ratios are significant at the 5% level.

Even if our model building process is still ongoing at this time, we added a couple of covariates in the model to give an idea of what our final results will look like. The hazard ratios for child’s gender and parent’s education level are presented in Table 1. Each column represents one transition of the multi-state model (or one arrow).

The effect of children’s gender is only significant in one transition. Boys have 75% higher risks than girls of transitioning from a mother-residence arrangement with low father-child contact to a mother-residence arrangement with regular father-child contact. This indicates, as it has been previously found (e.g. Cheadle et al., 2010), that non-



resident fathers are more prone to keep contact with their sons than with their daughters.

Children whose parents both have a postsecondary degree are twice as likely (HR=1.93) to go from low to regular-contact mother residence than children with only one parent having such a degree – the reference category. When none of a child's parents have a postsecondary degree he or she has 85% higher risks of quitting his or her dual-residence arrangement for a mother-residence arrangement. Moreover, these same children are respectively 4.5 and 5 times more likely to transition from dual residence to father residence and vice-versa. These results suggest that higher parental education tends to encourage a high level of father-child contact and to stabilize both dual- and father-residence arrangements.

## DISCUSSION

Much of our findings suggest that dual-residence arrangements are less stable than other kinds of post-separation residential arrangements, many of them transitioning to mother-residence after only a few years. This is not very surprising as the conditions needed for the prolonged sustenance of a dual-residence arrangement are indeed a lot more severe than for mother- or father-residence arrangements. For one, both parents need to stay and work in close enough proximity to the children's school. Both parents also need to own or rent a residence large enough for a complete family, even if children are present only half the time. These more restrictive conditions need to be taken into account in any discussion of dual residence instability.

As instability is often associated with poorer child well-being in family studies, we want to make clear that this is not necessarily the case for post-separation residential arrangements. The conditions that lead to the establishment of a specific arrangement at one point in time are bound to evolve: Jobs are lost and found, new out-of-town employment opportunities arise, new unions are formed, new children are born into these unions, etc. These evolving conditions might render the original arrangement untenable both for ex-partners and for their children. Thus, arrangement stability can be as much a sign of real parental concern not to disturb children's newfound habits and routine as it can be a sign of lack of communication, inflexibility or intransigence between ex-partners (Nielsen, 2011). Moreover, even if dual-residence arrangements are sometimes short-lived, they might actually have long-term beneficial effects for children. Fathers who initiate dual residence at separation almost never lose contact with their children, even after this arrangement no longer stands (see Figure 6). This finding may result either from a selection effect, from a real causal effect or from a combination of both.

Even if our model is still incomplete at this stage, it seems clear that the multi-state framework is well suited to study the post-separation residential arrangements of children. Because of their continuously changing nature, these arrangements are best

described through a model that take into account the multiple paths children can encounter. Once we add other relevant explanatory variables – such as parent's income and age, the quality of their communication with each other, their satisfaction with the involvement of the other parent and children's age at separation – to the model we will be able to give a much more precise portrait of children's residential arrangements' dynamic that what has previously been available.

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