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THE INCREASE IN LEISURE INEQUALITY

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ABSTRACT

This paper examines the changing allocation of time within the United States that has occurred between 1965 and 2003-2005. We find that the time individuals have allocated to leisure has increased in the U.S. for both men and women during this period, with almost the entire gain occurring prior to 1985. We also find that post 1985 there has been a substantial increase in leisure inequality, particularly for men. Over the last 20 years, less educated men increased the time they allocated to leisure while more educated men recorded a decrease in leisure time. While the relative decline in the employment rate of less educated men is important, trends in employment status explain less than half of the increase in the leisure gap.

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I. Introduction

In this paper we document trends in the allocation of time in the United States during the last 40 years. We pay particular attention to two separate questions. The first is how has leisure time evolved for the average individual between 1965 and 2005. The second, and potentially more important, question is the whether the dispersion in leisure across individuals has changed over this same period, and to what extent the observed change in dispersion is attributable to differences in employment status.

To preview our results, we find that for the average household, time spent in leisure has increased. In particular, we document that our focal measure of leisure has increased 3 hours per week for women and 5 hours per week for men during this time period. However, almost all of the gains in leisure occurred prior to 1985. Since 1985, our measure of leisure has been roughly constant for men and has declined for women.

In the second part of the paper, we document the extent that leisure inequality has increased in the United States during the last forty years. Prior to 1985, average time spent in leisure was roughly comparable for men with different levels of schooling. However, after 1985 there developed a significant leisure “gap” between men of differing educational attainment. For example, between 1985 and 2005, men who did not complete high school *increased* leisure by 8 hours per week, while men who completed college experienced a *decline* in leisure of 6 hours per week. Our work adds to the existing literature on measuring changes in the allocation of time.¹

¹ In Aguiar and Hurst (2007a), we document an increase in leisure for the average individual between 1965 and 2003. Our discussion in Section 3 of this manuscript is based on this earlier work. Additionally, three classic book length references have also examined trends in the allocation of time during earlier periods: Ghez and Becker (1975), Juster and Stafford (1985), and Robinson and Godbey (1999). The latter two books also documented an increase in leisure for the average individual during the periods they analyzed. See Schor (1992) for a popular, and controversial, study that draws different conclusions about the trends in leisure between the mid 1960s and the early 1980s.

At the same time, the employment rate for less educated men fell significantly relative to more educated men. This raises the important question of whether the growth in leisure inequality reflects increased involuntary unemployment (or disability) on the part of less educated men. To address this possibility, we answer the following four questions: (i) Conditional on working full time, does the allocation of time differ by educational attainment in 1985 or 2003-2005? (ii) How do men who do not work, regardless of education, allocate foregone market work hours? (iii) Are there differences by education in how unemployed, disabled, and other non-employed individuals allocate their time and has this changed over the period in question? and (iv) How much of the increased leisure experienced by less educated individuals over the last 20 years can be explained by changes in employment status?

We find that within each employment status category, men of different educational attainment exhibit similar time allocation patterns in 1985. However, this uniformity is not present in 2003-2005. For example, while market work hours are similar for employed men regardless of education in 2003-2005, less educated employed men enjoy 4 more hours of leisure than more educated employed men. This gap is made possible as less educated employed men perform less non-market work, less child care, and less religious and civic activities. Even more strikingly, less educated non-employed men enjoy 10 more hours per week of leisure than more educated non-employed men. This is made possible by less educated non-employed men performing less informal market work and less job search and training, as well as less non-market work, less child care, and less religious or civic activities.

Using a Blinder-Oaxaca type decomposition, we find that roughly 30 percent of the difference in leisure between more and less educated men in 2003-2005 is due to differences in employment status (i.e., potential involuntary unemployment). The remaining 70 percent is due to the fact that less educated individuals enjoy more leisure within all employment status categories. We do find that two thirds of the increase in leisure among less educated men between 1985 and 2003-2005 is due to changes in employment status during this period. However, more educated men experienced a decline in leisure during this period, none of which can be attributed to employment status. On net, less than half of the increase in leisure inequality can be attributed to trends in employment rates.

The remainder of the paper is organized as follows: Section 2 provides an introduction to why we believe it is important to examine the changing nature of time allocation, as well as discussing the data sources used in this paper and relevant measurement issues; Section 3 reviews overall trends in the allocation of time between 1965 and 2003-2005 for men and for women; Section 4 focuses on the changing inequality in leisure by educational attainment and presents a new set of facts about how non-employed individuals allocate their time relative to their employed counterparts; Section 5 presents our decomposition of how much of the cross sectional difference in leisure by education and the changing dispersion of leisure over the last 20 years can be explained by educational differences in employment rates; and Section 6 concludes with some caveats as well as a general discussion of how to relate our results to the issue of inequality.

2. Motivation and Methodology

2.1 The Importance of Time Allocation

This paper seeks to understand why the allocation of time has evolved differently for individuals of differing educational attainment. Before we begin, it is useful to spend some time discussing why time allocation is important and how it may influence our understanding of other economic phenomena observed in the market. This discussion will also help frame the patterns documented in the rest of the paper.

The starting point is to recognize that time is a component of nearly every economic undertaking. Naturally, time is the primary element of market labor. However, time is also a key input into consumption, as argued by Becker (1965). Individuals consume a range of different commodities. Each commodity is produced with a combination of the household member(s)' time and market goods using a production technology. For example, a commodity may be a meal. The inputs likely include ingredients bought from the market, time spent shopping for the ingredients, time spent cooking, and time spent eating. Similarly, a commodity may be watching a sporting event on television, which involves the services of a television set as well as the time spent watching the event. In the Beckerian model, market labor is just one of many uses of time that ultimately produce consumption commodities.

Viewed in this way, the standard dichotomy between market work and a catch-all term called "leisure" does not distinguish whether non-market time is spent engaged in cooking or watching television, to use the above examples. Why is it important to make this distinction? One primary reason is that economics is the study of how agents allocate scarce resources. How time is allocated is therefore of interest in and of itself.

Second, and potentially more importantly, if we want to understand the behavior of the market economy, we need to understand how time is allocated away from the market. This is important if the elasticity of substitution between time and goods varies across the production functions for different commodities. Indeed, one definition of whether an activity is “leisure” may be the degree of substitutability between the market input and the time input in the production of the commodity. That is, the leisure content of an activity is a function of technology rather than preferences. In the examples above, one can use the market to reduce time spent cooking (by getting a microwave or ordering takeout food) but cannot use the market to significantly reduce the time input into watching television (although innovations like VCRs and DVRs allow some substitution). A perhaps more ambiguous example would be the commodity of “good health” that requires time inputs such as doctor visits and medical procedures. We would like to avoid medical visits by using market substitutes, but we cannot always do so, because of technological constraints. However, at the margin, one can reduce the waiting time associated with medical care by paying a market price.

Reid (1934) argues that leisure (or “consumption” activities) are those activities that generate utility from the “doing” itself. Our framework extends this definition by defining the ease of substitutability between one’s own time and market purchased inputs in producing the ultimate consumption commodity as the crucial characteristic of “leisure”. Note that this implies that one can potentially rank activities along a continuum (ordered by the technological elasticity of substitution), with no clear cut dividing line between “leisure” and “production”. Moreover, the existence of a market for an activity does not necessarily indicate an activity’s leisure content. For example,

one can purchase child care on the market. However, it is not obvious the ultimate consumption commodity is the same regardless of whether the time allocated to child care comes from a parent or by a hired market substitute. On the one hand, a commodity such as a clean, well-nourished child seems amenable to market purchase. On the other hand, the bond between parent and child resulting from time together cannot be purchased on the market. Whether child care is leisure or production depends on how we classify the ultimate commodity. In the case of child care, as with many other activities, the answer is not obvious.

One important application of how the allocation of time away from the market affects market outcomes is the effect on market labor supply. In the Beckerian model, whether a wage increase draws a worker into the market depends not only on preferences embedded in the utility function but also on the production functions used to produce consumption commodities as well as on how time is allocated across these production functions. If agents are engaged in activities that have a high degree of substitution between goods and time, they will supply labor to the market differently in response to a real wage increase than will agents engaged in activities that have a low elasticity of substitution.

For example, suppose an individual who spends a significant amount of time on home production is offered employment at a certain wage. Given the ease of finding market substitutes for home production, it will take only a small wage premium to draw the individual into the work force. This generates a very elastic labor supply response. This is consistent with the fact that rising market wages for women and declines in the price of goods used in home production accompanied an increase in female labor force

participation in the twentieth century (see Greenwood, Seshadri, and Yorokuglu 2005). It also is consistent with the fact that estimates of labor supply for women tend to be higher than for men (see Mincer 1962). Conversely, if employment means forgoing activities that do not have close market substitutes, whether it be watching TV or spending time with one's own child (assuming that day care is not a perfect substitute for parental time at the margin), then it may take a large wage increase to generate an increase in labor supply.

These examples make it clear that the way that agents allocate their time away from the market has a direct bearing in understanding market labor supply. In particular, it makes a difference whether non-market activities have close market substitutes or not. Such an accounting may also guide our understanding of why labor supply elasticities change over time and across sub-groups, why hours and employment vary, and how technological shocks in the production of home goods or in the production of market goods influence total output.

Moreover, understanding time allocation is important in distinguishing actual "consumption" from market expenditure. For example, in previous work (Aguiar and Hurst 2005 and 2007b) we have documented that simply looking at market expenditures provides a misleading picture of true consumption. For example, food expenditure tends to decline at retirement. This has been viewed as evidence that retirees suffer due to poor planning. However, shopping and home production increase at the same time. Part of the decline in expenditure is due to lower prices paid by retirees stemming from intensive shopping for bargains. Similarly, by preparing one's own food, retirees can forego more expensive prepared foods and buy the raw ingredients instead. That is, time is used as a

substitute for market expenditures on food. Food diaries indicate that actual food intake does not decline for the average retiree despite a sharp decline in market expenditures. This provides just one example of the importance of time allocation in understanding market outcomes.

More generally, time allocation is important in making correct inferences about welfare. For example, the well-documented increase in the relative wages and expenditures of educated individuals (Katz and Autor 1999, Attanasio and Davis 1996, Krueger and Perri 2006) is shown below to be accompanied by little change in the relative time spent in home production but a large change in the relative time spent in leisure. In Section 6, we will return to how such time allocation should inform conclusions about the welfare consequences of wage, income, and expenditure inequality.

2.2 Methodology

The importance of time allocation raises the issue of how to measure it. There are three types of surveys that may be used. The first is standard household surveys such as the Current Population Survey (CPS) or the Panel Study of Income Dynamics (PSID). Respondents of such surveys typically report the market hours worked in a typical or reference week and the weeks worked per year. There are two drawbacks of these surveys in measuring time allocation. The first shortcoming is that the focus is on market work, with little or no reporting of other uses of time. The second is that respondents may not have a precise idea of their typical work week or weeks worked in a previous year.

A second type of survey collects data on one's immediate activity. For example, the ecological momentary assessment (EMA) methodology popular with psychologists and medical clinicians, provides respondents with an electronic device that prompts them at random times during the day to record activities as well as answer questions on stress levels, emotional state, pain symptoms etc. While avoiding issues of memory, the samples must be very large to obtain accurate coverage of time allocation for a 24-hour period.

The third type of survey involves time diaries, which is the approach adopted in this paper as well as in most time allocation studies. These surveys offer the best approach for measuring time allocation across a number of activities as well as over a significant time frame. The typical survey works as follows. Individuals are contacted on a particular (random) day and asked about time allocation over the previous day. For example, respondents are asked to report all activities in 15 minute intervals over a 24 hour period starting at 4 am the previous day. The focus on the previous day mitigates some of the poor recall issues of standard household surveys. The diaries also deter over-reporting of certain activities, such as market work, to the extent that the sum of all activities cannot exceed 24 hours. Of course, this does not mean that recall and exaggeration/under-reporting are not still present. The issue of multi-tasking is also addressed in some surveys by separating primary from secondary activities that occur simultaneously.

In this paper, we use three time diary surveys: *1965-1966 America's Use of Time*; *1985 Americans' Use of Time*; and the 2003, 2004, and 2005 waves of the *American Time Use Survey (ATUS)*. The Data Appendix describes these surveys in detail. Each

survey is based on 24-hour time diaries. Survey personnel assign each activity to a category in a set classification scheme. The more refined the classification scheme the less the survey needs to rely on the judgment of surveyors in correctly coding activities. The ATUS represents the state of the art of time use surveys for the United States and reports 406 detailed time use categories. The earlier surveys used schemes of slightly less than 100 categories.

We break the allocation of time into a number of broad time use categories. We construct the categories to be mutually exclusive and sum to the household's entire time endowment. *Total market work* includes all time spent working in the market sector on main jobs, second jobs, and overtime, including any time spent working for pay at home plus any time spent commuting to/from work, time spent on work related meals/activities, time spent searching for a job, and time spent working for pay in the informal sector.² This latter category includes any activities where the individual earns income providing services outside of the formal sector, such as babysitting for pay, doing home improvements for pay, doing household chores for pay, selling items at a flea market, etc. When noted, we separate from total market work the time spent on *job search*. This allows us to study the extent to which unemployed and disabled men spend time looking for employment.

Total non-market work consists of three sub-categories: home and vehicle maintenance, obtaining goods and services, and all other home production. Time spent on *home and vehicle maintenance* includes any time spent cleaning or repairing home exteriors or vehicles. Examples include painting home exteriors, building a deck,

² Throughout the paper, time spent on an activity includes any time spent on transportation associated with that activity.

cleaning a garage, shoveling snow, building a bird feeder, changing vehicle oil, restoring a car, washing a car, repairing a car, etc. Time spent *obtaining goods and services* includes all time spent acquiring any goods or services (excluding medical care, education, and restaurant meals). Examples include grocery shopping, shopping for other household items, comparison shopping, coupon clipping, going to the bank, going to a barber, going to the post office, and buying goods on-line. *All other home production* includes any time spent on meal preparation and cleanup, doing laundry, ironing, dusting, vacuuming, indoor household cleaning, and indoor design and maintenance (including indoor painting and decorating).

We treat *child care* as a separate time use category. Total time spent in *child care* combines time spent caring for a child (breast feeding, changing diapers, etc.), teaching a child (reading to a child, disciplining a child, parent-teacher conferences, etc.), and playing with a child (including watching a children in sporting events). *Gardening, lawn care, and pet care* consists of time spent gardening, doing yard work, playing with one's pet, walking the dog, etc. Child care and gardening, lawn care and pet care may conceptually be considered non-market work. However, at least elements of these categories (for example, playing with one's child or pet or gardening) may be viewed as leisure activities. We do not take a stand on the issue of whether these categories are leisure or home production activities and, as a result, we have chosen to treat these categories separately.

As argued above, one definition of "leisure" is as a characterization of technology, that is, how substitutable are time and goods in the production of the ultimate consumption commodity. Activities which directly yield utility are obvious candidates

for designation as leisure. Our measure of leisure therefore sums together time spent watching television, socializing (relaxing with friends and family, playing games with friends and family, talking on the telephone, attending/hosting social events, etc.), in exercise/sports (playing sports, attending sporting events, exercising, running, etc.), reading (reading books and magazines, reading personal mail, reading personal email, etc.), entertainment/hobbies (going to the movies or theatre, listening to music, using the computer for leisure, doing arts and crafts, playing a musical instrument, etc.), and all other similar activities. We also include in our leisure measure activities that provide direct utility but may also be viewed as intermediate inputs such as sleeping, eating, and personal care. While we exclude own medical care, we include such activities as grooming, having sex, sleeping or napping, and eating at home or in restaurants.³ For the key analyses performed in this paper, we also report detailed sub-categories of leisure. This allows the reader to see which components of the total leisure measure are driving the results.

The final time use categories are time spent on one's *education, own medical care, care of other adults, and civic/religious activities*. All residual time use categories are collected in *other* so that our time use categories encompass all activities performed by an individual during a day. A full list of the time use categories analyzed in this paper are shown in Appendix Table A1.

The focus of this paper is on differences in time allocation across different educational attainments and employment states. These groups may differ in other

³ This measure of leisure is equivalent to the leisure measure 2 of Aguiar and Hurst (2007a) minus time spent gardening, in lawn care or in pet care. We should note that the coding of eating at work has changed across surveys, an issue discussed at length in the robustness appendix to Aguiar and Hurst (2007a). See http://troi.cc.rochester.edu/~maguiar/timeuse_data/robustness_appendix.pdf.

relevant characteristics, such as age, family status, etc. As a result, along with “unconditional” means, we also report “conditional” differences that are adjusted for demographic variation across groups.

Specifically, we look at demographic cells defined by certain attributes, such as age, family status, sex, educational attainment and employment status. When we report “demographically adjusted differences,” we construct cells defined by age and family status within each educational category.⁴ The cells are assigned weights that do not vary across educational attainment or across the relevant survey years. Specifically, they reflect the sample averages of family status and age for men regardless of education and year of survey.⁵ This uniform set of weights is then used to sum the cells within each educational category. This mean is conditional on demographics in the sense it holds the relative importance of young versus old and married versus single constant across educational categories.

Our primary sample consists of respondents aged 21 through 65 who are neither students nor retirees. We drop adults younger than 21 and adults older than 65 (as well as students and early retirees) to minimize the role of time allocation decisions that have a strong inter-temporal component, such as education and retirement. Moreover, the 1965 time-use survey excludes households with heads who are either retired or over the age of 65. We drop these households from subsequent surveys to ensure a consistent sample. Additionally, the 1965 and 1985 time-use surveys exclude individuals under the age of 18 or 19 from their samples. We also restricted the sample to include only observations that

⁴ More specifically, we distinguish single households from married households and households that include children (regardless of marital status), separating multi-person households from single-person households. Given the small sample size in 1985 in some of the sub-categories, we do not distinguish households by number of children.

⁵ Specifically, for Tables 1 and 2 we construct demographic weights by averaging over the 1965, 1985, and 2003-2005 samples. For tables 4 and 5, we average over the 1985 and 2003-2005 surveys, and for table 6 we include only the 2003-2005 sample.

had a complete time diary report and who had non-missing variables for key co-variates. These restrictions, and their resulting impact on the size of our sample, are discussed in the Data Appendix. Overall, our analysis samples include 1,854, 3,115, and 34,697 individuals, respectively, from the 1965, 1985, and 2003-2005 sample.

3. Trends in the Allocation of Time

3.1 Trends in Mean Time Allocation

The last forty years have witnessed dramatic shifts in how individuals allocate their time. We summarize key trends in Table 1, adjusting for demographics as described in the previous section. The most obvious change is observed in market work. According to time diaries, the average man currently works 40 hours per week, including commuting time. Adjusting for changing demographics, the average for men in 1985 was 43.5 hours per week, and the average in 1965 was 51.2 hours per week.⁶ While men experienced a decline of nearly 12 hours per week in market work, women recorded an increase of 3.4 hours per week. Specifically, women currently work 25.5 hours per week, as opposed to 23 hours per week in 1985 and 22 hours per week in 1965.

For understandable reasons, relative to other categories, time spent in market work has received the lion's share of attention. Standard household surveys, such as the Current Population Survey (CPS), typically restrict time allocation questions to the hours spent in market work. As a result, non-market time is frequently lumped together into a catch-all "leisure" measure. However, households also allocate time to production

⁶ The 1965 survey sample was drawn from households where at least one person was employed during the previous year. This potentially biases upward the employment rates. However, the reported employment rates for men in the 1965 sample do not differ markedly from the nationally representative 1968 PSID. This issue is discussed in the appendix of Aguiar and Hurst (2007).

outside the formal market sector. To the extent that non-market (home) production is important and changing over time, changes in leisure time will be poorly proxied by changes in time spent away from market work.

Detailed time diaries allow us to take a more refined approach to non-market time. For example, the increase in market work for women was accompanied by a decline of 10.4 hours per week in housework and shopping, while men increased non-market production (excluding child care) by 3.5 hours per week. Both men and women increased time spent on child care by nearly 2 hours per week. These shifts clearly indicate that market work provides an incomplete measure of trends in “total” work.

To obtain a clearer picture of changing trends in “leisure”, we can start by examining the time spent in core leisure activities (including watching TV, socializing, participating in or watching sports, reading, engaging in hobbies, or spending time in other entertainment activities). In 1965, the average person spent nearly 31 hours per week in these activities. The corresponding number in both 1985 and in 2003-2005 was 35 hours per week. This net increase in core leisure was 4.6 hours per week for the average person, reflecting an increase of 5.6 hours per week for men and 3.7 hours per week for women. However, we note that almost all of these increases occurred in the 20 years prior to 1985.

A broader measure of leisure includes the above activities as well as time spent eating, sleeping, and in personal grooming (but not on own medical care). This measure of leisure will be the basis of the analyses that follow and is the leisure measure reported in Table 1. The average time spent on this broader measure in 1965 was 102 hours per week, increasing to 107 hours per week by 1985, before declining slightly to 106 hours

per week in the early 2000s. Again, leisure increases were recorded by both men and women, with men enjoying a 5 hour gain and women a 3 hour gain since 1965, controlling for demographics.

3.2 Trends in Time Allocation by Educational Attainment

One must be careful considering averages, even conditional on sex, as the gains in leisure may not be shared uniformly across the population. In fact, the changes in leisure differ markedly by educational attainment.

Table 2 breaks down the changes in time allocated to leisure between 1965 and 2003 by both sex and educational attainment. A striking fact presented in Table 2 is the similarity of time allocation across educational attainment in 1965. For example, in 1965, men with at least 16 years of schooling spent the same amount of time in leisure (101.9 hours per week) as did men with exactly 12 years of schooling (101.2 hours per week). Men with less than a high school degree took only 2.4 hours per week more of leisure than college educated men. By 2003, however, there is substantial difference in leisure by educational attainment. Men with at least 16 years of schooling only spend less than 100 hours per week in leisure while men with exactly 12 years of schooling and less than 12 years of schooling experience, respectively, 108 and 113 hours per week of leisure. In other words, on average, there was a slight decline in leisure for college educated men between 1965 and 2003. All of the increase in leisure for the “average” man is driven by the leisure increases of men with less than a high school degree, a high school degree, or some college training.

Moreover, the divergence in leisure started post 1985. In 1985, both college educated men and high school educated men allocated roughly the same amount of time to leisure (105.8 vs. 107.3 hours per week). As was the case in 1965, there was little cross sectional variation in leisure by educational attainment in 1985. The dispersion in leisure by educational attainment found in the 2003-2005 time use data started post 1985. The timing of the changing inequality in leisure across education groups mirrors the well documented timing of the changing inequality in wages and consumption (see Katz and Autor 1999 and Attanasio et al. 2004 for wages and consumption, respectively). Interestingly, while almost all of the increase in leisure for the average individual occurred between 1965 and 1985, the increase in leisure inequality for men occurred post 1985.

The pattern is similar for women, save for when the divergence begins. As was the case for men, the increase in leisure between 1965 and 2003 for women with a high school degree (4.8 hours per week) was much larger than the change in leisure for college educated women (-0.2 hours per week). However, roughly half of the dispersion in leisure between high and low educated women occurred prior to 1985. In other words, the dispersion in leisure between more and less educated women post 1985 is less dramatic than the dispersion in leisure between more and less educated men post 1985.

One major concern with dividing our sample by educational attainment centers on the fact that a larger fraction of men are going to college today relative to the 1980s. In our sample, 45 percent of the men had at least some college education in 1985. In the 2003-2005 sample, that fraction increased to 56 percent. Therefore, the education groups

reflect different segments of the population in 1985 versus 2003-2005 and this potentially could explain why the differences in leisure across educational attainment have grown.

There are two facts that mitigate this concern. The first is that the dispersion in leisure has occurred throughout the distribution, and is not simply an artifact of self-selection out of the less educated category and into more educated. This result is shown in Figure 1 which plots the distribution of time allocated to leisure for men (Panel A) and women (Panel B) in 1985 and 2003-2005. The horizontal axis represents hours per week spent on leisure. The vertical axis is the frequency that someone reports the corresponding leisure time. Specifically, each line is the kernel estimate of the probability density over leisure time in the corresponding sample, with the total area under the line integrating to one. For men, we see that the 2003-2005 density is flatter in the middle and has larger tails (save for the extreme right tail), representing a general fanning out of the leisure distribution. As noted above, the spreading out of leisure for women was not as concentrated in the 1985-2005 period as was the case for men. This is reflected in Panel B which shows that while the 2003-2005 distribution is somewhat flatter at the peak than in 1985, the effect is not as dramatic as that for men. Additionally, as we have shown in our previous work (Figure IV of Aguiar and Hurst 2007), the increasing dispersion in leisure has occurred at nearly every percentile of the leisure distribution.

The second fact is that we can identify categories of educational attainment that include similar fractions of the population in each sample. Specifically, roughly 30 percent of men in both samples have a college diploma or better, while those who do not finish high school comprise 13 percent of the sample in 1985 and 12 percent in 2003-

2005 (see Appendix Table A2). These two categories thus represent fairly stable fractions of the population. Although the fraction of the sample in each category is the same in 1985 and 2003-2005, Table 2 clearly indicates that the average amount of leisure taken by individuals in these two educational categories diverge post 1985.

4. Time Allocation by Educational Attainment and Employment Status

The trends presented in the previous section raise interesting question regarding what drives the growing “leisure gap” across educational attainment. One natural question is whether the relative gains in leisure for less educated men reflect involuntary unemployment or disability. More generally, how much of the increase in leisure dispersion across education groups reflects differences in the relative incidence of unemployment or disability across educational groups? Shedding light on such questions is the focus of this section. We confine our analysis to men given that less educated men experienced the sharpest decline in market work and therefore the issue of involuntary leisure due to employment status may be particularly relevant.⁷

We concentrate on trends between 1985 and the present, as this period witnessed the dramatic increase in leisure differences across educational attainment for men. We begin by documenting that trends in employment status over this period vary markedly by educational categories, with less educated men experiencing larger declines in employment.⁸ We then explore in detail differences in time allocation both within and between employment status for the 1985 and the 2003-2005 periods. This will allow us

⁷ We note the significant differences in labor force *entry* for women of different educational attainment are the primary forces behind the leisure gap among women, a phenomenon related to the pattern for men due to the prominence of differences in market labor trends. We leave the interesting question of the gap in leisure among women to future research.

⁸ Trends in labor market participation by educational attainment have been documented by others. For example, see Juhn, Murphy, and Topel (2002).

to decompose the extent to which leisure differences can be attributed to differences in the rate of employment, which is the focus of Section 5.

4.1 Employment Status by Educational Attainment

Table 3 documents employment patterns by education in 1985 and 2003-2005. Unlike the numbers earlier in the paper, the description of employment patterns are unconditional on demographics (i.e., represent the raw data from our sample). However, differences in the allocation of time between educational groups conditional on demographic differences are also shown in all subsequent tables. Additionally, for the remainder of our analysis, we focus on only two educational categories: more educated (those with more than 12 years of schooling) and less educated (those with 12 years or less of schooling). This is dictated by the relatively small sample in the 1985 survey. For example, there are only 15 non-employed men who are college graduates in the 1985 sample.

The top panel of Table 3 shows the employment patterns by educational attainment for 1985. The first line of the table reports that 89 percent (column 2) of men with a high school diploma or less were employed, while the corresponding number for more educated men was 94 percent (column 3). Adjusting for differences in demographics between the two groups, we find a 4 percentage point difference in the probability of being employed between more and less educated men.

The bottom panel reports the same statistics for the 2003-2005 period. We see that the average employment rate fell slightly from 91 percent to 88 percent over this period. However, the decline in the employment rate is much larger among less educated

men. Specifically, the employment rate for less educated men falls from 89 percent in 1985 to 83 percent in 2003-2005. More educated men saw a decline in employment rates from 94 to 92 percent. This relative decline in employment by less educated men generates an employment gap of 9 percentage points in 2003-2005.

In the 1985 survey we can distinguish unemployed from other non-employed individuals (the latter group includes the disabled, home makers, and other individuals out of the labor force). Remember, as discussed above, we have already excluded both students and retirees from our analysis. We see that most of the relatively small gap in employment rates in 1985 reflects both a higher unemployment rate as well as a higher rate of other non-employment among the less educated. We can achieve a finer breakdown of the non-employed in 2003-2005.⁹ The bottom panel of Table 3 reports that the employment gap between less and more educated men results from educational differences in all other job status categories. For example, conditional on demographics, less educated men were 5 percentage points more likely to be disabled. The sharp rise in disability over the last 20 years has been well documented in the literature (see, for example, Autor and Duggan 2003). Unfortunately, we do not observe disability status in the 1985 survey. However, the small rates of “other” non-employed in 1985 and the large gap observed in 2003-2005 suggests that disability rates increased disproportionately among the less educated.

4.2 Time Allocation in 1985 by Employment Status

⁹ Specifically, we use whether the respondents noted disability in response to a question of whether they held a job in the last seven days, as well as responses to such questions as “Las month you were reported to have a disability. Does your disability prevent you from doing any kind of work for the next six months? Yes, No, or Did not have a disability last month.”

We now turn to the important question of whether these trends in employment status are driving the differential increase in leisure for the less educated. Table 4 reports time spent on key activities in 1985 broken down by educational attainment and employment status. We show a broad set of time use categories as well as finer categories for leisure to get a detailed picture of how individuals are allocating their time.¹⁰ We use the same categories in Tables 5 and 6 for the 2003-2005 data, discussed below.

Part A of Table 4 averages over all employment groups, while Panel B conditions on employment and Panel C restricts the sample to non-employed men. This latter group includes the unemployed, the disabled, and others out of the labor force. Panel A indicates that time allocation is similar for a number of activities between less and more educated men. For example, conditional on demographic differences, less educated men perform 0.3 hours per week less market labor and 1.4 hours per week less home production than their more educated counterparts. The net effect is that the less educated enjoy 1.6 hours per week more leisure. These results are consistent with the results reported in Table 2 which show that there is little differences across educational attainment with respect to leisure in 1985.

The stability of time allocation within broad aggregates between education groups does mask some sharp differences at a disaggregated level. For example, less educated men watch 17 hours per week of television, compared to 13 hours per week for more educated men. This difference is offset by the less educated reading and sleeping less than their more educated counterparts.

¹⁰ The leisure sub-categories are not exhaustive. There is an "other" leisure category that we omit from the table.

Conditional on employment (panel B) and adjusting for demographic differences (column 5), less educated men perform 1.4 hours more market work and 1.3 hours per week less non-market work than their more educated counterparts in 1985. Interestingly, conditional on employment, there is essentially no leisure difference at all (0.2 hours per week) across educational attainment in 1985. The educational differences in Panel B for employed workers are consistent with the overall averages in Panel A, including the relative differences in TV, sleep, and reading.

The time use diaries collect data on informal market work, such as preparing food or drink for sale, making furniture for sale, playing in a band for pay, babysitting for pay, doing other household chores for pay, doing yard work or home and vehicle maintenance for pay, etc. This type of work may be important for those who are officially non-employed. Moreover, we observe job search, which includes activities such as: contacting potential employers, sending out resumes, researching details about a job, submitting applications, searching for open jobs (reading the classifieds, using the internet), interviewing for a job (in person or over phone), preparing for a job interview, and traveling to an interview. A third market related activity is education/training, which includes time spent in formal degree programs (and includes time spent on home work and the associated commuting time), as well as professional exam preparation (e.g. preparing to get real estate license or studying for the bar exam) or non-degree course work (e.g. taking a financial planning class or taking a cooking class).

Panel C indicates that conditional on being out of work, less educated men in 1985 perform more (informal) market work as well as engage in more searching for new employment and education/training. However, the less educated non-employed perform

less non-market work and child care. The net effect is that the less educated non-employed enjoy roughly one hour (adjusted for demographics) of leisure per week than more educated non-employed men. Again, the less educated leisure time is geared towards television and socializing and away from reading and exercise.

Overall, Table 4 indicates a striking stability in the allocation of time across educational attainment in 1985. Conditional on employment status, time allocation to key aggregates do not differ markedly between less and more educated men. Moreover, the rates of employment are similar across education groups. These patterns combine to generate little difference in average leisure between less and more educated men.

A comparison of Panels B and C reveals that the non-employed on average enjoy nearly 30 hours more per week in leisure than their employed counterparts, while performing only 12 hours more per week of non-market production and child care. Almost all elements of leisure show an increase between employed and non-employed status, with the biggest gains coming from TV and sleep. The fact that non-employed men enjoy more leisure than employed men suggests that the differences in employment rates observed in 2003-2005 may be an important factor in explaining the recent leisure gap, a possibility we explore next.

4.3 Time Allocation in 2003-2005 by Employment Status

Table 5 repeats the analysis of Table 4 using the 2003-2005 sample of men. Panel A reports educational group averages unconditional on employment status. Contrary to the case of 1985 and as anticipated by Table 2, the results show significant differences in time use across educational attainment. In particular, after adjusting for demographic

differences, less educated men experience 7.1 hours per week more leisure than men with more education. The difference stems from less educated men allocating 4.6 hours per week less to market work, 0.7 hour less to non market work, 0.7 hour per week less to child care, and 1.1 hours less to education/training.

Panels B and C of Table 5 report the allocation of time for the employed and non employed, respectively. As noted above, the ATUS survey allows us to break out the unemployed and disabled separately. However, we initially group all non-employed for comparison with 1985. We return to the various sub-categories of the non-employed in Table 6.

Conditional on working and adjusting for demographic differences, more educated men work in the market sector 1 hour per week more than less educated men. Despite the similarity in work hours across education for employed men, highly educated men spend 4 hours per week less in leisure. To put this in perspective, over the course of a year, less educated employed men average over 7.6 full (24 hour) days of additional leisure relative to highly educated men, holding demographics equal. This translates to roughly 4.5 additional (40 hour) weeks of vacation time for less educated employed males relative to their high educated counterparts.

The fact that less educated employed men work 1 hour less per week in the market sector but enjoy 4 hours per week more of leisure raises the question where is the additional leisure time coming from. The answer is that less educated men do less of nearly every other time category. Less educated employed men, conditional on demographics, spend 1 hour per week less on non-market work, 1 hour less per week on child care, 1 hour less on education/training, and 0.5 hours less on religious/civic

activities. Less educated employed men do spend slightly more time on gardening/pet care and care of other adults, but the total difference is roughly half an hour per week. The education gap within the non-market sector for employed men is driven by the fact that more educated men spend more time on cooking and indoor cleaning (the primary component of “all other home production”) and shopping, while less educated men spend slightly more time on home and vehicle maintenance.

An additional striking fact from Table 5 Panel B is that more than 100 percent of the conditional differences in leisure between educational groups for working men can be attributed to differences in the time spent watching television. Specifically, working men with a high school degree or less spend 4.0 hours more per week watching television than highly educated working men. While more educated men spend more time exercising, reading, and in other hobbies and less time sleeping and socializing, the net effect of all these other differences in leisure components across education groups is essentially zero.

The results of Table 5 Panel B imply that employment status is not the full story behind the large leisure gap across educational attainment. However, the 4 hour gap within employed men is much smaller than the 7.1 hour per week difference in leisure for the full sample. Given that most men are employed within each educational group, the remainder of the total difference in leisure documented in Panel A must come from either the differences in job status among the educational groups or the differential time use within the non-employed job status categories conditional on educational attainment.

Panel C indicates that educational differences are reflected in different time allocation choices conditional on non-employment. Relative to more educated non-employed men, the less educated non-employed perform 1.2 hours less informal market

work, 2 hours less job search, 1 hour less education/training, 2.7 hours less non-market work, 1.4 hours less on garden/pet care, 0.6 hours less on care of other adults and 0.7 hours less child care. This translates into nearly 10 hours more per week spent on leisure. Panel C indicates that employment status is not the only source of leisure differences across educational attainment. Less educated non-employed men allocate their time very differently than their better educated counterparts.

The results from 1985 (Table 4) indicate that this was not the case 20 years ago. Over the last 20 years, there was a dramatic shift in the time allocation patterns of less educated non-employed men. A non-employed man with a high school education or less spent 134.6 hours per week in leisure in 1985 but 137.1 hours per week in 2003-2005. Conversely, more educated non-employed leisure decline by over 3 hours per week. This change over time was accompanied by a sharp decline in home production, job search, and other informal market work between 1985 and 2003-2005 for less educated non-employed men. Moreover, in 1985 less educated men out of employment spent relatively more time than highly educated non-employed searching for jobs. This pattern is reversed in 2003-2005, perhaps reflecting changes in the separate job markets faced by men of different education as well as the different reasons that less educated men are non-employed (i.e., the rise in the disability rate and the rising rate of “other” non-employment between 1985 and 2003-2005).

These results suggest that conditional on employment status, the allocation of time by less educated men dramatically shifted relative to more educated men during the last 20 years. In particular, the nature of non-employment changed for less educated men, both relative to highly educated men and to less educated men in 1985. One issue is

that today's non-employed less educated man is more likely to be disabled than his 1985 counterpart. Physical disabilities may lie behind the drop in other forms of work by the non-employed. To explore this possibility, in Table 6 Panels A–C, we separately report time allocation in 2003-2005 for unemployed, disabled and other non employed men, respectively.

Table 6 Panel A indicates that unemployed men with a high school degree or less spend 6.4 more hours per week on leisure than do unemployed highly educated men. The difference falls to 5.5 hours per week after controlling for demographic differences across the educational groups. Like their employed counterparts, the increase in leisure is driven by the fact that less educated men watch more television (7.5 hours per week), socialize more (2.7 hours per week), and sleep more (3.4 hours per week) than more educated unemployed men. Conversely, less educated men spend less time reading (1.9 hours per week), eating (1.4 hours per week), exercising/sports (0.5 hours per week) and engaging in hobbies/other entertainment (5.0 hours per week) than highly educated men.

Where does the increase in leisure for less educated unemployed men come from? A striking fact is that less educated unemployed men spend 2.9 hours less per week searching for employment. This can account for nearly 53 percent of the conditional difference in leisure. This is not to say that informal job search is not taking place for either highly or less educated men. For example, “socializing” may include unemployed men networking or inquiring about potential job leads. We should note that collecting unemployment benefits is *not* included in job search (it is included as a component of civic activities). Similarly, more educated men spend roughly 1.2 hours more per week on education/training. Taken together, in 2003-2005 more educated unemployed men

spend more time than less educated unemployed men increasing future job prospects by either looking for a new job or increasing their human capital.

Moreover, highly educated men spend more time working in the informal sector than do less educated men. In total, more educated unemployed men spend 4.6 hours more per week on job search, education, and work for pay in the informal sector (conditional on demographic differences) relative to less educated unemployed men. Differences in time spent in these categories comprise nearly 84 percent of the conditional difference in leisure between high and low educated men.

The total amount of time spent on non-market work is similar between more and less educated men, although the composition differs. Highly educated unemployed men spend more time shopping, preparing meals, and cleaning the home (the latter two are the primary components of “all other home production”) and they spend less time on home and vehicle maintenance. However, less educated unemployed men spend one hour less per week on child care (conditional on demographics) and 2 hours less per week on gardening/lawn care/pet care, accounting for more than half of the total leisure differential.

In Panel B, we focus on those not employed due to a disability. Disability rates differ markedly by educational attainment (Table 3) and therefore are a potentially important source of time allocation differentials. The unconditional leisure gap across educational attainment is 5.4 hours per week for disabled men, similar to the leisure education gaps observed for employed men (4.1 hours per week) and unemployed men (6.4 hours per week). Conditional on demographics, the leisure gap across educational attainment is 5.7 hours per week for disabled men.

The fact that the differences are similar masks the fact that disabled men spend significantly more time in leisure than their unemployed or employed counterparts. Less educated disabled men spend 144 hours per week in leisure, compared to 104 hours for employed men and 128 hours per week for unemployed men of the same educational attainment. Note that the 40 hour per week difference in leisure between employed and disabled men is nearly the same as the 44 hours per week less educated employed men spend in market work. The remaining 4 hours is accounted for by medical care. That is, very little of disabled men's times not allocated to market work is re-allocated to non-market work or child care. A similar pattern holds for the highly educated, as well.

The additional leisure for less educated disabled men relative to more educated disabled men primarily comes from three sources. First, highly educated disabled men allocate 2.2 hours per week more to non-market production. Second, highly educated disabled men allocate 1.4 more hours per week to education than their less educated counterparts. Finally, they allocate 1.3 additional hours per week to the care of other adults. Contrary to the cases of employed and unemployed men, there is little difference in time spent on child care.

Table 6C reports the allocation of time for "other" non-employed men, that is, men that do not report being employed, unemployed, or disabled. Recall that students and retirees are not included in the sample. Therefore, the "other" non-employed consists of the residual group of men whose reason for non-employment is not explicitly included in the ATUS coding. The average leisure for this category is 130.5 hours per week, which is between that of unemployed and disabled men. However, the leisure differential across educational categories totals roughly 10 hours per week, which is greater than the

case for either the unemployed or disabled. This gap is accommodated in part by a 5 hour per week difference in the sum of non-market work, gardening/pet care and child care. The remaining differential is primarily due to the less educated “other” non-employed spending roughly one hour less per week on (informal) market work, own medical care, and the residual “other” time use category.

To gain some perspective on the time allocation patterns reported in Tables 5 and 6, we explore how the time freed up by non-employment is allocated for men of different educational attainment.¹¹ Specifically, consider that less educated employed men spend a total of 45 hours per week on employment, training, and job search (Table 5b). The corresponding number for more educated employed men is 47 hours per week. What fraction of this 45 or 47 hours per week is allocated to leisure as opposed to non-market production, child care, medical care, etc., by unemployed, disabled, and other non-employed men? To start, the difference in leisure between less educated employed and unemployed men is 24 hours per week, which accounts for 53 percent of the additional available time. The corresponding share for non-market work is 19 percent and 4 percent and 6 percent for child care and civic/religious/other, respectively. The corresponding shares for more educated unemployed men compared to more educated working men are 48 percent for leisure and 18 percent for non-market work, while gardening/yardwork/pet care accounts for nearly 6 percent of the additional time.

Performing the same exercise for disabled men reveals a slightly different picture. In particular, 90 percent of the 45 hours per week additional time goes to increased leisure for less educated disabled men. Eight percent is accounted for by additional time spent on medical care and care for other adults. The corresponding shares for more

¹¹ Hamermesh and Donald (2007) undertake a similar exercise to estimate the fixed costs of employment.

educated disabled men are 87 percent for leisure and 8.5 percent for own medical care. That is, almost all of the additional available time due to disability is spent on leisure and health care, regardless of educational attainment. This represents a much higher percentage than is the case for unemployed men.

5 Decomposing Leisure Differences: How much is due to employment status?

In this section we explore how much of leisure inequality by education can be attributed to differences in employment status across education groups. This addresses the possibility that less educated workers enjoy more leisure because they are involuntarily out of employment. We study four “gaps”: the difference in leisure across education in 1985; the difference in leisure across education in 2003; and the change in leisure between 1985 and 2003 within each education group.

To answer how much of each gap is due to employment status differences, we perform a Blinder-Oaxaca type decomposition. Let Y_H^t denote the time spent in leisure for highly educated individuals at time t , where $t=1985$ or $2003-2005$, and Y_L^t denote the corresponding leisure time of the less educated. Let W_j^t be the vector of shares (or weights) of population in various employment states for education category $j=Low, High$ at time t . This vector has two elements, corresponding to the share of men in the reference education group that are employed and the share of men in the reference education group that are non-employed. The difference in this vector across educational categories captures the educational differences in employment rates. Similarly, let X_j^t denote the 2 by 1 vector of hours allocated to leisure by employment status for education group j in year t . The difference in this vector across educational groups captures

differences *within* employment status. By construction, we have $Y_j^t = W_j^t X_j^t$. Therefore, the difference in leisure across education groups in 1985 can be expressed: $Y_L^{85} - Y_H^{85} = W_L^{85} X_L^{85} - W_H^{85} X_H^{85}$, which leaves two possible decompositions: $W_L^{85}(X_L^{85} - X_H^{85}) + (W_L^{85} - W_H^{85})X_H^{85}$ and $W_H^{85}(X_L^{85} - X_H^{85}) + (W_L^{85} - W_H^{85})X_L^{85}$. In both cases, the first term represents the differences in leisure due to the intensive (within employment status) margin and the second term reflects the extensive (across employment status) margin. The difference in the two measures is the weighting assigned to the elements of the two differences. The gap in 2003-2005 can be expressed the same way using the shares and time allocations from those years.

The change in leisure for a specific education group across time can be decomposed in the same manner. For example, the change in leisure for less educated adults is given by $Y_L^{05} - Y_L^{85} = W_L^{05} X_L^{05} - W_L^{85} X_L^{85}$. This has the corresponding decompositions $W_L^{05}(X_L^{05} - X_L^{85}) + (W_L^{05} - W_L^{85})X_L^{85}$ or $W_L^{05}(X_L^{05} - X_L^{85}) + (W_L^{05} - W_L^{85})X_L^{05}$. The same decomposition holds for the more educated. Again, the first terms in either decomposition represent the contribution of differences within employment status and the second terms represent difference in employment rates.

Table 7 reports the decompositions for each gap in leisure, with Panel A decomposing the within period across education differences, and Panel B decomposing the across periods within education differences. To avoid clutter, the table reports only one of the two alternative decompositions for each gap. The first row represents the cross-sectional leisure gap in 1985, when less educated men enjoyed 2.2 hours per week more leisure than more educated men. The fourth column of numbers reports the part of the gap due to different employment rates. For 1985, this amounts to 1.3 hours per week.

The remainder of 0.9 hours per week represents the differences in leisure across educational attainment *within* employment status. The share due to employment status is thus 1.3/2.2 or 59 percent (the final column).¹²

The second row of Panel A decomposes the gap in 2003-2005. The leisure gap has now grown to 7.5 hours per week. The share of the gap attributable to difference in employment status is 32 percent, or 2.4 hours per week of additional leisure. Conversely, 5.1 hours per week, or 68 percent, is due to differences within the same employment states. While the leisure gap in 2003-2005 is larger than that of 1985, in the latter period the majority – and perhaps as much as two thirds -- of the gap is due to within employment status differences in leisure and less than half is due to differences in employment rates. While the increased joblessness of the less educated is significant, it is not the only (or even the major) factor in explaining why less educated men spend more on leisure today than their more educated counterparts. This decomposition was anticipated in Table 5C, where we reported the fact that non-employed less educated men currently enjoy 10 hours more per week in leisure than non-employed more educated men.

Panel B tackles the change over time in leisure, with much different conclusions. The first row represents the change over time in the leisure of the less educated. In particular, less educated men increased leisure time by 2.5 hours per week. The second row reflects that more educated men decreased leisure by 2.8 hours per week. This, of course, generates the increase in the cross-sectional leisure gap over this time period of roughly 5.3 hours per week.

¹² The (unreported) alternative decomposition using $(W_L^{85} - W_H^{85})X_L^{85}$ to measure the gap due to employment status yields a share of 68 percent in 1985 and 40 percent in 2003-2005.

However, where these changes come from differs markedly across education categories. The increase in less educated leisure is primarily due to changes in employment status. Specifically, 2.0 hours per week, or 82 percent of the increase in leisure for the less educated, can be attributed to increased non-employment. The remaining 0.4 hour per week is due to changes within employment state.

Conversely, all the decline in high educated men's leisure is due to changes within employment status. In fact, the decline in employment rate for more educated men suggests an *increase* in leisure of 0.6 hours per week, while leisure actually decreased for these men. This reflects the fact that employment rates have not changed dramatically for more educated men, but conditional on employment, more educated men are working more. As seen from Panel B of Tables 4B and 5B, this increased work of high educated employed men is coming at home in the form of more child care and care of other adults as well as more gardening, yard work, and pet care.

Taken together, the results of Table 7 suggest that while employment status is important in understanding leisure differentials across educational attainment in 2003-2005, it is not the sole (or even the predominant) force. Increased non-employment (from both unemployment and disability) does explain most of the increase in leisure of less educated men. However, changes in employment status do not alone explain why the educational leisure gap has increased so much given that none of the significant changes in more educated men's leisure are attributable to changing employment status. A simple calculation reinforces this point. The cross-sectional leisure gap increased by 5.3 hours per week between 1985 and 2003-2005. From Panel A, the change in this gap attributable to employment status is 1.1 hours per week (or 2.4 minus 1.3), or 21 percent.

If we use the figures from Panel B, the change in the gap attributable to employment status is 1.4 hours per week (2.0 minus 0.6), or 26 percent. In either case, the rising non-employment of less educated men is not the predominant component of the increasing leisure gap.

6: Discussion and Conclusion

6.1 Interpreting Trends in Leisure Inequality

The facts presented above do not fit easily into standard economic models. To recap, we observe that less educated individuals increase leisure relative to more educated individuals at the same time relative wages of the less educated workers fall. In a simple model of labor supply, one would be tempted to interpret this as evidence that the substitution effect of wages dominates the income effect. That is, the lower wage deters employment more than the resulting lower income. However, this does not explain the changes in leisure conditional on non-employment. Moreover, it does not accord with why leisure increased uniformly with wages between 1965 and 1985.

The fact that the time allocation of the less educated non-employed has changed so dramatically, both relative to their counterparts in 1985 and relative to more educated non-employed, also raises interesting questions. Again, as this sub-sample is not employed it cannot simply reflect labor supply decisions. It may, however, represent changes in the relative price of leisure. For example, the dramatic rise in TV watching coincided with a large increase in the number of TV shows produced. Or, put another way, a sharp decline in the price of quality-adjusted entertainment. Such movements in

relative prices may be an important driving force. However, it still leaves the question of why more educated individuals did not respond equally.

One possibility is preference heterogeneity (either due to different underlying preferences or income effects on stable preferences). This is consistent with the fact that individuals of differing educational attainment who are out of the labor market and facing the same prices exhibit dramatically different time allocation decisions. However, if preferences differ across educational attainment, we must be careful in drawing conclusions about welfare, a topic we turn to next.

6.2 Welfare Implications of Leisure Inequality

The results documented in this paper raise important questions regarding the interpretation of inequality in the United States. How does one weigh the relative growth of leisure for the less educated against the simultaneous decline in relative wages, consumption, and market hours? To gain some insight, start with a simple benchmark. Suppose market wages differ exogenously across individuals and workers can freely choose their market hours. Depending on the income and substitution elasticities of labor supply with respect to wage, it may be the case that higher wages induce higher or lower market hours, and consequently whether more or less leisure is consumed. Nevertheless, we have enough information to say the high wage worker are better off – they could always choose the same time allocation as low wage workers and enjoy more consumption (due to higher wages and equal hours worked). In this simple benchmark, the market (hourly) wage is sufficient to rank outcomes. Note that even if preferences

differ across individuals, the same individual always prefers the higher wage to the lower wage.

However, the fact that conditional on the *same* market hours, less educated workers enjoy more leisure in 2003-2005 suggests there may be more to the story. Less educated workers consume a lower level of expenditures. This raises the return to home production for these workers, as they have the incentive to augment consumption through shopping intensively, preparing food themselves, and doing home repairs themselves. Conversely, with a low level of market inputs, diminishing returns to home production will set in quicker for less educated households. This makes the prediction of how much home production less educated individuals should perform relative to more educated individuals (conditional on the same level of market work) theoretically ambiguous.

Nevertheless, the fact that less educated households conditional on employment devote less time to home production, civic and religious activities, and child care suggests the possibility that preferences over consumption and leisure differ by educational attainment. In particular, less educated workers may value time over expenditure relatively more than high educated workers. In this case, workers will optimally choose differing levels of human capital (both via education and on the job training) subject to constraints on liquidity and ability. This raises the question of to what extent the lower wages offered less educated workers reflect endogenous choices of human capital acquisition as well as exogenous (to the worker) market forces. The results documented in this paper suggest heterogeneity in the relative value of market goods and free time – and the consequent effects on human capital and wages -- may be a fruitful framework to understand income inequality.

6.3 More Leisure More Stress?

The premise of this paper (and almost all similar exercises) is that more leisure (all else equal) is better. We have documented that leisure has increased substantially for a large segment of the population. How can this accord with studies that suggest people feel busy, rushed, or stressed?¹³ These patterns are typically documented using surveys asking respondents to rate how they feel on a numerical or other scale. For example, the 2003 wave of the Panel Study of Income Dynamics asked, “How often do you feel rushed or pressed for time? Would you say almost always, often, sometimes, rarely, or never?” While one should be cautious in comparing responses to such questions across people and time, suppose for the sake of argument that these surveys are accurately capturing changes in the way people feel. Is this consistent with an increase in leisure time?

A classic explanation was put forward by Linder in his 1970 monograph *The Harried Leisure Class*. Economic growth increases the amount of goods available from given resources, but not the amount of time available. This raises the relative value of time, particularly if consumption of goods requires complementary time inputs. Put another way, an increase in the real wage increases the opportunity cost of leisure. This implies that people may enjoy the same hour of leisure as before, but feel its cost more acutely as wages have increased. This may lie behind the survey responses about how busy one feels. A related theory is developed and tested by Hamermesh and Lee (2007).

Similarly, the opportunity cost of a particular leisure activity is not only captured by the market wage (or available goods) but also by alternative leisure activities that could have been pursued. For example, the opportunity cost of a TV show may increase

¹³ See, for example, Hamermesh and Lee (2007), and the cites within for additional references.

as the number of quality competing shows increase. A dramatic increase in the options for leisure activities (via, for example, cable TV, low priced vacation packages, more public golf courses, etc.) can raise the opportunity cost of leisure and contribute to the sense of “stress” captured in surveys.

A related point is that respondents in the time use surveys may be “multi-tasking” (for example, watching TV while they cook). The surveys are designed to elicit all primary tasks performed during the same time frame and allocate them accordingly (for example, split the hour into 30 minutes of TV and 30 minutes of cooking). However, if multi-tasking is on the rise and to the extent the surveys fail to account for this correctly, we may be over estimating the increase in leisure. The same can be said if leisure at work has been declining over the time period in which leisure away from work has increased. The surveys have difficulty capturing leisure at work, particularly if leisure occurs outside designated break and meal times.

A final explanation is that the “stress” is not due to time at all. It may reflect that one faces greater risks today, despite increased leisure. For example, respondents may translate uncertainty regarding employment risks, potential health care costs, etc. into their responses on how stressed they feel, and additional leisure do not directly mitigate these risks.

6.4 Concluding Caveats

In conclusion, we acknowledge key difficulties in measuring time allocation across people and over time. One major issue is the definition of leisure. Cooking may be leisure for one person and work for another. The same can be said for yard work, vehicle repair, etc. Our work, therefore, has taken a relatively agnostic approach.

However, the leisure patterns documented in this manuscript can be seen clearly in one category – watching TV. This category seems unambiguously leisure relative to most other activities and therefore provides some confidence regarding the impact of misclassification of activities into or out of leisure. Secondly, we do not address leisure on the job or during retirement. Considering that the amount of time people spend in retirement (given longer life spans), we are under estimating the increases in leisure over the last half century. However, if leisure on the job differs markedly over time by education category, this poses an important, but hard to measure, caveat to our results.

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APPENDIX

We use the following time use surveys: 1965–1966 Americans’ Use of Time; 1975–1976 Time Use in Economics and Social Accounts; 1985 Americans’ Use of Time; 1992–1994 National Human Activity Pattern Survey; and 2003 American Time Use Survey. All of our data, codebooks, and programs used to create the time-use categories for this paper are available on our data webpage (http://troi.cc.rochester.edu/~maguiar/timeuse_data/datapage.html). The programs on the data webpage include a detailed description of how we took the raw data from each of the time-use surveys and created consistent measures for each of the time-use categories across the different surveys. The classification used in this manuscript is the same as we used in Aguiar and Hurst (2007a). The only difference in our classification in this analysis -- compared to our analysis in Aguiar and Hurst (2007a) -- is that in this analysis we break out time spent in gardening, lawn care, and pet care as a separate category. In our prior work, we had included this category in both our measures of non-market work and leisure.

All time use surveys that we analyzed used a 24-hour recall of the previous day’s activities to record time diary information. The 1965–1966 Americans’ Use of Time was conducted by the Survey Research Center at the University of Michigan. The survey sampled one individual per household in 2,001 households in which at least one adult person between the ages of 19 and 65 was employed in a non-farm occupation during the previous year. This survey does not contain sampling weights, so we weight each respondent equally (before adjusting for the day of week of each diary). Of the 2,001 individuals, 776 came from Jackson, Michigan. The time-use data were obtained by having respondents keep a complete diary of their activities for a single 24-hour period

between November 15 and December 15, 1965, or between March 7 and April 29, 1966. In our analysis, we included the Jackson, Michigan sample.

The 1985 Americans' Use of Time survey was conducted by the Survey Research Center at the University of Maryland. The sample of 4,939 individuals was nationally representative with respect to adults over the age of 18 living in homes with at least one telephone. The survey sampled its respondents from January 1985 through December 1985.

The American Time Use Survey (ATUS) was conducted by the U.S. Bureau of Labor Statistics (BLS). We use the 2003, 2004, and 2005 waves of the ATUS. Participants in ATUS, which includes children over the age of 15, are drawn from the existing sample of the Current Population Survey (CPS). The individual is sampled approximately 3 months after completion of the final CPS survey. At the time of the ATUS survey, the BLS updated the respondent's employment and demographic information. The ATUS waves totaled 20,720, 13,973, and 13,039 respondents in 2003, 2004, and 2005, respectively.

We restrict our sample to include only those individuals from each survey between the ages of 21 and 65 and who are not retired or students and who had a complete 24-hour time diary. Additionally, all individuals in our sample must have had non-missing values for age, education, work status, sex, and the presence of a child. This latter restriction was relevant for only 11 individuals in 1965 and 118 individuals in 1985. The restriction that all individuals had to have a complete time diary was also innocuous. Only 43 individuals in 1965 and 3 individuals in 1985 had a time diary in which total time across all activities summed to a number other than 24 hours. In total, our sample

included 1,854 individuals from 1965, 3,115 individuals from 1985, and 34,697 individuals from 2003-2005.

One challenge in comparing the time use data sets with each other is the fact that the surveys report time use at differing levels of aggregation. This is particularly true for the ATUS compared to the earlier surveys (which used a similar activity lexicon). For example, each survey prior to 2003-2005 ATUS includes roughly 90 different sub-categories of individual time use. The 2003-2005 surveys include over 400 different sub-categories of individual time use.

To create consistent measures of time-use over time across the surveys, we worked with the raw data at the level of sub-categories. In order to render our analysis tractable (and to mitigate classification issues across the surveys), we aggregated an individual's time allocation into 20 broad categories described in Table A1. Travel time associated with each activity is embedded in the total time spent on the activity.

The raw time-use data in each of the surveys are reported in units of “minutes per day” (totaling 1,440 minutes a day). We converted the minute-per-day reports to hours per week by multiplying the response by seven and dividing by 60. When presenting the means from the time-use data within each demographic cell, we weighted the data using the sampling weights within each of the time-use surveys. The weights account for differential response rates to ensure the samples are nationally representative. We also adjusted weights so that each day of the week and each survey are equally represented.

Table 1: Time Allocation Over Time: Full Sample, Men and Women (Demographically Adjusted)

<i>Time Use Category</i>	<i>1965</i>	<i>1985</i>	<i>2003-2005</i>	<i>Difference: 2005–1965</i>	<i>Difference: 1985–1965</i>	<i>Difference: 2005–1985</i>
Panel A: All						
Total Market Work	35.5	32.6	31.9	-3.6	-2.9	-0.7
Total Non-Market Work	22.5	21.2	18.5	-4.0	-1.3	-2.7
Child Care	3.9	3.4	5.7	1.8	-0.5	2.2
Leisure	101.7	107.1	105.6	3.9	5.4	-1.5
Sample Size	1,854	3,115	34,697			
Panel B: Men						
Total Market Work	51.2	43.5	39.5	-11.7	-7.7	-4.0
Total Non-Market Work	9.8	14.1	13.3	3.5	4.3	-0.8
Child Care	1.6	1.6	3.4	1.8	0.0	1.8
Leisure	101.5	105.8	106.2	4.7	4.3	0.4
Sample Size	833	1,382	15,344			
Panel C: Women						
Total Market Work	22.1	23.4	25.5	3.4	1.2	2.1
Total Non-Market Work	33.3	27.2	22.9	-10.4	-6.1	-4.3
Child Care	5.9	5.1	7.7	1.8	-0.8	2.6
Leisure	101.8	108.2	105.1	3.3	6.4	-3.1
Sample Size	1,021	1,733	19,353			

Notes: This table reports the mean time (in hours per week) individuals allocate to Total Market Work, Total Non Market Work, Child Care, and Leisure. See the definitions of time use categories in Appendix Table A1 and the associated discussion in the text for activities included in each of the broad time use categories. See the Data Appendix for a description of the 1965, 1985, and 2003-2005 time use surveys. All means in this table are calculated using fixed demographic weights to adjust for changing demographics over time, as described in the Section 2 of the text. The analysis sample includes all non-student, non-retired individuals between the ages of 21 and 65 (inclusive) who had complete time use reports.

**Table 2: Leisure Changes by Educational Attainment 1965-2003
Demographically Adjusted**

<i>Years of Schooling</i>	<i>1965</i>	<i>1985</i>	<i>2003-2005</i>	<i>Difference: 2005-1965</i>	<i>Difference: 1985-1965</i>	<i>Difference: 2005-1985</i>
Panel A: Men						
< 12	104.3	104.9	113.0	8.7	0.5	8.1
12	101.2	107.3	107.9	6.7	6.1	0.6
13-15	98.6	104.1	104.4	5.8	5.5	0.3
16+	101.9	105.8	99.7	-2.2	3.9	-6.1
Panel B: Women						
< 12	105.7	113.2	111.0	5.3	7.5	-2.2
12	101.2	108.4	106.0	4.8	7.2	-2.4
13-15	101.0	105.8	102.8	1.8	4.8	-3.0
16+	100.4	105.5	100.2	-0.2	5.1	-5.3

Notes: This table reports time spent in leisure for men (panel A) and women (panel B) by educational attainment in 1965, 1985, and 2003-2005. The fraction of the sample in each educational category is shown in Appendix Table A2. See the Table 1 and the corresponding note for a description of the sample. All means in this table are calculated using fixed demographic weights to adjust for changing demographics over time, as described in Section 2 of the text.

Table 3: Descriptive Statistics for Men by Educational Attainment

	<i>Unconditional Means</i>			Demographically Adjusted Difference
	All	Less Educated	More Educated	
1985				
Share Employed	0.91	0.89	0.94	-0.04
Share Non-Employed	0.09	0.11	0.06	0.04
Unemployed	0.03	0.04	0.02	0.02
Other Non-employed	0.06	0.07	0.04	0.02
2003-2005				
Share Employed	0.88	0.83	0.92	-0.09
Share Non-Employed	0.12	0.17	0.08	0.09
Unemployed	0.04	0.05	0.04	0.02
Disabled	0.05	0.08	0.02	0.05
Other Non-employed	0.03	0.04	0.03	0.02

Notes: Sample is restricted to men and is the same as the male sub-sample described in the Tables 1 and 2. All means in columns 1-3 are unconditional on demographic characteristics. The difference in the final column is adjusted for demographic differences across educational categories, as described in Section 2 of the text. See the text for a discussion of the employment status categories.

Table 4 A: Time Allocation 1985 (All Men)

	<i>All</i>	<i>Less Educated</i>	<i>More Educated</i>	<i>Unconditional Difference</i>	<i>Demographically Adjusted Difference</i>
Total Market Work (exc. Job Search)	43.0	42.5	43.8	-1.3	-0.3
Job Search	0.1	0.3	0.0	0.2	0.3
Education/Training	0.7	0.5	0.9	-0.4	-0.3
Total Non-Market Work	13.0	12.5	13.6	-1.2	-1.4
Home and Vehicle Maintenance	3.0	3.6	2.3	1.3	1.2
Obtaining Goods and Services	4.7	4.2	5.2	-1.0	-1.0
All Other Home Production	1.5	1.1	1.9	-0.8	-0.9
Child Care	1.6	1.5	1.8	-0.3	-0.1
Gardening, Lawn Care, Pet Care	0.7	0.7	0.8	-0.1	-0.3
Total Leisure	106.4	107.4	105.1	2.2	1.6
Television Watching	15.1	17.1	12.6	4.5	4.7
Socialization	7.6	8.1	6.9	1.2	0.9
Exercise/Sport	3.1	2.9	3.2	-0.3	-0.2
Reading	3.1	2.1	4.4	-2.3	-2.5
Hobbies/Other Entertainment	1.7	1.6	1.8	-0.3	-0.3
Eating	8.0	8.1	8.0	0.1	-0.1
Sleeping	54.9	54.6	55.1	-0.5	-0.8
Personal Care	8.7	8.7	8.6	0.1	0.1
Own Medical Care	0.2	0.2	0.3	-0.1	-0.1
Care of Other Adults	0.5	0.7	0.2	0.5	0.4
Religious/Civic Activities	1.7	1.8	1.5	0.3	0.3
Other	NA	NA	NA	NA	NA
Sample Size	1,382	761	621		

Notes: This table reports the amount of time (in hours per week) spent in that row's time use category for all men (panel A), employed men (panel B), and non-employed men (panel C) broken down by educational attainment. All means in columns 1-4 are unconditional on demographic characteristics. The difference in the final column is adjusted for demographic differences across educational categories, as described in Section 2 of the text. See notes to Table 1 for sample description. See Appendix Table A1 for a detailed description of the time use categories.

Table 4 B: Time Allocation 1985 (Employed Men)

	<i>All</i>	<i>Less Educated</i>	<i>More Educated</i>	<i>Unconditional Difference</i>	<i>Demographically Adjusted Difference</i>
Total Market Work (exc. Job Search)	47.1	47.5	46.6	1.0	1.4
Job Search	0.0	0.0	0.0	0.0	0.0
Education/Training	0.7	0.5	1.0	-0.5	-0.4
Total Non-Market Work	11.9	11.4	12.6	-1.2	-1.3
Home and Vehicle Maintenance	2.8	3.4	2.0	1.4	1.2
Obtaining Goods and Services	4.4	3.9	4.9	-1.0	-1.0
All Other Home Production	1.4	1.1	1.8	-0.7	-0.7
Child Care	1.6	1.6	1.6	-0.1	0.1
Gardening, Lawn Care, Pet Care	0.7	0.7	0.8	-0.1	-0.3
Total Leisure	103.7	103.9	103.5	0.5	0.2
Television Watching	14.2	15.8	12.4	3.4	3.5
Socialization	7.1	7.4	6.7	0.7	0.5
Exercise/Sport	2.9	2.8	3.1	-0.3	-0.1
Reading	3.0	2.0	4.2	-2.2	-2.3
Hobbies/Other Entertainment	1.6	1.4	1.7	-0.2	-0.2
Eating	7.9	7.9	7.8	0.0	0.0
Sleeping	54.2	53.9	54.6	-0.6	-1.1
Personal Care	8.7	8.7	8.8	-0.1	0.0
Own Medical Care	0.2	0.1	0.2	-0.1	-0.1
Care of Other Adults	0.4	0.6	0.2	0.5	0.4
Religious/Civic Activities	1.6	1.7	1.5	0.2	0.2
Other	NA	NA	NA	NA	NA
Sample Size	1,258	675	583		

Table 4 C: Time Allocation 1985 (Non-Employed Men)

	<i>All</i>	<i>Less Educated</i>	<i>More Educated</i>	<i>Unconditional Difference</i>	<i>Demographically Adjusted Difference</i>
Total Market Work (exc. Job Search)	2.2	2.4	1.9	0.5	1.0
Job Search	1.5	2.2	0.2	2.0	2.5
Education/Training	0.6	0.9	0.1	0.8	0.6
Total Non-Market Work	23.7	21.3	29.0	-7.7	-5.3
Home and Vehicle Maintenance	5.6	5.3	6.3	-1.0	-1.6
Obtaining Goods and Services	7.3	6.3	9.4	-3.1	-1.7
All Other Home Production	2.1	1.1	4.4	-3.3	-2.0
Child Care	2.1	1.1	4.2	-3.1	-1.8
Gardening, Lawn Care, Pet Care	0.8	1.0	0.4	0.6	0.4
Total Leisure	133.2	134.6	130.0	4.6	1.3
Television Watching	24.0	27.7	15.8	11.9	11.8
Socialization	12.6	13.6	10.4	3.2	0.3
Exercise/Sport	4.3	3.7	5.6	-1.9	-2.3
Reading	4.7	3.1	8.2	-5.1	-4.7
Hobbies/Other Entertainment	3.1	2.5	4.3	-1.8	-0.9
Eating	9.6	9.5	10.0	-0.5	-0.9
Sleeping	61.3	60.4	63.4	-3.0	-2.6
Personal Care	8.2	8.9	6.6	2.3	2.0
Own Medical Care	0.9	0.9	0.7	0.2	0.1
Care of Other Adults	0.9	1.1	0.6	0.5	0.3
Religious/Civic Activities	2.1	2.6	1.0	1.6	1.0
Other	NA	NA	NA	NA	NA
Sample Size	124	86	38		

Table 5 A: Time Allocation 2003-2005 (All Men)

	<i>All</i>	<i>Less Educated</i>	<i>More Educated</i>	<i>Unconditional Difference</i>	<i>Demographically Adjusted Difference</i>
Total Market Work (exc. Job Search)	39.7	36.9	41.9	-5.0	-4.6
Job Search	0.2	0.2	0.3	-0.1	-0.1
Education/Training	0.9	0.4	1.3	-1.0	-1.1
Total Non-Market Work	11.3	10.9	11.7	-0.8	-0.7
Home and Vehicle Maintenance	2.5	2.7	2.4	0.4	0.4
Obtaining Goods and Services	4.2	3.9	4.4	-0.5	-0.5
All Other Home Production	1.1	0.9	1.3	-0.4	-0.4
Child Care	3.1	2.7	3.4	-0.7	-0.7
Gardening, Lawn Care, Pet Care	2.1	2.2	2.1	0.1	0.2
Total Leisure	105.6	109.8	102.3	7.5	7.1
Television Watching	18.1	21.6	15.3	6.3	6.0
Socialization	6.8	7.1	6.5	0.6	0.5
Exercise/Sport	2.8	2.6	3.1	-0.5	-0.5
Reading	1.9	1.2	2.5	-1.3	-1.3
Hobbies/Other Entertainment	2.3	1.9	2.7	-0.8	-0.8
Eating	8.9	8.2	9.4	-1.2	-1.2
Sleeping	58.1	60.1	56.5	3.5	3.3
Personal Care	4.2	4.0	4.3	-0.3	-0.3
Own Medical Care	0.8	0.8	0.7	0.1	0.1
Care of Other Adults	1.5	1.7	1.4	0.2	0.2
Religious/Civic Activities	1.7	1.5	1.9	-0.4	-0.4
Other	0.9	0.8	0.9	-0.1	-0.1
Sample Size	15,344	5,831	9,513		

Notes: This table reports the amount of time (in hours per week) spent in that row's time use category for all men (panel A), employed men (panel B), and non-employed men (panel C) broken down by educational attainment. All means in columns 1-4 are unconditional on demographic characteristics. The difference in the final column is adjusted for demographic differences across educational categories, as described in Section 2 of the text. See notes to Table 1 for sample description. See Appendix Table A1 for a detailed description of the time use categories.

Table 5 B: Time Allocation 2003-2005 (Employed Men)

	<i>All</i>	<i>Less Educated</i>	<i>More Educated</i>	<i>Unconditional Difference</i>	<i>Demographically Adjusted Difference</i>
Total Market Work (exc. Job Search)	45.1	44.5	45.5	-1.0	-0.9
Job Search	0.1	0.1	0.1	0.0	0.0
Education/Training	0.9	0.3	1.3	-1.0	-1.1
Total Non-Market Work	10.7	10.0	11.1	-1.1	-1.0
Home and Vehicle Maintenance	2.3	2.4	2.2	0.2	0.3
Obtaining Goods and Services	4.2	3.9	4.4	-0.5	-0.5
All Other Home Production	1.0	0.8	1.2	-0.3	-0.3
Child Care	3.1	2.6	3.4	-0.8	-0.9
Gardening, Lawn Care, Pet Care	2.0	2.2	1.9	0.3	0.3
Total Leisure	101.7	104.1	100.1	4.1	3.9
Television Watching	16.0	18.4	14.3	4.1	4.0
Socialization	6.2	6.3	6.2	0.1	0.1
Exercise/Sport	2.9	2.5	3.1	-0.6	-0.6
Reading	1.8	1.0	2.4	-1.3	-1.3
Hobbies/Other Entertainment	2.1	1.6	2.5	-0.8	-0.8
Eating	9.0	8.4	9.5	-1.1	-1.1
Sleeping	57.1	58.7	55.9	2.8	2.6
Personal Care	4.3	4.2	4.4	-0.2	-0.2
Own Medical Care	0.6	0.5	0.6	-0.1	-0.1
Care of Other Adults	1.5	1.6	1.3	0.3	0.3
Religious/Civic Activities	1.6	1.3	1.8	-0.5	-0.5
Other	0.8	0.7	0.8	-0.1	-0.1
Sample Size	13,505	4,793	8,712		

Table 5 C: Time Allocation 2003-2005 (Non-Employed Men)

	<i>All</i>	<i>Less Educated</i>	<i>More Educated</i>	<i>Unconditional Difference</i>	<i>Demographically Adjusted Difference</i>
Total Market Work (exc. Job Search)	1.6	1.1	2.4	-1.3	-1.2
Job Search	1.4	0.7	2.5	-1.8	-1.9
Education/Training	0.9	0.5	1.6	-1.0	-1.0
Total Non-Market Work	15.9	14.7	17.8	-3.1	-2.7
Home and Vehicle Maintenance	4.0	4.0	4.1	-0.1	0.2
Obtaining Goods and Services	4.6	4.1	5.3	-1.2	-1.1
All Other Home Production	1.6	1.1	2.3	-1.2	-1.4
Child Care	3.5	3.4	3.7	-0.3	-0.7
Gardening, Lawn Care, Pet Care	3.0	2.4	3.8	-1.4	-1.4
Total Leisure	133.2	137.1	126.9	10.2	9.7
Television Watching	32.8	36.7	26.5	10.2	10.0
Socialization	10.5	10.9	9.9	1.0	0.8
Exercise/Sport	2.8	2.8	2.9	-0.1	-0.1
Reading	2.7	1.9	4.1	-2.3	-2.3
Hobbies/Other Entertainment	4.0	3.3	5.1	-1.8	-1.8
Eating	7.9	7.3	8.8	-1.4	-1.3
Sleeping	65.1	66.4	62.9	3.5	3.3
Personal Care	3.3	3.2	3.5	-0.3	-0.1
Own Medical Care	2.3	2.4	2.1	0.3	0.3
Care of Other Adults	2.2	2.0	2.5	-0.5	-0.6
Religious/Civic Activities	2.5	2.3	2.8	-0.4	-0.1
Other	1.5	1.3	1.8	-0.5	-0.5
Sample Size	1,839	1,038	801		

Table 6 A: Time Allocation 2003-2005 (Unemployed Men)

	<i>All</i>	<i>Less Educated</i>	<i>More Educated</i>	<i>Unconditional Difference</i>	<i>Demographically Adjusted Difference</i>
Total Market Work (exc. Job Search)	3.4	3.0	3.8	-0.8	-0.5
Job Search	3.9	2.4	5.5	-3.2	-2.9
Education/Training	1.4	0.9	2.1	-1.3	-1.2
Total Non-Market Work	19.0	18.7	19.2	-0.5	-0.1
Home and Vehicle Maintenance	5.9	7.0	4.7	2.2	2.4
Obtaining Goods and Services	5.2	4.7	5.9	-1.2	-1.2
All Other Home Production	2.0	1.4	2.7	-1.3	-1.1
Child Care	4.3	4.4	4.2	0.2	-0.5
Gardening, Lawn Care, Pet Care	3.3	2.3	4.5	-2.2	-2.2
Total Leisure	124.9	127.9	121.5	6.4	5.5
Television Watching	26.2	29.7	22.2	7.6	7.5
Socialization	11.8	13.3	10.0	3.4	2.7
Exercise/Sport	3.3	3.0	3.5	-0.5	-0.5
Reading	2.3	1.4	3.4	-2.0	-1.9
Hobbies/Other Entertainment	3.7	1.3	6.4	-5.1	-5.0
Eating	7.8	7.0	8.7	-1.8	-1.4
Sleeping	62.7	64.7	60.5	4.2	3.4
Personal Care	4.0	4.0	4.1	-0.1	-0.3
Own Medical Care	0.5	0.6	0.5	0.1	0.2
Care of Other Adults	2.7	3.0	2.4	0.6	0.8
Religious/Civic Activities	2.5	2.4	2.6	-0.2	0.1
Other	2.1	2.5	1.6	0.9	0.8
Sample Size	596	283	313		

Notes: This table reports the amount of time (in hours per week) spent in that row's time use category for unemployed men (panel A), disabled men (panel B), and all other non-employed men (panel C) broken down by educational attainment. All means in columns 1-4 are unconditional on demographic characteristics. The difference in the final column is adjusted for demographic differences across educational categories, as described in Section 2 of the text. See notes to Table 1 for sample description. See Appendix Table A1 for a detailed description of the time use categories.

Table 6 B: Time Allocation 2003-2005 (Disabled Men)

	<i>All</i>	<i>Less Educated</i>	<i>More Educated</i>	<i>Unconditional Difference</i>	<i>Demographically Adjusted Difference</i>
Total Market Work (exc. Job Search)	0.2	0.0	0.7	-0.7	-0.7
Job Search	0.0	0.0	0.2	-0.2	-0.2
Education/Training	0.6	0.2	1.6	-1.4	-1.7
Total Non-Market Work	11.1	10.6	12.8	-2.2	-1.8
Home and Vehicle Maintenance	1.8	2.0	1.3	0.8	0.9
Obtaining Goods and Services	3.1	2.9	3.9	-1.0	-0.8
All Other Home Production	0.8	0.6	1.6	-1.0	-1.3
Child Care	2.4	2.5	2.0	0.4	0.2
Gardening, Lawn Care, Pet Care	2.0	2.2	1.3	0.9	1.0
Total Leisure	142.7	144.1	138.7	5.4	5.7
Television Watching	41.4	43.2	36.0	7.3	7.5
Socialization	9.7	9.8	9.2	0.6	0.4
Exercise/Sport	2.0	2.3	1.1	1.2	1.2
Reading	3.2	2.6	4.8	-2.2	-2.0
Hobbies/Other Entertainment	4.2	4.1	4.4	-0.4	-0.2
Eating	7.4	7.4	7.6	-0.2	-0.2
Sleeping	67.2	67.2	67.2	0.0	-0.2
Personal Care	2.9	2.8	2.9	-0.1	0.0
Own Medical Care	4.3	4.2	4.6	-0.4	-0.5
Care of Other Adults	1.5	1.2	2.5	-1.3	-1.4
Religious/Civic Activities	2.2	2.2	2.1	0.1	0.1
Other	1.0	0.8	1.5	-0.7	-0.8
Sample Size	758	521	237		

Table 6 C: Time Allocation 2003-2005 (Other Non-Employed Men)

	<i>All</i>	<i>Less Educated</i>	<i>More Educated</i>	<i>Unconditional Difference</i>	<i>Demographically Adjusted Difference</i>
Total Market Work (exc. Job Search)	1.3	0.8	2.0	-1.2	-1.0
Job Search	0.2	0.0	0.3	-0.3	-0.3
Education/Training	0.8	0.8	0.9	-0.1	-0.1
Total Non-Market Work	18.7	17.5	20.1	-2.6	-3.4
Home and Vehicle Maintenance	4.7	4.0	5.5	-1.5	-1.9
Obtaining Goods and Services	5.8	5.8	5.8	-0.1	-0.2
All Other Home Production	2.0	1.7	2.3	-0.6	-0.6
Child Care	4.2	4.0	4.5	-0.5	-0.4
Gardening, Lawn Care, Pet Care	3.9	3.0	5.0	-2.0	-1.4
Total Leisure	130.5	135.2	124.6	10.6	9.8
Television Watching	29.3	32.9	24.6	8.3	8.5
Socialization	10.2	10.1	10.4	-0.3	-0.6
Exercise/Sport	3.4	3.4	3.5	-0.1	0.2
Reading	2.6	1.0	4.5	-3.5	-3.4
Hobbies/Other Entertainment	4.0	4.2	3.8	0.5	0.4
Eating	8.6	7.7	9.7	-2.1	-2.1
Sleeping	65.1	67.0	62.6	4.4	2.6
Personal Care	3.0	2.9	3.0	-0.1	-0.2
Own Medical Care	1.8	1.4	2.3	-1.0	-1.0
Care of Other Adults	2.3	2.2	2.5	-0.3	0.0
Religious/Civic Activities	3.0	2.5	3.6	-1.0	-0.8
Other	1.3	0.6	2.2	-1.6	-1.5
Sample Size	485	234	251		

Table 7: Decomposition of Leisure Differentials

Panel A: Portion of Leisure Difference Between High and Low Educated within a Period Due to Differences in Employment Status						
Time Period (t)	Less Educated	More Educated	Difference	$(W_L^t - W_H^t)X_H^t$	$W_L^t(X_L^t - X_H^t)$	Share due to Differences in Employment Status
1985	107.4	105.1	2.2	1.3	0.9	0.59
2003-2005	109.8	102.3	7.5	2.4	5.1	0.32

Panel B: Portion of Leisure Changes Across Periods Due to Changing Employment Status						
Educational Attainment (j)	1985	2003-2005	Difference	$(W_j^{03} - W_j^{85})X_j^{03}$	$W_j^{85}(X_j^{03} - X_j^{85})$	Share due to Changing Employment Status
Less Educated	107.4	109.8	2.5	2.0	0.4	0.82
More Educated	105.1	102.3	-2.8	0.6	-3.4	<0

Notes: This table reports the Blinder-Oaxaca decomposition of leisure using the methodology described in Section 5 of the text. Panel A decomposes the differences in leisure *across* education *within* a given time period. Row 1 of Panel A decomposes the cross-sectional difference in 1985, and row 2 decomposes the cross-sectional difference in 2003-2005. Columns 1 and 2 report the time allocated to leisure in that row's time period for less and more educated men, respectively. These numbers correspond to those reported in Tables 4A and 5A. The third column is column 2 minus column 1 and represents the cross-sectional leisure gap for the corresponding period. The first term of the decomposition (column 4) represents the difference due to differential employment rates across educational attainment, and the second term (column 5) represents the difference due to differential leisure time within employment status. The final column is the ratio of column 4 to column 3. W_j^t is a row vector whose two elements contain the fraction of men of education j at time t who are employed and non-employed, respectively, and X_j^t is a column vector whose two elements contain the time allocated to leisure by men of education j in year t who are employed and non-employed, respectively. Panel B performs the same decomposition of the differences in leisure across time and within educational attainment.

Appendix Table A1: Time Use Classifications

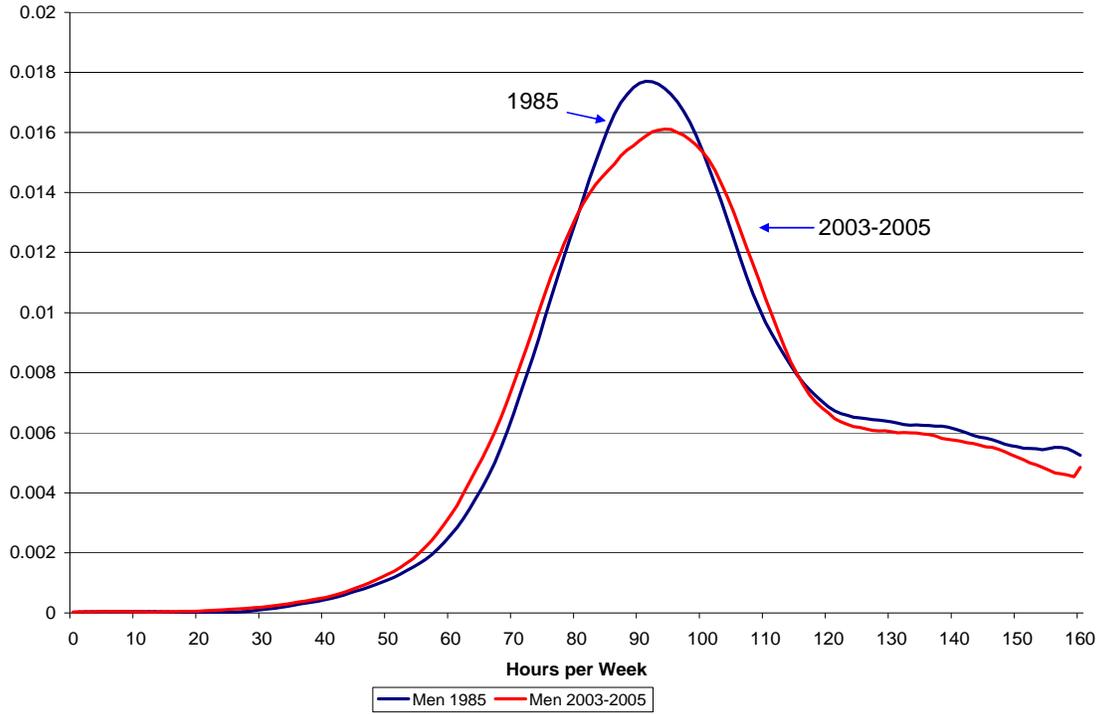
<i>Time Use Classification</i>	<i>Examples of Activities Included</i>
Total Market Work (excluding job search)	Work for pay, main job; Work for pay, other jobs (including time spent working in the informal sector); Commuting to/from work; Meals/breaks at work; etc.
Job Search	Searching for a job; Going on job interviews; Preparing resume; etc.
Education	Taking classes for degree; Personal interest courses; Homework for coursework; Research for coursework; etc.
Home and Vehicle Maintenance	Vehicle repair; Outdoor repair; Outdoor painting; Outdoor maintenance; etc.
Shopping/Obtaining Goods and Services	Grocery shopping; Shopping for other goods; Comparison shopping; Clipping coupons; Going to bank; Going to post office; Meeting with lawyer; Going to veterinarian; etc. (excluding any time spent acquiring medical care)
All Other Home Production	Food preparation; Food presentation; Kitchen/food cleanup; Washing/drying clothes; Ironing; Dusting; Vacuuming; Indoor cleaning; Indoor painting; etc.
Child Care	Primary child care (breast feeding, changing diapers); Educational child care (reading to children, helping with homework); Recreational child care (playing games with children, going to zoo with children); etc.
Gardening/Pet care/Lawn Care	Caring for lawn; Gardening; Care of houseplants; Playing with pets; Caring for pets: etc.
TV	Watching television
Socializing	Attending/hosting social events; Playing games; Telephone calls
Exercise/Sports	Playing sports; Attending sporting events; Exercise
Reading	Reading books, magazines; Personal mail; Personal email
Hobbies/Other Entertainment	Arts and Crafts; Collecting; Playing musical instrument; Going to movies and theater; Listening to music; Computer use for leisure; etc.
Reading	Reading books, magazines; Personal mail; Personal email
Eating	Eating meals at home; Eating meals away from home; etc.
Sleeping	Sleeping; Naps
Personal Care	Grooming; Bathing; Sex; Going to the bathroom; etc. (excluding any time spent on own medical care)
Own Medical Care	Visiting doctor's/dentist's office (including time waiting); Dressing wounds; Taking insulin; etc.
Care of Other Adults	Taking care of elderly parents or grand parents; Caring for a sick friend; etc.
Religious/Civic Activities	Religious practice/participation; Fraternal organizations; Volunteer work; Union meetings; AA meetings; etc.

Appendix Table A2: Descriptive Statistics for Time Use Samples

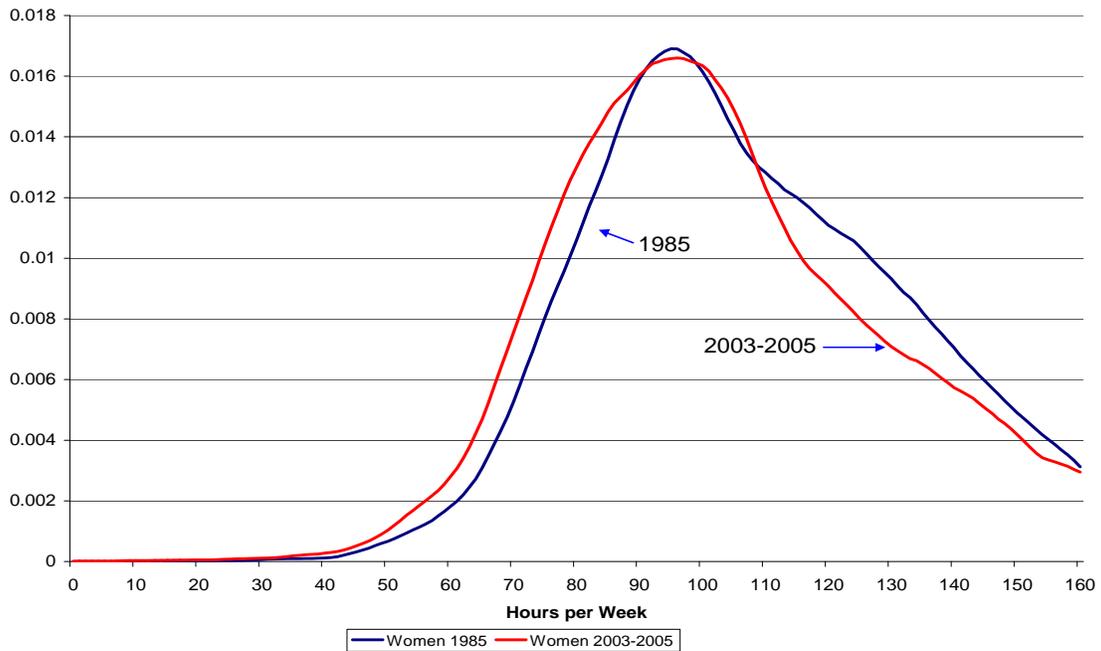
Variable	1965	1985	2003-2005
Age	40.3	39.2	41.3
Fraction Men	0.45	0.44	0.49
Fraction of Men with Education < 12	0.36	0.13	0.12
Fraction of Men with Education = 12	0.34	0.42	0.32
Fraction of Men with Education 13-15	0.14	0.16	0.26
Fraction of Men with Education 16+	0.16	0.29	0.30
Fraction of Women with Education < 12	0.32	0.13	0.10
Fraction of Women with Education = 12	0.44	0.48	0.31
Fraction of Women with Education 13-15	0.14	0.17	0.29
Fraction of Women with Education 16+	0.10	0.22	0.30
Fraction Married	0.82	0.69	0.63
Fraction with Children	0.63	0.43	0.46
Average Number of Children	1.6	0.8	0.9

Notes: See the appendix for a description of the sample and see Table 1 for the relevant sample sizes.

Figure 1: Distribution of Leisure by Sex
 Panel A: Men



Panel B: Women



Notes: This figure plots the distribution of time allocated to leisure for men (Panel A) and women (Panel B) in 1985 and 2003-2005. The horizontal axis represents hours per week spent on leisure. The vertical axis is the frequency that someone reports the corresponding leisure time. Specifically, each line is the kernel estimate of the probability density over leisure time in the corresponding sample, with the total area under the line integrating to one.