

Coniglio, Nicola Daniele; Hoxhaj, Rezart; Lagravinese, Raffaele

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## Crossing Boundaries and Time: An Exploration of Time Allocation, Emotional Well-Being of Immigrants in the United States

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# Crossing Boundaries and Time: An Exploration of Time Allocation, Emotional Well-Being of Immigrants in the United States\*

Nicola Daniele Coniglio  
University of Bari "A.Moro"

Rezart Hoxhaj  
University of Bari "A.Moro"

Raffaele Lagravinese  
University of Bari "A.Moro"

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## Abstract

This study investigates the emotional experiences of immigrants and native-born individuals in the United States, exploring the relationship between daily activities and feelings of happiness, stress, and meaningfulness. We analyze the entire range of daily activities and their durations, utilizing data from the American Time-Use Survey (ATUS) Well-Being modules. The results reveal that when viewed through the evaluation lenses of the general US population, immigrants engage in less happy, more stressful, and less meaningful activities compared to natives. However, when considering subjective emotional assessments, immigrants are more optimistic and perceive these activities as associated with higher levels of happiness and meaningfulness. The study also finds evidence of emotional assimilation over time, with happiness disparities between immigrants and natives diminishing. However, this process appears incomplete for second-generation immigrants. The findings highlights the importance of recognizing the different perspectives of immigrants to formulate inclusive policies that facilitate integration.

**Keywords:** Immigrants; Time Use; Emotional Experiences; Assimilation; Well-Being

**JEL codes:** J15, J22, I31, Z13

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# 1 Introduction

Understanding the nuances of how different populations allocate their time is essential in gauging the wellbeing of communities and, by extension, societies. A significant strand of social science research has scrutinized time-use patterns, with particular attention to the distinctions between immigrants and natives. Nonetheless, studies that investigate the intrinsic relationship between how time is allocated and the emotional experiences associated with different activities are scant. Our research bridges this gap by analysing time allocation between immigrants and natives in the USA, and analyzing the emotional dimensions connected to these activities, utilizing data from the American Time Use Survey (ATUS).

We leverage a rich dataset consisting of time diaries from a large sample of immigrants and natives in the US and exploit the well-being module available in ATUS for the years 2010, 2012, and 2013. With this data, we calculate activity-level indicators for happiness, stress, and meaningfulness associated with various activities at a rather detailed level (ex. cooking, attending a sports event, or commuting to work). These indicators reflect the average emotional experience or feelings associated with each activity as perceived by the broader community. Then by examining individual 24-hour time diaries we derive measures of happiness, stress, and meaningfulness regarding the time allocation of immigrants and natives. Our findings reveal that immigrants are inclined to allocate more time to activities that are associated by the average US citizen with unhappiness, stress, and a lack of meaningfulness. Remarkably, this divergence persists even after controlling for socio-demographic characteristics.

In our analysis, we also account for the social context of the activities, that is, whether they are conducted alone or in the company of others. This is particularly relevant given the sociological literature on unhappiness driven by increasing social isolation. Putnam's seminal work, "Bowling Alone" (2000), highlights the decline in social capital in the United States and its adverse impact on individual well-being. By controlling for the social aspect of activities, we ensure that our results are not influenced by differences in the propensity

to socialize between immigrants and natives. We explore the potential mechanisms that underlie these differences. There are two distinct channels through which these differences may arise. First, due to varying constraints and incentives, immigrants may specialize in different activities compared to natives, resulting in a divergence in the associated emotions. Second, immigrants may perceive the same activities differently due to varied cultural backgrounds and experiences or due to reference points to which these feelings are compared that are substantially different than those of natives. Our study provides evidence that both mechanisms are at play. While the activity composition channel is present, there is strong evidence of differences in feelings associated with each activity. When we employ measures of individual subjective well-being instead of community-wide perceptions, we find that immigrant status is associated with a higher degree of happiness, meaningfulness, and lower stress. In other words, immigrants tend to have more positive emotions and associate a higher level of happiness and meaningfulness, and lower stress with the same activities compared to natives. We also analyze the effect of time since migration and find evidence of convergence in time allocation patterns over time, though some differences persist and even extend to the second generation. Our study is related and contributes to different research strands. The first one is the relatively small but growing literature on immigrants' time use which shows how different characteristics but also incentives and constraints shape a significantly different of allocation of time – the scarcest human resource – of immigrants and natives (Hammermesh and Trejo 2013; Vargas 2016; Coniglio et al 2021). Our work builds on these contributions and adds a new dimension of these differences, namely the divergence in feelings associated with the time use. Another body of research in migration studies has explored the relationship between migration and happiness or subjective well-being in general, revealing mixed findings regarding whether immigrants are happier or not compared to natives (see, for example, Bartram, 2011; Safi, 2010). We build upon this literature and add a new dimension to our understanding of the immigrant experience by focusing specifically on the emotions associated with daily activities. One area of interest in

migration studies is the nature of jobs and activities immigrants often engage in, frequently termed as 3-D jobs – Dirty, Dangerous and Difficult (see the early work by Piore 1979 and Chiswick 1980 and subsequent research). While this strand of literature has examined immigrants’ occupations in depth, less attention has been given to other dimensions, such as the emotions and meaning associated with their daily activities. This study is pivotal as it broadens the scope of migration studies and offers insights into the well-being of immigrants, which is paramount for policy-making and community integration. Moreover, by acknowledging the multifaceted nature of the immigrant experience, our research supports the development of more inclusive societies that recognize and appreciate the diversity in values, perceptions, and contributions of all members. The implications of this research are far-reaching, as they can inform policies that foster not just economic integration but also psychological and emotional well-being, which is essential for a thriving and harmonious society. The paper is structured as follows. In Section 2 we discuss selected related studies. In Section 3 we present the data and the empirical methodology. Section 4 reports the empirical results. Conclusive remarks are presented in Section 5.

## 2 Related Literature

Recent studies have shown that there are differences in the daily activities and time allocation between immigrants and natives. A first strand of literature has focused on analyzing the differences in the activities that are most frequently performed by natives and immigrants. In this regard, Hammermesh and Trejo (2013) look at assimilation activities such as purchasing, market work and education in the US. They find that immigrants participated less but more intensively in these activities due to the higher fixed costs of assimilation. Zaiceva and Zimmermann (2014), examine the role of ethnicity and gender on household activities in the UK. They find that non-white women spend more time on food management and religious activities than white women but not childcare. They attributed this to

the lower opportunity cost and stronger traditions of ethnic women. Vargas (2016) looks at market work and household production of Mexicans in the US. He finds that for married immigrants, the time allocation to market work decreased with time since migration, while time allocated to housework and caring for the household increased. He inferred substitution between market work and housework. More recently, Coniglio et al (2021) find that immigrants are more likely to engage in both informal and formal education and that they allocate more time to these activities, conditional on participation. Several studies have pointed out that immigrants tend to work in jobs that pose greater health risks than natives (Giuntella and Mazzona, 2015; Giuntella et al 2019). Jobs known as the "three D jobs" (Dirty, Dangerous, and Difficult) according to Orrenius and Zavodny (2013) can have long-term negative impacts on the physical and mental well-being of individuals. A recent study by Bond et al. (2023) showed that immigrants are more likely to accept night jobs. The researchers emphasize that immigrants possess a comparative advantage in performing nocturnal tasks and/or face lower drawbacks when working at night, leading them to specialize in unconventional schedules. Working during nighttime can understandably affect socialization, hinder engagement in daytime activities, and increase stress levels, thereby raising the likelihood of developing mental health issues. Apart from analyzing differences in activities between immigrants and natives, there is a fast-growing body of literature examining the differences in subjective well-being (SWB) associated with daily activities. Senik (2014) finds that French natives are less happy than other Europeans, regardless of whether they live in France or outside. In contrast, immigrants are not less happy than immigrants elsewhere in Europe but their happiness reduced over time and across generations. Hendriks (2015) conducted a literature review that shows immigrants can become happier after migrating but it strongly depends on the specific migration stream. Additionally, immigrants typically do not attain similar levels of happiness to those of natives over time. The immigrant's SWB may be influenced by a range of factors, including the immigrants' country of departure and arrival as well as their employment status. Knight and Gunati-

laka (2010) analyze the link between expectations and well-being of Chinese immigrants who moved to Western countries and found that certain aspects of immigrant conditions contributed to unhappiness, as did the high aspirations that migrants had in relation to achievement, influenced by their new reference groups. Kogan et al (2018) investigate the variation in immigrants' life satisfaction across 18 European countries between 2002-2012, and find that immigrants are generally more satisfied in countries that offer more welcoming social settings. Kóczán (2016), using data from the German Socio-Economic Panel for the years 1984-2010, finds that while immigrants tended to report lower satisfaction than natives, this difference is primarily related to economic integration factors, such as employment conditions, rather than cultural factors like feelings of not belonging. Yaman et al (2022), using data from the German Socio-Economic Panel from 1984 to 2015, find that recently arrived immigrants in Germany are more satisfied with their lives than comparable German natives and that their life satisfaction decreases more over time than that Germans. This finding seems to suggest a progressive shift in the reference point of immigrants. It is more likely that higher initial level of happiness are due to the fact that in the early phase of the migration experience immigrants will largely compare their current life with the one they left at home and/or with those left behind; over time immigrants are more and more embedded into the host country socio-economic environment where their position in the social ladder is generally relatively lower. Differences may also exist between activities that are done alone versus those that require interaction with others. Sun et al (2019) show that well-being is more strongly associated with activities that require social interaction, particularly those involving high-quality conversations and relationships. Most of the works use happiness as the main dimension of well-being. Few works, however, have analyzed other dimensions such as stress or meaningfulness in various activities (Arbona et al., 2010; Flood and Genadek 2016; Hoang and Knabe, 2021). In addition most of the studies cited above refer to general perceptions of subjective well-being rather than feelings associated with the daily activities performed; hence the revealed measures of well-being are

only weakly related with the allocation of time. The Well-Being Module of the American Time Use Survey (ATUS), also used on our study, have been employed in a few studies to analyze the people's subjective well-being associated to some specific daily activities performed. Using ATUS data for 2010, Gimenez-Nadal and Molina (2015) find that individuals in the US who engage in voluntary activities report higher levels of happiness than those who do not. Hamermesh (2020) also uses ATUS data from 2012-2013 to show that both "who" people spend time with and "how" they spend it affect their life satisfaction. Married individuals are most satisfied when they spend more time with their spouse, while singles are least satisfied when they spend more time alone. Additionally, more time spent sleeping or watching TV reduces satisfaction, while longer than usual workweeks and higher incomes increase it. Yet, Hoang and Knabe (2021), use ATUS 2010-2013 to re-examine the relationship between unemployment and emotional well-being. They find that the unemployed are sadder and suffer more than the employed, but no other emotion queried in the ATUS is worse for the unemployed than for the employed. Song and Gao (2019) analyze the effect of working from home or away from home on SBW using ATUS data. They find that the effect of working at home on SWB varies according to parental status and gender. Specifically, parents, especially fathers, report lower level of SWB when working at home on weekdays but a higher SWB when working at home on weekends or holidays. However, these studies are limited to identifying differences between various daily activities in the US population, without considering possible differences between natives and immigrants. Our work attempts to enrich the literature by examining differences between immigrants and natives in terms of time allocation and their levels of satisfaction in terms of happiness, stress and meaningfulness.



## 3 Data and Methodology

### 3.1 Data

Our analysis uses the well-being (WB) modules of the American Time-Use Survey (ATUS) for the years 2010, 2012 and 2013. The ATUS has been conducted annually from 2003 by the U.S Bureau of Labor Statistics, based on a randomly selected and representative sample of the U.S. population aged 15 years and older<sup>[1]</sup>. From each designed households, one individual is interviewed using computer-assisted telephone interviewing (CATI), about the activities performed in the 24 hours prior to the interview and the time (in minutes) allocated to each activity<sup>[2]</sup>. The ATUS data contains a very detailed set of activities (around 400)<sup>[3]</sup>. For example, among the household chores it is possible to distinguish doing laundry from interior cleaning, or among paid work activities, one can distinguish the main job from secondary job. As individuals are only interviewed once per year, the ATUS data is cross-sectional. All respondents of ATUS in 2010, 2012, 2013 were selected for the WB module<sup>[4]</sup>. Within the module, three activities were randomly selected from each individual’s reported set of activities, excluding sleeping, grooming, and personal care. To be considered in the survey, the selected activities should last for at least 5 minutes. Respondents rated their happiness, pain, sadness, tiredness, stress, and meaningfulness for each activity on a scale from 0 (not at all) to 6 (very). In addition, the respondents rated meaningfulness of each activity on the same scale. This survey method, introduced by Kahneman et al. (2004a), integrates daily activities with the corresponding emotional experiences. By utilizing a

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<sup>1</sup>The ATUS data set is publicly available upon registration. We used the American Time-use Survey Extract Builder to extract the data (Hofferth et al., 2017)

<sup>2</sup>ATUS diary days are assigned randomly and distributed across the days of the week, with 10 percent allocated to each day of the week and 25 percent allocated to Saturday and Sunday. This distribution is based on research showing that on weekends the allocation of time is different as compared to working days (Horrigan and Herz, 2004).

<sup>3</sup>See [link](#) for the list of variables

<sup>4</sup>The WB module was collected also for year 2021. As COVID-19 was still active during 2021, and substantially affected the perceived well-being of daily activities, we excluded this year from the analysis.

short recall period, this approach mitigates errors and recall biases (Ribar 2015, Juster et al. 2003). The WB module also provides information on whether the respondent interacted with someone during the activity. Additionally, the ATUS WB modules include a comprehensive set of information on respondents’ household and demographic characteristics. Table 1 reports the descriptive statistics of the dependent variables and of other covariates included in the analysis, for immigrants and native-born. The samples are comparable in terms of observed characteristics. The survey’s response rate declined from 56.9 percentage points in 2010 to 50 percentage points in 2013. Response rate is likely unrelated to any specific characteristics of the individuals, as the primary reason for refusal to answer was survey fatigue after completing the CPS survey (BLS 2022). To ensure a more homogeneous sample, we restrict the dataset to individuals aged 18-65 years (Gimenez-Nadal and Molina, 2015). After dropping low-quality observations and observations with missing information <sup>5</sup>, the usable dataset is composed of 27,862 individuals (12,604 men and 15,258 women) among whom 4,448 are immigrants.

(Table 1 about here)

## 3.2 Methodology

### 3.2.1 Defining measures of daily feelings

We assess people’s daily feelings by examining the activities they engage in and the corresponding emotions they experience during those activities (Kahneman et al., 2004a). In our study, we are particularly interested in exploring differences in three emotional dimensions associated with time use for immigrants and natives: happiness, stress, or meaningfulness. The choice of these indicators is driven by their importance in shaping individual well-

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<sup>5</sup>The data quality variable is assessed by the interviewers and indicates whether the data from a particular interview should be used. Non-usable data include those with wrong answers and incorrect recall of activities.

being, which is demonstrated by the dense literature in social science on the determinants and drivers of these feelings. We jointly employ the time-use data and the Well-Being modules of ATUS in order to build for each individual a set of feeling metrics.

More precisely, for each individual  $i$ , who performs  $n$  activities  $j$  during the observed day, we calculate the level of daily feeling  $F_i$  associated with their use of time using the following formula:

$$F_i = \frac{\sum_{j=1}^n (Pop\_score_{fija} \cdot Duration_{ij})}{\sum_{j=1}^n Duration_{ij}}$$

where  $Pop\_score_{fija}$  is the average score of feeling  $f$  (respectively, happiness, stress, or meaningfulness) calculated on the entire sampled US population for activity  $j$ , and  $Duration_{ij}$  is the duration of activity  $j$  for individual  $i$ . By using population-level average feelings, the index can be viewed as an "objective" measure of daily feelings that varies depending on: (i) the activity mix performed during the observed day by each individual and; (ii) the relative duration of each activity. These metrics can be interpreted as measures of emotional experiences associated with how individuals allocate their time evaluated with the 'lenses of the average American citizen'. Clearly, this is a specific - although arguably relevant - way to evaluate feelings that is explicitly benchmarked to general society perceptions. Perceptions of specific groups - including immigrants - might diverge in a fundamental way from this 'average view'; we will, in fact, consider below an individual (subjective) view on emotional experiences.

The time-weighting approach is widely used in the literature to evaluate more accurately the experienced utility that individuals derive from a typical day (Kahneman et al., 2004b, Knabe et al., 2010, Hoang and Knabe 2021). In defining the metrics described by Eq. (1), we explicitly take into account whether individuals perform activities jointly with others or alone. Interacting with others during activities could affect the level of experienced feelings ((Putnam, (2000), Helliwell and Putnam (2004), Becchetti et al 2008, Gimenez-Nadal and Medina (2015)), and there may be differences in this regard between immigrants

and native-born individuals. We calculate population-level feelings (happiness, stress, or meaningfulness) separately for activities performed jointly with others ( $a = 1$ ) and those performed alone ( $a = 0$ ), and then employ these values in index (1).

As mentioned above, the feelings metrics in Eq. (1) are assessed based on average scores of the population and do not consider individual differences in subjective feelings experienced during daily activities. In order to capture this subjective dimension, we calculate alternative feeling metrics associated with time use, which use individual subjective feeling scores instead of population average feeling scores. Eq. (2) below defines these subjective feelings metrics as follows:

$$F_i^S = \frac{\sum_{j=1}^3 (Score_{fij} \cdot Duration_{ij})}{\sum_{j=1}^3 Duration_{ij}}$$

where  $Score_{fij}$  is the score of the subjective feeling  $f$  (happiness, stress, or meaningfulness) reported for each of the three randomly chosen activities  $j$ , and  $Duration_{ij}$  is the duration of activity  $j$  for individual  $i$ .

Our approach presents some caveats. Firstly, both indexes measure feelings cardinally, while the feelings data itself represents ordinal information. This raises the possibility that the change in experienced feelings when switching between categories may not be consistent across the entire distribution of feeling categories (Bond (2021), Schroder (2017)). According to Kaiser and Vendrik (2022, page 2): *"the difference in underlying well-being between (say) the 1st and 2nd response category can be arbitrarily larger or smaller than the difference between (say) the 9th and 10th response category. In turn, when the effect of some variable  $X$  is positive in one part of the distribution of reported well-being, but negative in another, then the sign of the average effect of  $X$  can be flipped by rescaling the different parts of the response scale."* This may lead to biased estimates of the relationship between a given variable of interest and feelings. However, Kaiser and Vendrik (2022) find that to have such reversals, the respondents have to interpret the feeling's categories in a strongly non-linear manner. They also provide some preliminary evidence that, in practice, sign reversals are

quite unlikely and that OLS regressions, which assume linearity, are the appropriate method of estimation.

Secondly, like the majority of studies that use subjective data, our method may also be influenced by variations in reporting subjective feelings among individuals and different groups. These differences in reporting feelings can arise due to various factors, such as variations in numerical literacy (Galbraith et al, 2022), the use of different rating scales to represent the same level of feelings (Montgomery 2022), or the comparison of feelings with different reference groups (Fleurbay and Blanchet 2013). Despite these potential challenges, Kaiser and Vendrik (2022) argue that these differences are not significant enough to bias the substantive findings. In our study these issues are unlikely to be distortive or of high relevance as they refer to specific and clearly identified activities rather than being abstract expression of feelings vis-à-vis other individuals or reference groups.

### 3.3 Empirical Model

Our main goal is to estimate the differences between immigrants and native-born in emotional experiences or feelings – namely happiness, stress, and meaningfulness – associated with how individuals allocate their time. We proceed using a two-step procedure. First, we focus on the role of the status of immigrants on these different feelings considering the population measures – i.e., a measure of emotional experiences as expressed on average by the US population as specified in Eq. (1). In this way, we ‘neutralize’ the individual preference channel as we are evaluating feelings using a collective measure. In the second step, in order to shed light on potentially heterogeneous preferences with respect to the (dis)utility associated with different activities, we consider a measure of individual subjective well-being as specified by the metrics of Eq. (2). The baseline model is the following:

$$F_i = \alpha_0 + \beta_1 \text{Immigrant}_i + \delta' \mathbf{X}'_i + \gamma'_t + \varphi'_s + \epsilon_i \quad (1)$$

where  $F_i$  represents the daily feeling (happiness, stress, or meaningfulness) of individual

$i$ , as assessed by the feeling's indexes specified alternatively by Eqs. (1) and (2). The dummy  $\text{Immigrant}_i$  that equals 1 for immigrants<sup>6</sup> is our main variable of interest. It captures differences in daily feelings between immigrants and native-born. Alternatively, we include three dummies capturing the time since migration:  $YSM1$  for immigrants residing in the US for less than 6 years,  $YSM2$  for immigrants residing in the US from 7 to 20 years, and  $YSM3$  for immigrants residing in the US for more than 20 years. We also include in the same estimations a dummy for second-generation immigrants (Second generation)<sup>7</sup>. The vector  $\mathbf{X}'$  includes individual-level characteristics that may affect daily feelings such as the age of the respondent (Age) and its quadratic form (Age squared), gender (dummy Female), marital status (dummy Married), having children by age groups (set of dummies: No children, children 0–2 years, children 3–5 years, children 6–12 years, children 13–17 years), educational attainment (set of dummies: Less than secondary, Secondary, Degree, Postgraduate). We also include the dummy Holiday/weekend (equals 1 for holidays and weekends) and a variable for household income (Income). As research has shown that health outcomes and employment status determine self-reported satisfaction (Kahneman et al. 2004b; Knabe et al. 2010) and affect the mix of activities performed during the day, we include in the estimations a dummy Good health (equals 1 for those reporting good health) and a set of dummies for employment status (employed, unemployed, and not in the labor force). The model also includes year fixed effects  $\gamma'_t$  and US state fixed effects  $\varphi'_s$ . Standard errors are clustered at the state level. For the exact definition of the variables, please refer to Table 1A in the Appendix. Following the argument developed by Kaiser and Vendrick (2022), we estimate Eq (3) by employing the OLS method as it assumes linear response scales.

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<sup>6</sup>An immigrant is defines as individual born abroad with both parents foreign-born.

<sup>7</sup>Individuals born in the U.S. with parents foreign-born.

## 4 Results

In the first step of our analysis, we investigate differences in daily feelings (happiness, stress, and meaningfulness) between immigrants and natives. We use society-wide feeling metrics as specified by Eq. (1). The dependent variable measures the average daily feelings of individuals based on the population average scores of all activities performed. Firstly, we investigated whether immigrants experience happier days compared to natives; the results of the empirical exercise are displayed in Table 2. Column 1 displays the results of estimates using the entire sample of individuals while controlling for relevant demographic characteristics, year and state fixed effects. The findings show that immigrants experience less happiness in their daily lives compared to natives. This might be attributed to their engagement in less happy activities for a longer duration and/or to performing less enjoyable tasks within the same activities. For instance, with regard to work, research indicates that immigrants are more concentrated in what are commonly referred to as "three D jobs" compared to natives (Orrenius and Zavodny 2013). Columns 2 and 3 focus on men and women separately, to explore possible heterogeneity across genders. The estimated coefficient is negative and statistically significant only for men, suggesting that immigrant men specifically engage in less enjoyable activities compared to native men.

In our analysis, we consider the variation in the duration and nature of individuals' daily activities between weekdays and weekends/holidays. Weekdays are characterized by a more structured schedule of activities, including work, education, and other obligations. On the other hand, weekends and holidays afford individuals the freedom to organize their time more flexibly. In column 4 and column 5, we estimate our model separately for weekdays and weekends/holidays, respectively. The results indicate that immigrants allocate more time to relatively 'unhappy' activities during weekends/holidays compared to natives. However, no differences in happiness levels between immigrants and natives are observed during weekdays. This result suggests that immigrants spend more time than natives in activities that are generally considered unpleasant on days when the allocation of time is

characterized by a higher degree of freedom and more leisure time.

In column 6, we estimate a model that includes dummies for time since migration and second-generation immigrants (with natives as the reference category). Consistent with assimilation theory, the negative differences in daily happiness decrease steadily with the time spent in the US, and these differences almost disappear for immigrants who have been in the US for over 20 years <sup>8</sup>. Interestingly, differences in daily happiness between second-generation immigrants and natives persist. Overall, the results suggest an ongoing process of assimilation and that this process is not yet completed for second-generation immigrants. Furthermore, we find the expected relationships between the other covariates and happiness across the various model specifications. Individuals in good health and those with young children have a happier allocation of time. Age is positively and nonlinearly related to happiness. Highly educated individuals engage relatively more in activities that are considered less happy by the general population compared to those having secondary education.

**(Table 2 about here)**

Table 3 presents the results of estimates with population-weighted stress scores as the dependent variable. Considering the entire sample, we find no differences between immigrants and natives in allocating time toward stressful activities. However, when we examine the results by gender in column 2 and column 3, contrasting and statistically significant differences emerge. Immigrant men perform more stressful activities than native men, while immigrant women perform less stressful activities than their counterparts (the coefficient is statistically significant at the 7.5). Furthermore, results in column 4 and column 5 suggest that immigrants experience lower levels of stress than natives during weekdays, but they exhibit higher stress levels and lower happiness during weekends and holidays (as shown in Table 2). These differences in daily stress do not appear to be influenced by the length of

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<sup>8</sup>The coefficient becomes smaller and is statistically significant only at 10 %



time immigrants have spent in the US. Regarding the other covariates (column 1), we find that married individuals and women experience less stressful days. Interestingly, parents with children experience lower levels of stress, and the level of stress decreases as their children grow older. Notably, individuals who are not part of the labor force experience less stress, but this result is driven by women (column 3), while men exhibit higher levels of stress (column 2). Furthermore, highly educated individuals of both genders engage in less stressful activities throughout the week.

**(Table 3 about here)**

The estimations in Table 4 examine the potential differences between immigrants and natives in terms of the meaningfulness of activities performed during a typical day. The results in column 1 indicate that immigrants engage in activities that are perceived as less meaningful based on the average scores assigned by the population. This finding is consistent across both genders, as shown in columns 2 and 3. However, it appears that this difference is primarily driven by the activities immigrants engage in during weekends and holidays. However, we find evidence of a clear pattern of assimilation with native-born population as differences tends to disappear with time since migration. Second-generation immigrants look like the native population in terms of meaningfulness assigned to daily activities. Estimations also show that married people and women consider their day to be more meaningful than their counterparts. The presence of children in the household not only contributes to a happier and less stressful day but is also associated with a higher level of meaningfulness. Activities involving children, such as educational activities, playing, and childcare, are particularly regarded as enjoyable and meaningful (Musick et al 2016) although the evidence on happiness and parenthood is rather mixed (see also Kahneman et al 2004a). Interestingly, even after accounting for other individual characteristics, unemployed individuals consider their day to be more meaningful than those who are employed (see

Knabe et al. 2010).

(Table 4 about here)

In the second step of our analysis, we examine possible differences in subjective feelings experienced during daily activities between immigrants and natives. The purpose of this analysis is to determine whether and how the feelings of immigrants and natives differ by comparing the estimates with the dependent variable specified as individual subjective feelings – that reflects individual preferences – with those based on the feelings of the average US citizen. This analysis allows us to assess to what extent the same combination of daily activities generates a different emotional impact in immigrants compared to the average US resident<sup>9</sup>. Panel 1 in Table 5 presents the results of estimations when the explanatory variable is the dummy variable immigrant, while panel 2 presents the results when the explanatory variables are the dummies for years spent in the U.S. and a dummy for second generation immigrants. In both panels, columns 1, 3 and 5 consider the subjective feelings scores (happiness, stress and meaningfulness) assessed over the three observed activities as dependent variables, while columns 2,4 and 6 consider the same feelings measured using average population scores<sup>10</sup>. Results in panel 1 indicate that immigrants perceive the same set of activities carried out during the day with an associated higher level of happiness compared to natives (column 1); their typical day is perceived equally stressful as that of natives (column 3), but they find these activities more meaningful in comparison to US residents (column 5). These results diverge significantly from the outcomes obtained using

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<sup>9</sup>For further details on subjective feelings and population based feelings (based on 3 activities), by gender and day of the week see Table A2 in Appendix

<sup>10</sup>It is important to note that the dependent variables in columns 2-4-6 are calculated using the feeling metric defined in eq. (1), just like the dependent variables in Tables 1-3. However, the distinction lies in the fact that the dependent variables in columns 2-4-6 are calculated based on only the three activities, rather than considering the entire set of daily activities performed by individuals. We believe that this approach improves the comparison between subjective and "objective" feelings, as they are assessed using the same (three) activities.

the "objective" population average feelings presented in columns 2-4-6. According to those estimates, the set of activities to which immigrants allocate their time is perceived by the general US population as less happy, more stressful and less meaningful. Overall, the findings suggest that immigrants have a significantly more positive perception of the allocation of their time compared to what would be anticipated by considering the evaluation of the average US resident. These results underline an unambiguously more optimistic attitude of immigrants who seems to have an happy time even doing things that natives would associate to negative feelings. Referring to the estimates in Panel 2, it is observed that the higher level of daily happiness perceived by immigrants decreases with the time since migration. However, second-generation immigrants look like natives in terms of their perceived happiness (column 1). Subjective meaningfulness follows a similar pattern (column 3), with the exception of the persistent differences found among second-generation immigrants. Instead, the results in column 2 suggest no relationship between time since migration and differences in perceived stress, but they do indicate a lower level of perceived stress for second-generation immigrants compared to natives. Interestingly, the results in columns 2 and 4 show that immigrants gradually assimilate with natives in terms of happiness and stress associated with the activities performed. Similarly, second-generation immigrants appear to have completed the process of assimilation with natives in these aspects.

**(Table 5 about here)**

The results presented in Table 5 demonstrate that the same activities generate different emotional evaluations when done by immigrants and natives. Which activities are perceived as more happy, stressful, and meaningful by individuals? What are the activities that present the most remarkable differences in subjective feelings across immigrants and natives? Table 6 presents the average scores of feelings for each activity and the differences in average scores between immigrants and natives. Panel 1 displays the unconditional means

for happiness, panel 2 for stress, and panel 3 for meaningfulness. It also includes the average time spent on these activities (in minutes, conditional on participation) and the differences in average time between immigrants and natives (panel 4). The results in panel 1 indicate that immigrants and natives share similar preferences when it comes to activities that bring happiness. Out of the six activities rated as the happiest (see superscript for rank), only caring for non-household adults (mean=5.07, for immigrants) and socializing (mean=4.81, for natives) diverge between the two groups. Both immigrants and natives rank caring for non-household children as the most happy activity, while research and homework is considered the least happy activity. Interestingly, immigrants associate across almost all activities more positive feelings compared to natives. The five activities with the largest differences in happiness scores are: non-household adult care (0.76), research and homework (0.7), household adult care (0.69), household child education (0.62), and volunteering (0.61). The results reported in panel 2 show that the three activities considered as most stressful by both immigrants and natives are research and homework, work, and caring for household adult. These activities, which also consume a significant portion of the day (see panel 4), have a substantial impact on overall daily stress levels. Additionally, immigrants perceive commuting (mean=1.68) and doing household chores (mean=1.61) as highly stressful, while natives report higher levels of stress when traveling for educational purposes (mean=1.89) and providing education to household children (mean=2.02). When examining mean differences, the results for stress are more nuanced compared to happiness. Immigrants feel less stressed when providing education (-0.57) and care (-0.18) to household children, and when doing home maintenance (-0.21). Conversely, they experience more stress when doing cleaning and laundry (0.29), cooking (0.23), relaxing (0.16), and having meals (0.13). Differences in the perception of the meaningfulness of activities are presented in panel 3. We find that activities involving children are considered the most meaningful by both immigrants and natives, followed by socializing. Immigrants perceive research and homework as one of the most meaningful activities, despite it being the least happy and more stressful

one. In terms of mean differences, this activity also presents the second highest differential in meaningfulness between immigrants and natives (1.05), following commuting. This underscores the great importance of education for immigrants; a result which is in line with the findings of Coniglio et al (2022) on the higher time-investment of immigrants in formal and informal educational activities. Generally, immigrants consider their daily activities to be more meaningful compared to natives.

(Table 6 about here)

## 5 Discussion and conclusions

This study undertook a comprehensive examination of the differences in daily emotional experiences between immigrants and native-born individuals in the United States, utilizing American Time-Use Survey (ATUS) Well-Being modules data. Specifically, we dissected the association between variations in the nature and duration of daily activities and their impact on feelings of happiness, stress, and meaningfulness. We found that, through the evaluation lenses of the general US population, immigrants allocate their time to relatively less happy, more stressful, and less meaningful activities compared to natives. This pattern is particularly prominent among male immigrants and seems to be attributable to their engagement in less enjoyable activities, often described as “three D jobs” (Orrenius and Zavodny, 2013). An intriguing observation was that immigrants, compared to natives, allocate more time to unhappier activities during weekends/holidays while no significant differences were observed on weekdays. This suggests that immigrants might be employing their discretionary time in a different manner, potentially due to cultural norms or constraints in the types of activities they have access to. However, our study reveals a key finding when we shift the evaluation to subjective emotional assessments: immigrants and natives di-

verge in their evaluations. Interestingly, immigrants perceive the same set of activities as associated with higher levels of happiness and meaningfulness compared to natives, despite these activities being deemed less happy and meaningful by the general population. This uncovers an underlying optimistic outlook among immigrants regarding the activities they engage in. The data also evidenced a process of emotional assimilation, with the difference in happiness levels between immigrants and natives diminishing with time since migration. However, this process appeared to be incomplete among second-generation immigrants. In terms of stress levels, we found nuanced gender differences with immigrant men experiencing more stress than native men, while the opposite was true for women. Additionally, stress levels for immigrants were lower during weekdays but elevated during weekends/holidays compared to natives. These findings hold significant implications for policy formulation. Understanding the cultural diversity and transitional challenges faced by immigrants is vital. Developing policies that facilitate integration and offer opportunities for meaningful engagement in activities, especially during weekends/holidays, is essential. Moreover, the optimism and the value immigrants place on education and child-related activities represent an opportunity for mutually beneficial policies. Fostering educational integration and supporting family-oriented activities could have long-lasting benefits for both immigrants and the host country. Despite these insights, our study has limitations. The cross-sectional nature of the data does not allow for causal interpretations, and self-reported emotional assessments can be subject to biases. Additionally, our study does not explore the underlying causes of the observed disparities in emotional experiences. Future research should therefore utilize longitudinal data to better understand the dynamics of emotional adaptation and explore the factors such as language barriers, discrimination, and social networks which might influence these experiences. Furthermore, the interplay between cultural retention and assimilation, especially among second-generation immigrants, warrants deeper investigation. Understanding how these processes interact with daily activities and well-being is critical for developing effective policies and support systems for immigrant populations.

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**TABLE 1. Summary statistics of the sample**

VARIABLES	Immigrants Mean 1	Native-born Mean 2	T-test Mean equality	Immigrants St. Dev.	Native-born St. Dev.	All sample Mean	All sample St. Dev.
Happiness all activities	4.08	4.07	0.01	0.30	0.29	4.08	0.29
Happiness 3 activities	4.34	4.31	0.00	0.36	0.36	4.33	0.36
Happiness subjective	4.30	4.56	0.00	1.39	1.43	4.34	1.40
Stress all activities	1.39	1.39	0.52	0.40	0.39	1.39	0.40
Stress 3 activities	1.41	1.43	0.00	0.42	0.41	1.41	0.42
Stress subjective	1.44	1.48	0.14	1.58	1.65	1.44	1.60
Meaningfulness all activities	3.92	3.91	0.01	0.44	0.44	3.92	0.44
Meaningfulness 3 activities	4.32	4.32	0.99	0.47	0.45	4.32	0.47
Meaningfulness subjective	4.29	4.66	0.00	1.58	1.57	4.35	1.59
Age (years)	41.38	40.33	0.00	12.79	11.28	41.21	12.56
Married	0.52	0.66	0.00	0.50	0.48	0.55	0.50
Women	0.51	0.49	0.08	0.50	0.50	0.51	0.50
No children	0.68	0.50	0.00	0.50	0.50	0.65	0.50
Child 0-2	0.09	0.14	0.00	0.32	0.36	0.10	0.32
Child 3-5	0.09	0.16	0.00	0.34	0.38	0.10	0.35
Child 6-12	0.16	0.28	0.00	0.43	0.47	0.18	0.43
Child 13-17	0.12	0.20	0.00	0.36	0.40	0.14	0.36
Illiterate	0.00	0.01	0.00	0.01	0.09	0.00	0.04
Primary	0.00	0.03	0.00	0.02	0.16	0.01	0.07
Middle	0.01	0.11	0.00	0.09	0.29	0.03	0.15
Secondary	0.67	0.56	0.00	0.48	0.50	0.65	0.49
Degree	0.21	0.18	0.00	0.42	0.40	0.21	0.42
Post graduate	0.11	0.12	0.09	0.33	0.36	0.11	0.34
Holiday/weekend	0.30	0.30	1.00	0.50	0.50	0.30	0.50
Good health	0.80	0.74	0.00	0.40	0.44	0.79	0.41
Employed	0.73	0.71	0.24	0.44	0.45	0.72	0.45
Unemployed	0.07	0.07	0.72	0.24	0.25	0.07	0.24
Not in labor force	0.20	0.21	0.28	0.41	0.41	0.21	0.41
Income (range 1-16)	11.24	10.20	0.00	4.09	4.18	11.06	4.11
Observations	4448	23,414		4448	23,414	27862	27862

Note: Our elaboration of ATUS WB module data. Age is restricted to 18-65 range. Income is a continuous variable ranging from 1 to 16. The demographic characteristics are weighted using population weights. Test of differences between means, \*\*\* p<0.01, \*\* p<0.05.

**TABLE 2.** Time Use and Happiness (emotional scores based on the perception of the average US resident)

VARIABLES	(1) All	(2) Men	(3) Women	(4) Weekdays	(5) Weekend	(6) All
Immigrant	-0.0216*** (0.00506)	-0.0373*** (0.00662)	-0.00694 (0.00595)	-0.00156 (0.00702)	-0.0407*** (0.00593)	
YSM 1						-0.0488*** (0.0103)
YSM 2						-0.0222*** (0.00774)
YSM 3						-0.0168* (0.00922)
Second generation						-0.0314*** (0.0101)
Holiday/weekend	-0.00988** (0.00433)	0.00367 (0.00546)	-0.0208*** (0.00525)			-0.00985** (0.00433)
Good health	0.0384*** (0.00429)	0.0416*** (0.00593)	0.0342*** (0.00625)	0.0243*** (0.00408)	0.0536*** (0.00628)	0.0384*** (0.00433)
Unemployed	-0.00727 (0.00920)	0.00384 (0.0127)	-0.0228** (0.00933)	-0.0208** (0.00921)	0.00637 (0.0142)	-0.00716 (0.00923)
Not in labor force	-0.0104** (0.00506)	-0.0161 (0.00969)	-0.0144** (0.00662)	-0.0151** (0.00669)	-0.00639 (0.00675)	-0.0100* (0.00507)
Income	0.000141 (0.000585)	8.52e-05 (0.000935)	0.000102 (0.000606)	-0.000942 (0.000637)	0.00117 (0.000818)	5.55e-05 (0.000585)
Age	0.00510*** (0.00136)	0.00495*** (0.00153)	0.00587*** (0.00190)	0.00465** (0.00192)	0.00578*** (0.00185)	0.00484*** (0.00133)
Age squared	-6.17e-05*** (1.55e-05)	-5.48e-05*** (1.76e-05)	-7.4e-05*** (2.09e-05)	-5.26e-05** (2.19e-05)	-7.3e-05*** (2.14e-05)	-5.97e-05*** (1.51e-05)
Married	-0.00533 (0.00424)	0.00239 (0.00715)	-0.0106** (0.00451)	0.00546 (0.00420)	-0.0160** (0.00682)	-0.00484 (0.00419)
Female	0.00841** (0.00412)			0.0205*** (0.00489)	-0.00296 (0.00569)	0.00830** (0.00412)
Child (0-2 years)	0.0899*** (0.00579)	0.0498*** (0.00755)	0.119*** (0.00980)	0.103*** (0.00868)	0.0769*** (0.00842)	0.0898*** (0.00576)
Child (3-5 years)	0.0369*** (0.00629)	0.0357** (0.0140)	0.0384*** (0.00638)	0.0445*** (0.00586)	0.0303*** (0.0101)	0.0368*** (0.00632)
Child (6-12 years)	0.0216*** (0.00432)	0.0162* (0.00855)	0.0233*** (0.00446)	0.0345*** (0.00384)	0.00920 (0.00731)	0.0212*** (0.00426)
Child (13-17 years)	0.00591 (0.00553)	0.00765 (0.00856)	0.00247 (0.00729)	0.00569 (0.00510)	0.00704 (0.00792)	0.00582 (0.00549)
Illiterate	0.0132 (0.0523)	0.0433 (0.0672)	-0.0154 (0.0976)	-0.0112 (0.0437)	0.0475 (0.0952)	0.0143 (0.0519)
Primary	0.0273 (0.0213)	-0.000974 (0.0267)	0.0580 (0.0387)	0.0418** (0.0184)	0.0175 (0.0492)	0.0258 (0.0214)
Middle school	0.0355** (0.0171)	0.0128 (0.0220)	0.0537*** (0.0185)	0.0220* (0.0130)	0.0507** (0.0248)	0.0355** (0.0169)
Degree	-0.0186*** (0.00390)	-0.0302*** (0.00661)	-0.00963 (0.00612)	-0.00530 (0.00428)	-0.0315*** (0.00728)	-0.0182*** (0.00387)
Post graduate	-0.0255*** (0.00507)	-0.0388*** (0.00781)	-0.0160** (0.00625)	-0.0235*** (0.00608)	-0.0283*** (0.00700)	-0.0248*** (0.00508)
State FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Constant	3.955***	3.945***	3.962***	3.964***	3.932***	3.964***
R-squared	0.026	0.023	0.039	0.050	0.022	0.027
Observations	27,862	12,604	15,258	13,613	14,249	27,862

Estimations using OLS method. The reference category in models 1-5 is natives. The reference category in model 6 is natives excluding second generation immigrants. Other reference categories are: no children and secondary diploma. Errors clustered at state level are in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**TABLE 3.** Time Use an Stress (emotional scores based on the perception of the average US resident)

VARIABLES	(1) All	(2) Men	(3) Women	(4) Week days	(5) Weekend	(6) All
Immigrant	-0.000213 (0.00538)	0.0191** (0.00822)	-0.0132* (0.00664)	-0.0256*** (0.00931)	0.0245*** (0.00822)	
YSM 1						-0.00772 (0.0139)
YSM 2						-0.00274 (0.00702)
YSM 3						0.00680 (0.00839)
Second generation						0.00567 (0.0116)
Holiday/weekend	-0.0842*** (0.00496)	-0.0832*** (0.00636)	-0.0862*** (0.00566)			-0.0842*** (0.00497)
Good health	-0.0163*** (0.00558)	-0.00741 (0.00668)	-0.0176* (0.00885)	-0.00727 (0.00856)	-0.0253*** (0.00766)	-0.0162*** (0.00557)
Unemployed	-0.0139 (0.0122)	-0.00666 (0.0171)	-0.00619 (0.0146)	0.000225 (0.0125)	-0.0252 (0.0180)	-0.0139 (0.0122)
Not in labor force	-0.0161** (0.00605)	0.0422*** (0.0131)	-0.0268*** (0.00921)	-0.0315*** (0.00947)	-0.00227 (0.00768)	-0.0159** (0.00609)
Income	-0.00300*** (0.000743)	-0.00162 (0.00122)	-0.003*** (0.00102)	-0.00219** (0.000926)	-0.0038*** (0.00124)	-0.003*** (0.000734)
Age	-0.00340* (0.00178)	0.00470** (0.00200)	-0.0103*** (0.00259)	-0.00142 (0.00267)	-0.00524** (0.00214)	-0.00337* (0.00177)
Age squared	2.79e-05 (2.01e-05)	-5.52e-05** (2.28e-05)	9.1e-05*** (2.92e-05)	6.64e-06 (2.92e-05)	4.81e-05* (2.63e-05)	2.74e-05 (2.00e-05)
Married	-0.0248*** (0.00474)	-0.00611 (0.00939)	-0.0419*** (0.00614)	-0.0195*** (0.00632)	-0.0293*** (0.00583)	-0.0247*** (0.00479)
Female	-0.0905*** (0.00656)			-0.0871*** (0.00659)	-0.0946*** (0.00849)	-0.0905*** (0.00658)
Child (0-2 years)	-0.110*** (0.00888)	-0.0632*** (0.0113)	-0.157*** (0.0115)	-0.116*** (0.0136)	-0.106*** (0.0112)	-0.110*** (0.00888)
Child (3-5 years)	-0.0611*** (0.00590)	-0.0510*** (0.0114)	-0.0767*** (0.00792)	-0.0519*** (0.00975)	-0.0689*** (0.0109)	-0.0610*** (0.00592)
Child (6-12 years)	-0.0397*** (0.00614)	-0.0214* (0.0112)	-0.0592*** (0.00792)	-0.0510*** (0.00804)	-0.0286*** (0.00799)	-0.0398*** (0.00625)
Child (13-17 years)	-0.0137** (0.00540)	-0.0271*** (0.00927)	-0.00538 (0.00660)	-0.0165* (0.00867)	-0.0114 (0.0102)	-0.0137** (0.00542)
Illiterate	0.0194 (0.0543)	0.108 (0.0738)	-0.0726 (0.0615)	0.159** (0.0709)	-0.138** (0.0681)	0.0199 (0.0543)
Primary	0.0260 (0.0260)	0.104*** (0.0388)	-0.0632* (0.0364)	0.0419 (0.0307)	0.0131 (0.0480)	0.0246 (0.0256)
Middle school	0.0217 (0.0153)	0.0583* (0.0313)	-0.00438 (0.0149)	0.0403** (0.0174)	0.00170 (0.0244)	0.0215 (0.0153)
Degree	-0.0377*** (0.00571)	-0.0391*** (0.00979)	-0.0364*** (0.00704)	-0.0384*** (0.00690)	-0.0367*** (0.00969)	-0.0375*** (0.00571)
Post graduate	-0.0430*** (0.00672)	-0.0557*** (0.00992)	-0.0355*** (0.00848)	-0.0158* (0.00864)	-0.0670*** (0.0102)	-0.0428*** (0.00675)
State FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Constant	1.718***	1.488***	1.816***	1.708***	1.644***	1.718***
Observations	27,862	12,604	15,258	13,613	14,249	27,862
R-squared	0.056	0.034	0.066	0.051	0.048	0.056

Estimations using OLS method. The reference category in models 1-5 is natives. The reference category in model 6 is natives excluding second generation immigrants. Errors clustered at state level are in parentheses.\*\*\* p<0.01, \*\* p<0.05, \*

p<0.1

**TABLE 4.** Time Use and Meaningfulness (emotional perception of the average US resident)

VARIABLES	(1) All	(2) Men	(3) Women	(4) Week days	(5) Weekend	(6) All
Immigrant	-0.0222*** (0.00538)	-0.0199*** (0.00653)	-0.0260*** (0.00955)	-0.00754 (0.00639)	-0.0367*** (0.00844)	
YSM 1						-0.0279* (0.0159)
YSM 2						-0.0319*** (0.00623)
YSM 3						-0.00940 (0.0117)
Second generation						-0.00717 (0.0119)
Holiday/weekend	0.0346*** (0.00687)	0.0522*** (0.00915)	0.0215*** (0.00795)			0.0346*** (0.00687)
Good health	0.0855*** (0.00641)	0.0875*** (0.00812)	0.0794*** (0.0107)	0.0880*** (0.00720)	0.0850*** (0.00939)	0.0856*** (0.00644)
Unemployed	0.0773*** (0.0100)	0.0903*** (0.0137)	0.0554*** (0.0153)	0.0881*** (0.0171)	0.0678*** (0.0145)	0.0773*** (0.0100)
Not in labor force	0.00580 (0.00691)	-0.0557*** (0.0146)	0.0231*** (0.00843)	0.0255** (0.0112)	-0.0115 (0.0102)	0.00607 (0.00683)
Income	0.00432*** (0.000964)	0.00419*** (0.00110)	0.00409*** (0.00143)	0.00350** (0.00162)	0.00529*** (0.00127)	0.00425*** (0.000956)
Age	-0.00161 (0.00231)	-0.00376 (0.00269)	0.00129 (0.00266)	-0.00199 (0.00300)	-0.00119 (0.00290)	-0.00166 (0.00231)
Age squared	4.78e-06 (2.61e-05)	2.84e-05 (3.09e-05)	-2.35e-05 (3.08e-05)	4.34e-06 (3.36e-05)	4.51e-06 (3.34e-05)	4.62e-06 (2.61e-05)
Married	0.0289*** (0.00784)	0.0396*** (0.0114)	0.0228* (0.0114)	0.0103 (0.0111)	0.0445*** (0.0102)	0.0292*** (0.00781)
Female	0.0260*** (0.00473)			0.0373*** (0.00569)	0.0157** (0.00778)	0.0260*** (0.00471)
Child (0-2 years)	0.158*** (0.00833)	0.0594*** (0.0122)	0.230*** (0.0125)	0.164*** (0.0108)	0.151*** (0.0139)	0.158*** (0.00831)
Child (3-5 years)	0.0740*** (0.00937)	0.0641*** (0.0150)	0.0822*** (0.0117)	0.0786*** (0.0127)	0.0723*** (0.0127)	0.0742*** (0.00935)
Child (6-12 years)	0.0391*** (0.00845)	0.0207** (0.0101)	0.0502*** (0.0112)	0.0688*** (0.00953)	0.0117 (0.0119)	0.0392*** (0.00847)
Child (13-17 years)	0.0147* (0.00770)	0.0225** (0.0108)	0.00685 (0.00917)	0.0101 (0.0105)	0.0186* (0.0102)	0.0147* (0.00771)
Illiterate	-0.000186 (0.0639)	-0.0631 (0.0809)	0.0858 (0.0779)	-0.143*** (0.0514)	0.176* (0.0995)	0.000538 (0.0636)
Primary	-0.0832 (0.0580)	-0.155** (0.0654)	-0.00605 (0.0674)	-0.0512 (0.0478)	-0.112 (0.0909)	-0.0856 (0.0574)
Middle school	0.00687 (0.0182)	-0.0284 (0.0293)	0.0322* (0.0163)	-0.0117 (0.0253)	0.0275 (0.0236)	0.00720 (0.0181)
Degree	0.0184*** (0.00631)	0.0161* (0.00907)	0.0189** (0.00798)	0.0250** (0.00945)	0.0130 (0.00929)	0.0185*** (0.00636)
Post graduate	0.0187*** (0.00676)	0.0206* (0.0123)	0.0150 (0.00986)	0.0128 (0.00794)	0.0228* (0.0114)	0.0191*** (0.00675)
State FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Constant	3.767***	3.851***	3.703***	3.774***	3.790***	3.770***
R-squared	0.054	0.048	0.069	0.074	0.046	0.054
Observations	27,863	12,605	15,258	13,614	14,249	27,863

Estimations using OLS method. The reference category in models 1-5 is natives. The reference category in model 6 is natives excluding second generation immigrants. Errors clustered at state level are in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**TABLE 5.** Subjective feelings and population based feelings (based on 3 activities)

<b>PANEL 1: Estimations with a dummy immigrants</b>						
	(1)	(2)	(3)	(4)	(5)	(6)
Feeling:	Happiness		Stress		Meaningfulness	
	Subjective score	Average Population score	Subjective score	Average Population score	Subjective score	Average Population score
Immigrant	0.221*** (0.0220)	-0.0395*** (0.00672)	-0.0146 (0.0260)	0.0281*** (0.00954)	0.324*** (0.0240)	-0.0232*** (0.00506)
Constant	4.069*** (0.150)	4.215*** (0.0380)	1.564*** (0.127)	1.647*** (0.0373)	3.417*** (0.154)	4.235*** (0.0491)
R-squared	0.052	0.088	0.067	0.114	0.045	0.079
Observations	26,290	26,290	26,336	26,336	26,226	26,226
<b>PANEL 2: Estimations with dummies years since migration and second generation</b>						
	(1)	(2)	(3)	(4)	(5)	(6)
Feeling:	Happiness		Stress		Meaningfulness	
	Subjective score	Average Population score	Subjective score	Average Population score	Subjective score	Average Population score
YSM 1	0.351*** (0.0735)	-0.0538*** (0.0123)	-0.108* (0.0602)	0.0477** (0.0188)	0.478*** (0.0561)	-0.0145 (0.0150)
YSM 2	0.261*** (0.0300)	-0.0434*** (0.0113)	-0.0243 (0.0390)	0.0223 (0.0143)	0.355*** (0.0356)	-0.0394*** (0.00807)
YSM 3	0.135*** (0.0362)	-0.0327*** (0.00709)	0.00521 (0.0355)	0.0284*** (0.0106)	0.257*** (0.0399)	-0.00567 (0.00900)
Second generation	0.0641 (0.0406)	-0.0172 (0.0106)	-0.143** (0.0593)	0.00300 (0.0145)	0.154*** (0.0488)	0.00315 (0.0157)
Constant	4.041*** (0.155)	4.220*** (0.0384)	1.600*** (0.133)	1.645*** (0.0360)	3.372*** (0.162)	4.235*** (0.0496)
R-squared	0.053	0.088	0.068	0.114	0.045	0.079
Observations	26,290	26,290	26,336	26,336	26,226	26,226

Estimations using OLS method. The reference category in Panel 1 is natives. The reference category in panel 2 is natives excluding second generation immigrants. In columns (1), (3) and (5) the dependent variable is specified as the subjective feelings as in eq. (2) while in columns (2), (4) and (6) the population average is used as specified in eq. (1). All independent variables, state fixed effects and year fixed effects are included in the estimations. Errors clustered at state level are in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1



TABLE 6. Differences in subjective feelings between immigrants and natives (aggregated time-use categories).

Time-use aggregate categories	(1) Happiness			(2) Stress			(3) Meaningfulness			(4) Minutes spent in each activity		
	Immigran t	Native	Difference	Immigran t	Native	Difference	Immigrant	Native	Difference	Immigran t	Native	Difference
	Mean	Mean	(Imm- nat.)	Mean	Mean	(Imm- nat.)	Mean	Mean	(Imm.- nat.)	Mean	Mean	(Imm- nat.)
Non household adult care	<b>5.07<sup>4</sup></b>	4.31	0.76***	1.23	1.57	-0.34	4.33	4.60	-0.27	62	58	4
Research and homework	<b>3.89<sup>23</sup></b>	<b>3.19<sup>23</sup></b>	0.7***	<b>2.86<sup>1</sup></b>	<b>2.94<sup>1</sup></b>	-0.08	<b>5.41<sup>2</sup></b>	4.36	1.05***	<b>144<sup>2</sup></b>	<b>135<sup>3</sup></b>	9
Household adult care	4.89	4.2	0.69*	<b>1.81<sup>3</sup></b>	<b>1.91<sup>4</sup></b>	-0.1	5.00	4.68	0.32	42	30	11
Household child education	4.82	4.2	0.62**	1.45	<b>2.02<sup>3</sup></b>	-0.57**	5.02	<b>5.34<sup>2</sup></b>	-0.32	67	62	6
Volunteer	<b>5.38<sup>2</sup></b>	<b>4.76<sup>5</sup></b>	0.61***	1.23	1.26	-0.03	4.56	4.8	-0.24	39	36	3
Home maintenance	4.56	3.97	0.59***	1.23	1.44	-0.21***	4.46	4.04	0.42***	88	77	11**
Travel for education	4.39	3.81	0.58*	1.3	<b>1.89<sup>5</sup></b>	-0.6	5.19 <sup>4</sup>	4.58	0.61***	22	17	5***
Cleaning and laundry	4.33	3.77	0.56***	<b>1.61<sup>5</sup></b>	1.33	0.29***	4.37	3.77	0.6***	92	79	12***
Non household childcare	<b>5.71<sup>1</sup></b>	<b>5.17<sup>1</sup></b>	0.54**	1.02	1.13	-0.11	<b>5.23<sup>3</sup></b>	<b>5.47<sup>1</sup></b>	-0.23	47	67	-20
Food preparation	4.58	4.21	0.37***	1.48	1.25	0.23***	4.77	4.19	0.58***	43	34	9***
Pet care (excl. walking dogs)	4.75	4.38	0.37**	1.23	1.07	0.16	4.79	4.66	0.13	36	28	8**
Travel (caring for children/adults)	4.84	4.47	0.37***	1.34	1.45	-0.11	4.42	3.75	0.67***	18	20	-1
Purchasing	4.48	4.13	0.35***	1.41	1.41	0.00	4.44	3.77	0.67***	55	39	16***
Travel (person./purch./household)	4.59	4.28	0.31***	1.56	1.24	0.32	<b>5.63<sup>1</sup></b>	4.82	0.8**	<b>115<sup>3</sup></b>	<b>156<sup>2</sup></b>	-41
Household childcare	<b>5.09<sup>3</sup></b>	<b>4.79<sup>3</sup></b>	0.30**	1.17	1.35	-0.18***	<b>5.23<sup>3</sup></b>	<b>5.18<sup>3</sup></b>	0.04	44	37	8***
Travel (religious/volunteer/civic)	4.97	4.67	0.30**	0.95	1.12	-0.18	4.82	4.41	0.41***	19	19	0
Commuting	4.31	4.02	0.29***	<b>1.68<sup>4</sup></b>	1.67	0.01	4.89	3.39	1.5***	23	21	2
Doing sports	<b>5.06<sup>5</sup></b>	<b>4.77<sup>4</sup></b>	0.29***	1.0	0.84	0.16	5.07	<b>5.00<sup>5</sup></b>	0.07	74	<b>97<sup>5</sup></b>	-23***
Relaxing and leisure	4.49	4.25	0.24***	1.27	1.11	0.16***	4.11	3.69	0.42***	<b>111<sup>4</sup></b>	<b>115<sup>4</sup></b>	-4
Eating and drinking	4.76	4.52	0.24***	1.25	1.12	0.13***	4.74	4.39	0.34***	37	36	1
Work	4.11	3.89	0.21***	<b>2.25<sup>2</sup></b>	<b>2.26<sup>2</sup></b>	-0.01	4.59	4.35	0.24***	<b>218<sup>1</sup></b>	<b>221<sup>1</sup></b>	-3
Socializing	5.01	<b>4.81<sup>2</sup></b>	0.2***	0.92	1.06	-0.13	<b>5.13<sup>4</sup></b>	<b>5.01<sup>4</sup></b>	0.13	<b>104<sup>5</sup></b>	92	12**
Travel (other)	4.64	4.48	0.16***	1.3	1.15	0.15***	4.62	3.72	0.9***	48	37	11

For this analysis, we aggregated the information of around 400 activities into 60 activities. Due to space limitations, we have included the top 23 activities (out of a total of 60 activities) that exhibit the highest and statistically significant differences in happiness. The activities are ranked based on the absolute value of differences between happiness scores of immigrants and natives, and the superscript number indicates their position in the feelings' rank, ranging from 1-min to 6-max. T-test significance levels: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Appendix

**Table 1A.** Definition of the variables

VARIABLES	DEFINITION	SOURCE
<b>Dependent variables</b>		
$F_i$	Feelings (happiness, stress and meaningfulness), as assessed by indexes 1 and 2.	ATUS WB modules
<b>Explanatory and control variables</b>		
<i>Immigrant</i>	Respondent is born abroad from foreign-born parents.	ATUS
<i>YSM1</i>	<= 6 years in the U.S.	
<i>YSM2</i>	Between 7 and 20 years in the U.S.	
<i>YSM3</i>	> 20 years in U.S.	
<i>Second generation</i>	Individual born in U.S. with parent foreign-born	
<i>Age</i>	Age in years	-//-
<i>Age squared</i>	The square of age.	-//-
<i>Married</i>	Dummy equal to 1 if the respondent is married, 0 otherwise.	-//-
<i>Female</i>	Dummy equal to 1 for female, 0 otherwise.	
<i>No children, children</i>	5 dummy variables equal to 1 if the respondent has a child in these age groups, 0 otherwise.	-//-
<i>0-2 years, children</i>		
<i>3-5 years, children</i>		
<i>6-12 years, children</i>		
<i>13-17 years</i>		
<i>Less than secondary</i>	6 dummy variables for each of the educational level specified.	-//-
<i>Secondary, Degree, Post graduate</i>		
<i>Good health</i>	Dummy equal to 1 if reported health is good, very good or Excellent, and 0 otherwise.	
<i>Employed</i>	In the reference week, worked at least 1 h as a paid employee or self-employed.	
<i>Unemployed</i>	Individual available for work at the reference week and those making an effort to find a job in the 3 weeks preceding the reference week.	
<i>Not in labor force</i>	Individual that had not actively looked for a job in the 3 weeks preceding the reference week.	
<i>Holiday/weekend</i>	Dummy equal to 1 if the diary day is (Saturday, Sunday, New Year's Day, Easter, Memorial Day, 4 <sup>th</sup> of July or Christmas), 0 otherwise.	-//-
<i>Income</i>	A variable for household income ranging from 1 (lowest range <5,000\$) to 16 (highest range > 150,000\$)	-//-

**TABLE 2A.** Subjective feelings and population based feelings (based on 3 activities), by gender and day of the week

<b>PANEL 1: MEN</b>						
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Subjective Happiness	Happiness interacted	Subjective Stress	Stress Interacted	Subjective Meaningfulness	Meaningfulness Interacted
Immigrant	0.213*** (0.0380)	-0.0357*** (0.00995)	0.0806** (0.0364)	0.0420*** (0.0126)	0.335*** (0.0432)	-0.0263*** (0.00812)
Constant	4.049*** (0.176)	4.144*** (0.0334)	1.474*** (0.175)	1.704*** (0.0481)	3.485*** (0.206)	4.170*** (0.0556)
R-squared	0.058	0.095	0.071	0.128	0.045	0.083
Observations	11,869	11,869	11,893	11,893	11,843	11,843
<b>PANEL 2: WOMEN</b>						
Immigrant	0.227*** (0.0317)	-0.0405*** (0.00740)	-0.0989* (0.0515)	0.0129 (0.00979)	0.309*** (0.0425)	-0.0202** (0.00872)
Constant	4.215*** (0.182)	4.281*** (0.0535)	1.741*** (0.165)	1.597*** (0.0419)	3.532*** (0.197)	4.342*** (0.0661)
R-squared	0.049	0.086	0.066	0.105	0.042	0.075
Observations	14,421	14,421	14,443	14,443	14,383	14,383
<b>PANEL 3: WEEKDAY</b>						
Immigrant	0.244*** (0.0392)	-0.0231** (0.00892)	-0.00182 (0.0369)	0.00177 (0.0121)	0.319*** (0.0342)	-0.0175** (0.00862)
Constant	3.979*** (0.196)	4.252*** (0.0400)	1.597*** (0.0419)	1.315*** (0.209)	3.523*** (0.176)	4.236*** (0.0573)
R-squared	0.046	0.060	0.046	0.073	0.043	0.095
Observations	12,794	12,794	12,813	12,813	12,758	12,758
<b>PANEL 4: WEEKEND/HOLIDAY</b>						
Immigrant	0.199*** (0.0284)	-0.0559*** (0.00964)	-0.0235 (0.0305)	0.0543*** (0.0101)	0.328*** (0.0306)	-0.0292*** (0.0105)
Constant	4.358*** (0.182)	4.316*** (0.0567)	1.374*** (0.149)	1.497*** (0.0539)	3.328*** (0.193)	4.246*** (0.0591)
R-squared	0.049	0.054	0.066	0.025	0.050	0.072
Observations	13,496	13,496	13,523	13,523	13,468	13,468

Estimations using OLS method. The reference category is natives. All independent variables, state fixed effects and year fixed effects are included in the estimations. Errors clustered at state level are in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1