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Title: Investigating differences in the decay of divorce-induced residential mobility across gender and urbanisation

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Urban Studies, Master's (Two-Year) Thesis, 30 Credits, Malmö University

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Spring Semester 2019

Abstract

Divorce is a life course event that triggers deviant, negative residential moves that symbolises the antithesis of climbing the traditional housing ladder, and sets individuals on an altered housing trajectory, typically associated with long-term instability compared to married counterparts. Studies have revealed that long-term instability associated with divorce is commonly connected to an increased probability of moving out of owner occupation that is greater and persists longer for women than men. Similarly, studies examining the immediate effects of divorce typically identify that women have a higher risk of moving out of the matrimonial home at the time of separation. No studies found have examined the time taken for divorcing individuals to assume their new altered housing trajectories. This study aims to develop an understanding in this regard by examining gendered differences in the time taken for individual mobility rates to assume their new housing trajectory, and considering what effects urbanisation has on divorce-induced mobility. Using the Swedish LISA database, groups of divorcing single parents with cohabiting children under 18 are compared to similar long-term divorcees whom are conceptualised to represent the post-divorce altered housing trajectory. Noteworthy findings include: 1) Divorce-induced mobility at the time of separation decays one year after divorce for Rural and Urban male groups, at which time the new housing trajectory was assumed. 2) The decay time for Big City males was four years. 3) The decay time for Urban females was four years, while Rural and Big City female groups remained at an elevated mobility state for all four years observed post-divorce. 4) Degree of Urbanisation has a significant impact for women, mobility was highest in Rural groups and lowest in Big City groups. However, no such effect is observed for males. This study is important to municipalities and urban planners because the findings presented here concerning gendered and regional impacts on mobility are relevant to forecasting housing demand. Moreover, national planners are concerned with regional inequalities and the finding that degrees of urbanisation has a mobility association for females, but not males, is interesting in light of Sweden's rural development and gender equality goals.

Keywords: Divorce, Effect, Gender, Residential Mobility, Time, Urbanisation.

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1. Introduction

Understanding and conceptualising the factors which effect migration and spatial mobility has been deeply pursued throughout the 20th century. In exploring when, where, and why people move homes, authors have presented theories incorporating socio-economic demographics, the housing career, and the life cycle in the growing body of literature studying residential mobility (Elder, 1981; Feijten & van Ham, 2007; Glick & Parke, 1963; Lee, 1889). While residential mobility is connected to broad concepts such as age, gender, or income, the current and dominant theoretical framework for explaining residential moves are life course events (W. A. V Clark, 2013; Courgeau, 1985; Feijten & van Ham, 2007). That is, residential mobility is most strongly connected to certain events, such as entering into homeownership, relationship formation and dissolution, having dependent children, entering higher education, incarceration, etc., and these events are used to understand residential mobility in conjunction with other factors (W. A. V. Clark & Lisowski, 2017; Feijten & van Ham, 2007). Although, the depth and richness to be found in mobility research far exceeds this introductory explanation (Coulter, van Ham, & Findlay, 2015).

Divorce, as member of the relationship dissolution category of life course events, is especially interesting for this study because the connection between divorce and residential moves is very direct. These moves have the characteristics of being unexpected, immediate, unplanned, and constrained by availability, affordability, and proximity (W. A. V. Clark & Lisowski, 2017; Mulder, ten Hengel, Latten, & Das, 2012). Furthermore, moves associated with divorcing are commonly perceived as negative or deviant moves, where the stereotypical idea of climbing a housing ladder is disrupted as individuals may downsize or move to less desirable areas (Feijten & van Ham, 2013). Studies have found evidence that several residential moves are often required before an individual finds a new suitable housing equilibrium (Feijten, 2005; Feijten & van Ham, 2007, 2010; Mikolai & Kulu, 2018b; Thomas, Mulder, & Cooke, 2017). Studying residential moves that incur because of divorcing (divorce-induced mobility) is especially important because mobility in this sense is extremely negative and stressful for people. Municipal and national actors have a vested interest in understanding divorce-induced mobility so that they can plan housing and support mechanisms accordingly. In this regard, divorce has extremely gendered residential mobility outcomes that are consistently documented – women tend to exhibit more extreme instability around the time of a divorce than men do (Cooke, Mulder, & Thomas, 2016; Coulter, Van Ham, & Feijten, 2012; Feijten, 2005; Feijten & van Ham, 2007, 2010, 2013, Mikolai & Kulu, 2018a, 2018b; Mulder & Malmberg, 2011; Mulder et al., 2012; Mulder & Wagner, 2010; Smits, Mulder, & Hooimeijer, 2003; Thomas et al., 2017; Thomas, Mulder, & Cooke, 2018; Warner & Sharp, 2016).

The body of residential mobility research has devoted much attention to understanding the immediate effects of divorce, and other life course events. Similarly, the long-term effects on residential mobility are well documented, albeit with wider variation among studies. The general consensus indicates that individuals remain at an elevated state of mobility compared to their married counterparts, and that divorce puts individuals on a new altered housing trajectory (Feijten, 2005; Feijten & van Ham, 2010; Herbers, Mulder, & Mòdenes, 2014; Mikolai & Kulu, 2018b; Warner & Sharp, 2016). The conceptualisation of a new altered housing trajectory post-divorce is fascinating. This idea stipulates that divorce changes the long-term expectations of the housing situation of individuals, and therefore that it is incorrect to expect divorcees to return to a mobility level that is on par with their married counterparts. Figure 1 presents the altered housing trajectory post-divorced in a visual manner, where the blue line represents residential mobility behaviour, the grey arrow signifies the housing trajectory of a married individual, and the orange dashed line represents the housing trajectory for divorced

persons. At the conceived time of divorce, the blue line departs from the grey, expected trajectory for married persons, enters a period of extreme instability, then returns to a new normal state that conforms to the orange housing trajectory for divorcees, not the grey trajectory for married individuals.

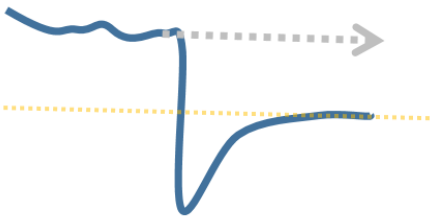

Figure 1. Visually depicting different housing trajectories for marriage and post-divorce.

However, this study identifies there is a research gap in understanding the duration of the immediate effects of divorcing and the time taken for the new altered housing trajectory to be assumed. Because gender has a large effect in the short and long-term mobility outcomes of divorce, it is expected that gender also impacts how quickly the new altered housing trajectory is assumed.

A further angle of enquiry that appears lacking in the residential mobility literature reviewed, are the impacts of urbanisation. How divorce-induced mobility is connected to urbanisation is an interesting line of enquiry given our rapidly urbanising globe, that has been conceptualised in different ways in previous mobility studies (Feijten, 2005; Mulder & Malmberg, 2011; Thomas et al., 2017). There appears scope to explore the understanding of urbanisation and the effect it has on mobility, and this study has the opportunity to further this discussion by including urbanisation in the primary investigation of the decay of divorce-induced mobility.

This study aims to contribute to the understanding of residential mobility, by investigating the decay of divorce-induced mobility across gender and urbanisation in a Swedish context. Central to this study is the conceptualisation that divorce alters an individual's housing trajectory. By calculating the time taken for a divorcing individual to exhibit mobility behaviour in line with an individual already on a post-divorce housing trajectory, this study will attempt to quantify the decay time of divorce-induced mobility. The average frequency of residential moves made per year of divorcing single parents with cohabiting children under 18 will be compared to the average frequency of residential moves made per year of long term divorced single parents with cohabiting children under 18. A discussion on these observations follows to evaluate the effects of gender and urbanisation on divorce-induced mobility.

2. Literature Review

2.1 Gender

Numerous studies have investigated the gendered nature of divorce and its impacts on residential mobility. The consensus of research recognises that divorce is a disruptive life course event that induces residential mobility for both men and women (W. A. V. Clark & Lisowski, 2017; Feijten & van Ham, 2010, 2013; Mulder et al., 2012; Mulder & Wagner, 2010; Warner & Sharp, 2016) (*Cf.* Leopold, 2018). This study focuses on findings that women exhibit

a higher probability of making a move and higher numbers of moves made because of divorce than male counterparts. This increased mobility may be conceptualised to form two parts: movement out of the matrimonial home, and adjustment moves recovering from the instability of divorce.

The decision on who moves from the marital home is a complex negotiation between partners (Coulter et al., 2012; Mulder & Malmberg, 2011; Mulder & Wagner, 2010). The relative resources of the partners has been submitted as an important factor by studies in determining who remains living in the matrimonial home (Coulter et al., 2012; Dewilde, 2008; Feijten, 2005; Mikolai & Kulu, 2018a; Mulder & Malmberg, 2011; Mulder et al., 2012). Inequalities in resources between genders may arise due to macro level forces and structural connections (Coulter et al., 2012, 2015; Mulder & Hooimeijer, 1995). For example, Cooke, Boyle, Couch & Cooke, Boyle, Couch & Feijten (2009) submit that divorce amplifies gender pay gaps and differences in human capital. Thomas et al. (2017) expand the notion of human capital inequalities by observing how women operate in more restricted labour markets and are less likely to operationalise human capital than men (Agadjanian & Hayford, 2018; Bradbury & Katz, 2002; Davis & Jennings, 2018; Kang, Song, Kim, & Sohn, 2009; Killewald, 2016; Smits et al., 2003). Additionally, studies have explored the notion that resource inequalities between genders may be a product of educational attainment differences, and that personal development sacrifices made by women in pursuing marriage can lead to a resource deficit compared to male partners (Cooke et al., 2009; Thomas et al., 2017). Alternatively, resource inequalities may be considered at an individual level. Mikolai & Kulu (2018a) find that women are more likely to move out of the marital home if their income is less than half of the male partner. The relative ages of partners in a relationship is commonly associated with incomes and the accumulation of capital, influencing a partner's ability to manage the upkeep of the common home post separation (Mulder & Malmberg, 2011). In Sweden the age of first entering marriage is three years older for men than women (Statistics Sweden, 2015), suggesting there would be a resources disparity between the average couple. Furthermore, the lower relative resources of women may leave them with more restricted residential choices in the post-divorce adjustment period (Feijten & van Ham, 2007). However, the dynamics in these decisions concerning mobility are more nuanced, and include considerations about children and tenure type in addition to resources.

Where children are involved, Thomas et al. (2017) observed that fathers are more likely to leave than mothers almost regardless of resource based inequalities and housing conditions, echoing the findings of Mulder & Wagner (2010) that the ex-partner with custody of children is less likely to leave. Given that children typically reside with mothers post-divorce in Sweden (Jensen, 2009; Mulder & Malmberg, 2011; Statistics Sweden, 2014), it would be reasonable to expect similar gendered trends in this study. The concepts of linked lives (Thomas et al., 2017) and increased location specific capital (DaVanzo, 1981) are submitted as explaining factors as to why children effect mobility outcomes that surpass considerations of relative resources between partners. Additionally, the partner initiating the separation is more likely to move out of the common home, as is the case if the reason for separation is the formation of a new relationship for one of the partners (Mulder & Wagner, 2010).

The tenure type of the matrimonial home is a complex determinant of residential mobility, for both the decision on who moves out, and for subsequent adjustment moves (Falkingham, Sage, Stone, & Vlachantoni, 2016). Mulder et al. (2012) showed women were more likely of move out of the matrimonial home if it was owner occupied. Similarly, Feijten (2005) found that women were more likely to leave owner occupation than men after divorce, while men were more likely to move between owner occupied homes. These findings are significant for

the period of post-divorce adjustment because owner occupation is recognised as a more stable tenure type than rented accommodation or social housing (Mulder & Hooimeijer, 1995; van Ham & Clark, 2009; Warner & Sharp, 2016). Degree of urbanisation in which the separation occurs may even have gendered mobility outcomes, likely due to regionally varying trends in the composition of housing stock by tenure type (Mulder et al., 2012).

2.2 Long-Term Effects of Divorce and the Altered Housing Trajectory

Tenure type and the associated risk of moving home is connected to this study's conceptualisation of adjustment moves recovering from the instability of divorce, and the new altered housing trajectory that is produced by divorcing. A few key pieces of research establish a point of departure for investigating the decay time of divorce-induced mobility:

Firstly, Warner & Sharp (2016) evaluate that divorce as a disruptive event places individuals on a long term trajectory of instability. They calculate that divorce had a significant long term effect that lasted for the duration of the divorced state, on average 4,92 years. It is difficult to evaluate Warner & Sharp's (2016) findings by gender and urbanisation.

Secondly, Feijten (2005) finds evidence that one year after divorce, the risk of leaving owner occupation disappeared for men while women remain at risk for longer. This finding may be interpreted to indicate that males should be expected to return to a 'normal' mobility level after one year, or that potentially the destabilising effects of divorce have decayed after one year, if tenure type is taken to be a primary driver of mobility behaviour post-divorce.

Thirdly, Feijten & van Ham (2010) expand our understanding by calculating that elevated mobility of divorcees remains higher than married couples for up to eight years, while divorcees entering a new relationship experience a decline in mobility after 3,5 years, and return to a 'married level' of mobility after five years. Furthermore, Feijten & van Ham's (2010) UK study finds that the risk of moving out of owner occupation persists for five years, and there is no significant difference between genders in this regard. It is worthwhile noting that comparing the mobility behaviours of divorcees to married persons may not be a good way to evaluate the decay of divorce-induced mobility given that literature suggests a new altered housing trajectory is created by divorcing (Feijten, 2005; Thomas et al., 2017; Warner & Sharp, 2016). This point was also raised in the introduction as previously depicted in Figure 1.

Lastly, Mikolai & Kulu (2018b) find that at the time of divorce the risk of moving is 2,9 times higher for women compared to married counterparts and 3,2 for men, decreasing to 1,3 for women, and 1,2 for men, three years after divorce. These mobility outcomes are effected by the probabilities of moving out of and into various tenure types varying between genders over time from divorce. A noteworthy reflection on these studies is the interest in the tenure trajectories of individuals after divorce, suggesting that the long-term effects of divorce-induced mobility are heavily influenced by tenure type.

Following the conceptualisation that divorce alters the 'normal' housing trajectory of individuals, setting them on a new path of long term instability (Feijten, 2005; Feijten & van Ham, 2010; Mikolai & Kulu, 2018b; Thomas et al., 2017; Warner & Sharp, 2016), is not immediately clear in the selected literature reviewed how long it takes for divorced-induced instability to decay. Furthermore, there is no indication of the time taken for individuals to assume their altered, 'new normal' housing trajectory. Moreover, it is not clear whether there is any gendered difference in time taken to adjust to a 'new normal'.

2.3 Urbanisation

A number of studies consider the role that urbanisation plays in residential mobility, and urbanisation is a complex variable that may capture multiple effects that differ by region. Tenure type effects mobility, it is generally understood that owner-occupation is a more stable form of living than rental or social housing (Falkingham et al., 2016; Feijten, 2005; Feijten & van Ham, 2007, 2010, Mikolai & Kulu, 2018b, 2018a; Warner & Sharp, 2016). In addition, a common trend in many countries is that rural areas have greater proportions of owner-occupied tenure, while the proportion of rentals is greatest in cities. It is therefore natural that urbanisation may be capturing the composition of housing stock, as at differs across regions, which can be associated with regional differences in residential mobility behaviour.

In the context of the Netherlands, Feijten (2005) anticipated that more urban areas would lead to higher levels of mobility due to the prevalence of rental accommodation in cities. That study unexpectedly observed that mobility behaviours of owner-occupiers varied regionally, by degree of urbanisation: Owner-occupiers were more mobile in urban areas than rural areas, moving more often between owner-occupied homes. This finding connects to other observations that certain demographics of the population tend to cluster in cities.

Regional policy and development is connected to residential mobility. Coulter et al. (2015) note that British higher education policy has increased public participation in universities. The clustering of universities in urban areas rather than rural areas means that residential mobility that is connected to entering further education has regional differences. Wall, Aboim, Ramos & Nunes (2013) also connect regional migration difference in Portugal to the development of higher education in the 1980s and 1990s. Similarly, individuals with higher educational attainment have more to benefit from operating in within wider labour markets and may be more mobile (Mulder, 2000). The regional clustering of jobs that require specialised education may be an additional way that mobility differs across degrees of urbanisation (Mulder & Malmberg, 2011). In literature investigating neighbourhood effects on mobility and selective migration, there is recognition that mobility may be affected by a combination of the place, and the composition of the population (Andersson & Bråmå, 2004; Boschman, 2015).

Mulder & Malmberg (2011) theorised that due to the dense clustering of amenities and increased availability of job opportunities and housing stock, that more urbanised areas would require fewer moves post-divorce, which was echoed by Thomas et al. (2017). While tenure type has appeared as a dominant focus in literature investigating the long-term mobility outcomes of divorce, the literature reviewed in respect of urbanisation has presented a plethora of arguments associating urbanisation with mobility.

Because urbanisation is a complex phenomenon that captures many associations, it may be challenging to isolate causes and effects on mobility. Some studies reviewed encountered difficulty in this way, where the anticipated effects of urbanisation were not supported by observation (Mulder, 2000), or highlight that the operationalisation of ‘urbanisation’ diminishes findings (Coulter et al., 2015; Feijten & van Ham, 2013).

Therefore, this study expects that urbanisation has an effect on residential mobility in general, that also corresponds to the decay of divorce-induced mobility. However, it is challenging to determine if urbanisation has a stabilising or destabilising impact due to the variety of associations that may be captured by a degree of urbanisation variable.

3. Hypothesis Formation

Much of the literature reviewed discusses and analysis residential mobility in terms of probability. The data collected for this study will be in the form of the average frequency of residential moves. Therefore, it is prudent to verify the connectivity of these two forms of understanding mobility by testing a benchmark of residential mobility behaviour.

Hypothesis 1: Divorcing and Non-Divorcing individuals have different mobility frequencies.

Testing this hypothesis aims to establish that the expected increased risk of mobility at the time of divorce translates to an increased frequency of residential moves made around the time of divorce.

Due to the gendered inequality of resources, and increased risk of moving from owner occupation to a more unstable tenure time, it is expected that women will exhibit more extreme instability at the time of divorce, and generally over the long term.

Hypothesis 2: Divorce-induced mobility has gendered outcomes, women move more frequently than men.

Due to the different shares of owner occupied accommodation concentrated in Sweden's urban areas, and different supplies of jobs, housing and density of amenities, it is expected that increased urbanisation has an effect on residential mobility and produces some regional variance. However, it is unclear if the effect will be stabilising or destabilising.

Hypothesis 3: Increasing degree of urbanisation has an effect on residential mobility.

Because residential mobility is expected to have differing outcomes across gender and urbanisation, it is expected that the time taken for divorce induced residential mobility to decay should accordingly vary across gender and urbanisation.

Hypothesis 4. Decay of elevated residential mobility in divorcing groups is different across genders and degree of urbanisation.

4. Method

Using register data extracted from the *Longitudinell integrationsdatabas för Sjukförsäkrings- och Arbetsmarknadsstudier* (LISA database) prepared by Statistics Sweden this study collects and compares the average frequency of residential moves made per year for specific agglomerated groups of individuals. The LISA database contains microdata for all individuals in Sweden for the years 1990-2014. Individuals over 16 years of age appear in the database as individuals, younger persons are only identifiable through their RTB family units (Statistics Sweden, 2016a). Malmö University provided the data extraction for this study using the University's existing subscription to a selection of available variables in the database.

First, urbanisation is operationalised and quantified with each municipality in Sweden categorised into degrees of urbanisation. Degrees of urbanisation are presented as a typologization of municipalities on the basis of population density, population size and the population's proximity to population agglomerations, generally in line with practice by Eurostat and the OECD. The division is based on population in coordinated statistics (kilometre squares) to calculate the rural and non-rural population of a municipality and different

threshold values in order to determine the municipality's group affiliation (Myndigheten för tillväxtpolitiska utvärderingar och analyser, 2014) (Referred to in text as Tillväxtanalys). Using these definitions from Tillväxtanalys, which incorporates Funktionella Analysregioner (Myndigheten för tillväxtpolitiska utvärderingar och analyser, 2015), goes some way towards addressing the modifiable areal unit problem in this study. Because Funktionella Analysregioner consider neighbouring municipalities within a broader, regional labour market in calculating degree of urbanisation, this definition is less susceptible to extreme values from population and density calculations based solely on administrative boundaries.

Table 1. Definitions of degrees of urbanisation

Short Name	Urban Code	Definition	# Municipalities
Rural	1	municipalities with at least 50 per cent population in rural areas	130
Urban	2	other municipalities with less than 50 per cent population in rural areas	131
Big City	3	municipalities with less than 20 per cent of the population in rural areas and a population of at least 500,000 inhabitants gathered between neighbouring municipalities	29

Translated and adapted from Tillväxtanalys (2014)

The degree of urbanisation of each municipality will be used when agglomerating individual level data from the LISA database into three groups: Rural, Urban, and Big City.

The sample of divorcing persons is created by specifying that for the years 2010-2014, the marital status of the individual must be ‘divorced’. For the year 2009 the marital status must be ‘not divorced’ in order to capture a change in marital status. The reference groups must be ‘divorced’ for all years 2008-2014. In addition to the marital status variable, it was also specified that the family structure of the individual must be ‘single mother with child 0-17’ or ‘single father with child 0-17’. To be included in the reference groups, individual also needed to meet the family structure criteria for every year 2008-2014. The divorcing groups needed to meet the single parent criteria for the years 2010-2014, however for 2008 and 2009 the family structures ‘husband’ ‘wife’ ‘registered partner’ and ‘cohabitant with common children’ were permitted to capture the family structures as they stood prior to divorcing.

The number of registered changes of address each year were recorded for all individuals meeting the marital status and family structure criteria. Additionally, disposable income personalised from family was recorded to give an insight into the resources of individuals. The data was then collapsed into 12 groups, by gender (male or female), degree of urbanisation in their municipality (Rural, Urban, Big City), and whether they were divorcing in 2010 or not.

For each of the groups, the number of individuals in each group was recorded, together with the arithmetic mean of the frequencies of residential moves made in a year, respective standard deviations, average employment rate and disposable income calculated. It is necessary to agglomerate the data so that it is not possible to identify any individuals in the database over privacy concerns. The data for disposable income is calculated for November of the given year in the database, while marital status, family structure, employment, and residence are represented as the register data stood at the 31st December of the given year.

Therefore, it is possible that the register data misses a marriage and subsequent divorce if it happens within the same calendar year.

Similar to the challenges Mulder & Malmberg (2011) faced working with the Swedish ASTRID database, the LISA database struggles to capture extramarital cohabiting unions. The presence and residence of children in the register data goes some way to alleviating the challenges of identifying new relationship formation. The family structure variable is useful in this regard to identify and exclude new cohabiting unions forming. However, these would only be identified if such information enters the register. The register data cannot be used to capture the true realities of life, for example the registered residence of the children may not reflect their habitual residence arrangements between parents. It is worthwhile acknowledging that this study operates through a confined lens of register data reality.

The data sample was constructed in this way in an attempt to isolate the effects of divorce on residential mobility by excluding other life course events such as the formation of new relationships, and children moving out of the parental home. Initially, a constraint on age was attempted, however this was found to substantially reduce the sample size and was dropped from the final extraction process.

5. Limitations

There are certain limitations to the understanding of residential mobility this study can develop due to the design and nature of research that this study performs. Firstly, this study is a quantitative, enumerative statistical study, relying on a large sample size of over 100.000 individuals to glean insight into generalised mobility behaviour (Deming, 1953). Using a relatively large database in this way enhances this study's claims of generalisability, while using standardised statistical techniques aids reproducibility of the findings (Bryman, 2012). However, this study still encounters some issues with small sample sizes.

The next section presenting the data will show the smallest sample size among the groups is 224. Considered alone, a group's sample size this small is not too concerning. However, because the observed means are close to zero, the issue of minimum resolution given the sample size is encountered: what appears a noteworthy increase in the mean between years is actually an increase of one extra move per year. The significant differences in the numbers observed between genders consequently affects the strength of generalised conclusions this study can make. Similar concerns connected to size and data arise because this study is only able to control for a small number of variables. This is because resources for this study are limited by time and accessibility of data. While this study attempts to control for and isolate the effects of variables, it pales in comparison to mature research such as Warner & Sharp (2016).

The temporal resolution of the database also limits the understanding that is developed in this study. Because the nature of divorce-induced mobility is characterised as immediate and time constrained, observing individuals on a yearly basis, as opposed to a monthly basis as some studies have done, may inaccurately describe time depended mobility behaviours (W. A. V. Clark & Lisowski, 2017; Mikolai & Kulu, 2018b, 2018a; Mulder et al., 2012). Additionally the LISA database is limited to showing individuals of age 16 and over. There may be differences in the distribution of the cohabiting child's age that correlates with gender or degree of urbanisation that cannot be observed. Because age is a factor that influences mobility, the age

of cohabiting children plays a large role in a household's mobility (Long, 1972; Mulder et al., 2012).

Using the LISA database as the single source of data for this study also means that a registered reality is being observed. The quality of Swedish register data is very high, it captures the entire population of individuals over the age of 16 residing in Sweden, which represents an improvement in the quantity and quality of observations compared to panel survey data. However, it can never be a perfect reflection of real life. Here, de jure divorce is observed, not physical separation as was the case in Mulder and Malmberg (2011). As will be shown in the next section, the year before divorce, 2009, has significant mobility differences most likely because couples effect separation during the 'period of reconsideration' rather than the legalisation of divorce (Sveriges Domstolar, 2018). There is also the possibility that informal living arrangements are not captured by the register data. Registration of a child's address with parent is presumed to be accurate because of the divorce proceedings, however the actual living arrangements and behaviour of children cannot be known. This raises the question as to what extent cohabiting dependent children in this study effect residential mobility in the same way as understood in the literature reviewed.

This study does not collect any qualitative data, and is therefore reliant on the theories developed in previous research. Consequently, there is an unknown aspect in the reasons and motivations for residential mobility behaviour that is observed. Furthermore, the collection of qualitative data to supplement this study is not considered as a worthwhile course of action. The amount of qualitative data required to avoid anecdotalism would be large and beyond the resources available to this study (Bryman, 2012). This study's deductive approach to theory is concerned with evaluating hypotheses that are derived from previous research, which largely holds a positivist empirical standpoint (Bryman, 2012). This study misses an opportunity to consider residential mobility in light of changing gender norms.

The recent acceptance of a non-binary gender in society could be important in how gender effects of residential mobility are conceptualised. As W.A.V. Clark (2013) detailed the limitations of age as an explanatory variable for residential mobility, perhaps gender will also require a similar re-think. For the purposes of working with register data on the LISA database, this study adopts a binary gender perspective out of necessity. Similarly, the previous research reviewed adopts a binary gender perspective, continuing to do so facilitates international comparisons over time. This study cannot discern how non-binary individuals behave at the time of divorce.

Finally, this study also assumes a hetero-normative view of relationships, marriage and divorce, that is separated from reality. This decision was also taken to facilitate comparison with existing research. The LISA database has the possibility to work with 'registered partnerships', that is the term for same-sex unions before gender limitations were removed for marriage in 2009 (Statistics Sweden, 2016a), and the dissolution of these partnerships. This study did not take the opportunity to investigate same-sex relationship dissolution-induced mobility outcomes, and instead focusses on the classical hereto-normative position taken by existing research. While research investigating the mobility dynamics of non-hetero-normative relationship dissolution may be lacking, it is submitted that the variety of factors explored in the literature review, such as relative resources, age, tenure type, etc., provide sufficient means to understand mobility in this new gender and relationship paradigm.

6. Data and Analysis

This section will conduct the frequency analysis using the register data extracted from the LISA database as described in the Method section. Each hypothesis will be tested in turn using the extracted data. This will develop a perspective for understanding residential mobility behaviour connected to divorce, gender, and urbanisation that will be reflected on throughout this section and lead to the Discussion section.

First, the full data sample extracted from the LISA database is presented in Table 2, rounded to 3 decimal places for ease of reading. The Figures 2 through 9, which are shown later in this section, are produced from the extracted sample. It is noted that some elements of this analysis section refer to calculations performed on the data that is not expressly visualised in this paper. By providing the full data extraction in Table 2, the critical reader has the opportunity to validate the claims of this study.

Moreover, the possibility to extend this area of research is promoted, and researchers may reflect on the efficacy of using frequency analysis in the field of residential mobility research. The dominant method within residential mobility research is logistic regression analysis. From a methodological perspective, it is interesting to examine to what degree findings derived by frequency analysis confirm or deviate from findings derived by logistic regression analysis. Finally, this study notes that Appendix 1 brings an additional methodological contribution to the field with a reflective discussion on comparing actual and theoretically-modelled standard deviations to facilitate the interpretation of data. This methodological reflection is placed in Appendix 1 because it is not the primary focus of this study. Here, the study is investigating the decay of divorce-induced mobility across gender and urbanisation, while reflections on theoretically-modelled standard deviations developed from this research process they are supplementary to the main objective of this paper.

Table 2. The data sample extracted from the LISA database, individual register data is agglomerated into groups based on gender, degree of urbanisation, and divorcing in 2010 (continued on the next page):

Gender	Urban code	Divorcing Group	Average Moves 2008	Average Moves 2009	Average Moves 2010	Average Moves 2011	Average Moves 2012	Average Moves 2013	Average Moves 2014	Observations
1	1	0	0,117	0,088	0,085	0,067	0,058	0,064	0,059	2976
2	1	0	0,280	0,262	0,265	0,210	0,180	0,176	0,165	12802
1	2	0	0,117	0,109	0,102	0,081	0,072	0,072	0,064	8364
2	2	0	0,269	0,249	0,241	0,177	0,165	0,154	0,143	41572
1	3	0	0,130	0,099	0,096	0,072	0,058	0,060	0,060	4979
2	3	0	0,197	0,186	0,167	0,117	0,109	0,102	0,102	32110
1	1	1	0,098	0,085	0,129	0,054	0,058	0,067	0,067	224
2	1	1	0,194	0,422	0,432	0,273	0,210	0,202	0,188	644
1	2	1	0,079	0,124	0,137	0,083	0,073	0,064	0,069	700
2	2	1	0,240	0,409	0,412	0,204	0,180	0,186	0,146	2344
1	3	1	0,116	0,160	0,187	0,089	0,096	0,080	0,059	438
2	3	1	0,220	0,302	0,349	0,151	0,142	0,121	0,123	1983

Gender 1 = Male 2 = Female
Urban code 1 = 'Rural' 2 = 'Urban' 3 = 'Big City'
Divorcing Group 0 = No (reference group) 1 = Yes (divorcing group) Note that 2010 is the year of divorce for the Divorcing group
Average moves* Average frequency of residential moves made for each year 2008-2014

Table 2 Continued. The data sample extracted from the LISA database, individual register data is agglomerated into groups based on gender, degree of urbanisation, and divorcing in 2010:

Gender	Urban code	Divorcing Group	Standard Deviation 2008	Standard Deviation 2009	Standard Deviation 2010	Standard Deviation 2011	Standard Deviation 2012	Standard Deviation 2013	Standard Deviation 2014	Average Disposable Income	Employment % 2010
1	1	0	0,367	0,313	0,316	0,271	0,251	0,255	0,251	1540	0,887
2	1	0	0,537	0,523	0,519	0,473	0,443	0,434	0,421	1264	0,747
1	2	0	0,355	0,351	0,336	0,299	0,278	0,282	0,262	1714	0,892
2	2	0	0,527	0,506	0,494	0,430	0,425	0,410	0,396	1327	0,731
1	3	0	0,368	0,328	0,320	0,289	0,262	0,263	0,256	2055	0,869
2	3	0	0,465	0,456	0,428	0,362	0,350	0,340	0,342	1477	0,726
1	1	1	0,340	0,295	0,398	0,226	0,253	0,314	0,252	1462	0,897
2	1	1	0,474	0,605	0,616	0,499	0,471	0,466	0,425	1287	0,750
1	2	1	0,280	0,397	0,387	0,301	0,271	0,268	0,285	1782	0,904
2	2	1	0,539	0,595	0,596	0,453	0,417	0,446	0,385	1314	0,699
1	3	1	0,420	0,408	0,485	0,308	0,358	0,311	0,255	4202	0,879
2	3	1	0,512	0,566	0,576	0,415	0,394	0,364	0,370	1499	0,671

Gender 1 = Male 2 = Female
Urban code 1 = 'Rural' 2 = 'Urban' 3 = 'Big City'
Divorcing Group 0 = No (reference group) 1 = Yes (divorcing group) Note that 2010 is the year of divorce for the Divorcing group
Standard Deviation* Standard deviation of the corresponding average frequency of residential moves made for each year 2008-2014
Average Disposable Income Average disposable income of individual, personalised from family
Employment % 2010 Percentage employed as at 31st December 2010.

6.1 Descriptive statistics

It is important that the sample extracted from the LISA database is representative of the total population to improve the strength of claims that this study is proportional to the general population and that the findings can be generalised (Bryman, 2012). Table 3 compares the characteristics of the extracted data sample to population data for Sweden. It is important to highlight the representation of genders here as this study is concerned with mobility behaviour that differs across gender. While the extracted sample observed many more women than men, this is generally the case for divorced single parents in Sweden.

Table 3. Descriptive statistics for the data sample extracted from the LISA database compared with descriptive statistics of the Swedish Population. Source: Statistics Sweden.

	Total size	Of which Female	% Female	% Employed	
				Men	Women
Total Sweden Population as of 2017	10.120.242	5.038.000	49,8%	89,4%	84,5%
Population who are single parents with cohabiting children ages 0-17 as of 2013	261.308	205.506	79%	No Data	No Data
Extracted Sample	109.136	91.445	84%	88,8%	72,1%
Reference Group	102.803	86.484	84%	88,2%	73,5%
Divorcing Group	6.333	4.971	78%	89,4%	70,7%

Despite growing trends of shared custody of children between partners in Sweden (Statistics Sweden, 2014), here the registered reality shows that more children are registered as living with their mother than their father, as expected from previous research on Sweden (Jensen, 2009; Mulder & Malmberg, 2011). The ratio between male and female observations in this sample is roughly in line with the overall trend in the entire population of single parents (Statistics Sweden, 2013).

This sample captures significantly fewer family units than the total measured for 2013, because this sample requires that the family unit be classified as a single parent for all years 2008 – 2014. Family units that are not single parents for any of the years are excluded from the sample. Family units may lose their single parent status through a number of processes. For example, forming new relationships which enter the register, the child has a different registered address to the parent, or the child becomes 18 years of age.

The division of the sample between degrees of urbanisation is 15%/49%/36% for Rural, Urban, and Big City respectively. The sample also shows that male groups have a higher average personalised disposable income than their counterpart female groups. These differences between disposable income are smallest for Rural groups, and largest for Big City groups in both absolute kronor and percentage terms. In employment terms, the sampled males conform to the national employment rate. The employment rate among sampled women is significantly lower than the national female average, likely associated with single parent status. It is interesting that this difference in employment rate is large for women, but small for male single parents.

6.2 Hypotheses

Hypothesis 1: Divorcing and Non-Divorcing individuals have different mobility frequencies.

To evaluate the first hypothesis, all groups from the extracted data sample are sorted to form general divorcing and reference groups. Figure 2 shows that the divorcing group have higher frequencies of residential moves than the reference group in 2010, the year of divorce. Additionally, we can observe similar increase in 2009, the year preceding divorce. Comparing the average frequency of residential moves in the divorcing group to reference group around the time of divorce leads to the confirmation of the first hypothesis.

It is noted that Swedish courts normally require a 'period for reconsideration' lasting 6 – 12 months, if children are living with parents when a divorce application is filed (Sveriges Domstolar, 2018), except for certain cases (Regerinsgkansliet, 2013). Therefore, there is an expected likelihood that some parties will physically separate the year preceding the legal registration of divorce, and that this is captured on the register data in 2009. The literature reviewed addresses the period immediately before divorce from the perspective of deciding who effects separation and moves out of the matrimonial home. Some studies using register data also face this challenge of determining if mobility before registration is divorce-induced, while other studies measure the physical separation as the point of effecting the divorce to meet this challenge (Feijten, 2005; Feijten & van Ham, 2007; Mulder & Malmberg, 2011). In 2008, we can observe that the divorcing in 2010 group has a lower mobility rate than the reference group. This is to be expected because married households typically have lower mobility rates than divorced persons (Warner & Sharp, 2016).

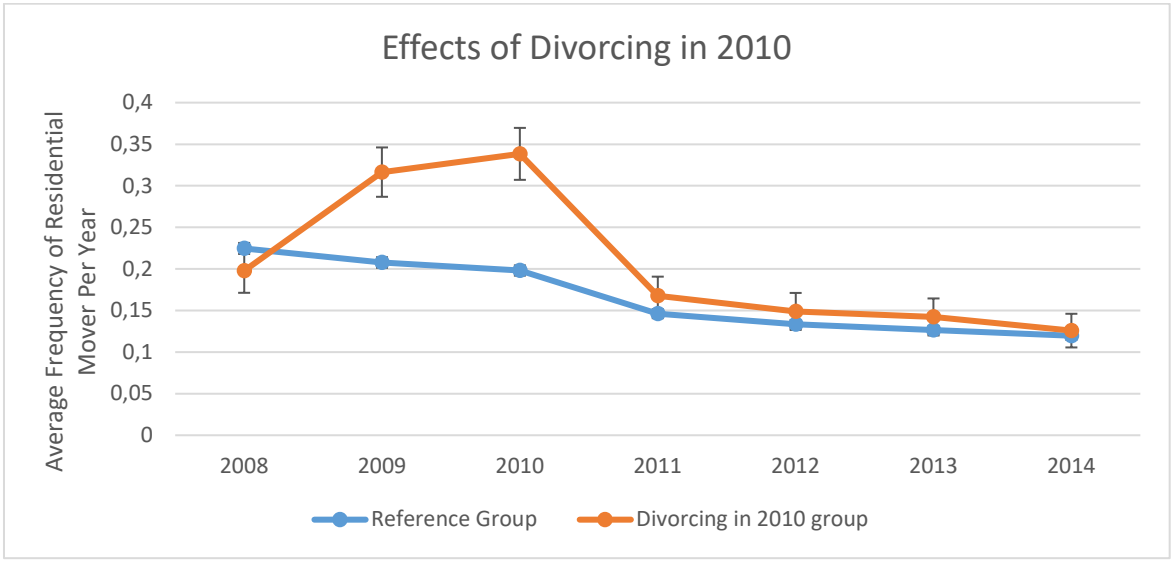

Figure 2. Comparing the mobility of the divorcing in 2010 group to the reference group, by sorting all individuals into either divorcing or reference, regardless of gender and degree of urbanisation, with 95% confidence intervals[1].

For the reference group, the frequency of residential moves is stable over time and does not exhibit any spikes in mobility. The reference group's frequency of moves decreases gradually over time,

[1] Standard deviations for the purpose of calculating confidence intervals for combined groups, such as all divorcing groups, are derived from the summation of variances of the comprising groups such that:
$\sigma_{combined} = \sqrt{\sum {\sigma_1}^2 + {\sigma_2}^2 + \cdots + {\sigma_n}^2}$

which is interpreted to reflect the effects of the sample cohort ageing between 2008 and 2014. It is prudent to explain that the ageing of children is also an important factor: the literature reviewed identifies that new born children are typically destabilising for household residential mobility, whereas school age children are typically stabilising (Gambaro, Joshi, & Lupton, 2017; Long, 1972). While 7 years of ageing in the adult context is not expected to have a dramatic effect on mobility behaviour, 7 years of ageing for the children covers the period from birth to entering compulsory schooling (Swedish Institute, 2018). The register data used cannot identify births of any additional children in the single parent household. While Courgeau (1985) observed that the births of subsequent children after the first did not have a substantial effect on spatial mobility, it not clear in this modern Swedish context whether births of additional children into the household would be destabilising as new born children change the housing needs of households (Gambaro et al., 2017; Lee, 1889). Or, if the alternative theory holds that additional children would be a stabilising factor on household mobility through the cumulative effect of children (Long, 1972; Mulder & Malmberg, 2011).

Figure 2 also reveals the first insight into the decay of divorce-induced mobility. We can observe that in the years after the divorce, 2011 onwards, the divorcing group exhibits higher mobility than the reference group. This elevated mobility appears to decrease over time, whereby in 2014 the elevated state of mobility is much less and the divorcing group appears to intercept the reference group. The interception of the divorcing and reference group is conceptualised to represent the time at which the new altered housing trajectory is assumed and the immediate, mobility-inducing effects of divorce have decayed.

Hypothesis 2: Divorce-induced mobility has gendered outcomes, women move more frequently than men.

The second hypothesis concerns the gendered nature of mobility behaviour. By combining all female and male groups, Figure 3 shows that women are generally more unstable than men for all years observed.

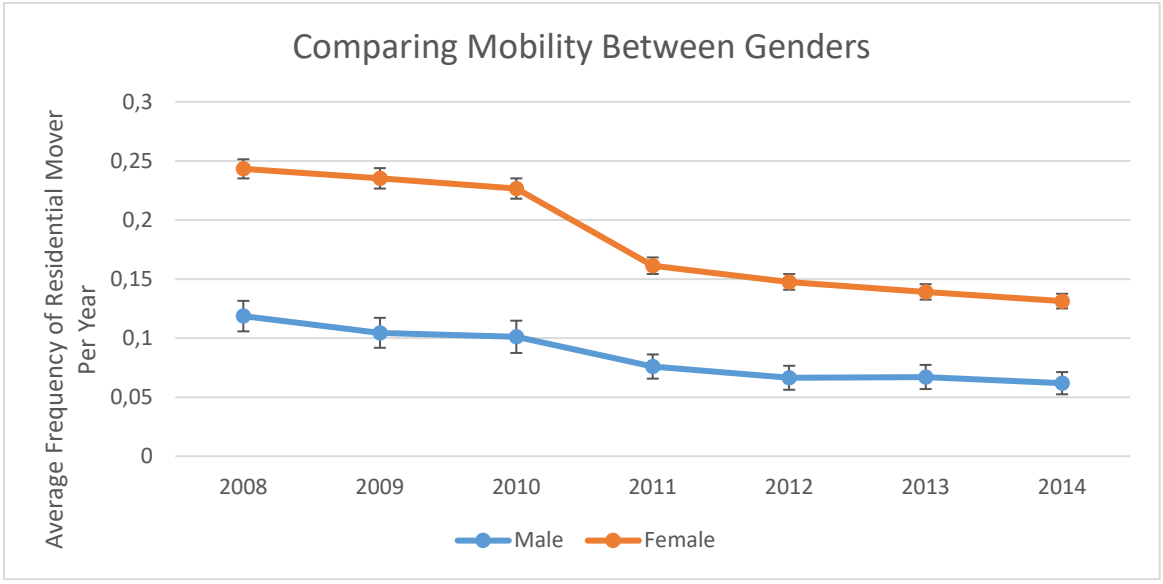

Figure 3. Comparing mobility between genders with 95% confidence intervals. All individuals are grouped into gender categories regardless of divorcing or degree of urbanisation.

A better understanding of mobility behaviour can be developed by including divorce and gender together, as is shown in Figure 4. The consensus of literature reviewed indicated that women

experience more instability at the time of divorce than men do. Noting the deviation that the divorcing female group make compared to the reference female group in Figure 4, and comparing it to the size of the deviation made by the divorcing male group supports this argument. Considering the mobility behaviours of the reference groups, Figure 4 also shows that the new altered housing trajectory that is represented by the reference groups is significantly different between genders. We can observe that the reference female group has a higher mobility rate than the reference male group for all years observed. Moreover, these differences are significant as shown by the 95% confidence intervals. This observation is in line with the expected long-term effects of divorce. The literature reviewed indicated that the altered housing trajectories were different for women and men. Specifically, women remain at risk of exiting owner-occupation for longer post-divorce, while the risk of men moving out of owner-occupation lasts for a shorter time (Feijten, 2005; Mikolai & Kulu, 2018b). This argument translates into an observation that female groups are more unstable both at the time of divorce and over a longer period once on the new altered housing trajectory.

Figure 4 also gives the first indication that the decay of divorce-induced mobility has gendered outcomes. We can observe that the first year after divorce is registered, 2011, the divorcing male and reference male groups intercept. This is interpreted to mean that divorce-induced mobility has decayed one year after divorce. However, for divorcing females it is only in 2014, four years after divorce, that the group comes close to intercepting the reference female group. The 95% confidence intervals shown in Figure 4 indicate that before 2014, the mobility behaviour of the divorcing female group is significantly above the reference female group.

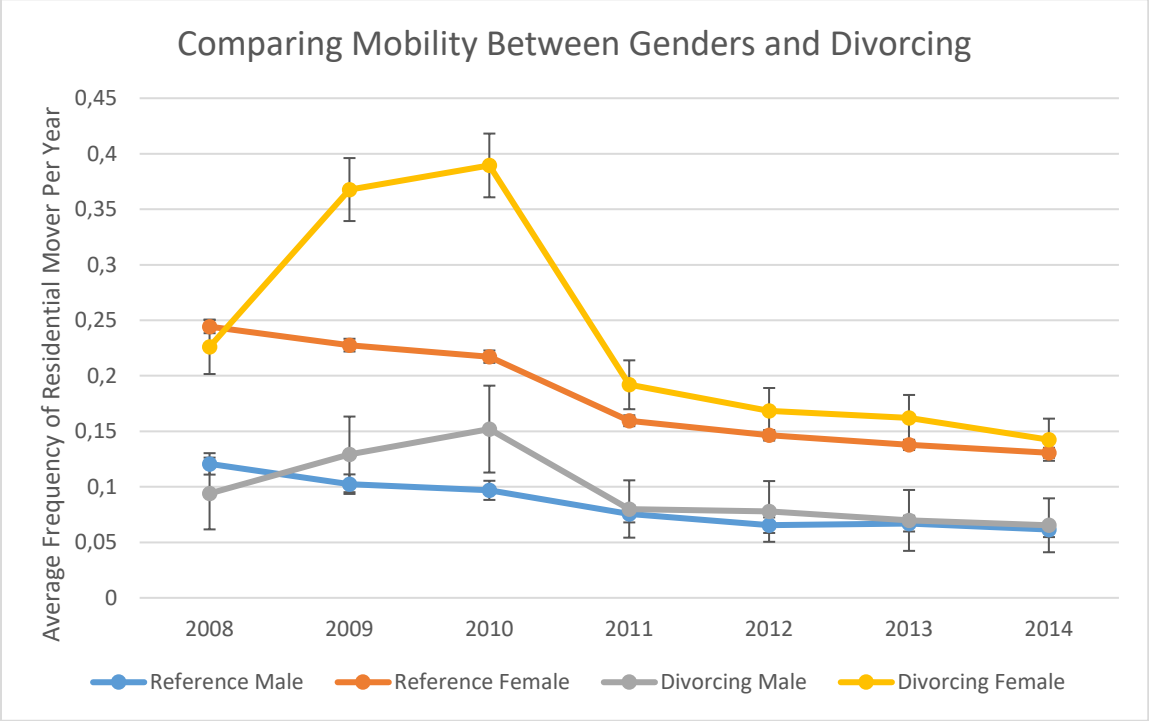

Figure 4. Comparing mobility between gender and divorce with 95% confidence intervals. The groups presented in this figure include all degrees of urbanisation, stratification and analysis by degree of urbanisation continues below.

We can therefore confirm the second hypothesis, divorce-induced mobility does differ significantly between genders, women move more frequently than men. We have also observed that there are gendered mobility differences in three distinct areas:

- Gendered differences in the new altered housing trajectory,
- Gendered differences in the immediate effects of divorce and the shock experienced by individuals as they separate from the matrimonial home,
- Gendered differences in the decay of divorce-induced mobility, the time taken for mobility to match the new altered housing trajectory.

Hypothesis 3: Increasing degree of urbanisation has an effect on residential mobility.

Although the literature reviewed identified many interesting facets of urbanisation and how it is connected to residential mobility, it was challenging to determine what the overall connection between increasing degrees of urbanisation and mobility behaviour would be. Figure 5 shows that increasing degrees of urbanisation appears to have a generally stabilising effect on mobility. We can observe that the frequencies of moves made in Big City municipalities are significantly lower than Urban and Rural. Additionally, we can observe that there is less disparity between the Urban and Rural groups in Figure 5, some years the groups overlap, though in later years observed the difference becomes more visible.

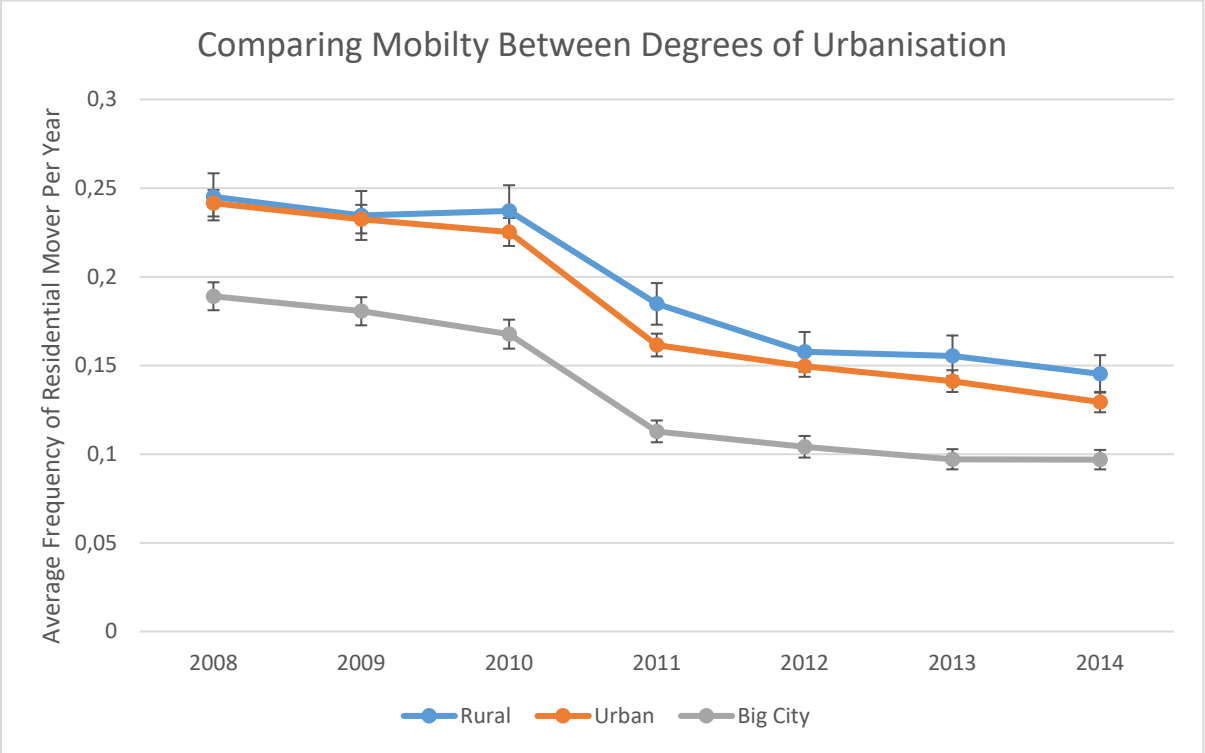

Figure 5. Comparing mobility between degrees of urbanisation with 95% confidence intervals. All individuals are grouped into degrees of urbanisation, regardless of gender or divorcing.

To deepen our understanding of urbanisation and how it is connected to mobility, we can attempt to differentiate urbanisation by divorce and gender. Figure 6 shows how the mobility behaviours differ across degree of urbanisation for the divorcing groups. Because the reference groups comprise such a large proportion of the total population, they are not shown separately from the overall population, as the graphs are not meaningfully different.

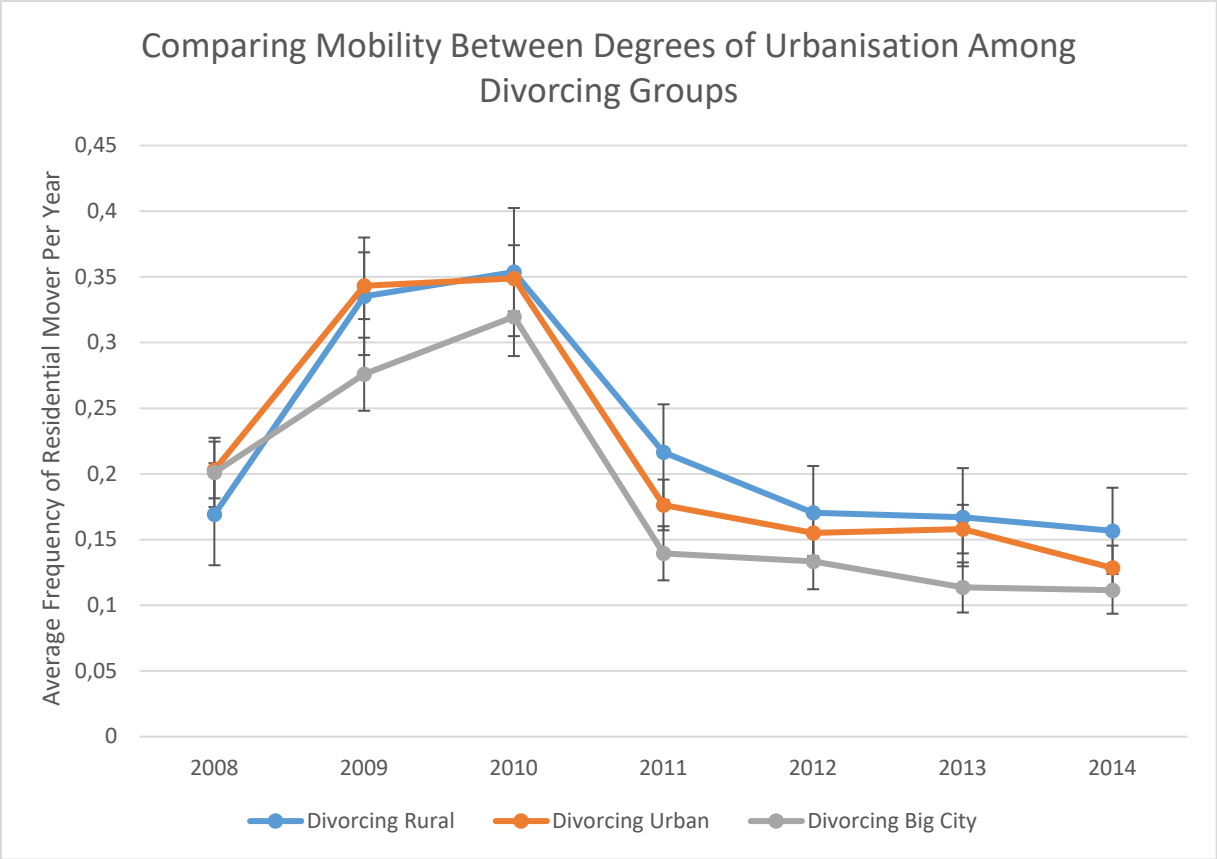

Figure 6. Comparing mobility between degrees of urbanisation for all divorcing groups combined, with 95% confidence intervals.

Two similar observations are noteworthy in Figure 6: Firstly, that the Big City groups, the highest degree of urbanisation, are significantly more stable than Urban and Rural groups. Secondly, the difference between Urban and Rural groups is much smaller and overlapping in some instances. These generalisations hold true regardless of divorcing or not.

Next we can consider urbanisation in the context of gender. Figure 7 shows what may be the most interesting finding of this study. Female groups exhibit the same differences due to degrees of urbanisation as previously observed. Increasing degrees of urbanisation is connected to lower frequency of moves, more urbanised regions appear connected to increased stability, while rural regions appear associated with instability. The largest difference is observed in the Big City degree of urbanisation, while Urban and Rural have a smaller difference.

However, Figure 7 highlights that for male group, no significant variation based on degree of urbanisation is observed. The three degrees of urbanisation are closely grouped together, overlapping for several years of observation. It is an interesting and unexpected finding that degree of urbanisation captures some kind of regional effect that impacts female mobility, but does not have a significant impact on male mobility.

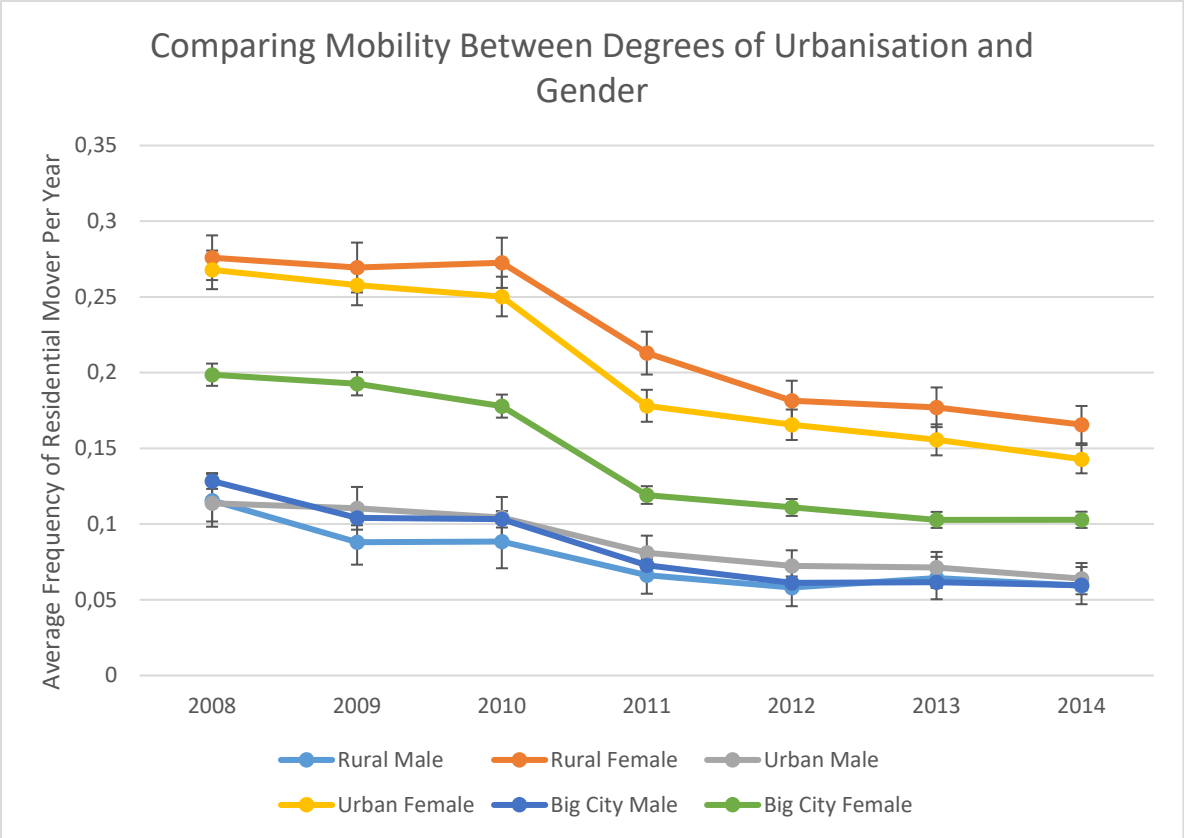

Figure 7. Comparing mobility between degrees of urbanisation and gender with 95% confidence intervals. All individuals are combined regardless of divorcing or not.

To unpack and understand this finding further, we can examine this trend from the perspective of the divorcing groups, shown in Figure 8. Because the reference group has such a large effect on the combined population, the trend does not differ meaningfully from Figure 7, so a visualisation focussing only on reference groups is not shown. In Figure 8, we observe that these gendered findings hold true for the divorcing group. The same patterns can be observed: for female groups, Rural is associated with the highest frequency of moves while Big City is associated with the lowest. For male groups, the same trend is not observed and the degrees of urbanisation are clustered close together and overlapping in many parts for all years. This is a second level of observation to indicate that degree of urbanisation captures some regional effect that is significant to women, but not men, and this does not differ significantly due to divorcing in 2010.

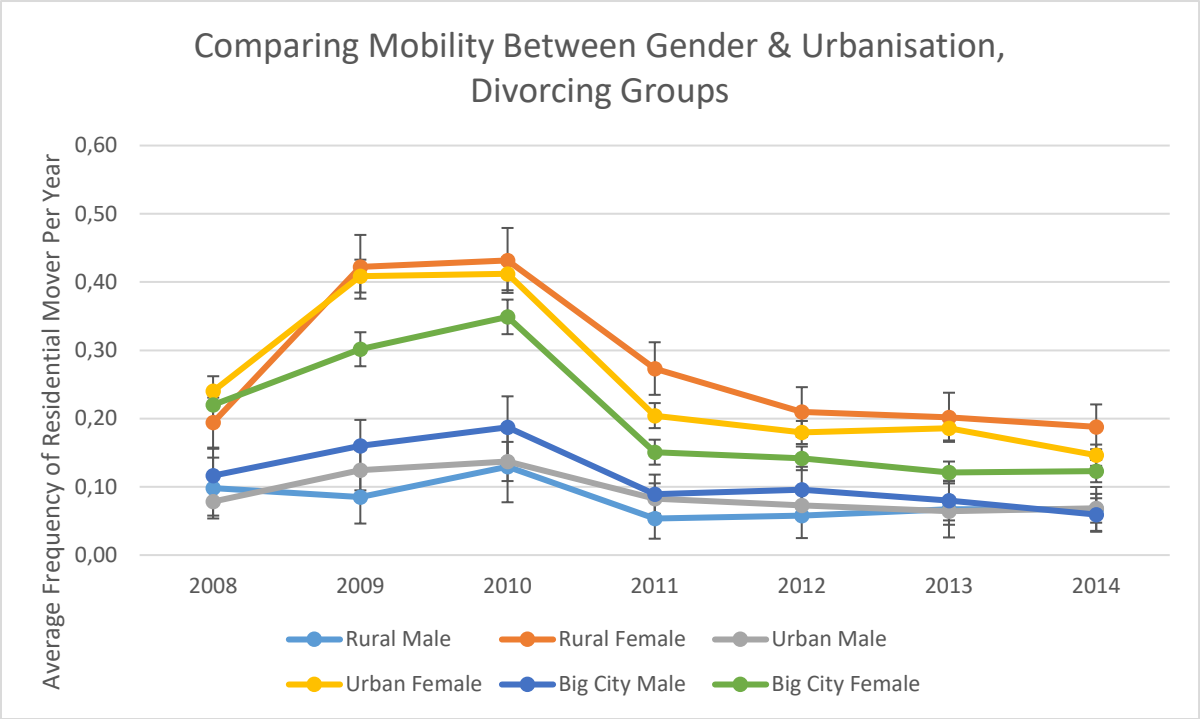

Figure 8. Comparing mobility between gender & urbanisation, divorcing groups with 95% confidence intervals.

The observations investigating the connection between urbanisation and mobility can also be linked to the three major findings for gender. Firstly, degree of urbanisation has gendered mobility outcomes for the new altered housing trajectory, apparently women are affected but men are not. Secondly, degree of urbanisation has gendered mobility outcomes for the immediate effects of divorce and the shock experienced by individuals when separating from the matrimonial home, apparently women are affected but men are not. With the exception of the male Big City group which exhibits increased instability at the time of divorce, which is the opposite of the effect for female groups. Finally, it is necessary to examine in detail the decay of divorce-induced mobility to determine how this is connected to degree of urbanisation and gender, leading to the fourth hypothesis.

Hypothesis 4. Decay of elevated residential mobility in divorcing groups is different across genders and degree of urbanisation.

To evaluate the decay of divorce-induced mobility, developing the understanding that was presented earlier in the gender observations, each divorcing group stratified by gender and degree of urbanisation will be compared to the corresponding reference group. Confidence intervals facilitate a three-tiered analysis. No overlapping of the confidence intervals indicates there is a significant difference between the divorcing and reference group and that the new altered housing trajectory has not been assumed. Intersection of the data points within the confidence intervals of the reference group indicates with some certainty that the new altered housing trajectory has been assumed. Some overlapping of the confidence intervals for the divorcing group with the reference group indicates there is a possible interception that is open to interpretation based on the surrounding data. Figure 9 shows all of the comparisons made, comparing male and female groups, across Rural, Urban, and Big City degrees of urbanisation.

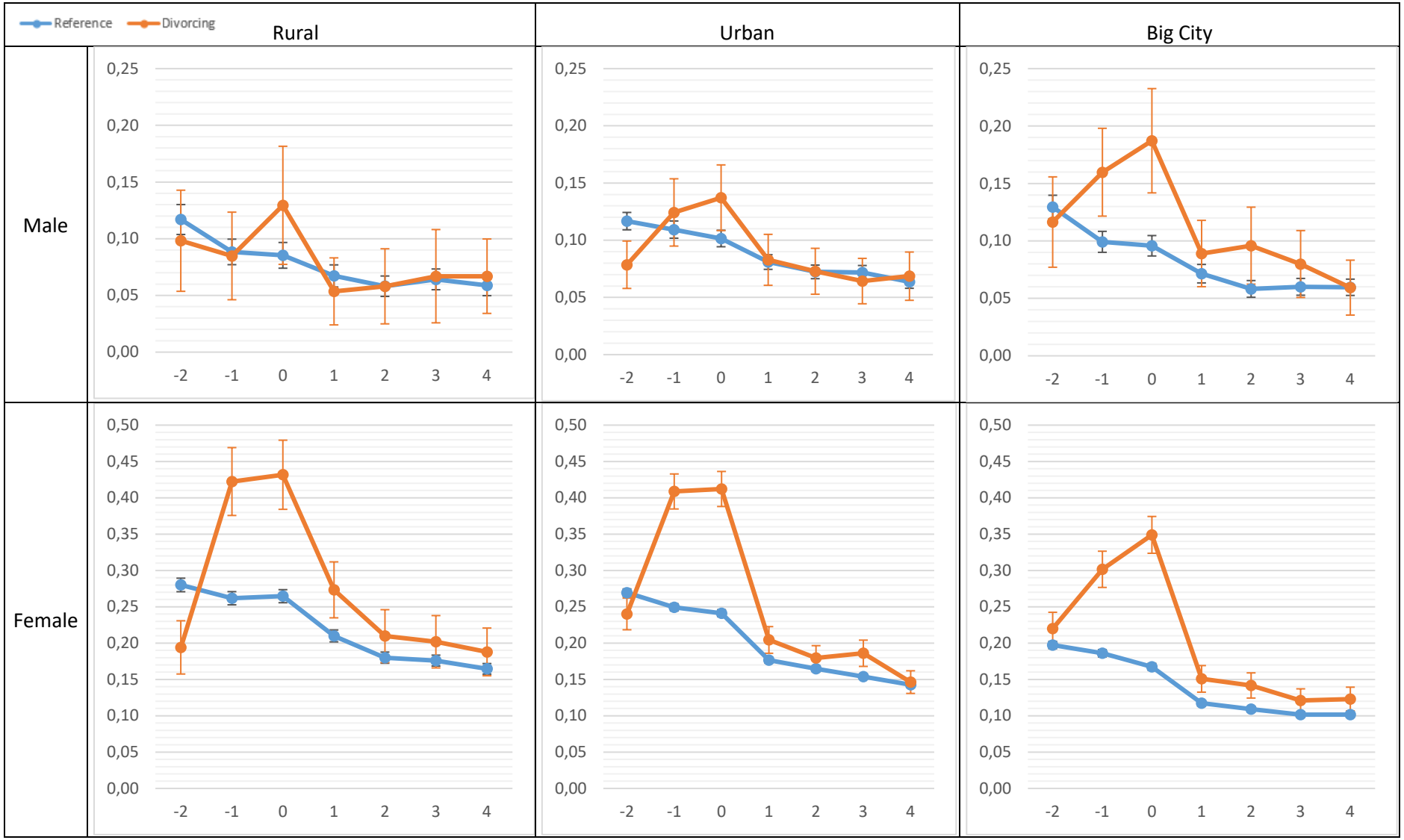

Figure 9. Summary of decay time of divorce-induced mobility, stratified across gender and degree of urbanisation, with 95% confidence intervals. For all graphs, Y axis: Average moves per year, X axis: Years from divorce event (2010 = 0)

Immediately it is obvious that the earlier observation that males assume the new altered housing trajectory sooner after divorce than women do. It is unfortunate that this study was not able to observe a longer period of time post-divorce to capture the point where female groups assume the new housing trajectory. This would have facilitated better connection with existing literature on the long-term effects of divorce. Nevertheless, we also observe that the male Big City group exhibits increased mobility at the time of divorce and takes longer to assume the new altered housing trajectory in comparison to the other male groups. The same pattern is not observed among the female groups. In fact, instability at the time of divorce is lower for the female Big City group, compared to the other female groups.

Table 4. Two-way table summarising findings for decay times of divorce-induced mobility, measured in years after divorce event.

	Male		Female	
	Major Intercept	Some Overlap	Major Intercept	Some Overlap
Rural	+1, +2, +3, +4	+0	-	+2, +3, +4
Urban	+1, +2, +3, +4	-	+4	+2
Big City	+4	+1, +3	-	-

We can clearly observe from Figure 9 and Table 4 that the decay time of divorce-induced mobility has gendered outcomes. Divorce-induced mobility decays much faster for men than for women. Whether divorce-induced mobility decays differently across degrees of urbanisation is not as clear. Decay in Rural and Urban degrees of urbanisation behave mostly the same. For Big City however, we observe an increase in decay time for men, and no overlapping of confidence intervals for women. In addition, Big City groups exhibit opposite mobility behaviours between gender at the time of divorce, the male group is more unstable, while the female is more stable than usual. Clearly, there are underlying factors influencing mobility across degrees of urbanisation, however this study is unable to isolate and identify how these operate and effect differing mobility behaviours.

7. Discussion

It is somewhat unsurprising that the data observed in this study has led to findings of gendered mobility differences in three distinct areas:

- Gendered differences in the new altered housing trajectory,
- Gendered differences in the immediate effects of divorce and the shock experienced by individuals as they separate from the matrimonial home,
- Gendered differences in the decay of divorce-induced mobility, the time taken for mobility to match the new altered housing trajectory.

Both the immediate and long-term effects of divorce are well documented as presented in the literature reviewed, and it is clear through theory and previous empirical research that there are significant differences between genders. Therefore, it appears probable that there should be gendered differences in the time taken for divorce-induced mobility to decay, for many of the same reasons that have been recounted to produce gendered mobility differences in general. What is unexpected an interesting from the data observed in this study is the mobility behaviour connected between gender and degree of urbanisation:

- Gendered difference in the exposure to regional variation.

In the analysis of the third hypothesis, Figures 7 and 8 showed that women exhibited different mobility behaviour across degrees of urbanisation, while men did not. This may be interpreted as exposure to regional differences across Sweden. That is, whatever inequalities exist between municipalities operationalised into Rural, Urban, and Big City, are having a marked effect on mobility and housing trajectories of women, but not men. This element is also related to the field of urban studies because there are unspecified interactions between individuals and institutions that contribute to mobility behaviour that may be better understood through a sociological lens. Moreover, understanding mobility trends aids in informing urban planning decisions, such as the supply of housing or provision of welfare support. Broadening the theoretical base this study is founded on, towards a wider perspective of urban studies, may improve the understanding of urbanisation in the context of residential mobility because the residential mobility literature reviewed for this study seldom addresses urbanisation.

What follows in this study is a discussion attempting to unpack and understand urbanisation in this regard; however, this gap in our understanding of residential mobility deserves further, dedicated research to address gendered mobility outcomes associated with regional inequalities.

This study's observations indicated that increasing degree of urbanisation has a stabilising effect on mobility for female groups. This could be a combination of factors in operation, for example increased density, availability of job and housing stock, and local amenities means that fewer residential moves would be required after divorce, as there is a greater possibility to find housing that suitably meets the needs of the household post-divorce (Mulder & Malmberg, 2011). Another idea to explain how urbanisation influences mobility behaviour could be that the greater proportion of rental housing stock in more urban Swedish municipalities may lessen the shock of moving out of the matrimonial home, because rental accommodation may be more accessible than owner-occupation to individuals with fewer resources.

It is possible that the degree of urbanisation is actually capturing elements of the housing market that are contributing to mobility differences. Similar as Feijten (2005) observed in the Netherlands, Sweden's municipalities containing large cities on average have the highest concentration of rental accommodation proportional to the total housing stock, while owner-occupation is more common in rural areas (Statistics Sweden, 2017). There is more variation in the proportion of rental stock in Sweden's Big City municipalities than rural municipalities as can be observed in Figure 10a.

The proportion of rental dwellings out of the total housing stock split into Rural, Urban, and Big City degrees of urbanisation is, 30%, 39% and 41% respectively. There appears a legitimate expectation that because of the higher proportion of rental housing stock available in more urbanised municipalities, that mobility should be higher in more urban areas. Yet, Sweden's largest cities are somewhat infamous for the extremely long waiting times required to acquire a rental contract. Areas of Malmö, Göteborg, and Stockholm have average rental queues of over three years. No formal data was available on the time taken to acquire a rental contract at municipal level to facilitate a regional comparison using the same definitions of Rural, Urban, and Big City municipalities. It is unclear how waiting times may have an impact on mobility across regions, but this may be conceptualised as increased moving costs due to the extra time investment required to find suitable housing (Mulder & Wagner, 2010). Moreover, macroeconomic factors, or structural connections (Coulter et al., 2015), such as a sluggish job market, or controls on rent setting can have suppressing effects on residential mobility (Forslund, 2015; Hardman & Ioannides, 1999). Upon reflection, the selected literature reviewed in the field of residential mobility, seldom incorporates research in economics and the housing market. Perhaps a greater connection between housing market research and residential mobility would glean a better understanding of urbanisation and regional inequalities in a residential mobility context.

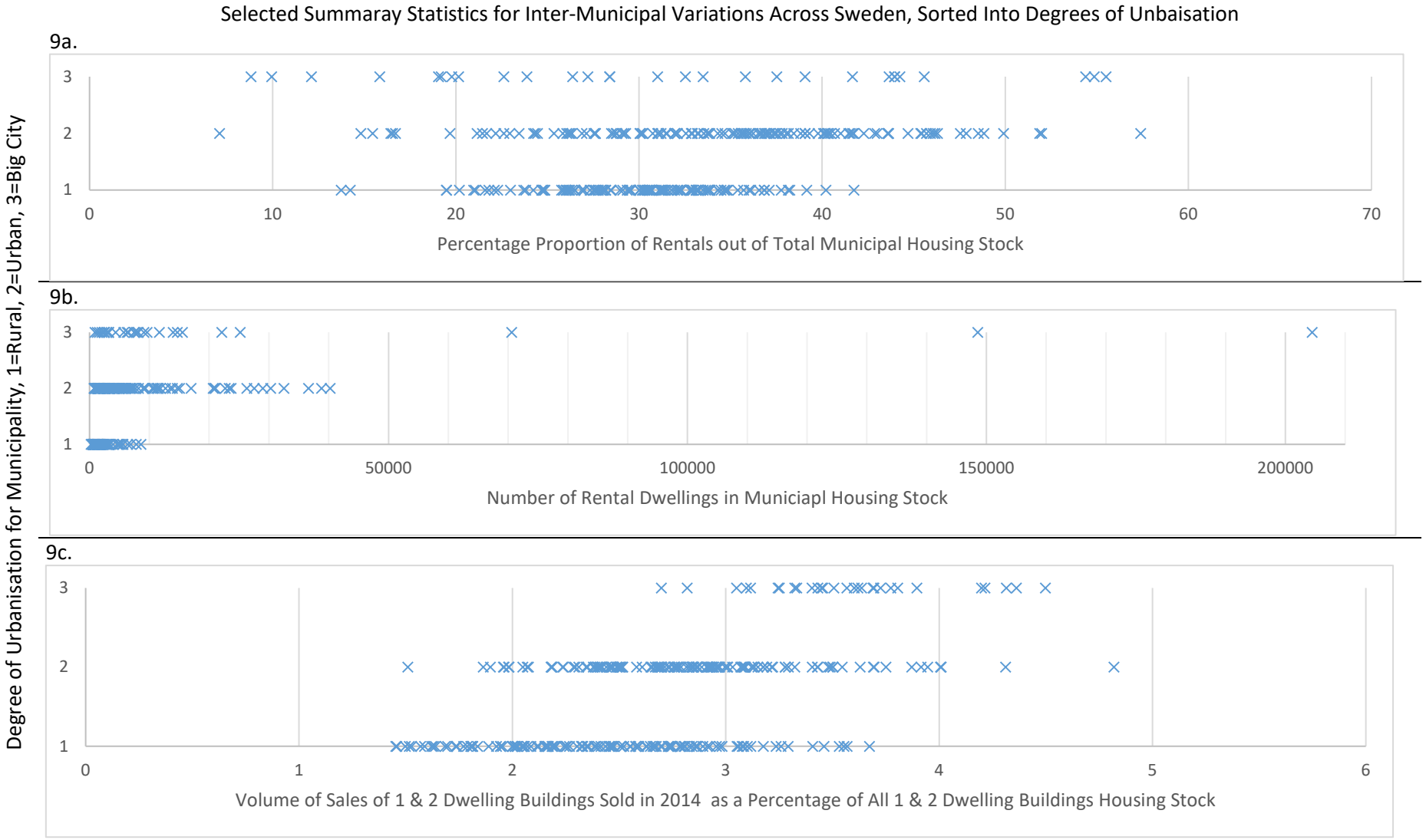

Figure 10. Open data from Statistics Sweden, not from the LISA database, at municipal level is combined and agglomerated with the definitions for degrees of urbanisation from Tillväxtanalys. ***10a***. Distribution of proportions of rentals out of total municipal housing stocks. ***10b***. Distribution of number of rental dwellings per municipality. ***10c***. The number of 1 & 2 dwelling buildings sold in 2014 as a percentage of the total 1 & 2 building housing stock per municipality.

In addition to the composition of housing stock by tenure type, the depth of the housing market may also be a factor that has regional differences across degrees of urbanisation. Figures 10b and 10c show respectively the number of rental dwellings per municipality, and the volume of sales of 1 & 2 dwelling buildings per municipality as a percentage of 1 & 2 dwelling housing stock. In Figure 10b there are three data points that are obvious outliers within the Big City degree of urbanisation, and compared to the rest of Sweden. These points represent Stockholm, Göteborg, and Malmö, where it is obvious that the housing market is characteristically different from other municipalities.

A valid question therefore arises as to what extent the Big City degree of urbanisation is skewed by Stockholm, Göteborg, and Malmö. Given the significantly larger population in Sweden's largest cities, any variations in mobility behaviour that are unique to these cities may yield misleading results. Figure 10c however, shows that despite the larger scale of the housing markets in Stockholm, Göteborg, and Malmö, the volume of sales of 1 & 2 dwelling buildings as a percent of that housing stock is in line with other Big City municipalities. This observation is in line with Feijten's (2005) finding that owner-occupiers in cities move more often than rural owner-occupiers. Given that more urbanised areas in Sweden have higher proportions of rental housing, and that owner-occupiers are more mobile, we would expect from a theoretical perspective that mobility would be higher in the Big City groups. The observations that urbanisation is negatively associated with female mobility behaviour and not associated with male mobility behaviour highlights that there must be a combination of factors in effect that include residential mobility behaviours, which this study cannot explain.

It is worth mentioning that for female groups, both divorcing and reference, there is a slight negative correlation between increasing degree of urbanisation and employment rate. Employment is not typically associated with residential instability (Warner & Sharp, 2016), it is therefore curious that Rural groups with highest female employment are the most unstable in this study. This observation may capture broader elements of the relative resources arguments presented in the literature review. For instance, if Rural female groups have accumulated less capital than Urban and Big City groups, they may be employed out of necessity, and are actually in a much more precarious financial state that is connected to increased residential mobility. The data extracted also shows that in raw terms, Rural groups have lowest disposable incomes, while Big City groups have the highest, potentially supporting this line of argumentation. There may be unobserved effects such as levels of support from the ex-partner, or state support that have some regional variance and therefore influence mobility behaviour (Falkingham et al., 2016). However, we can also observe that gendered differences in disposable income are lowest for Rural groups, and highest for Big City groups, which leads back to the interesting finding that there is no significant regional variance for male groups.

While this study cannot adequately determine what is producing regional mobility differences that are captured by the degree of urbanisation variable, this study does note that there appears to be a clear gendered outcome related to urbanisation. This finding is interesting both at an academic level, and at a practical urban planning level for municipalities and national actors. Forecasting housing demands and understanding mobility behaviour are important urban planning tasks that can be informed through research. Additionally, the gendered regional differences observed in this study could be important for national actors that are concerned with Sweden's rural development and gender equality goals (Statistics Sweden, 2016b).

This study cannot control for the age of individuals or their cohabiting children. In the event that there is some skewed distribution in age of adults or children, across gender or degree of urbanisation this would be expected to impact mobility behaviour. There is also a common notion suggesting that frequent residential mobility during childhood is detrimental to educational attainment and that frequent mobility informs later decisions and behaviours, which may be particularly interesting to Swedish institutional actors (Coulter et al., 2015).

Reflecting on the methodology of this study, the operationalisation of the new altered housing trajectory may have a gender bias. Given that the new altered housing trajectory is operationalised as a group of long-term divorced single parents with cohabiting children, and the duration of the long-term effects of divorce differs significantly between gender, this study could be improved by controlling for the length of divorcee status in the reference group. Feijten and van Ham (2010) noted that the long-term instability of divorce lasted up to five years for women. This study did not track the marital status of individuals before 2008, therefore there is a probability that the female reference group contains some individuals that divorced in 2008, 2007, etc., that are still suffering the increased instability associated with divorce in 2011, 2012, and so forth. This does not exclusively represent the new altered housing trajectory. However, for the male reference group, the long-term effects of divorce disappear much sooner. Even if a male individual in the reference group divorce as late as 2008, by 2010 they are probably 'back to normal' and exclusively reflecting the new altered housing trajectory. Therefore the design and operationalisation used in this study may be gender biased to some extent.

Similarly, drawing conclusions based on the intersection of data and confidence intervals may have elements of gender bias. While this practice is commonplace in analysis, drawing conclusions in this way is exposed to differences in the standard deviations of data. Due to the noticeably larger sample sizes of female groups compared to male groups in the data extracted, the calculated error terms are higher and much broader confidence intervals are generated for male groups, compared to the narrower confidence intervals for female groups. In this study, the male confidence intervals are larger than female confidence intervals by a factor of between a third, and a half. Therefore, the threshold for identifying interception is lower for males and more rigorous for females. Moreover, there is a systemic bias, however large or small, in this study using the specific data extracted, that produces earlier identification of interception for male groups and comparatively later identification of interception for female groups. In this study it is submitted that the effect of this bias is not substantial, because the bias in values of standard deviation are relatively small compared to the observed separation of divorcing and reference groups. However, perhaps improvements in the planning and design of this study could go some way to minimising or eliminating systemic gender biases.

8. Conclusions

The findings of this study are in line with the generally expected notions of gendered differences in residential mobility behaviour both at the time of divorce and in the long term. Women experience and exhibit higher instability than men at the time of separation and in the new altered housing trajectory that awaits post-divorce. This study's finding that divorce-induced mobility, or instability, also decays quicker for men and slower for women is somewhat unsurprising. This study provides confirmation that gendered mobility differences are still present and relevant in Sweden, despite improvements towards gender equality. Therefore, further effort and study is required to understand and mitigate gender inequality, and it is encouraging to see this topic is still prevalent in forthcoming research concerning residential mobility, see for example the *PartnerLife Project*.

The second contribution this study brings to the body of research concerns urbanisation. This study finds that degree of urbanisation is connected to mobility behaviour for women, but not for men. Urbanisation is a complex phenomenon, and this study reveals that whatever urban effect there may be is more likely an unknown combination of regional differences, housing market structure, or economic factors that are influencing mobility. This study cannot identify nor isolate the elements of urbanisation that appear to have gendered mobility outcomes, and suggests that further dedicated research addresses urbanisation and gendered mobility outcomes between regions.

Appendix 1. Discussion on the suitability of modelling standard deviation for agglomerated data related to the frequency of residential moves assuming individual mobility is a Boolean variable.

Collecting data is resource intensive, and not every researcher will have access to the resources required to utilise a database of individual register data. During an earlier stage of this study, an extraction from the LISA database was made that recorded only the mean frequency of residential moves per year, and the sample size. At that time, confidence intervals were required to analyse the interception of data points and determine the decay time of divorce-induced mobility. Because, standard deviation was not collected in this early stage, a model for standard deviation was created to facilitate an interim analysis. This discussion serves to reflect on the suitability of the model for standard deviation so that future researchers, who may for example be working with open data that does not supply standard deviations, could consider using such a model to facilitate their analysis.

$$\sigma = \sqrt{\frac{\sum(x-\mu)^2}{N}}$$

$$where:$$
$$\sigma = Standard\ deviation$$
$$x = An\ individual\ value$$
$$\mu = Mean$$
$$N = Population\ Size$$

An attempt to model the standard deviations of each data point was made by imagining the data takes a Boolean form to produce the smallest theoretical standard deviation, where individuals in the sample make either 0, or 1 residential move per year.

$$where:$$
$$total\ moves, 'm' = N\mu$$
$$model\ \sigma = \frac{\sqrt{m(1-\mu)^2 + (N-m)(0-\mu)^2}}{N}$$
$$expressing\ 'm'\ in\ terms\ of\ N\mu\ and\ simplifying\ yields:$$
$$model\ \sigma = \sqrt{\mu - \mu^2}$$

It is noted that the modelled standard deviation is simply related to the mean, such as that $model\ \sigma \to 0\ as\ \mu \to 0$. Assuming the data takes on this shape effectively treats the data as a Bernoulli random variable and inherits the associated limitations. This assumption applies better to the control groups than to the divorcing groups. For the background population it seems unlikely that more than one residential move would be made in any given year under normal circumstances. When individuals experience a divorce however, individuals may make several household moves in a year due to the time sensitive, resource constrained, and necessary nature of the circumstances (Mulder & Wagner, 2010). Moreover, Feijten & van Ham (2010) note that up to five residential moves may be required before housing equilibrium is restored, there is a likelihood that a number of moves occur within a single year for divorcing households.

Confidence intervals are calculated for each data point using the modelled standard deviation.

$$Confidence\ intervals\ for\ any\ given\ data\ point, = \mu \pm 'Error'$$
$$Error = z^* \frac{\sigma}{\sqrt{N}}$$
$$For\ confidence\ level\ 95\%, z^* = 1{,}96$$
$$Error = 1{,}96 \frac{\sqrt{\mu - \mu^2}}{\sqrt{N}}$$

The confidence intervals calculated using the modelled standard deviation are products of the mean of each data point and the sample size of each group, such that $Error \to \infty \; as \; N \to 0$, and $Error \to 0 \; as \; N \to \infty$. For the control groups, the large sample sizes reduce the value of the error when calculating the confidence intervals, compared to the divorcing groups which conversely have higher error terms due to a smaller sample size. Within each group, for every data point the value of the confidence interval is dependent on the mean, where values closer to zero have smaller error values. The calculated confidence intervals are used to compare each divorcing group to its corresponding control group, as in Figure 9 of this study.

Because this model generates the theoretical minimum possible standard deviation, it systemically underestimates the actual standard deviation of the data sample collected. This underestimation is detailed in tables 5 and 6, which reveal that this model underestimates real standard deviations by factors approximately between 0,22% – 30%. There are therefore some instances where this model is very close to being correct and the individual data contained virtually only households making 0 or 1 residential move per year (see divorcing rural males).

Table 5. Differences between the modelled and actual standard deviations to 6 decimal places.

Kon	urbankod	divorcee10	2008	2009	2010	2011	2012	2013	2014
1	1	0	-0,045934	-0,029323	-0,036200	-0,020669	-0,016683	-0,009460	-0,015261
2	1	0	-0,088105	-0,083590	-0,077658	-0,066190	-0,058409	-0,053320	-0,050322
1	2	0	-0,033976	-0,038977	-0,034477	-0,025962	-0,018726	-0,023912	-0,018427
2	2	0	-0,083732	-0,073220	-0,066478	-0,048570	-0,053636	-0,048945	-0,046504
1	3	0	-0,032009	-0,029486	-0,025540	-0,031612	-0,027564	-0,025692	-0,018787
2	3	0	-0,066986	-0,067129	-0,054582	-0,040110	-0,037954	-0,037372	-0,039758
1	1	1	-0,042794	-0,016246	-0,061844	-0,000504	-0,018937	-0,064101	-0,000560
2	1	1	-0,078938	-0,110761	-0,120695	-0,053028	-0,064051	-0,064820	-0,034603
1	2	1	-0,010617	-0,067126	-0,043271	-0,025011	-0,010964	-0,022478	-0,032106
2	2	1	-0,112231	-0,103758	-0,103650	-0,049919	-0,033121	-0,057290	-0,031295
1	3	1	-0,099182	-0,041754	-0,094574	-0,023464	-0,063447	-0,039613	-0,018884
2	3	1	-0,098122	-0,107384	-0,098890	-0,057508	-0,044935	-0,038079	-0,041947

Table 6. The model's underestimation of the standard deviation in percentage terms.

Kon	urbankod	divorcee10	2008	2009	2010	2011	2012	2013	2014
1	1	0	14,29	10,33	12,96	8,26	7,13	3,86	6,49
2	1	0	19,62	19,02	17,61	16,25	15,20	14,00	13,57
1	2	0	10,58	12,49	11,42	9,52	7,23	9,26	7,55
2	2	0	18,87	16,93	15,54	12,74	14,46	13,56	13,30
1	3	0	9,53	9,86	8,68	12,27	11,77	10,81	7,93
2	3	0	16,83	17,25	14,62	12,47	12,17	12,37	13,16
1	1	1	14,38	5,83	18,42	0,22	8,10	25,64	0,22
2	1	1	19,96	22,42	24,37	11,90	15,74	16,15	8,86
1	2	1	3,95	20,35	12,58	9,07	4,22	9,16	12,70
2	2	1	26,27	21,11	21,06	12,38	8,63	14,72	8,85
1	3	1	30,92	11,39	24,24	8,24	21,55	14,61	7,99
2	3	1	23,69	23,40	20,75	16,07	12,88	11,67	12,77

Tables 5 and 6 also reveal that there is a gender difference in the underestimation of the standard deviation made by the model. Standard deviations for female groups are generally underestimated more than male groups. This actually gives the study further insight into the characteristics of the data extracted. Because underestimation of the standard deviation is directly connected to the extent the data deviates from a Boolean variable, higher underestimation is an indicator for more

extreme mobility. Male groups with generally low underestimation are more confirmative to a Boolean variable, making either 0 or 1 move per year. But female groups which generally have higher underestimations must therefore be comprised of individuals more often making 2, 3, 4, etc. residential moves per year, which is a sign that mobility is more unstable and erratic.

Of course, any claim of gender-based underestimation must be weighed against the differences in the means, population, and the relative sizes of the standard deviations in question. However, this property may be useful in further unpacking and understanding the effects of urbanisation on male groups that had similar levels of mobility. We can identify from Tables 5 and 6 that there appears to be an association between increasing degrees of urbanisation and increasing underestimations of the standard deviation among male group. Given that the means of male groups does not differ greatly within the divorcing cohort and reference cohort, we can interpret increased underestimation to indicate individuals of the group deviate further from the Boolean property. As previously discussed, increased deviation from the Boolean property is a signifier of instability and more erratic mobility behaviour. This is especially interesting that male groups did not differ much in terms of the average number of moves made per year when stratified by degree of urbanisation, yet there is an argument that individual male mobility behaviour is more unstable as degree of urbanisation increases. Because the average number of moves made per year is significantly different for female groups stratified by degree of urbanisation, it is not possible to comment on whether a similar effect is also present for women.

Finally, it is possible to compare the interpretations of the graphs used to calculate the decay times of divorce-induced mobility between the real and modelled standard deviations. Figure 9 shows the real standard deviations being used to generate confidence intervals which then facilitate observing the interception of lines. Figures which use the modelled standard deviations are not shown, instead the interpretations are presented in Table 7 below.

Table 7. Comparing observations of decay times using real standard deviations and modelled standard deviations.

Observations based on real standard deviations				
	Male		Female	
	Major Intercept	Some Overlap	Major Intercept	Some Overlap
Rural	+1, +2, +3, +4	+0	-	+2, +3, +4
Urban	+1, +2, +3, +4	-	+4	+2
Big City	+4	+1, +3	-	-

Observations based on modelled standard deviations				
	Male		Female	
	Major Intercept	Some Overlap	Major Intercept	Some Overlap
Rural	+1, +2, +3, +4	+0	-	+2, +3, +4
Urban	+1, +2, +3, +4	-	-	+2, +4
Big City	+4	+1, +3	-	-

Table 7 shows that the conclusions of the study in calculating the decay time of divorce-induced mobility are mostly the same when changing between real and modelled standard deviations. The notable difference is for Urban females, who appear more distant from the new altered housing trajectory in the fourth year post-divorce as a result of narrower confidence intervals. This discussion suggests that this model for standard deviations would have been quite appropriate for a study of this kind, and that the findings did not dramatically change when substituting real standard deviations for modelled counterparts. Moreover, a comparison between the modelled and real standard deviations gives a deeper insight into the composition of agglomerated data, possibly revealing trends that would not necessarily be identified without the comparison of standard deviations to a theoretical model.

Appendix 2. List of Swedish municipalities classified by degree of urbanisation.

KN KOD	Municipality	Degree	KN KOD	Municipality	Degree	KN KOD	Municipality	Degree	KN KOD	Municipality	Degree
114	Upplands-Väsby	3	765	Älmhult	2	1441	Lerum	3	1983	Köping	2
115	Vallentuna	2	767	Markaryd	1	1442	Vårgårda	1	1984	Arboga	2
117	Österåker	3	780	Växjö	2	1443	Bollebygd	1	2021	Vansbro	1
120	Värmdö	2	781	Ljungby	2	1444	Grästorp	1	2023	Malung	1
123	Järfälla	3	821	Högsby	1	1445	Essunga	1	2026	Gagnef	1
125	Ekerö	2	834	Torsås	1	1446	Karlsborg	1	2029	Leksand	1
126	Huddinge	3	840	Mörbylånga	1	1447	Gullspång	1	2031	Rättvik	1
127	Botkyrka	3	860	Hultsfred	1	1452	Tranemo	1	2034	Orsa	1
128	Salem	3	861	Mönsterås	1	1460	Bengtsfors	1	2039	Älvdalen	1
136	Haninge	3	862	Emmaboda	1	1461	Mellerud	1	2061	Smedjebacken	2
138	Tyresö	3	880	Kalmar	2	1462	Lilla Edet	1	2062	Mora	2
139	Upplands-Bro	3	881	Nybro	2	1463	Mark	1	2080	Falun	2
140	Nykvarn	2	882	Oskarshamn	2	1465	Svenljunga	1	2081	Borlänge	2
160	Täby	3	883	Västervik	2	1466	Herrljunga	1	2082	Säter	1
162	Danderyd	3	884	Vimmerby	2	1470	Vara	1	2083	Hedemora	2
163	Sollentuna	3	885	Borgholm	1	1471	Götene	1	2084	Avesta	2
180	Stockholm	3	980	Gotland	1	1472	Tibro	2	2085	Ludvika	2
181	Södertälje	3	1060	Olofström	2	1473	Töreboda	1	2101	Ockelbo	1
182	Nacka	3	1080	Karlskrona	2	1480	Göteborg	3	2104	Hofors	2
183	Sundbyberg	3	1081	Ronneby	1	1481	Mölndal	3	2121	Ovanåker	1
184	Solna	3	1082	Karlshamn	2	1482	Kungälv	2	2132	Nordanstig	1
186	Lidingö	3	1083	Sölvesborg	1	1484	Lysekil	2	2161	Ljusdal	1
187	Vaxholm	2	1214	Svalöv	1	1485	Uddevalla	2	2180	Gävle	2
188	Norrtälje	1	1230	Staffanstorp	3	1486	Strömstad	2	2181	Sandviken	2
191	Sigtuna	3	1231	Burlöv	3	1487	Vänersborg	2	2182	Söderhamn	1
192	Nynäshamn	2	1233	Vellinge	3	1488	Trollhättan	2	2183	Bollnäs	1
305	Håbo	2	1256	Östra Göinge	1	1489	Alingsås	2	2184	Hudiksvall	1
319	Älvkarleby	2	1257	Örkelljunga	1	1490	Borås	2	2260	Ånge	1
330	Knivsta	2	1260	Bjuv	1	1491	Ulricehamn	1	2262	Timrå	2
331	Heby	1	1261	Kävlinge	2	1492	Åmål	2	2280	Härnösand	2
360	Tierp	1	1262	Lomma	3	1493	Mariestad	2	2281	Sundsvall	2
380	Uppsala	2	1263	Svedala	2	1494	Lidköping	2	2282	Kramfors	1
381	Enköping	2	1264	Skurup	2	1495	Skara	2	2283	Sollefteå	1
382	Östhammar	1	1265	Sjöbo	1	1496	Skövde	2	2284	Örnsköldsvik	2
428	Vingåker	1	1266	Hörby	2	1497	Hjo	2	2303	Ragunda	1
461	Gnesta	2	1267	Höör	2	1498	Tidaholm	2	2305	Bräcke	1
480	Nyköping	2	1270	Tomelilla	2	1499	Falköping	2	2309	Krokom	1
481	Oxelösund	2	1272	Bromölla	2	1715	Kil	2	2313	Strömsund	1
482	Flen	1	1273	Osby	2	1730	Eda	1	2321	Åre	1
483	Katrineholm	2	1275	Perstorp	2	1737	Torsby	1	2326	Berg	1
484	Eskilstuna	2	1276	Klippan	2	1760	Storfors	1	2361	Härjedalen	1
486	Strängnäs	1	1277	Åstorp	2	1761	Hammarö	2	2380	Östersund	2
488	Trosa	1	1278	Båstad	1	1762	Munkfors	1	2401	Nordmaling	1
509	Ödeshög	1	1280	Malmö	3	1763	Forshaga	2	2403	Bjurholm	1
512	Ydre	1	1281	Lund	3	1764	Grums	2	2404	Vindeln	1
513	Kinda	1	1282	Landskrona	2	1765	Årjäng	1	2409	Robertsfors	1
560	Boxholm	1	1283	Helsingborg	2	1766	Sunne	1	2417	Norsjö	1
561	Åtvidaberg	2	1284	Höganäs	1	1780	Karlstad	2	2418	Malå	1
562	Finspång	2	1285	Eslöv	2	1781	Kristinehamn	2	2421	Storuman	1
563	Valdemarsvik	1	1286	Ystad	2	1782	Filipstad	2	2422	Sorsele	1
580	Linköping	2	1287	Trelleborg	2	1783	Hagfors	1	2425	Dorotea	1
581	Norrköping	2	1290	Kristianstad	2	1784	Arvika	2	2460	Vännäs	1
582	Söderköping	2	1291	Simrishamn	1	1785	Säffle	2	2462	Vilhelmina	1
583	Motala	2	1292	Ängelholm	2	1814	Lekeberg	1	2463	Åsele	1
584	Vadstena	2	1293	Hässleholm	1	1860	Laxå	1	2480	Umeå	2
586	Mjölby	1	1315	Hylte	1	1861	Hallsberg	1	2481	Lycksele	2
604	Aneby	1	1380	Halmstad	2	1862	Degerfors	2	2482	Skellefteå	2
617	Gnosjö	1	1381	Laholm	1	1863	Hällefors	1	2505	Arvidsjaur	1
642	Mullsjö	2	1382	Falkenberg	2	1864	Ljusnarsberg	1	2506	Arjeplog	1
643	Habo	2	1383	Varberg	2	1880	Örebro	2	2510	Jokkmokk	1
662	Gislaved	1	1384	Kungsbacka	2	1881	Kumla	2	2513	Överkalix	1
665	Vaggeryd	1	1401	Härryda	2	1882	Askersund	1	2514	Kalix	2
680	Jönköping	2	1402	Partille	3	1883	Karlskoga	2	2518	Övertorneå	1
682	Nässjö	2	1407	Öckerö	2	1884	Nora	2	2521	Pajala	1
683	Värnamo	2	1415	Stenungsund	2	1885	Lindesberg	1	2523	Gällivare	2
684	Sävsjö	1	1419	Tjörn	1	1904	Skinnskatteberg	1	2560	Älvsbyn	1
685	Vetlanda	2	1421	Orust	1	1907	Surahammar	2	2580	Luleå	2
686	Eksjö	2	1427	Sotenäs	1	1960	Kungsör	2	2581	Piteå	2
687	Tranås	2	1430	Munkedal	1	1961	Hallstahammar	2	2582	Boden	2
760	Uppvidinge	1	1435	Tanum	1	1962	Norberg	1	2583	Haparanda	2
761	Lessebo	1	1438	Dals-Ed	1	1980	Västerås	2	2584	Kiruna	2
763	Tingsryd	1	1439	Färgelanda	1	1981	Sala	2			
764	Alvesta	1	1440	Ale	1	1982	Fagersta	2			

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