ALTERNATIVE PATHWAYS TO RETIREMENT IN A HOUSEHOLD CONTEXT

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Research indicates significant roles for gradual transitions to full retirement and for coordination between spouses in the typical retirement experience. However, there is little research exploring the potentially important interactions between the two. This paper addresses this gap in the literature and provides a more robust understanding of retirement decisions by examining joint work-to-retirement trajectories within a unified theoretical and empirical framework. We analyze 12 waves of the Health and Retirement Study to develop detailed descriptions of couples' realized joint retirement trajectories. Our classifications of joint work-to-retirement transitions build on previous work that classifies individual work-to-retirement transitions that allow for partial retirement (Maestas 2010). We document the frequency of couples' joint work-to-retirement trajectories observed in the data and the characteristics of these joint trajectories. We also explore the extent to which couples' personal and employment characteristics correlate with their joint work-to-retirement transitions and trajectories. Our results suggest that joint transitions are in fact relatively rare, and that couple retirement trajectories tend to respond more to the characteristics of the husband than the wife.

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1. Introduction

More and more, older individuals are transitioning to retirement through partial retirement, including phased retirement and bridge jobs. At least 48% of individuals work after retirement and 71% express the desire to do so (Maestas, 2010). At the same time, research on retirement timing has found that for many couples, retirement is a joint decision (Coile 2004, Banks et al. 2010). Yet, despite potentially important interactions, little research examining the relationship between partial retirement and joint retirement exists. To our knowledge, only Gustman and Steinmeier (2014) has looked at these problems together, however this paper takes a very different approach and only begins to address this important interaction. The paper addresses this gap in the literature and provide a deeper understanding of retirement decisions by examining alternative work-to-retirement trajectories and joint retirement decisions of dual income couples.

While there are many papers about retirement transitions, there is little consensus on the precise definitions of various retirement pathways. We define the work-to-retirement trajectory as the path of transitions from full time work to full retirement. For some this will involve simply moving from full time work directly to full time retirement. For others this includes partial retirement, which may occur through phased retirement, where one reduces their hours at their current employer, or through a bridge job, where one takes a job at a new employer to transition to retirement. Furthermore, some reenter after a period of retirement. A couple's work-to-retirement trajectory includes the full set of transitions for both spouses.

Studying joint retirement decisions and work-to-retirement transitions separately, if they in fact interact, will cause us to misunderstand how individuals are retiring. For example, we may understate the importance of joint retirement decisions. When retirement is defined as the complete cessation of work, a joint transition in which one spouse stops working completely

while the other only reduces the number of hours worked will be missed. Likewise, analysis using an individualistic framework omits spouses' preferences and employment opportunities, which may play an important role in shaping work-to-retirement trajectories.

To illustrate the potential prevalence of the interaction between work-to-retirement trajectories and household decision-making, Table 1 shows the distribution of joint employment/retirement states of couples in the 2012 Health and Retirement Study (HRS).

Table 1: Density of Joint Retirement States

		Wife	
Husband	Working Full Time	Partially Retired	Fully Retired
Working Full Time	0.39	0.02	0.08
Partially Retired	0.04	0.02	0.03
Fully Retired	0.14	0.01	0.26

Notes: Couples where both spouses are ages 55-70 and respond to retirement and work questions.

While the majority of respondents are in couples where both are working full time or both are fully retired, approximately 12% of couples have one spouse who is partially retired (phased retirement or bridge job). This is significant when you consider that it represents only one point in time, and partial retirement is typically a transitory state. These results from just one year suggest the importance of partial retirement, as has been documented elsewhere. What is unique here is that we see that among couples where one spouse is working full time and the other is at least partially retired, roughly 20% consider themselves to be partially retired; for example, 2 percent of couples have full time working husbands and *partially* retired wives, and 8% have full time working husbands and *fully* retired wives.

These data suggest that partial retirement plays an important role in joint work-to-retirement transitions. However, to fully understand the interaction between joint retirement decisions and work-to-retirement trajectories a unified model and empirical approach using more

data are needed. This paper seeks to enrich our understanding of how the decision to transition to retirement is made in the context of a couple rather than in the independent individual context.

In this paper, we consider how work-to-retirement trajectories are jointly determined within a couple. We use the HRS to characterize and document observed patterns of joint work-to-retirement transitions allowing for partial retirement. We take two primary approaches. First, in this paper, we classify retirement trajectories and document what characteristics are most associated with different retirement patterns.

2. Contribution to the Literature

There is a very large literature examining the factors that influence retirement decisions. The early retirement literature was focused solely on the labor supply of older men and retirement as single event (e.g. Burtless 1986, Krueger and Pischke 1992, Stock and Wise 1990). The recent literature has extended these models, including a richer modeling of retirement itself, allowing for gradual transitions, and of how retirement decisions are made in a household setting. The research to date suggests the importance of both "nontraditional" paths to retirement and of household decision-making. However, the literatures addressing these two issues have remained largely distinct, limiting our understanding of how these factors operate together to shape retirement decisions. This paper seeks to bring together these literatures to provide a more complete understanding of work-to-retirement transitions.

The economics research on retirement decisions has taken two distinct approaches: structural and reduced form modelling. Structural models, first define a specific functional form for agents' utility functions, and then estimate the parameters of a utility function, with a particular goal of projecting how individuals respond to changes in the policy setting. For example, in the case of retirement, a structural model might be used to estimate how retirement

patterns would change if the early retirement age were increased to 63. Reduced form models are less restrictive in their assumptions about the functional form of the utility function. This allows for more exploration of heterogeneity in decisions and preferences.

2.1 Individual Work-to-retirement Transitions

There is now substantial evidence that a "traditional retirement," where an individual leaves a career job and exits the labor force completely and permanently, is not a representative experience (Cahill et al. 2006, Maestas 2010, Mutchler et al. 1997, Ruhm 1990). Maestas (2010) presents a thorough examination of individual retirement transitions. Using data from the HRS (1992-2002), Maestas finds that nearly 50 percent of older workers in the U.S follow nontraditional work-to-retirement trajectories. Twenty percent of older workers initially transition to partial retirement and 25-40 percent of all older workers increase their labor supply following an initial reduction. The prevalence of alternative retirement paths is greater than Ruhm (1990) finds studying an earlier cohort in the RHS. Cahill et al. (*Forthcoming*) includes more current waves of the HRS (1992-2010) and finds that gradual retirements are increasingly prevalent, especially among women.

Given the prevalence and heterogeneity of nontraditional retirements, it is important to understand what drives work-to-retirement trajectories. Much of the work in this area has focused on the correlation between individuals' characteristics and circumstances and their work-to-retirement trajectories. Demographic variables, including age, race/ethnicity, sex, and education, as well as health and retirement plan type are correlated with partial retirement and post-retirement reentry (Giandrea et al. 2010, Ruhm 1990). Age and health are also important determinants of retirement preferences in structural models that allow for partial retirement (Gustman and Steinmeier, 1986 and 2005).

While health, pensions, and correlates of economic status are associated with the type of retirement an individual experiences, a key finding of Maestas (2010) is that the realized work-to-retirement trajectories are anticipated. Maestas finds no evidence that unexpected negative financial shocks are sending people back to work. Conversely, most of those who do not meet their retirement expectations had planned to work longer. This suggests that labor market constraints may prevent individuals from following their desired trajectories.

This highlights the fact that realized work-to-retirement trajectories are the product of the interaction between individual preferences for a particular trajectory, potentially competing household preferences, and labor market constraints. Despite their apparent importance, the effects of spouses and their interactions with the labor market on alternative retirement trajectories have been largely ignored. An exception is Gustman and Steinmeier (2014), discussed in more detail below, which considers partial retirement in a joint retirement model.

2.2 Joint Retirement Decisions

The apparent prevalence of (near-) simultaneous retirements within households (Hurd, 1990) and the increasing labor force attachment of women, motivated research to understand how retirement decisions are made within a dual worker household. The spillover effects of a spouse's retirement incentives and retirement realization on an individual's own retirement decision, as well as other mechanisms binding spousal retirements are considered. However, this literature has for the most part treated retirement as a homogenous outcome. Alternative work-to-retirement trajectories are generally not incorporated into the theoretical models or empirical analyses of household decision-making. This approach potentially masks a substantial amount of heterogeneity in the joint retirement process.

The structural joint retirement literature places significant focus on modeling the decision-making process within the household. The empirical analysis then estimates the

parameter values of the model. The earliest attempts at modelling joint retirement decisions used a unitary model of retirement, which avoided much of the complexity that arises from the interaction of between individuals (Hurd 1990). In these models, households maximize a single joint utility function, and so they do not allow for competing preferences between spouses. Spousal interactions are incorporated into later literature through non-cooperative strategic interactions (Gustman and Steinmeier 2004) or through cooperative bargaining models (Maestas 2001). Michaud and Vermeulen (2011), allows for the possibility that there are transitions to retirement that include part time work, however, their empirical results do not discuss this aspect of their model. Gustman and Steinmeier (2014) is the only paper to our knowledge that seeks to model both joint retirement and partial retirement. They use this model to simulate how couples would respond to policy changes, including the elimination of partial retirement.

The structural literature on joint retirement largely supports the hypotheses that couples make retirement decisions together. These structural models are designed to estimate utility function parameters and simulate the overall responses to policy changes.

There is a complementary reduced form literature that examines retirement timing decisions within the household context and seeks to identify the extent to which spouses coordinate. Coile (2004) estimates the probability that an individual member of a married couple retires as a function of his or her own retirement financial incentives (social security, pensions, etc.) and his or her spouse's retirement incentives. She finds that husbands are less likely to retire if their wives have a strong financial incentive to continue working, but that wives do not exhibit a reciprocal response. She hypothesizes that for husbands, their wives' leisure is a strong complement to their own. Banks et al. (2010), similarly examines the effect of spouses' Social Security incentives on an individual's probability of retiring, but finds no spousal effect for men

or women. Baker (2002) and Lalive and Staubli (2014) find evidence that labor supply is weakly responsive to changes in spouses' social security benefits.

Understanding the mechanism by which changes in one's spouse's financial retirement incentives affect one's own retirement is a particular challenge in this literature. For example, a change in the spouse's retirement incentives may cause the spouse to retire which could cause the individual to change his or her labor supply in response. However, in the context of a shared household budget, the individual's behavior may be directly influenced by the change in financial incentives (e.g. Banks et al. 2010). It is difficult to disentangle the two forces.

2.3 Contributions of this Paper

The literature discussed above identifies both alternative work-to-retirement trajectories and household decision-making as important aspects of retirement choices. However, there has been little work examining the interaction of these two phenomena. This paper makes several contributions to the literature that has been started by Gustman and Steinmeier (2014). First, we document the prevalence of joint partial retirement. While their paper documents the prevalence of partial retirement by husbands and wives, it is unclear to what extent both spouses simultaneously partially retire, and to what extent one spouse chooses partial retirement as a compromise, allowing the other to work or retire fully. Second, our paper uses a reduced form approach to provide greater insight into heterogeneity in joint work-to-retirement trajectories. In particular we examine how age differences and the availability of part time jobs in one's field or geographic location may affect these trajectories. Finally, our theoretical model takes a very different approach to describing the behavior of couples. Following Browning and Chiappori (1998) we use a cooperative bargaining model now standard in much of the literature on intra-household decision making, while Gustman and Steinmeier use a sequential decision-making equilibrium solved using backwards induction.

Most of the previous literature on retirement transitions has focused on models that either predict preferences for partial retirement or use survival models to predict retirement transitions from full time work to full retirement. As the literature has shown, actual transitions are more complex and can involve multiple transitions including partial retirement. In some of our ongoing analysis, we use multi-state models to describe transitions over time. Multi-state models are well established in the statistical literature (Jackson, 2011; Farewell & Tom 2014; Andersen & Keiding 2002); they are used to describe transitions between multiple potential states, and can be used when state membership is observed in panel data, but the time of transition is not observed. While multi-state models are not new, their application to joint retirement decisions is innovative.

3. Data

We use the RAND HRS Enhanced Fat Files (v.N) as our main data source. This data set is a cleaned, user-friendly compilation of eleven waves (1992-2012) of the HRS biannual core surveys. Table 2 details information about the survey cohorts. All survey respondents are age 51-61 at the time they enter the survey. Much of our analysis focuses on the Initial HRS cohort because it is more likely that this group has initiated their joint work-to-retirement transitions and we can observe them over a longer time frame. However, we also include the War Baby cohort and the Early Baby Boomer cohort in some analysis.

Table 2: HRS Cohorts

	Birth years	Survey entry year	Years observed
Initial HRS	1931-1941	1992	20
War Baby	1942-1947	1998	14
Early Baby Boomer	1948-1953	2004	8

Mid Baby Boomer	1954-1959	2010	2

Our sample consists of 2,773 couples from the HRS who are observed to both be working full time and who make a transition to retirement at some point during the HRS. We exclude those where both are not observed working full time because we cannot be sure if a spouse who is working part time has begun their retirement transition or if they have been less attached to the labor force. Furthermore, we exclude couples where no transition to retirement is observed, because at this point in time we have no evidence of their retirement trajectories. This leaves us with 2,773 couples. Table 3 describes key characteristics of our sample at the time of first observation.

Table 3: Summary Statistics

Variable	*Obs*	*Mean*	*Std. Dev.*	*Min*	*Max*
Husband Birthyear	2,773	1941.57	8.04	1912	1985
Wife Birthyear	2,773	1944.93	8.00	1918	1975
Age Difference (Husband-Wife)	2,773	3.37	5.80	-28	32
Length of Current Marriage	2,588	24.92	11.34	0.1	52.5
Husband's Self Rated Health (1=Excellent)	2,772	2.45	0.99	1	5
Wife's Self Rated Health (1=Excellent)	2,771	2.36	0.98	1	5
Cohort					
HRS	2,773	62%			
AHEAD	2,773	0%			
War Baby	2,773	17%			
Early Boomers	2,773	16%			
Mid Boomers	2,773	5%			
Husband's Race					
White	2,770	80%			
Black	2,770	14%			
Other	2,770	6%			
Wife's Race					
White	2,772	81%			
Black	2,772	14%			
Other	2,772	6%			
Husband Hispanic	2,771	10%			
Wife Hispanic	2,773	10%			
Husband's Education					
LT High school	2,770	18%			
GED	2,770	4%			
High School	2,770	28%			
Some College	2,770	22%			
College and Above	2,770	27%			
Wife's Education					
LT High school	2,773	13%			
GED	2,773	5%			
High School	2,773	33%			
Some College	2,773	26%			
College and Above	2,773	23%			
Urbanicity					
Large Urban	2,759	47%			
Smaller Urban	2,759	25%			
Rural	2,759	28%			

3.1 Definitions of retirement states

In our analysis, we focus on only three individual retirement/employment states – working full time (WFT), partially retired (PR) and fully retired (FR) and nine joint retirement states that do differentiate each spouses' retirement status. Table 4 describes the retirement states of each spouse. In this phase of our research we have focused only on retirement states defined by hours of work, such that each spouse is considered to be retired if they are not working at all and partially retired if working less than full time.

Table 4: Retirement state and transition definitions **Retirement or Employment Status**	**Time Worked**
Working Full Time (WFT)	35 hours or more per week
Partial Retirement	Working more than zero but less than 35 hours per week
Fully Retired	Does not Work for Pay

Much of the previous literature on retirement transitions has considered both an hours-based definition of retirement and a definition based on an individual's own description of their work status. However, this introduces many additional possible states for each individual, as they may be working full time, working part time, unemployed, retired, disabled, and out of the labor force. When you then consider joint retirement states, the total number of states increases exponentially, rather than having 9 joint retirement states, a more nuanced description of retirement would lead to 36 joint retirement states.

The joint retirement states are shown in Figure 1. The wife's retirement status is indicated in the columns, and the husband's in the rows. There are nine total joint retirement states, indicated by the cell labels, when differentiated by the individual retirement states of the husband and wife. In each cell, the wife's retirement status is listed first and the husband's status is listed

second; for example, PR-WFT indicates a wife who is partially retired and a husband who is working full time.

		Wife		
		Working Full-time	Partially Retired	Fully Retired
Husband	Working Full-time	WFT-WFT	PR-WFT	FR-WFT
	Partially Retired	WFT-PR	PR-PR	FR-PR
	Fully Retired	WFT-FR	PR-FR	FR-FR

Figure 1: Joint retirement states

3.2 Definition of alternative work-to-retirement trajectory measures

A series of joint retirement states can be combined to define a joint retirement trajectory. We define a complete joint work-to-retirement trajectory as one in which both household members are observed working full time at entry into the HRS and are then observed fully retired for at least two years. However, each couple's retirement trajectory is subject to possible left and right censoring. First, not all couples are observed in the joint state WFT-WFT upon entering the survey, e.g. one spouse may have never worked full time or alternatively one spouse may have already transitioned to retirement. Second, many couples in the data may have not yet completed, or even started, their joint work-to-retirement trajectories.

We focus on couples that are observed in the state WFT-WFT. We are interested in dual-career couples, and for couples that are not initially observed in this state, we cannot distinguish dual-career couples that have already made an initial transition to retirement from those in which only one spouse ever worked. A further complication for the descriptive trajectory mapping is that for couples that are not observed in state WFT-WFT we do not have information on the timing and the type of the initial joint work-to-retirement transitions. We acknowledge that this

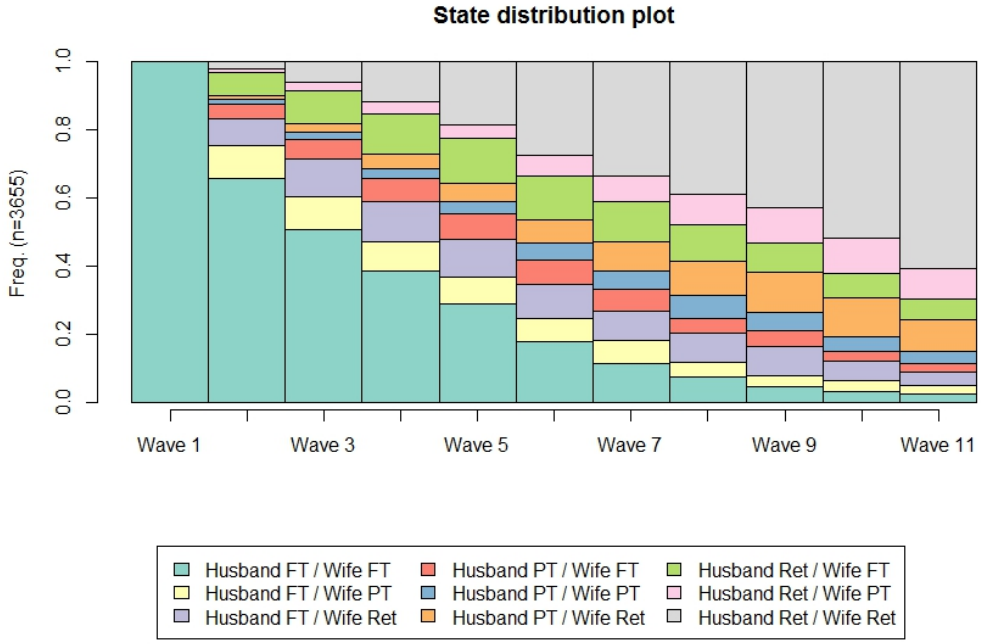
data limitation introduces selection bias into the sample of joint work-to-retirement trajectories, because we do not observe the trajectories of dual-career couples with early retirements. However, the objective of this research is to document the most prevalent joint work-to-retirement trajectories for dual-career couples and to understand the determinants of these trajectories. Couples enter the HRS in their 50s, so we expect to capture the majority of initial transitions to retirement for our population of interest.

4. Documenting Joint Retirement Trajectories

As a first step, we document the retirement states and transitions observed in our sample. Figure 2 illustrates the retirement states for each couple in each wave. This stacked bar chart shows what fraction of couples are in each state in each wave. The teal color (in the first bar), represents couples where both are observed working full time. By definition all couples start our sample in the FT/FT state. The blue color indicates couples where both are partially retired, and grey indicates couples where both are fully retired. These three states represent situation where both spouses are in the same retirement state, which refer to as concordant.

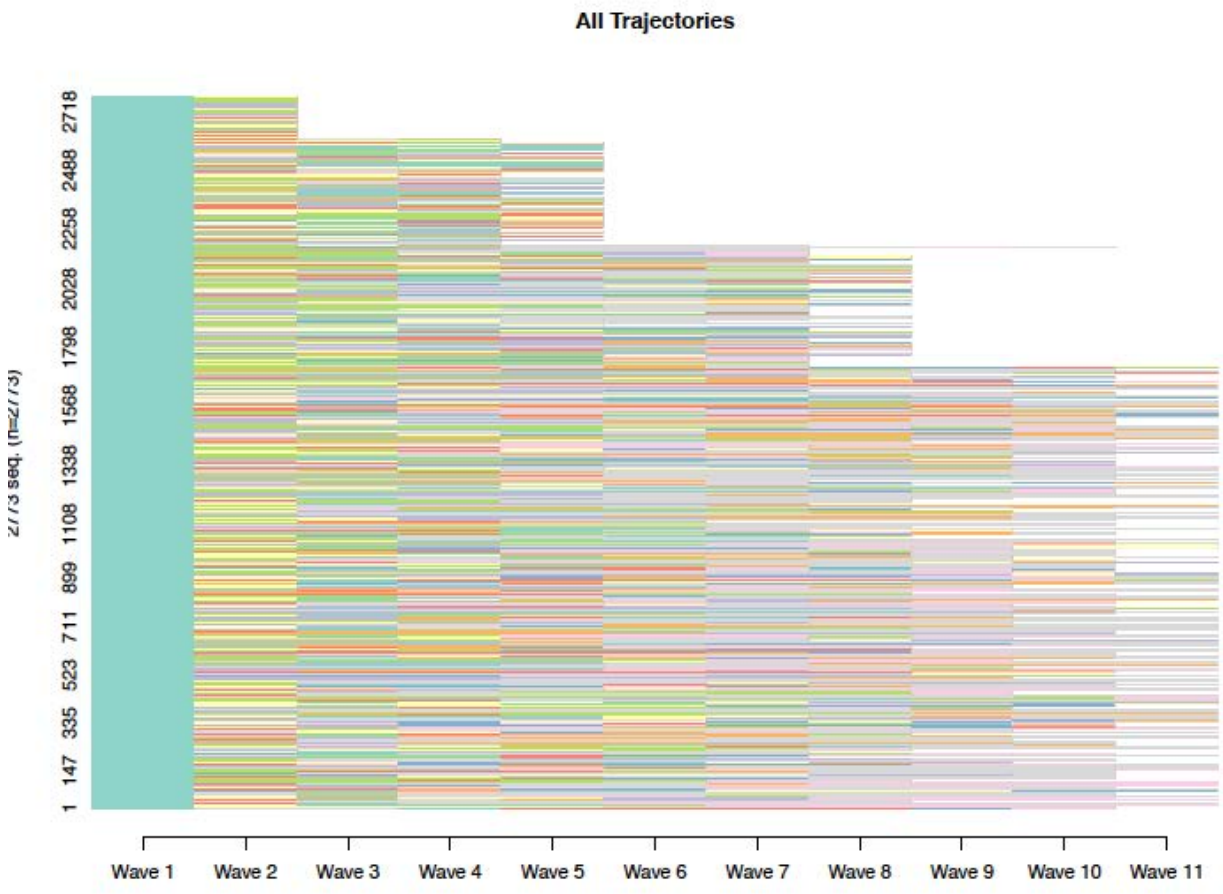
In the light green bar, the husband is fully retired and the wife is working full time. In the purple bar, the wife is fully retired and the husband is working full time. We refer to these two states as discordant, the spouses are engaging in completely different activities. The remaining bars represent states where one spouse is working part time and the other is either working full time or fully retired. We refer to these states as partially concordant because the two spouses are somewhat similar in their behavior.

Figure 2: Wave by Wave Joint Partial Retirement States



The first thing we observe, is that much of the time that couples are observed transitioning to full retirement involves either a discordant or partially concordant state. This is somewhat contrary to the commonly held belief that couples retire simultaneously. However, this figure considers states and not transitions, thus we cannot observe what fraction of couples over time deviate from full concordance. As a next step to understanding retirement trajectories, Figure 3 creates a single horizontal line for each couple that changes colors over time to indicate their retirement state in each wave. While the details of this figure are impossible to identify, one thing is clear, there are many unique paths to joint retirement. In fact, we observe over 1,400 unique trajectories, with only 2,773 couples.

Figure 3: Wave by Wave Joint Partial Retirement Trajectories



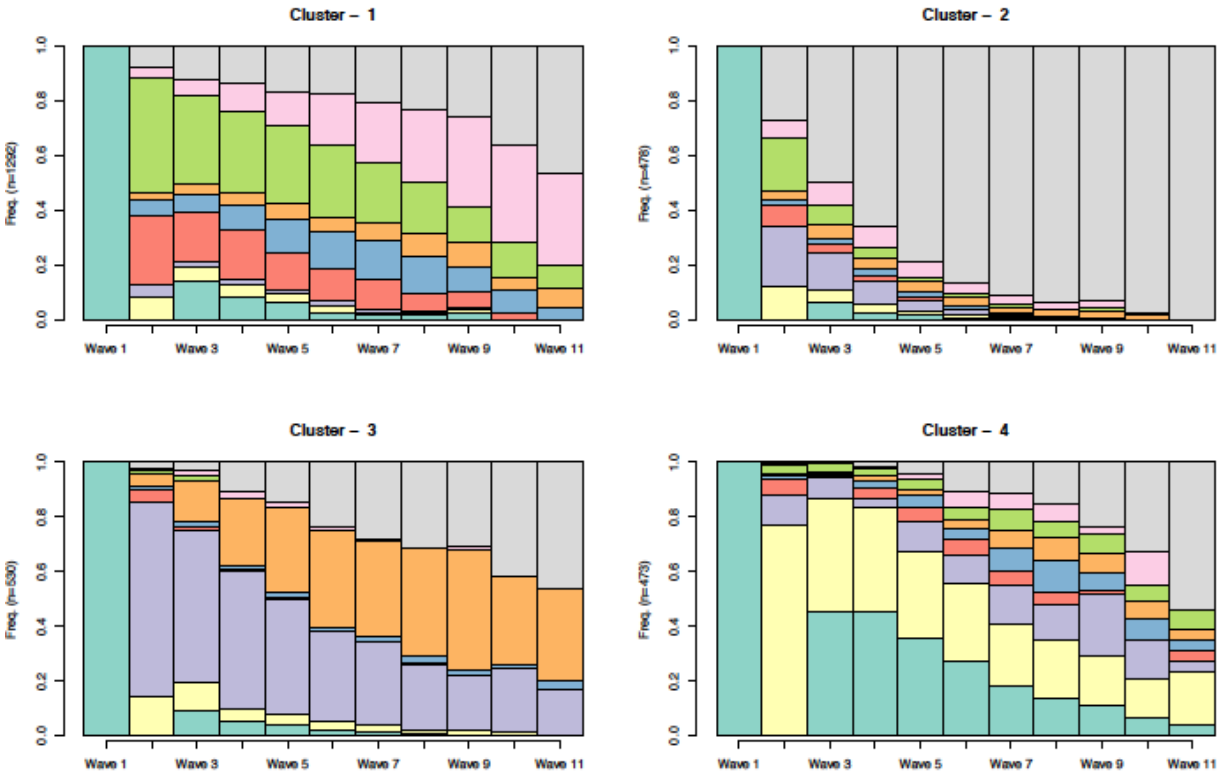
To make the number of unique trajectories more tractable, we consider several methods to classify trajectories. First, we develop a rule to classify couples into one of three trajectory types. Second, we use cluster analysis methods to group similar trajectories together.

Our rule for classifying trajectories is based on the concepts of concordant, partially concordant, and discordant states described above. If a couple is only observed in concordant states (both retired, both partially retired, or both working full time in each wave), we consider their full trajectory to be concordant. If a couple is ever observed in a discordant state (one working full time and the other fully retired in any wave), we consider their fully trajectory to be discordant. In all other cases, by definition, there will be waves where one spouse is observed working part time, while the other is not. We consider these to be partially concordant

trajectories. Only 7.1% of our sample is observed to have a fully concordant retirement trajectory. Contrary to common perceptions, joint transitions to retirement are not common. 31.0% of couples are observed to have partially concordant trajectories. The remaining 61.9% of couples have discordant trajectories. These discordant trajectories may include periods of partial concordance or full concordance, but the experience at least one wave where each spouse has a completely different labor force participation status.

As an alternative methodology, rather than defining trajectory types we use cluster analysis methods to group trajectories into the most similar patterns. This method uses a distance measure to group trajectories in order to maximize the similarity in each group. As a simplifying example, consider if there were only two states and two periods, there would be only 4 possible trajectories. As the number of periods increases, it is possible that two trajectories would be identical but for one period. Clustering methods allow these small deviations from a large path to play less of a role in determining the type of trajectory. For example, Consider three couples. The first couple is observed both working full time in the first wave, and then both fully retired in all future waves. The second couple is observed both working full time in the first wave, then one retired in the second wave, and then both fully retired in all future waves. The third couple is observed both working full time in the first wave, then one retired in the second through the penultimate wave, and then both fully retired in the final waves. The second couple spends only a brief time in a discordant state, while they spend the majority of their time in a concordant state. The third couple spends most of the time in a discordant state. By our definition, the second and third couple would both be considered discordant. Our clustering method on the other hand develops a distance measure and calculates the degree of deviation from the norm, then assigns each couple across the clusters to minimize the differences within

clusters. It would allow for a short period out of compliance with the groups norm. As a first pass, we consider 4 possible clusters. Figure 4, illustrates the retirement states for each of these four algorithmically determined clusters.



Looking at these clusters you can see some similar characteristics. Those in group 2, spend a significant period of time a joint fully retired state. This cluster represents 478 couples. The states in group 1 are dominated by three colors: red, green, and pink. These colors represent states where the wife is working more than the husband. This cluster represents 1,292 couples. The states in group 3 are dominated by purple, and orange. These colors represent states where the husband is working more than the wife. This cluster represents 530 couples. The states in group 4 are dominated by the colors green and yellow, representing states where either both are working full time, or where the husband works full time and the wife works part time. This

cluster represents 473 couples. We again see that trajectories characterized by similar labor force participation are the least common.

5. Predicting Retirement Trajectories

As a next step, we use our classification to identify which characteristics are most associated with different trajectory types. Table 5 presents the relative risk ratios from a multinomial logit regression predicting whether a couple is observed to have a concordant, partially concordant, or discordant retirement trajectory.

Table 5: Multinomial Logit Regression Predicting Concordance

VARIABLES	Partially Concordant	Discordant
Husbands age	0.951**	0.906***
	[0.021]	[0.019]
Age Difference (negative)	0.932	0.944
	[0.060]	[0.059]
Age Difference (positive)	1.078***	1.088***
	[0.029]	[0.028]
Husband in good Health	1.738**	1.429
	[0.469]	[0.361]
Wife in good health	1.570*	1.237
	[0.397]	[0.292]
Both in good health	0.910	0.882
	[0.322]	[0.295]
Husbands earnings ($10,000)	0.888**	0.952
	[0.043]	[0.044]
Earnings Difference ($10000) negative	0.916	0.920
	[0.060]	[0.059]
Earnings Difference ($10000) positive	1.164***	1.082
	[0.065]	[0.058]
First wave in our sample	1.053***	0.984
	[0.017]	[0.016]
Observations	2,546	2,546
Standard Errors in Brackets		
*** p<0.01, ** p<0.05, * p<0.1		

Here we find that couples with husbands that are older relative to other couples, are less likely to be observed with partially concordant and discordant trajectories. Older husbands on average are more likely to be associated with concordant retirement paths, suggesting that over time this type of path has become less common. Age difference also is a significant predictor of the retirement path, but only when the husband is older than the wife. Larger age differences are associated with partially concordant or discordant paths. One possibility for why this happens is because the larger the gap in ages between spouses, the larger the lag between the time when the husband qualifies for social security and when the wife qualifies. However, it is interesting to note that couples only seem to respond to age differences when the husband is older. We argue that age differences are plausibly exogenous to the retirement decision. The couples in our sample have been married on average 25 years and have an average age difference of approximately 3 years. At the time of marriage, it is unlikely that the majority of couples were thinking about the implications of their age difference 25 years down the road. As a further check of this we intend to consider parameterizations of the age difference that may get at further nonlinearities. Interestingly, age variables are the only variables that predict full discordance.

Partial concordance is associated with having one spouse (but not both spouses) in good health. However, this logical classification does not allow us to identify which spouse moves out of the labor force. Looking at the clusters created in our cluster analysis in a regression framework will allow us to get at this. We present these results below.

Couples with higher earning husbands are more likely to choose fully concordant retirement paths over partially concordant paths. This may be because they can afford to have the wife quit working earlier in order to follow a concordant path. Larger earnings differences between spouses are, like age differences, associated with partially concordant retirement paths.

Again, analysis based on the clusters predicted above may help us to identify which spouse is likely to retire earlier in these cases.

As a next step, we do similar analysis for the clusters calculated above. Table 6 presents results from a multinomial regression predicting the 4 clusters calculated by the clustering algorithm described above. Here we treat the cluster where both spouses spend most time in the joint retirement state as the base category. We again present relative risk ratios.

Table 6: Multinomial Logit Regression Predicting Clusters

VARIABLES	Both Work Longer	Husband Works Longer	Wife Works Longer
Husbands age	0.862***	0.915***	0.929***
	[0.018]	[0.017]	[0.015]
Age Difference (negative)	1.009	0.943	1.018
	[0.046]	[0.041]	[0.043]
Age Difference (positive)	1.130***	1.060**	1.150***
	[0.026]	[0.024]	[0.023]
Husband in good health	1.288*	1.028	0.793*
	[0.195]	[0.145]	[0.096]
Wife in good health	1.224	0.947	1.135
	[0.191]	[0.137]	[0.144]
Husbands earnings ($10,000)	0.986***	0.993*	1.002
	[0.004]	[0.004]	[0.004]
Earnings Difference negative	0.995	1.004	0.996
	[0.004]	[0.005]	[0.004]
Earnings Difference positive	1.016***	1.008*	0.993*
	[0.005]	[0.005]	[0.004]
First wave in our sample	1.250***	1.178***	1.196***
	0.986***	0.993*	1.002
Observations	2,550	2,550	2,550
Standard Errors in brackets			
*** p<0.01, ** p<0.05, * p<0.1			

Here we find that couples with husbands that are older relative to other couples, are less likely to be in any of any of these clusters relative to the joint retirement cluster. Older husbands

on average are more likely to be associated with the husband working longer than the wife, the wife working longer than the husband, and both remaining in the labor force, relative to joint retirement. This suggest that among older cohorts, joint retirement is more common. Age difference (husband's age minus wife's age) also is a significant predictor of the retirement path, but only when the husband is older than the wife. Interestingly, larger age differences are associated both with the husband working longer than the wife, and the wife working longer than the husband. Again, couples only seem to respond to age differences when the husband is older, not to age differences when the wife is older. When the husband is in good health both are more likely to work longer than both retire, but when the husband is in good health it is less likely that the wife will work longer than the husband.

Couples with higher earning husbands are less likely to both work longer or have the husband work longer than to retire completely. While our regressions currently don't control for wealth, this may suggest that joint retirement is more feasible for couples with greater resources. Larger positive earnings differences between spouses are, like age differences, associated both working longer or with the husband working longer. Couples with larger positive earnings differences are less likely to have the wife work longer than the husband.

6. Conclusion

In this paper, we examine joint partial retirement decisions, with a focus on whole retirement trajectories, not just retirement transitions. Our results suggest that joint retirement may be less common than found in previous research. This may occur for several reasons. First, because we focus on trajectories, we may observe some couple whose initial transition appears to be to joint retirement re-entering the labor force. Alternatively, because we account for partial

retirement, some retirements that previously were counted as joint retirement may actually involve part time work in the period before retirement.

We also find that trajectories where the husband works longer than the wife are more common than those where the wife works longer than the husband. This is surprising because husbands are on average 3 years older than their wives, so we would expect husbands to reach retirement age prior to their wives.

In future versions of the paper, we will explore plausibly exogenous source of variation in retirement, including the availability of part time jobs and income differences.

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