Cities 89 (2019) 228–242

Contents lists available at ScienceDirect

Cities

journal homepage: www.elsevier.com/locate/cities

Do cities or suburbs offer higher quality of life? Intrametropolitan location, activity patterns, access, and subjective well-being

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A B S T R A C T

Critics deride American suburbs as dull, aesthetically displeasing, socially isolating, unhealthy, environmentally unsound, and lacking in accessibility. However, the dramatic shift of the American population to the suburbs in the post-WWII period suggests suburban living may have advantages. Using data from the American Time Use Survey, this paper examines whether residence in a principal city versus the suburbs offers a more emotionally satisfying lifestyle. First, the findings show that demographically similar city residents and suburbanites engage in a very similar amount and composition of out-of-home activities. Second, the ratio of travel time to activity time for specific travel/activity couplets is lower for city residents for a few activities, and lower for suburbanites for others, but on the whole the differences in accessibility implied by these travel time prices are minor. Third, the activities in which city residents and suburbanites engage are associated with very similar degrees of subjective well-being (SWB), including both life satisfaction and affect. The most noteworthy difference between the two geographies is that suburbanites have modestly but measurably higher SWB than demographically similar urbanites in terms of feelings of happiness (hedonic affect), a sense of meaning (eudaimonic affect), and life satisfaction. These findings suggest that there may be advantages to suburban living.

1. Introduction

American suburbanization has many critics. Books such as *Suburban Nation* (Duany, Plater-Zyberk, & Speck, 2010) and *The Geography of Nowhere* (Kunstler, 1993) excoriated the suburbs for many alleged failings: erosion of community life, unappealing aesthetics, sedentary lifestyles, excessive energy consumption, chain retailing and the demise of mom-and-pop stores, autodependence, and much else. Not least, many observers feel suburban life is, quite simply, dull. As a result, many have hailed a possible trend toward a return to urban living, particularly by the Millennial generation, due in part to their purported preferences for more lively urban settings (see Myers (2016) and The Economist (2018)). Ehrenhalt (2012) labeled this "The Great Inversion."

Presumably, stultifying suburban life should in part be a product of inferior access to out-of-home activities. Many view urban areas as providing superior access due to the presence of amenities like trendy cafes, bookstores, live music venues, museums, etc. Given higher densities, mixed land uses, and the radial nature of most rail transit systems, cities are also held to offer better accessibility due to more transportation choices, such as walking, transit, and bicycling.

On the other hand, revealed preferences show Americans have "voted with their feet"—only 13% of Americans lived in suburbs before World War II, while more than half did in 2010 (Nicolaides & Wiese, 2017). Unless this is a product of imperfect information, flawed decisionmaking, or distortions caused by government policy, this suggests that suburban living may offer a higher quality of life. Herbert Gans (1967) suggested the suburbs may not be the cultural wasteland commonly depicted. To many, suburbs offer newer housing, ample space, better schools, lower crime, a better chance of homeownership, and less pollution. This paper addresses the question of whether cities or suburbs in the United States offer higher quality of life, particularly as mediated through the lens of access as reflected by travel to, and participation in, out-of-home activities. Do city dwellers have all the fun, or are the suburbs the best place to find what is good in life?

2. Prior literature

Extensive prior study has examined the links between urban geographic characteristics, such as centrality and population density, and travel behavior, including trip frequencies, distances, modes, and durations. To give but two examples among many, see the meta-analyses on this question by Ewing and Cervero (2010) and Stevens (2017). However, study of the links between intraurban location and the activity participation which travel fosters has been far more limited. Fan (2007) investigated this question and found few significant links between out-of-home time, and also specifically leisure time, and neighborhood characteristics. However, she did find more connected street networks are associated with longer out-of-home activity participation; she also found a link between more local auto traffic density and engagement in more out-of-home activities. Chen and McKnight (2007), studying homemakers in the New York area, found that Manhattanites

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https://doi.org/10.1016/j.cities.2019.02.012
Received 9 September 2018; Received in revised form 14 February 2019; Accepted 18 February 2019
Available online 07 March 2019

engage in more discretionary activities but fewer maintenance activities than those in the outer boroughs or the suburbs. They noted, however, that location is a minor factor compared with other characteristics that influence activity patterns, such as sociodemographics. Ettema, Schwanen, and Timmermans (2007) found that higher-density areas reduce time constraints and result in more out-of-home activity participation, though the impact of location is weak compared with other factors; further, the relationships may differ by gender. Schwanen, Kwan, and Ren (2008) found that, for women, living in a denser area results in fewer constraints on where and when activities take place. Although their findings were nuanced and complex, Schwanen, Ettema, and Timmermans (2007) found weak-to-nonexistent links between core urban area location and the frequency of participation in out-of-home activities in general, though they did find higher activity participation by men in areas of higher employment density, and less engagement in personal business but more shopping for convenience goods in city centers. Wang, Chai, and Li (2011) also disaggregated by gender, finding that neighborhood type in Beijing influences activity participation, particularly for men. Levinson (1999) found population density to be a very weak predictor of out-of-home activity time. Wang and Lin (2013) found that the built environment and housing type (public versus private) significantly predict out-of-home time, and while population density and higher accessibility might have a negative association with out-of-home time, they may also be associated with more social contacts.

This raises the issue of suburbanization and access to other people. Detractors of suburban living have argued that suburbanization has reduced social connectedness and fostered isolation and loneliness. There are several mechanisms through which this is said to occur. First, isolation is said to take place due to land use and development patterns, particularly due to suburbs' tendency to “sprawl.” American suburbs are more likely to exhibit design features such as low densities; single-family homes; coarse-grained zoning that separates land uses of different types; and winding, indirect street networks featuring many cul-du-sacs in residential areas, plus heavily trafficked, difficult-to-walk arterials (Duany et al., 2010; Jackson, 1987; Kunstler, 1993). Conversely, cities are more likely to feature multifamily housing, gridiron street patterns, and mixed uses (Jacobs, 1961; Sander, 2002; Talen, 1999). (Census data on the principal city versus suburban geographies used in this paper, presented in Table 1 below, confirms the generalization that in the aggregate the suburbs are lower density and have more single-family homes.) All of these characteristics are said to promote auto travel in the suburbs, which has been held to be a “cocooning” mode that eliminates the possibility of serendipitous social encounters. and which may be more time-consuming (Glaeser & Gottlieb, 2006; Kunstler, 1993; Putnam, 2001). (Again, Census data on the suburban and urban geographies presented in Table 1 below confirm that principal city dwellers are less likely to drive rather than taking transit and walking to work.) Further, the single-family homes more prevalent in the suburbs may make it less likely that individuals meet their neighbors, and gated communities may keep others, particular those of different races, ethnicities, and social classes, out of the neighborhood (Danielsen & Lang, 1997; Fishman, 1987; Jackson, 1987; Kunstler, 1993; McKenzie, 1996; Putnam, 2001). Suburban political arrangements, which often include fiscalized, exclusionary zoning and land-use regulations promoting more upscale development, may reduce connectedness with socioeconomically different others (Danielsen & Lang, 1997; Fischel, 2005; Kunstler, 1993; Oliver, 1999; Orfield, 2002; Tiebout, 1956).

However, empirical evidence on suburbs, cities, and social connectedness has been mixed. Putnam (2001) maintained that there is a “‘sprawl civic penalty’ of roughly 20 percent on most measures of community involvement” and that “the direct civic penalty associated with sprawl probably accounts for something less than one-tenth of the total [civic] disengagement” that he outlines (p. 215). However, studies which have attempted to test this assertion have arrived at ambiguous results, particularly as they used different measures of social connectedness and capital. Oidjarv (2018) found higher self-reported feelings of social connectedness in an urban Chicago neighborhood compared to a suburb, and Boessen, Hipp, Butts, Nagle, and Smith (2018) found that population density is positively related to more social ties. However, other results have been more mixed. For example, Kamruzzaman et al. (2014) found that transit-oriented developments (with transit access, high job and employment density, land use diversity, and street connectivity) have higher trust and reciprocity and connections between neighborhoods, but that much of this is due to residential self-selection. Boessen et al. (2018) found that street network connectivity and the prevalence of multi-family housing are associated with stronger social ties in some settings but not others. Wickes, Zahnow, Corcoran, and Hipp (2019) found a link between land use mix and social cohesion, but not between social cohesion and fewer high-speed roads. Leyden (2003) and Lund (2003) found that people living in traditional, walkable, mixed-use neighborhoods may have stronger social connections, but not in all circumstances and not for all forms of social ties. Mason (2010) found that sidewalks are associated with more trust among neighbors, but so are cul-du-sacs.

Further, a number of researchers have failed to unearth any link between social capital and things like neighborhood walkability (Hanibuchi et al., 2012), population density (Freeman, 2001), and the presence of big box retail (Carden, Courtemanche, & Meiners, 2009). In fact, some studies have actually found a positive association between various manifestations of social life and characteristics of sprawl, such as low densities (Brueckner & Largey, 2008; Glaeser & Gottlieb, 2006; Nguyen, 2010), less connected street networks (Mason, 2010; Nguyen, 2010), and walkability (du Toit, Cerin, Leslie, & Owen, 2007; Jun & Hur, 2015; Wood, Giles-Corti, & Bulsara, 2012). In terms of the city/suburbs dyad studied in this paper, Williamson (2002) found that city living is associated with higher political engagement but not more social capital. Morris and Pfeiffer (2017) found few links between urban versus suburban location and the amount of time spent engaging in many kinds of social activities, both formal and informal, when demographics are controlled for. Finally, Glaeser and Gottlieb (2006) found very little, if any, difference between city and suburban dwellers across a range of measures of social connectedness. In sum, prior findings on the relationships between social connectedness and urban design, density, autodependence, and political fragmentation, as well as living in the suburbs versus the city, have been inconclusive.

In all, inquiry into the built environment, intraurban location, and activity patterns has been rather sparse. Further, relationships between residential location and activity participation have often been insignificant, and when significant have been often difficult to explain and contradictory, and have not consistently pointed to better access across a range of activity types associated with either urban or suburban living. There are shortcomings in the current body of research: studies have often been confined to restricted geographies, models have often included only a limited number of very broad activity categories, and the data have often had only limited indicators of the built environment. Finally, the research for this paper only uncovered a few papers which specifically investigated out-of-home activity patterns in cities versus their suburbs, or central versus peripheral locations, as opposed to related, but distinct, characteristics such as population density and job accessibility. This paper addresses these gaps by using a large data set that is very representative of the US population, finely disaggregated activity definitions that cover a very large majority of out-of-home time, and novel methods for gauging accessibility that include an analysis of both activity time and the travel time necessary to engage in those activities.

What does the evidence show about cities, suburbs, and happiness, or “subjective well-being” (SWB), in American metropolitan areas? Berry and Olulicz-Kozaryn (2011), using data from the U.S. General Social Survey gathered between 1972 and 2008, found suburban residence is associated with higher SWB. However, Okulicz-Kozaryn and Mazelis (2018), using data from the U.S. Centers for Disease Control

and Prevention, found no significant difference in SWB between suburbs and their cities, nor, using data from Detroit, did Adams (2006). Du, Wood, Ditchman, and Stephens (2017) found residents of downtown high-rises in Chicago have higher SWB than residents of suburban low-rises.

Pfeiffer and Cloutier (2016) and Wang and Wang (2016b) reviewed evidence on how neighborhood characteristics contribute to SWB; though space limitations here preclude discussion of all the work they cited, the reader is referred to their papers for references to specific studies. Broadly, they concluded that the body of evidence suggests that higher SWB is associated with higher property values, lower population densities, and better amenities such as schools or hospitals. There are strong links between SWB and neighborhood safety, as well as access to green space. Quiet and a lack of pollution are also associated with higher SWB. All of these characteristics are typically associated with suburban living. Overall, study on the links between SWB and city population, social ties, and transportation access has been inconclusive. The body of research into the links between SWB and other neighborhood characteristics (such as housing condition and housing diversity) is not well-developed.

As with the evidence on activity patterns and intraurban location, there is considerable scope to build upon inquiries into urban/suburban living and SWB. As has been noted, only four papers have studied differences in SWB across U.S. cities and their suburbs (for more on international studies, see below), and two of these were drawn from extremely restricted geographies. Further, the two papers with large and nationally representative data sets reached conflicting findings.

Finally, the extant studies focus only on life satisfaction. This is only one component of SWB, which since Andrews and Withey (1976) has often been conceptualized as also consisting of affect (immediate mood during activities); affect in turn is generally subdivided into positive affect (emotions such as joy and elation) and negative affect (emotions such as stress and fatigue), which though correlated are distinct and independent constructs. Further, no study considering the links between intraurban location and happiness has specifically examined happiness in both its "hedonic" and "eudaimonic" aspects. A large body of literature makes use of this distinction; a Google Scholar search returns 187 hits for papers and other scholarly texts that contain both "hedonic" and "eudaimonic" in the title, and returns 15,100 hits for texts containing these words somewhere in the body. A useful introduction to these concepts appeared in Ryan and Deci (2001). Briefly, the view of happiness as hedonism runs back as least as far as the fourth century B.C. Greek philosopher Aristippus, and has continued to flow forward through the work of thinkers such as Hobbes and Bentham. Perhaps the most influential modern exposition of this school of thought came from Kahneman, Diener, and Schwarz's (1999) edited volume. Briefly, the hedonic school maintains that happiness consists of maximizing pleasure and the fulfillment of self-interest, while minimizing pain or unpleasantness; this includes psychological and cognitive pleasure and pain as well as the physical sort. What constitutes pleasure and pain is up to each individual to decide, which means that "the goals through which well-being is enhanced can be highly idiosyncratic and culturally specific [and] would also seem to fit well within a relativistic, postmodern view" (Ryan & Deci, 2001). In contrast, the concept of "eudaimonia" flows ultimately from the thought of Aristotle and has been echoed by thinkers such as John Stuart Mill. This school of thought denigrates living for what are perceived to be vulgar and selfish goals, instead maintaining that life should be lived in pursuit of higher and more noble virtues, as determined objectively and not based on the subjective whims of the individual. Numerous criteria for living the "good life" have been proposed, but to give one example, Ryff (1989) outlined eudaimonia as being comprised of six different states: "self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth" (p. 1069). See the Ryan and Deci review for references to more authors on the hedonic and eudaimonic perspectives.

The import of whether the hedonic or eudaimonic conception of happiness is the "correct" one is of more than theoretical importance. "Happiness" is generating considerable interest on the part of governments worldwide who are seeking to move beyond maximizing GDP to plan more broadly for citizen welfare. The choice of which version of happiness is most worth pursuing is thus of considerable importance for policymaking. However, no paper has specifically addressed the hedonic versus eudaimonic perspectives when examining possible links between SWB and city versus suburban living.

This paper fills this and other key gaps in the literature. In addition to addressing all of these questions using a large and nationally representative data set that has not been applied to these issues before, and examining intraurban location and SWB in both its hedonic and eudaimonic conceptions, this inquiry is the first to specifically examine SWB and intraurban location with a special focus on the potential mediating role played by activity participation and access. It does this by examining not only the links between access, activities, and city versus suburban living, but also how the activities of suburbanites may contribute differently to well-being than the activities of urbanites do. No inquiry has conducted such an analysis, which draws together formerly disconnected tracks of prior research and thus provides a novel look at these questions.

3. Data

The data used in this paper are drawn from the American Time Use Survey (Bureau of Labor Statistics, 2016; Hofferth, Flood, & Sobek, 2018). Conducted by the U.S. Bureau of Labor Statistics and Census Bureau, the ATUS queries roughly 13,500 Americans per year about how they spent their time on the day prior to the survey interview. The interviewers assist respondents in reconstructing their activities, and then code the activities; at the finest level of disaggregation, the ATUS has over 450 separate activity categories. The ATUS and Current Population Survey (CPS) also collect data on basic demographics, including variables commonly used in social science model specifications. Many of these are used as covariates in the models below. Intrametropolitan location, the variable of interest in this paper, is assigned based on geographies created by the Census. The survey has been conducted each year since 2003. Because physical health is used as a covariate in the models below, and was only collected from 2006 to 2016, excluding 2009, the activity and travel time price models below use data from only those years.

In 2012 and 2013, the survey included the Cantril Ladder life satisfaction question (Cantril, 1965), which asked respondents to rate their quality of life on a 0–10 scale. In addition, in 2010, 2012 and 2013, each respondent was asked about the intensity with which they felt six different emotions, or manifestations of affect, during three of the activities in which they participated on the study day. These emotions were happiness, sadness, pain, fatigue, stress, and a sense of meaningfulness, all scored on a 0–6 scale with 6 being feeling the strongest intensity of the emotion.

The sample includes over 71,000 individuals in the activity participation models, almost 15,000 individuals in the life satisfaction models, and almost 70,000 individual activities in the affect models. Thus sample sizes are more than adequate for finding statistical significance given more than trivial effect sizes.

Data on overall activity time per day was obtained from the ATUS-X Data Extract Builder (Hofferth et al., 2018). A component of the IPUMS data project administered by the Maryland Population Research Center and the Minnesota Population Center, this site simplifies working with the ATUS data, allowing the creation of variables that reflect total time spent on various activities during the study day. It also allows the attachment of various demographic and geographic variables to the time use records, including, for the purposes of this study, the intraurban location variable and the life satisfaction variable. See the ATUS-X site (https://www.atusdata.org/atus/) for full documentation.

For the analysis of affect during specific activities, data were accessed directly from the ATUS site (Bureau of Labor Statistics, 2016). Specifically, the pooled multi-year well-being module files were used (see https://www.bls.gov/tus/wbdatafiles.htm). The ATUS site has more information on that data set, as well as the ATUS in general. Activity types were identified using the codebook provided by the ATUS. The record associated with each activity contained the affect scores reported for that activity. These data were supplemented by marrying the records of individual activities with data from the person-records provided by the ATUS-X, matched based on respondents' personal ID numbers.

4. Conceptual framework

The analysis below proceeds in five parts. First, basic Census and American Community Survey data on the principal city versus suburban geographies used in this paper are presented to explore whether this dyad meaningfully describes what we intuitively feel characterizes urban versus suburban America. This section also outlines the results of a probit regression using the ATUS data which shows which demographic variables predict the propensity to live in cities as opposed to the suburbs. The next section presents the results of the modeling of out-of-home activity patterns, with city versus suburban living as the independent variable of interest. Separate regressions model time spent on 17 different out-of-home activities, plus all out-of-home activities, excluding travel, aggregated. These time uses cover almost 99% of out-of-home activity time. The principle that guides this analysis is that if cities, or suburbs, provide better access to activities, or higher-quality activities, we should observe higher activity times in one geography or the other on the grounds that people should consume more of a good if it is more plentiful, lower-cost, and/or higher quality.

This analysis is conducted using Cragg two-part hurdle models (Cragg, 1971). The first part is a probit model that shows which characteristics are associated with participation (yes or no) in a given activity on a given day. The second part is a truncated OLS model which shows which characteristics are associated with activity duration conditional on the activity being performed, using data only from those who engaged in the activity. Most models use the log of conditional activity time to correct for skewed distributions. In addition to making tractable a data set with large numbers of zeroes (most respondents participated in many activities for zero minutes on the study day), the Cragg method is well-suited to modeling a phenomenon governed by two separate decision-making processes, as is the case with activity participation. For example, one person may decide to go to the movies more frequently than another, but that does not necessarily mean that that person also chooses to go to longer movies. The Cragg method models such decisions separately.

To render the results more interpretable, the model results are used to generate predictions for unconditional activity time, i.e., the average number of minutes people are predicted to engage in an activity on a given day. Activity times are predicted for a hypothetical city dweller and a hypothetical suburbanite, using the average marginal effects method (the values of the set of covariates for each individual member of the sample are used to generate predictions for activity time if that individual lived in the city and if they lived in the suburbs, and so on throughout the sample, and then the predictions are averaged across the sample). For each individual, the prediction of unconditional time is generated by multiplying the predicted probability of taking part in the activity by the predicted conditional activity time.

All analyses in this paper were run using Stata Version 14.2. The "churdle" command runs the hurdle model. See the Stata documentation for more information about this command and hurdle models more generally (Stata Press, 2017). The "margins" command was used to generate the predictions. Again, see the Stata documentation for more on this.

Third, the paper presents the results of models that examine access by observing how city versus suburban residence affects the "travel time prices" associated with 17 different activity/travel couplets, using OLS regression. (The Stata command "regress" was used (Stata Press, 2017).) The travel time price is the ratio of travel time required to engage in an activity divided by amount of time spent participating in that activity. (Note, the log of the prices is taken to correct for rightward skew.) The travel time price may be thought of as the number of travel minutes needed to "buy" an activity minute. It is calculated for those who both participated in an activity and reported travel time for that purpose. This analysis rests on the presumption that on the whole people seek to minimize their travel time. In addition, it is presumed that for the most part engaging in more of an activity is preferable to less. Thus lower travel time prices are taken to be preferable to higher ones, and to reflect better levels of access.

Fourth, a set of models examines life satisfaction using OLS regression to see if city dwellers or suburbanites have higher SWB. In some models, the city residence variable is interacted with the various types of activity participation to see if the out-of-home activities of urbanites contribute more or less to life satisfaction than those of suburbanites. Finally, a similar analysis examines how urbanites and suburbanites experience affect, both overall and during specific activity types. To do so, the models include two emotions asked about by the ATUS as dependent variables: these are the "happy" emotion and the "meaningful" emotion. The reported "happy" score is taken to be evidence of hedonic affect (whether the activity was pleasurable) and the "meaning" score to reflect eudaimonic affect (whether the activity contributed to deeper fulfillment and progress toward attaining goals and achieving self-realization). To investigate affect, the modeling capitalizes on the fact that the ATUS records contain three observations per respondent. This allows the employment of random-effects panel models using Stata's "xtreg" command with the "re" option (Stata Press, 2017), which make comparisons both within individuals (comparing the affect scores for the three activities for which each person reported affect) while simultaneously producing estimates of the effects across individuals of those variables that do not differ within individuals (such as age, income, race, and, of course, city and suburban residence).

5. The city versus suburban geographies

The U.S. Census Bureau assigns Americans to one of four geographies: 1) the principal city or cities in a Metropolitan Statistical Area (MSA), 2) in an MSA but outside the principal city or cities, which for convenience is referred to here as the "suburbs," 3) in an MSA where city versus suburbs is not assigned, and 4) outside of an MSA. Those in groups 3 and 4 are excluded from the models in this paper. Respondents in group 3 typically live in small MSAs where the Census does not distinguish between principal city and suburbs. This is the case for nearly all respondents in the sample who lived in MSAs with populations under 250,000, and for nearly 28% of the sample who lived in MSAs with a population between 250,000 and 500,000. Nearly all residents of MSAs with over 500,000 people are in groups 1 or 2. Of the respondents in groups 1 and 2, roughly 39% lived in principal cities and 61% in suburbs. This almost exactly matches the distribution in the 2010 Census.

"Principal cities" as defined by the Census include the single most populous incorporated place in each MSA. Additional places may also receive the "principal city" designation, if they have 1) at least 250,000 residents and 100,000 jobs, 2) between 50,000 and 250,000 residents and more jobs than working residents, and 3) between 10,000 and 50,000 residents where the number of jobs exceeds the number of working residents and where the place has at least one-third the population of the main principal city. For example, in the New York-Newark-Jersey City MSA, New York City, Newark, Jersey City, Lakewood, New Brunswick, and White Plains are all "principal cities."

Table 1 displays descriptive statistics for the geographies taken from the 2010 Census and the 2015 American Community Survey. The

Table 1
City versus suburbs characteristics.
Sources: United States Census 2010 and American Factfinder 2015, accessed through the Missouri Census Data Center.

	City	Suburbs
Population	100,743,583 (39.0% of population)	157,575,180 (61% of population)
Population density-persons/sq. mile (persons/sq. km)	2754 (1063)	180 (70)
Demographics		
Median age	34.7	39.2
Race/ethnicity		
Pct. white	61.7	77.0
Pct. black	18.8	10.0
Pct. Asian	7.1	4.2
Pct. Hispanic, any race	24.0	16.2
Pct. born in U.S.	81.2	87.2
Avg. household size	2.58	2.74
Marriage		
Pct. never married	41	30.4
Pct. married	40.2	51.4
Pct. separated	2.4	1.8
Pct. widowed	5.3	5.8
Pct. divorced	11.1	10.6
Pct. families with children	26.3	29.8
Education		
High school graduate or higher	85.1	88.8
Bachelor's degree or higher	33.9	31.8
Work and income		
Median household income	$50,754	$63,003
Per capita income	$29,624	$31,928
Pct. below poverty line	19.1	11.4
Pct. in labor force	64.8	63.8
Pct. full-time workers (male)	56.2	57.9
Pct. full-time workers (female)	43.8	42.1
Transportation		
Commute mode		
Pct. drive alone	69.2	80.2
Pct. carpool	9.0	8.7
Pct. public transportation	10.6	3.0
Pct. walk	4.3	1.8
Pct. other commute mode	2.5	1.4
Pct. work at home	4.5	4.8
Mean travel time to work (mins.)	25.7	27.9
Pct. no vehicles in household	15.2	5.5
Housing		
Pct. owner occupied	48.5	70.2
Pct. in multi-family dwellings	43.6	20.1
Percent vacant housing units	10.8	10.5
Approx. avg. year homes built	1971	1980
Median home value	$205,300	$218,200
Median gross rent	$983	$1023
Pct. housing crowded (> 1 persons/room)	4.8	2.9
ICT access		
Pct. no Internet	12.7	10.0

principal cities have far higher population densities, though the figure for the suburbs is doubtless deflated by the inclusion of unpopulated areas such as mountains or forest. (Water area, however, is not included.) City residents tend to be younger, and are more likely to be minorities, born outside the U.S., unmarried, childless, lower-income, and below the poverty line. They are more likely to take transit or walk to work, live in zero-vehicle households, have shorter commutes, rent instead of own their housing, live in older housing, live in more crowded housing (more people per room), live in multifamily housing, and live in lower-value housing (in terms of both home values and rents). They are less likely to have Internet access. All of these findings fit the stereotypes about urban versus suburban dwellers in the U.S.

To further explore differences across the two geographies, this time specifically in the sample used in this paper, a probit model (run using the Stata command “probit” (Stata Press, 2017)) predicting principal city as opposed to suburban residence was run using the covariates employed in the models below. Principal city residence is associated with being in the middle of life (with age 49 being the peak likelihood); being lower-income; being more educated; being black, Asian and/or Hispanic (black has the highest t-statistic of any variable in the model); not being born in the U.S.; having never been married; having fewer children in the household; and living outside the Northeast, particularly in the West. For the most part these results are in concert with the Census and ACS data.

It should be noted that there is considerable heterogeneity across American principal cities. There is a noteworthy difference in vibrancy, economic health, aesthetics, and much else separating Manhattan from downtown Detroit. Therefore a subset of America's liveliest principal cities was selected for special analysis in this paper. These were chosen on the basis of jobs in the central business district; specifically, metro areas were chosen if their CBDs contained > 200,000 jobs and > 10% of the metro area's jobs. These include New York, Chicago, Boston, San Francisco, Philadelphia, and Washington DC. While this list admittedly excludes some thriving principal cities (such as Portland or Seattle), in all, the chosen cities intuitively match what one might come up with if asked to list America's most vibrant urban centers.

6. Results

6.1. City versus suburban location and activity participation

Table 2 presents results of Cragg two-part hurdle models showing the relationship between principal city (as opposed to suburban) residence and 18 out-of-home time uses. Each row in the table shows the results from a separate model with the dependent being a time use. These are listed in the left-hand column. The first row shows results for all out-of-home time, excluding travel. The other rows show results for the disaggregated activities.

Column 2 shows the coefficient and t-statistic from the probit model predicting whether an individual engages in the activity or not on the typical day. For brevity's sake, the table presents only the result for the variable of interest, principal city location. A positive coefficient indicates that a city dweller is more likely to take part in the activity. Results for all the control variables, which are listed below the table, are available on request. Column 3 shows results of the truncated OLS models showing whether city residence is associated with higher, or lower, conditional activity time presuming the activity is engaged in. The fourth and fifth columns show predicted unconditional activity times, in minutes per day, for a hypothetical suburbanite and a city dweller, generated using average marginal effects.

For 11 of the 18 activities there was no significant association between city location and activity participation in either part of the models. Further, in no case was city residence significant in both parts. For three of the activities (any out-of-home time, work, and grocery shopping) the probit coefficient was positive and significant, indicating that city dwellers are slightly more likely to leave home, work, and shop for groceries on a given day. For one category, sports/exercise/outdoor activities, suburbanites are significantly more likely to participate. For three activities the conditional time coefficient was positive and significant, so that, conditional on participating in the activity, city dwellers engage for longer times in eating/drinking out, arts and entertainment activities, and socializing. The latter finding does suggest there may be some benefit to social life from living in a more urban area.

However, an examination of the predictions in columns 4 and 5 suggests that even when the city variable is significant in one of the models, differences in predicted unconditional activity time are generally very small either in absolute terms, proportional terms, or both. For example, city dwellers are predicted to have a significantly greater chance of leaving home; this translates into about 3 more minutes of predicted out-of-home time per day. This amount is fairly trivial in

Table 2
Cragg two-part hurdle models: activity participation and duration regressed on city location.

1	2	3	4	5
Activities	Probit coefficient: city residence and activity participation (Y/N)	Truncated OLS coefficient: city residence and conditional activity duration	Predicted unconditional activity duration for suburbs (mins./day)	Predicted unconditional activity duration for city (mins./day)
All out-of-home[1]	0.0447*	0.824	363.1	366.1
	(2.36)	(−0.26)		
Caring for others	0.00465	−0.0165	12.7	12.6
	(0.30)	(−0.52)		
Education[1]	0.0566	−7.88	18.1	18.8
	(1.70)	(−0.76)		
Household maintenance	0.0281	0.0639	7.5	8.4
	(1.63)	(1.87)		
Services, excluding medical	−0.00624	0.0558	2.58	2.69
	(−0.28)	(1.06)		
Medical	0.0296	0.0679	1.96	2.25
	(0.91)	(1.44)		
Shopping ex. groceries	0.00699	−0.0152	17.9	17.8
	(0.48)	(−0.66)		
Grocery shopping	−0.00596**	−0.0060	6.24	6.69
	(2.93)	(−0.28)		
Work[1]	0.0362*	−5.17	189.5	192.3
	(2.29)	(−1.83)		
Eating/drinking	0.0113	0.0261*	26.6	27.6
	(0.79)	(2.22)		
Arts/entertainment	−0.00239	0.0926**	5.41	5.91
	(−0.09)	(2.74)		
Socializing	0.0134	0.0626*	23.1	25.0
	(0.86)	(2.43)		
Leisure/relaxing	0.01342	−0.0210***	16.4	16.4
	(0.81)	(0.77)		
Playing sports/exercise/ outdoors	0.0322	−0.0581**	15.7	15.5
	(1.85)	(−2.86)		
Watching sports	−0.0459	0.0455	1.66	1.55
	(−1.13)	(0.70)		
Volunteering	0.00327	−0.0356	7.09	6.89
	(0.14)	(−0.72)		
Religion	−0.00790	0.0331	6.54	6.67
	(−0.37)	(1.29)		
All travel	0.0289	0.0054	77.3	78.2
	(1.58)	(0.59)		

t statistics in parentheses.
N = 71,215.
Covariates with results not included for brevity include physical health (self-reported as poor, fair, good, very good, or excellent), age and age squared, sex, log of household income normalized by Modified OECD persons in the household (which counts the cost of supporting the first adult in the household as 1, the second adult as 0.5, and each child as 0.3, so that the cost of maintaining a household of two adults and two children is assumed to be roughly equivalent to the cost of two single adults living independently), education level (coded as not high school grad, four years high school, some college, 4 years college, postgrad work), race (self-reported as white, black, Asian, Native American, and other/mixed race), Hispanic status, citizenship, marital status (self-reported as never married, married with spouse present, married with spouse absent, widowed, divorced, or separated), number of own children in the household, employment status (self-reported as not in the labor force, employed full-time, employed part-time, or involuntarily unemployed), year, MSA population (midpoints of bins 100,000-249,000, 250,000-499,000, 500,000-999,000, 1,000,000-2,499,999, 2,500,000-4,999,999, and a value for the topcoded bin of 5,000,000+ of 10,952,000, as this is the population-weighted mean CSMA population for U.S. metro areas over 5,000,000), Census region (Northeast, South, West, Midwest), and weekday/weekend. In the model of work time, the employment status variable is not included as a control.
Sampling probability weights used.
Predictions generated using average marginal effects method.
Full model results are available on request.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.
[1] Truncated linear model for conditional activity participation; all other conditional models = exponential (ln of the dependent taken).

absolute terms, and in proportional terms is < 1% more out-of-home time. Further, the difference in the predicted times is not statistically significant at the $p < 0.05$ level. The hypothetical city dweller is predicted to spend 8.5% more time participating in arts and entertainment activities. However, the difference is very small in absolute terms, at only about 0.5 more minutes per day, and again the predictions do not significantly differ from each other. City residents are more likely to grocery shop, but only for 0.5 more minutes per day, about 6.7% more unconditional time than suburbanites (in this case, the difference in predictions is statistically significant). The predictions for informal socialization also significantly differ, but the difference is not large in either proportional or absolute terms (7.6% more social time for the city dweller, or 1.9 min per day). This fairly trivial effect size tempers a possible finding that city residents may have a richer social life. Suburbanites are predicted to be more likely to play sports/exercise/spend time outdoors, but because the coefficient in the other part of the model has the opposite sign, the unconditional time predictions for the two groups barely differ and the difference is not statistically

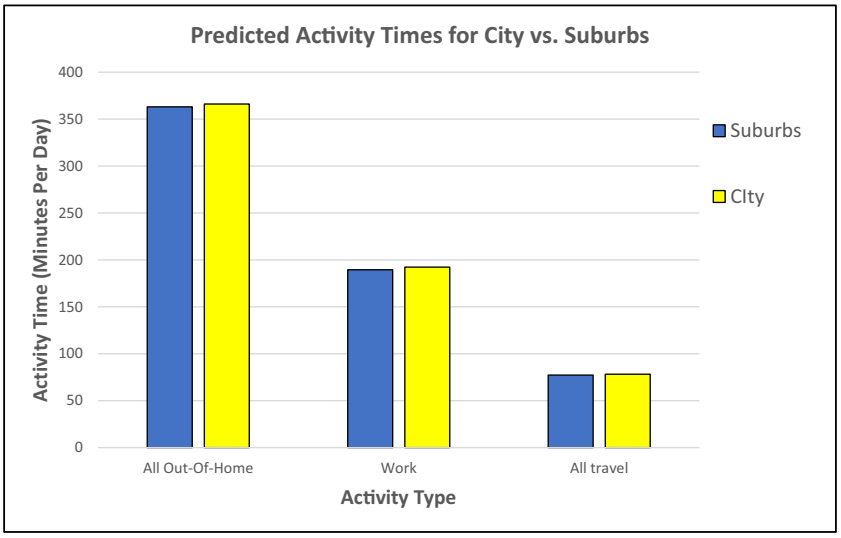

Fig. 1. Predicted activity times for city vs. suburbs.

significant.

In three cases neither the probit model nor the conditional OLS model showed significant results, but the signs in both models pointed in the same direction and thus there was a fairly substantial difference in the unconditional time predictions. This is true for household maintenance activities and medical appointments (higher for city dwellers) and volunteering (higher for suburbanites). In all three cases the predictions differ significantly from each other at the $p < 0.05$ level. However, though significant, again these differences are not dramatic in either absolute or proportional terms.

It is also worth noting where the models do not show significance. For example, city residents are not predicted to shop more, as might have been expected if they have richer shopping opportunities. Moreover, predicted travel times are nearly identical across the geographies, which, in concert with the findings that the two groups' predicted aggregate activity times are nearly identical, suggests that accessibility is on the whole quite similar across the geographies. This point is returned to below.

Fig. 1 and Fig. 2 make the modest differences in predicted activity times across the geographies clear by showing them graphically.

For the models focusing on the principal cities of the six MSAs with the most developed centers, the interaction between principal city residence and living in one of the six MSAs is insignificant in both parts of the model of all aggregated out-of-home time. Disaggregating time uses, seven of the 34 parts of the models had significant interaction terms, indicating that those who live in those six principal cities differ in some cases from others. In two of those cases (volunteering and religion) there were opposite signs in the two parts of the model, so that unconditional predictions were very similar across geographies. However, there were some more meaningful, if modest, differences. Residents of the principal cities of the six MSAs were predicted to spend roughly 1.0 more daily min on household activities than others, and to participate in sports/exercise/outdoor activities about 1.4 min more than others. Though the result was not significant in either model, two positive and borderline-significant coefficients result in a prediction that residents of the principal cities of those six MSAs socialize about 3.5 min per day more than others. This suggests that these activities might be more accessible for those in the principal cities of MSA's with large and vibrant centers. However, residents of these six centers are predicted to work roughly 16 min per day less than others, mostly because they are less likely to work at all, suggesting poorer access to employment. (I return to this question in the next section.) The most dramatic result is that residents of the principal cities in the six MSAs are predicted to spend much more time traveling than others, by

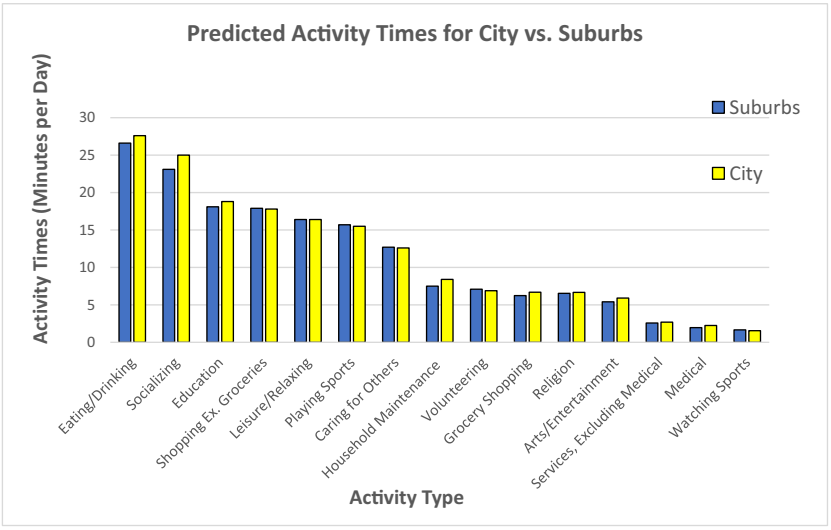

Fig. 2. Predicted activity times for city vs. suburbs (cont'd).

between 9 and 12 min per day. Thus it would seem that residence in a principal city of a metro area with a thriving center does not offer materially better access to most opportunities, and in fact the opposite might be true: those in principal cities with large and thriving centers are engaging in a similar amount of out-of-home activities compared with others, but are taking considerably longer to travel to and from those activities. Again, this is explored further below.

Finally, this research explores the possibility that suburban versus city residence might affect those with low incomes differently than others. This may be the case because low-income individuals may be more constrained in their location options; the observed lower incomes in urban areas in the Census data may be a result, for example, of zoning restrictions in the suburbs (such as zoning out multifamily or mandating minimum lot sizes) that may force many low-income individuals to live in urban locations. Another possibility is that discrimination based on race and/or ethnicity constrains those with low incomes to disproportionately reside in center city areas. This may reduce out-of-home activity time for the urban poor if the urban areas in which low-income individuals are forced to reside are relatively bereft of certain opportunities, such as retail. However, it might also be posited that low-income individuals may be more active in urban locations due to greater walkability as well as greater availability of transit than in the suburbs. To examine this, the models were run using only a subsample of low-income individuals. These were those in the bottom quartile of the distribution on of the income measure used in this paper. This would be an income of below $15,277 for a single individual or $32,081 for a family of four.

The first finding of note is that those with lower incomes are less active than others. While members of the full sample are predicted to have over 360 out-of-home activity minutes per day, those in the low-income group were predicted to have only about 308 min. This is as expected, since as those with low incomes will tend to 1) have substandard access to transportation resources (e.g., autos), 2) have less money to engage in activities that cost money (such as shopping), and 3) may live in areas with fewer opportunities since neighborhoods with low incomes may have less aggregate purchasing power. Few specific time uses showed any significant difference between the urban and suburban poor. However, the urban poor who worked on the study day were predicted to do so for 17 fewer minutes than the suburban poor who worked. Further, the urban poor were predicted to spend significantly more time traveling, provided they do travel, than the suburban poor, suggesting they have inferior access to opportunities. The only other significant finding was that low-income individuals in principal cities are predicted to spend less conditional time playing sports/exercising/participating in outdoor activities. It should be noted that restricting the sample decreased the sample size, reducing the probability of finding statistical significance compared to the model with the full sample, all else equal. However, the sample with only low-income individuals still contained > 15,000 cases, so there is still reasonable scope for finding significance.

6.2. Travel time prices

To further examine the relationship between city versus suburban location and access to activities, Table 3 below presents the results of models of travel time prices. Each row presents the results of a separate model with the travel time price for that activity (which appears in column 1) as the dependent. Column 2 shows the coefficients for the city residence dummy (a positive coefficient means the travel time price is higher for urbanites). Because the natural log of the travel time price is taken, the coefficient can be read as the percent change in the travel time price associated with urban living, so that, for example, city residents are predicted to spend 5% fewer minutes traveling to and from work for each minute of work. Results for the demographic variables used as controls in all of the models are omitted to conserve space; findings on these are available on request.

Table 3
OLS models: log of travel time prices regressed on city vs. suburban location.

1	2	3	4	6
Activity	OLS coeff. for city residence	Predicted price for suburbs	Predicted price for city	N R^2
Ln All out-of-home	−0.00253	0.207	0.207	60,893
	(0.22)			0.115
Ln Caring for others	0.0390	1.555	1.617	15,860
	(0.116)			0.043
Ln Education	0.155**	0.094	0.110	2022
	(2.73)			0.211
Ln Household maintenance	−0.0177	0.777	0.749	5979
	(−0.32)			0.042
Ln Services ex. medical	−0.0326	0.813	0.787	4004
	(−0.61)			0.048
Ln Medical	−0.0602	0.410	0.386	1847
	(−0.93)			0.040
Ln Shopping ex. groceries	−0.0159	0.870	0.856	23,134
	(−0.69)			0.040
Ln Grocery shopping	0.00110	0.527	0.528	11,020
	(0.04)			0.041
Ln Work	−0.0489**	0.084	0.080	21,909
	(−2.76)			0.070
Ln Eating/drinking	−0.0192	0.318	0.312	17,802
	(−0.83)			0.028
Ln Arts/entertainment	−0.137**	0.200	0.175	2424
	(−2.59)			0.040
Ln Socializing	−0.077**	0.313	0.290	12,902
	(−2.26)			0.020
Ln Leisure/relaxing	−0.0331***	0.231	0.223	5432
	(−0.63)			0.071
Ln Playing sports/ exercise/outdoors	0.0875*	0.182	0.199	5950
	(2.28)			0.045
Ln Watching sports	−0.117	0.218	0.197	700
	(−1.17)			0.076
Ln Volunteering	0.0486	0.186	0.195	3101
	(0.86)			0.030
Ln Religion	−0.0437	0.201	0.193	5249
	(−1.19)			0.076

t statistics in parentheses.
See the notes for Table 1 for a list of covariates in these models.
Sampling probability weights used.
Predictions generated using average marginal effects method.
Full model results are available on request.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

There are five significant differences in travel time prices associated with city vs. suburban living. First, commute time per minute of work time is somewhat lower for city residents. This is in concert with the figures presented in Table 1, and may be because 1) despite widespread suburbanization of jobs, city centers remain major centers of job concentration, 2) because they are centrally located, principal cities offer reasonably good access to suburban jobs, and 3) because highway and transit networks are generally radial in nature, they privilege central locations. Second, city dwellers have lower travel time prices for arts and entertainment activities, as may be expected if principal cities have major concentrations of theaters, concert halls, museums, etc. Third, there is a lower travel time price for socializing for city dwellers. Fourth, residence in the suburbs is associated with lower travel time prices for education and sports/exercise/outdoor activities. The latter may be because there are more recreational facilities and/or open space in and near the suburbs.

For the most part, however, travel time prices are statistically indistinguishable across the geographies. This holds true when aggregating all travel and all out-of-home activities, and for 11 of the 16 disaggregated travel/activity categories. Moreover, even when significant, the effect sizes are not particularly large. On the whole, city

living appears to offer slightly better access to certain activities, and the suburbs to others, but the differences between geographies are mostly fairly trivial, including for accessibility in the aggregate.

Living both in a principal city and in a metro area with a thriving city center is associated with poorer access, not better. Residents of those principal cities are predicted to spend 0.235 travel minutes per activity minute versus roughly 0.205 min for others, or about 15% more travel time. The main reason for this is longer commutes to work for residents of the principal cities of those six MSAs; their commutes are predicted to be about 16% longer per minute of work than commutes of those who live in the suburbs of those six MSAs or outside those MSAs entirely. Further, education and watching sports seem to be considerably less accessible for those in the principal cities of the six MSAs. The results do suggest that sports/exercise/outdoor activities may be more accessible for residents of the principal cities in those six MSAs, though the effect size is modest.

The suburban poor and urban poor show no significant difference in terms of overall travel time price, although the coefficient for urban location is positive. This suggests that neither the urban nor the suburban poor have a clear advantage in terms of overall accessibility. There are two specific activities with significant differences: access for low-income individuals residing in principal cities appears more constrained for education and engagement in sports/exercise/outdoor activities compared with access for their suburban counterparts.

6.3. Intraurban location, activities and life satisfaction

Table 4 presents the results of five models with life satisfaction as the dependent variable. The independents of interest are city location, duration of activity participation in minutes per day, and the interactions between these. Each column shows the results of a separate model. Blank cells mean that the independent variable (these are listed in the first column) was omitted from that model. Results for the demographic variables used as control variables are not listed for brevity's sake; they are available on request.

Of greatest interest are the results in models 1, 2, and 4, where life satisfaction's association with city dwelling is negative and significant. (In models 3 and 5, the main effect for city residence, though still negative, is no longer significant; this is due to the inclusion of the interactions between city dwelling and activity times.) City residents are estimated to be roughly 0.11 life satisfaction points lower on a 0–10 scale. A simpler analysis, a difference in means *t*-test for the groups, shows that the mean life satisfaction for city dwellers is 7.01, while the mean for suburbanites is 7.15. The difference is significant at the $p < 0.001$ level.

Model 2 shows that those who participated in more out-of-home activities on the study day are, all else equal, more satisfied with their lives. Model 4 shows that engagement in five specific out-of-home activities during the study day is significantly associated with higher life satisfaction: these are eating/drinking, sports/exercise/outdoor activities, engaging in arts and entertainment activities, volunteering, and religious participation. No interaction term between city dwelling and activity type is significant. Thus there is no evidence that the out-of-home activities undertaken by principal city dwellers contribute any more or less to life satisfaction than those undertaken by suburbanites.

To analyze the six urban areas with thriving centers, a variable for residence in one of those six MSAs was added and then interacted with the principal city dummy, and, for the models which include activity participation, a three-way interaction term was introduced (living in one of the six metropolitan areas*living in a principal city*activity participation). In no cases were these interaction terms significant. In a more conceptually simple exercise, models were also run with a variable for living in one of the principal cities in the six MSAs or not, thus comparing those residents to all others. Life satisfaction was statistically indistinguishable across the two geographies, although the coefficient for principal city was negative and not much smaller in magnitude than the estimate in the model with all principal cities included. Further, residence in the principal cities of the six MSAs shows a significant and negative relationship between SWB and sports/exercise/outdoor activities and leisure activities, suggesting these principal cities might be less rich in these opportunities.

Finally, another set of models shows no significant association between life satisfaction and urban/suburban location when the sample is restricted to low-income individuals. However, the coefficient for urban location is actually more negative in this model than in the model with the full sample (-0.128). This suggests that the lack of statistical significance in the low-income model may be caused by the reduction in sample size, and that the urban poor are likely less happy than the suburban poor. Future study should examine this issue with a larger sample size of low-income individuals. As with the full sample, in no case was the interaction between activity time and center city location significant, suggesting that the activities in which the suburban and urban poor engage do not contribute differently to life satisfaction.

6.4. Intraurban location and affect during activities

Table 5 shows the results of five random-effects panel models exploring the relationships between the “happy” emotion (hedonic affect), intraurban location, activity type, and the interactions between the latter two. As in the previous table, each column shows the results of a separate model, and blank cells mean that the independent variable on the left was omitted from that particular model. The demographic variables used as covariates are omitted for brevity; results for them are available on request.

As Models 1, 2, and 4 show, in concert with the findings in the life satisfaction models, principal city residence is associated with experiencing less happiness, or hedonic affect. Model 2 shows that, in the aggregate, out-of-home activities are associated with better hedonic affect than in-home ones. As Model 4 shows, the associations between hedonic affect and activity type are quite intuitive: respondents report feeling greater hedonic affect when they are outside the home caring for others, performing household maintenance activities, eating and drinking, socializing, engaging in arts/entertainment activities, engaging in leisure activities, playing and watching sports, volunteering, engaging in religious activities, and traveling. They report feeling poor hedonic affect while working, participating in education, and engaging in medical activities.

Again, nearly all interaction terms between city residence and activity type are insignificant. The three exceptions are that principal city dwellers report higher hedonic affect than suburbanites when engaging in educational activities and accessing services; suburban dwellers report higher hedonic affect when they are engaging in leisure and relaxation activities. There is no clear explanation for these findings. Given this, and the fact that the interaction terms are insignificant for all other activities (including out-of-home activities in the aggregate), it seems that the differences in the hedonic affect experienced by city and suburban dwellers as a result of their activities are quite minor. None of the three-way interaction terms between activity type, principal city residence, and residence in one of the six MSAs with large centers is significant. Thus there is no evidence that the activities of those who live in the six principal cities contribute to hedonic affect any differently than they do for those in suburbs of those six MSAs, or in other MSAs entirely.

To conserve space, the table for the “meaningful” emotion, which measures eudaimonic affect, is not presented. Results are quite similar to the “happy” models, though a few activities which are low in hedonic affect are high in eudaimonic affect (work, medical, and education), while leisure/relaxation and travel are lower in eudaimonic affect than they are in hedonic affect. The most noteworthy finding is that, as with hedonic affect, principal city residents experience somewhat lower feelings of eudaimonic affect, particularly when caring for others. The reduction in the meaning score associated with principal city living is

Table 4
OLS models: life satisfaction regressed on city vs. suburban location and activity participation.

	(1)	(2)	(3)	(4)	(5)
	Life sat.	Life sat.	Life sat.	Life sat.	Life sat.
Principal city	−0.112*	−0.115**	−0.0943	−0.114**	−0.0833
	(−2.56)	(−2.61)	(−1.31)	(−2.61)	(−1.08)
All out-of-home time		0.000264**	0.000285**		
		(2.91)	(2.59)		
City*all out home			−0.0000567		
			(−0.36)		
Care for others time				−0.000366	−0.000202
				(−0.77)	(−0.37)
Education time				0.000535	0.000627
				(1.86)	(1.65)
Household activities time				0.000194	0.000260
				(0.39)	(0.40)
Services ex. medical time				−0.000682	−0.000984
				(−0.54)	(−0.63)
Medical time				−0.000185	0.000162
				(−0.16)	(0.12)
Shop ex. groceries time				0.000792	0.000482
				(1.75)	(0.86)
Grocery shop time				−0.000111	−0.000188
				(−0.11)	(−0.15)
Work time				−0.000142	−0.000193
				(−1.24)	(−1.42)
Eat/drink time				0.00162***	0.00214***
				(3.42)	(3.48)
Arts/entertainment time				0.00104*	0.000977
				(2.29)	(1.64)
Socialize time				−0.0000679	−0.000305
				(−0.23)	(−0.79)
Leisure/relax time				0.000491	0.000788*
				(1.59)	(2.02)
Play sports/exercise/outdoors time				0.00110**	0.00157***
				(2.92)	(3.69)
Watch sports time				0.000863	0.00131
				(1.01)	(1.35)
Volunteer time				0.00117**	0.000938
				(2.94)	(1.85)
Religion time				0.00226***	0.00220***
				(4.99)	(3.86)
City*care others					−0.000664
					(−0.60)
City*education					−0.000181
					(−0.36)
City*HH activities					−0.000216
					(−0.21)
City*services ex. medical					0.000940
					(0.36)
City*medical					−0.000818
					(−0.34)
City*shop ex. groceries					0.000825
					(0.89)
City*grocery shop					0.000124
					(0.06)
City*work					0.000120
					(0.64)
City*eat/drink					−0.00133
					(−1.42)
City*arts/entertainment					0.000137
					(0.15)
City*socialize					0.000522
					(0.89)
City*leisure/relax					−0.000742
					(−1.18)
City*play sports					−0.00137
					(−1.70)
City*watch sports					−0.00181
					(−0.95)
City*volunteer					0.000594
					(0.74)
City*religion					0.0000247
					(0.03)
Constant	3.910***	3.846***	3.839***	3.850***	3.838***
	(10.66)	(10.50)	(10.48)	(10.46)	(10.43)

(*continued on next page*)

Table 4 (*continued*)

	(1)	(2)	(3)	(4)	(5)
	Life sat.	Life sat.	Life sat.	Life sat.	Life sat.
N	14,793	14,793	14,793	14,793	14,793
R^2	0.156	0.156	0.156	0.161	0.162

t statistics in parentheses.
See the notes for Table 1 for a list of covariates in these models.
Sampling probability weights used.
Full model results are available on request.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

similar to the reduction in the happiness score (coefficient = −0.052, $t = -2.47$), which though modest is statistically significant.

As with hedonic affect, residents of the principal cities in the six MSAs with thriving centers appear to experience lower feelings of meaningfulness (eudaimonic affect) in general than suburbanites, particularly during caring for others. Given that all other interactions are insignificant, it appears there is little substantial difference in the meaningfulness associated with activities for those who live in those principal cities.

Models with low-income individuals only produce similar results compared with the full sample. Low-income city dwellers experience significantly less happiness and feelings of meaning than low-income suburbanites, and there are very few, and very minor, significant differences in the association between affect and city dwelling interacted with activity type for any activity in the low-income models.

Although the other emotions studied in the ATUS do not reflect hedonic or eudaimonic affect as well as the "happy" and "meaningful" variables, they were also analyzed. "Stress" shows no significant association with intraurban location; the only activity where stress is predicted to differ for principal city residents and suburbanites is sports/exercise/outdoor activities, which is shown to be slightly more stressful for urban residents. Sadness is also not associated with principal city versus suburban living, though principal city residents are predicted to be marginally less sad when engaging in education and religious activities. Finally, the Affect Balance Scale, as proposed Bradburn (1969) and Kahneman and Krueger (2006), was calculated and used as the dependent in a set of models. The ABS reflects "overall" affect by taking the mean score for manifestations of positive affect (in this case, the "happy" and "meaning" scores) and subtracting the mean score for manifestations of negative affect (in this case, the "sad" and "stress" scores). Bradburn (1969) finds the ABS accurately predicts self-ratings of overall happiness. Models using the ABS show that on the whole suburbanites experience more positive overall affect than demographically similar urbanites. During three activities (caring for others, leisure/relaxing, and participating in sports/exercise/outdoor recreation) urbanites are expected to experience poorer affect than suburbanites.

7. Conclusion

The results above suggest that differences in accessibility between the principal cities and suburbs are relatively minor. Though there are some significant differences in predicted activity times, these are generally quite small. In no case does the proportional difference in any predicted activity time exceed 13% (this is for medical time, a very minor time use), and in no case does the absolute difference exceed 3 min per day (for all out-of-home time). In all, demographically similar city residents and suburbanites are doing very similar things outside of their homes for very similar amounts of time. This is also true when looking exclusively at the low-income population. The models focusing on the principal cities of the six MSAs with the most developed centers do show some differences in activity participation based on intrametropolitan location, but even when significant, the differences are generally not large except for the fact that residents of those centers are predicted to spend considerably less time working and considerably more time traveling.

The analysis of travel time prices suggests that city residents may have somewhat better access to work, arts and entertainment activities, and social opportunities. This may be in keeping with commonly held ideas about urban residence. Still, these differences are not major. For example, city residents are predicted to spend 2.4 fewer minutes commuting for each 8-hour work day. The large majority of travel time prices, including the overall travel time price, for those in cities are not statistically distinguishable from those in their suburbs. These findings hold true when looking only at the low-income population. Perhaps the most dramatic finding on accessibility unearthed by this paper is the difference in travel time prices between those living in the principal cities of the six MSAs with thriving CBDs and others. Contrary to what might be expected, these residents actually pay a 15% higher travel time price, primarily due to longer commutes. This would run contrary to the theory that living near a thriving center should result in better accessibility due to physical proximity to opportunities. Possible explanations are long travel times due to higher transit use in those cities, or greater traffic congestion in them.

There is little evidence that the quality of activities, judged by their contribution to life satisfaction or affect, are any different for urbanites versus suburbanites, either across the entire sample or in the sample with only low-income individuals, or when comparing residents of the six cities with thriving MSAs to others. Perhaps the most noteworthy finding in this paper is that suburbanites, all else equal, have modestly higher SWB. Suburbanites are predicted to score themselves 0.11 ladder rungs higher on the 0–10 Cantril Ladder scale. This is not a large amount, but nor is it trivial, given that life satisfaction is a very all-encompassing phenomenon involving genetics, physical and emotional health, personality, satisfaction with relationships and family life, job satisfaction, material circumstances, and much else (Dolan, Peasgood, & White, 2008). For any individual variable to measurably "move the needle" suggests that its impact is meaningful. While the difference is not statistically significant in the model with only low-income individuals, the coefficient associated with city residence is actually lower (−0.14 ladder rungs) for those with low incomes. Further, suburbanites are predicted to be 0.053 points higher on the 0–6 happiness score, reflecting greater feelings of hedonic affect, 0.061 points higher on the 0–6 meaningfulness score, reflecting greater eudaimonic affect, and 0.080 higher on the overall −6 to 6 ABS score. Low-income individuals in principal cities also experience lower hedonic and eudaimonic affect than low-income suburbanites. It is beyond the scope of this paper to rigorously investigate all of the ways in which suburban living may contribute to better well-being, but some obvious possibilities may be newer and higher-quality housing stock, greater possibilities for homeownership, safer neighborhoods, better schools, less crowding, less noise, and/or better aesthetics (for example due to less blight and

Table 5
Random-effects panel models: the "happy" emotion regressed on city vs. suburban location and activity participation.

	(1)	(2)	(3)	(4)	(5)
	Happy	Happy	Happy	Happy	Happy
Principal city	−0.0505**	−0.0514**	−0.0488*	−0.0514**	−0.0478*
	(−2.80)	(−2.85)	(−2.31)	(−2.87)	(−2.28)
Any out-of-home		0.0734***	0.0755***		
		(6.57)	(5.31)		
City*any out-of-home			−0.00523		
			(−0.23)		
Care for others				0.292***	0.317***
				(7.54)	(6.49)
Education				−0.228**	−0.436***
				(−2.72)	(−4.08)
Household activities				0.135**	0.127*
				(2.94)	(2.15)
Services ex. medical				−0.158	−0.304**
				(−1.86)	(−2.78)
Medical				−0.688***	−0.805***
				(−6.71)	(−6.20)
Shop ex. groceries				−0.0592	−0.0738
				(−1.89)	(−1.85)
Grocery shop				−0.340***	−0.418***
				(−6.94)	(−6.51)
Work				−0.285***	−0.313***
				(−11.79)	(−10.11)
Eat/drink				0.306***	0.333***
				(11.92)	(10.04)
Arts/entertainment				0.803***	0.773***
				(8.80)	(6.33)
Socialize				0.493***	0.498***
				(14.38)	(11.44)
Leisure/relax				0.128**	0.215***
				(3.06)	(3.92)
Play sports/exercise/outdoors				0.498***	0.503***
				(11.21)	(8.78)
Watch sports				0.443**	0.404*
				(2.67)	(1.96)
Volunteer				0.468***	0.423***
				(6.33)	(4.51)
Religion				0.387***	0.354***
				(6.62)	(4.59)
Travel				0.0377**	0.0517**
				(2.88)	(3.09)
City*care others					−0.0675
					(−0.84)
City*education					0.545**
					(3.16)
City*HH activities					0.0192
					(0.21)
City*services ex. med.					0.371*
					(2.12)
City*medical					0.317
					(1.50)
City*shop ex. groceries					0.0387
					(0.60)
City*grocery shop					0.188
					(1.89)
City*work					0.0700
					(1.44)
City*eat/drink					−0.0669
					(−1.28)
City*arts/entertainment					0.0675
					(0.37)
City*socialize					−0.0131
					(−0.19)
City*leisure/relax					−0.210*
					(−2.48)
City*play sports					−0.0130
					(−0.14)
City*watch sports					0.119
					(0.34)
City*volunteer					0.121
					(0.79)
City*religion					0.0771
					(0.65)

(*continued on next page*)

Table 5 (*continued*)

	(1)	(2)	(3)	(4)	(5)
	Happy	Happy	Happy	Happy	Happy
City*travel					−0.0355
					(−1.34)
Constant	3.352***	3.329***	3.328***	3.341***	3.338***
	(24.87)	(24.72)	(24.69)	(24.95)	(24.91)
N	68,306	68,306	68,306	68,306	68,306
R^2 between	0.080	0.081	0.081	0.092	0.092
R^2 within	0.000	0.000	0.000	0.015	0.016
	(No variable varies within panel)				
R^2 overall	0.053	0.055	0.055	0.066	0.067

t statistics in parentheses.
See the notes for Table 1 for a list of covariates in these models.
Omitted activity category = all in-home activities.
Sampling probability weights used.
Full model results are available on request.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

graffiti, better landscaping, etc.). Building on these findings and the literature cited above, further research should investigate the specific avenues through which suburban living appears to be contributing to higher SWB.

The results do show that residents of the principal cities in the six metropolitan areas with thriving centers have no lower life satisfaction than others, including suburbanites, all else equal. However, residents in those principal cities are measurably lower than suburbanites in terms of both hedonic and eudaimonic affect.

Three major caveats are in order. The most substantial is that it is important to be clear that this analysis is about American principal cities versus their suburbs as they are defined by the U.S. Census Bureau. It is not an in-depth analysis of the impact of urban form—such as population density, job density, the interconnectedness of street networks, etc.—on behavior or SWB. As Table 1, shows, in the aggregate the Census' "principal city" and "in an MSA but outside its principal city or cities" geographies do exhibit the expected characteristics associated with "sprawl" versus "compact development"; for example, the city geography is much denser, features a higher share of multi-family dwellings, has older homes, sees much more commuting by transit and walking, etc. But these characteristics are observed only at the national level, not at the level of the neighborhood of the individual survey respondent. Thus the potential for distortions exists due to the scale modifiable unit areal problem (MAUP), which seriously limits the ability of this paper to yield insights on the "sprawl" versus "compact development" debate. For such an analysis it would be highly desirable to have data with finer-grained geographic detail, for example respondents' Census tracts or blocks, or, even more ideally, their actual physical addresses; these could be matched to geographic data such as neighborhood population density, job density, street density and connectivity, zoning and land use (to calculate mix of uses using an entropy measure), etc.

Along those lines, the Census definition of "principal city" results in considerable heterogeneity across metropolitan areas, as it is based on political boundaries, the nature of which differ across geographies. For example, in the American Northeast, principal cities tend to be smaller in geographic extent because they were often hemmed in by suburbs before the era where municipal annexation of surrounding areas became more commonplace. The geographic extent of the city of Boston covers only 48 $mile^2$ (124 km^2) of land, while the city of Jacksonville, Florida covers 747 $mile^2$ (1935 km^2), despite the fact that the Boston metropolitan area contains nearly three times the population. Further, many places within principal cities are relatively "suburban" in their characteristics (e.g., Staten Island or Northridge in Los Angeles), while many areas outside principal cities are relatively "urban" (e.g., example, Hoboken or unincorporated East Los Angeles.) This raises the issue of zonal MAUP.

However, while further work examining activity patterns and SWB based on neighborhood characteristics would certainly be welcome, it is still of interest to examine "cities" and "suburbs," if for no other reason than "cities" and "suburbs" as defined by the Census are the geographic delineations which informs much public discussion and debate. For example, a Google Scholar search returns 310 papers and books with both "cities" and "suburbs" in the title, versus only four with both "compact development" and "sprawl" in the title. Many reports and news articles compare cities and suburbs using the Census definition. Moreover, basing an analysis on political boundaries does have some advantages, as differences in well-being and activity patterns may result not only from neighborhood land use and transportation characteristics but also from political policies decided at the municipal level such as zoning, tax rates, and the levels of provision of public goods.

The second caveat is that these findings are for the United States. American urbanization has taken a different path than is found in many other nations in the world. As the statistics above suggest, in general, in the U.S. the wealthy have moved to the suburbs, and many central city areas have concentrations of poverty and blight. Further, American jobs and business activity have suburbanized to a great extent. In many other nations, for example in Europe, the center cities are often far more vibrant and are more often home to the wealthy, with the poor being disproportionately likely to have suburbanized (e.g., see Brueckner, Thisse, & Zenou, 1999). It is quite likely that different results would be obtained when considering principal city versus suburban life in other nations. For example, studies have found that higher SWB is associated with living in the city center, or closer to it, in London (MacKerron & Mourato, 2009), Beijing (F. Wang & Wang, 2016a), and Indonesia (Arifwidodo & Perera, 2011), though no association between central location and life satisfaction has been found in studies of Germany (Rehdanz & Maddison, 2008) and Sweden (Bergstad et al., 2012). Requena (2016) finds a link between suburban living and higher SWB in wealthier countries, but not in poorer ones.

Third, this inquiry cannot weigh in on residential self-selection versus a treatment effect of location on behavior. For example, an explanation for the findings that those in principal cities engage in modestly more informal socialization and arts and entertainment activities may be that those who are inherently more likely to participate in these activities may have sorted themselves into city locations, as opposed to an explanation that there is a direct effect of city living causing their behavior. The possible presence of self-selection is not,

however, a challenge to the overall findings in this paper, which are that there are relatively weak associations between intrametropolitan location and activity participation. *Neither* a self-selection effect nor a treatment effect appear to be contributing to substantially different behavior for suburbanites and urbanites. It is possible that the most noteworthy difference between city dwellers and suburbanites found in this paper, higher SWB for suburbanites, may be due to self-selection. But it is unclear why intrinsically happier people would be more likely to move to the suburbs, and thus it seems more likely that the treatment effect of the suburban environment on attitudes is responsible for the observed difference in SWB. In the life satisfaction models it would be ideal to have data on individuals' intrinsic predisposition to experience SWB, since studies have shown that perhaps one third of life satisfaction is determined by genetic factors (Nes & Roysamb, 2015); however, measuring this in a survey is hardly feasible. Another method for dealing with the self-selection question would be to do a panel study on those who have moved from the city to the suburbs or vice versa.

In sum, this paper suggests that suburbanites and urbanites may live far more similar lifestyles than advocates of either geography may believe. Further, it appears that, in the aggregate, the suburbs may offer a modestly but measurably higher quality of life. In addition to the evidence presented here and in some prior research, a city/suburbs SWB gap is suggested by the fact that cities have been losing population relative to the suburbs for decades. Despite the “hype” about a return to urban living in the late 2000s, the trend toward the suburbanization of America seems to have resumed in recent years. After a period from roughly 2006 to 2012 when growth in the urban core exceeded that in the suburbs in percent terms, more recent trends show clearly that the suburbs are once again outpacing center cities in terms of growth (Economist, 2018), and research has found that the apparent turn toward cities by Millennials may be explained by transitory economic and demographic factors (Myers, 2016). In short, suburban living may not be all that bad.

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