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Automobile commuting duration and the quantity of time spent with spouse, children, and friends

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Abstract

Objective—To explore the extent to which commuters reallocate time away from their spouse, children, and friends.

Methods—An analytic sample of adult, full-time employed, urban-dwelling respondents is drawn from the nationally representative American Time Use Survey (2003–2010). Seemingly Unrelated Regressions are utilized to calculate adjusted mean number of daily minutes spent with spouse, own children, and friends at several commuting durations.

Results—Mean {median} daily commuting time was 54.5 {50} minutes (the range was 6–210 min). For those commuting 60 min daily, a one hour commuting time increase is associated with a 21.8 minute decrease in time males spent with their spouse, an 18.6 minute decrease in time with children, and a 7.2 minute decrease in time with friends. A one hour increase in commuting time is associated with an 11.9 minute decrease in time females spent with friends, only, with no significant impact on time females spent with either spouse or children.

Conclusion—This was the first study to utilize time diary data to explore the relationship between commuting length and time spent with others. These estimates will inform researchers interested in time usages' impacts on physical and mental health.

Keywords

Commuting; Time use; Social relationships; Social capital; Adults; United States

Background

Time is a limited resource, with competing demands. Insufficient time is cited as an obstacle to physical activity (Wolin et al., 2008) and a nutritious diet (Devine et al., 2003; Jekanowski et al., 2001). Lengthy commutes are one source of time constraints already associated with physical inactivity (Lopez-Zetina et al., 2006). Another potential burden of long commutes is less available time to spend with family and friends. A long commute leaves less time available to both develop social support networks and also maintain existing relationships. Less time with one's spouse, for example, is linked to an increased divorce risk (Hill, 1988; Presser, 2000). The inherent time trade-off between commuting and time with others is

Conflict of interest statement

The author wishes to state that no conflict of interest is present.

important given substantial research on the link between social ties and health (Cohen et al., 1997; Fujiwara and Kawachi, 2008; House et al., 1988; Kawachi and Berkman, 2001; Kawachi et al., 2008). Commuting is already associated with weaker social outcomes: lengthy commutes are linked to reduced civic engagement (Putnam, 2000; Schaff, 1952), informal social interactions (Besser et al., 2008; Flood and Barbato, 2005), and increased divorce risk (Sandow, 2011). Additionally, long commutes may adversely impact the commuter's dependents as reduced parental time inputs increase childhood obesity risk (Anderson et al., 2003; Benson and Mokhtari, 2011; Cawley and Liu, 2009; Fertig et al., 2009). While the precise mechanisms of these findings are not yet empirically established, current time diary data enables more precise estimates of time spent with others than previously feasible. The object of this study is thus to provide initial evaluations of decreases in time spent with family and friends in response to longer commute durations.

Methods

Data are from the American Time Use Survey (2003–2010). The ATUS is a nationally representative cross-sectional survey administered by the Bureau of Labor Statistics. Respondents chronologically list their activities and those activities' duration, including who else was present during each activity, over the course of a twenty-four hour period referred to as the respondents' diary date. An analytic sample was derived from respondents residing in urban counties, employed full time, ages 18–65, and additionally, respondents either not commuting on their diary day or commuting exclusively by automobile. Automobile-only commuting is the predominant travel mode reported (91.5% of full-time employed, urban-dwelling commuters) and alternative modes are largely clustered within specific geographical areas, rendering treatment of nonautomotive modes impractical.

Three outcomes are constructed from ATUS data identifying who else was present during each activity: the total number of minutes the respondent spent with their spouse or unmarried partner, with their own children, and with friends. Times spent with each category may overlap with other categories. The “who else” information is unrecorded for several activity categories: sleep, grooming, personal/private activities, and working (for most years). Total daily commuting time is measured as the summation of all travel times between when the respondent leaves home and arrives at work and again between leaving work and arriving home.

Gender-specific adjusted outcome means are calculated using a system of Seemingly Unrelated Regressions (to incorporate error correlations among individuals' time usage). Means are evaluated at several commuting durations, and percent changes are then calculated relative to a baseline commuting time. Control variables are daily minutes spent working, daily minutes “who else” information is recorded, age, race and ethnicity, education, presence of a spouse or unmarried partner and the spouse/partner's employment status, wage and household income, the number of other adults and children present in the household, and the diary date day of the week, month, and year. Continuous variables are entered with both linear and squared terms. Survey weights are applied to produce representative estimates.

Results

Descriptive statistics are presented by gender in Table 1. The total sample is 27,702 individuals (14,297 males and 13,405 females). Males {females} reported on average 194.2 {157.4} observable minutes with spouse, 113.9 {111.7} minutes with own children, and 54.5 {51.2} minutes with friends. Conditional on having commuted, the average total daily commuting time was 54.5 min (the range was 6–210 min). The 25th percentile commuting duration was 30 min, the 50th percentile was 50 min, the 75th percentile was 70 min, and the 95th percentile was 120 min.

Table 2 displays adjusted means for diary date time spent with spouse, own children, and friends. Means are evaluated at a 60 minute minute baseline (1 h daily commuting time is the approximate sample mean and a suitable reference point for time measurements) and at additional half-hour intervals: 30, 90, 120, and 150 total daily commuting minutes. From the baseline 60 minute commuting time, among males, a one hour (100%) increase in the daily commuting duration is associated with a 21.8 minute (13.3%; $p\text{-value}<0.001$) decrease in time with spouse, an 18.6 minute (16.7%; $p\text{-value}<0.001$) decrease in time with own children, and a 7.2 minute (16.8%; $p\text{-value}=0.040$) decrease in time with friends. Among females, a one hour increase in daily commuting time is associated with an 11.9 minute decrease in time with friends (28.8%; $p\text{-value}=0.005$). There is no statistical difference between this decrease and the corresponding 16.8% decrease in time with friends among males ($p\text{-value}=0.314$). Lastly, among females there is no significant decrease in time with either spouse or children related to commuting time.

Discussion

Longer daily commuting time is associated with males spending decreased time with their spouse and children and both males and females spending decreased time with friends. These findings are consistent with the hypothesis that lengthy commutes inhibit interpersonal interactions. Previous studies suggest that such patterns can adversely impact a commuter's health, their marital relationship, and their children's development.

The analysis reveals gender differences in time trade-offs with commuting. Although both genders similarly decrease time spent with friends, females do not reduce time with either their spouse or their children at even fairly lengthy commuting times. An implication follows that females must instead reallocate time from other usages at greater rates than males to compensate for increased commuting time. Future research should seek to further understand gender differences in response to time constraints. Although females seemingly preserve time spent with their spouse and children, whichever activities female reduce instead may have alternate consequences, such as if females disproportionately reduce exercise or healthy meal preparation.

Several limitations warrant mention. First, both the inclusion criteria of full-time employment and the primary factor of interest, commuting duration, are choice variables in the long-run, and so the potential exists for selection bias. Moreover, these estimates may not extend beyond the sample construction. Second, only time spent in the physical presence

of others – a proxy for social interactions – is measured, omitting any interactions by telephone or internet. The ubiquity of modern communication devices suggests that thus a nontrivial portion of total interactions is omitted. Third, as a caveat on interpreting numerical estimates, by design the calculations produce broad population averages. Responses to commuting are likely heterogeneous within differently structured households. Fourth, cross-sectional data cannot rule-out the possibility that individuals with long commutes compensate for lost time with others on days they do not commute. Moreover, these estimates are calculated from a single twenty-hour period. Although some cumulative effect presumably exists, inferences on this effect necessarily require extrapolation from observed data.

Balancing personal life with career necessities such as commuting is a common challenge. This study sought to quantify decreases in time spent with others to better document trade-offs between commuting and interpersonal relationships. These results document social consequences of long commute times, and can guide future researchers toward identifying additional ends.

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References

- Anderson P, Butcher K, Levine P. Maternal employment and overweight children. *J Health Econ*. 2003; 22:477–504. [PubMed: 12683963]
- Benson L, Mokhtari. Parental employment, shared-parent–child activities and childhood obesity. *J Fam Econ Iss*. 2011; 32:233–244.
- Besser LM, Marcus M, Frumkin H. Commute time and social capital in the US. *Am J Prev Med*. 2008; 34:207–211. [PubMed: 18312808]
- Cawley, J., Liu, F. Maternal employment and childhood obesity: a search for mechanisms in time use dataWorking Paper. 2009. Accessible via: http://www.popcenter.umd.edu/research/sponsored-events/atus-conf-workshop-2009/papers-atus-2009/02-cawley-liu/at_download/file.
- Cohen S, Doyle W, Skoner D, Rabin B, Gwaltney J. Social ties and susceptibility to the common cold. *J Am Med Assoc*. 1997; 277:1940–1944.
- Devine C, Connors M, Sobal J, Bisogni C. Sandwiching it in: spillover of work onto food choices and family roles in low- and moderate-income urban households. *Soc Sci Med*. 2003; 56:617–630. [PubMed: 12570978]
- Fertig A, Glomm G, Tchernis R. The connection between maternal employment and childhood obesity: inspecting the mechanisms. *Rev Econ House*. 2009; 7:227–255.
- Flood, M., Barbato, C. Discussion Report 78. Australia Institute; 2005. Off to work: commuting in Australia.
- Fujiwara T, Kawachi I. Social capital and health: a study of adult twins in the US. *Am J Prev Med*. 2008; 35:139–144. [PubMed: 18617082]
- Hill M. Marital stability and spouses' shared time: a multidisciplinary hypothesis. *J Fam Issues*. 1988; 9:427–451.
- House JS, Landis KR, Umberson D. Social relationships and health. *Science*. 1988; 241:540–545. [PubMed: 3399889]

- Jekanowski M, Binkley J, Eales J. Convenience, accessibility, and the demand for fast food. *J Agric Resour Econ*. 2001; 26:58–74.
- Kawachi I, Berkman Lisa F. Social ties and mental health. *J Urban Health*. 2001; 78:458–467. [PubMed: 11564849]
- Kawachi, I., Subramanian, SV., Kim, D. *Social Capital and Health: A Decade of Progress and Beyond*. Springer; New York: 2008.
- Lopez-Zetina J, Lee H, Friis R. The link between obesity and the built environment. Evidence from an ecological analysis of obesity and vehicle miles of travel in California. *Health Place*. 2006; 12:656–664. [PubMed: 16253540]
- Presser H. Nonstandard work schedules and marital instability. *J Marriage Fam*. 2000; 62:93–110.
- Putnam, R. *Bowling Alone: The Collapse and Revival of American Community*. Touchstone; New York: 2000.
- Sandow, E. GERUM. Vol. 2011. Umeå University; Umeå: 2011. On the Road: Social Aspects of Commuting Long Distances to Work; p. 2
- Schaff A. The effect of commuting on participation in community organizations. *Am Sociol Rev*. 1952; 17:215–220.
- Wolin K, Bennett G, McHeil L, Sorensen G, Emmons K. Low discretionary time as a barrier to physical activity and intervention uptake. *Am J Health Behav*. 2008; 32:563–569. [PubMed: 18442336]

Table 1

Descriptive statistics of United States adult full-time employed residents of urban counties, American Time Use Survey (2003–2010).

Description	Male	Female	Total
Sample size	14,297	13,405	27,702
Time with others, in minutes			
Time with spouse/partner, mean (sd)	194.2 (235.9)	157.4 (218.6)	177.9 (229.1)
Time with own children, mean (sd)	113.9 (202.5)	111.7 (202.4)	112.9 (202.4)
Time with friends, mean (sd)	54.5 (143.6)	51.2 (131.8)	53.1 (138.5)
Total observed minutes with others, mean (sd)	579.1 (238.5)	578.8 (228.6)	578.9 (234.2)
Time usage, in minutes			
Total daily commute, mean (sd)	23.8 (34.9)	20.9 (31.1)	22.4 (33.1)
Conditional on having commuting, mean (sd)	56.3 (33.5)	52.1 (29.6)	54.5 (31.9)
Total time working, mean (sd)	242.1 (263.6)	218.5 (249.1)	230.6 (256.9)
Conditional on having worked, mean (sd)	486.5 (157.3)	458.1 (152.8)	474.0 (156.0)
Demographics			
Age, mean (sd)	41.1 (10.6)	41.5 (11.1)	41.3 (10.8)
White, %	69.8%	67.4%	68.7%
Black, %	8.4%	14.3%	11.2%
Hispanic, %	15.7%	13.3%	14.5%
Asian, %	4.4%	3.4%	4.0%
Other race, %	1.7%	1.6%	1.6%
No spouse/partner present, %	39.2%	30.8%	34.5%
Spouse present: employed full time, %	47.8%	35.3%	40.8%
Spouse present: employed part time, %	4.7%	12.9%	9.3%
Spouse present: not employed, %	8.4%	21.0%	15.5%
Own child present, %	41.8%	46.0%	44.1%
Number of household youths, mean (sd)	1.1 (1.2)	0.9 (1.1)	1.0 (1.1)
Number of other household adults, mean (sd)	1.0 (0.8)	0.8 (0.8)	0.9 (0.8)
Infant present, %	11.5%	7.4%	9.5%
Wage, mean (sd)	\$21.74 (\$14.95)	\$17.06 (\$11.58)	\$19.47 (\$13.63)
Household income, mean (sd)	\$66,942 (\$44,984)	\$59,256 (\$42,287)	\$63,223 (\$43,868)
No high school diploma, %	8.1%	5.1%	6.6%
High school diploma, %	21.9%	21.4%	21.7%
Some college, %	26.3%	30.5%	28.3%
College degree, %	27.6%	27.7%	27.7%
Graduate or professional degree, %	16.1%	15.3%	15.7%

Additional control variables are respondents' time diary date information. Included survey weights are applied.

Table 2

Total commuting duration and daily minutes spent with spouse, own children, and friends by United States adult full-time employed residents of urban counties, American Time Use Survey (2003–2010).

<i>Time with spouse</i>				
Total commute duration	Adjusted minutes with spouse, male [95% CI]	% Change from 60 min^a	Adjusted minutes with spouse, female [95% CI]	% Change from 60 min^a
30 min (baseline–30 min)	179.7 [174.0–185.3]	(+9.3%)*	173.2 [167.3–179.0]	(+0.9%)
60 min (baseline)	164.3 [157.9–170.8]	–	171.6 [164.9–178.4]	–
90 min (baseline+30 min)	151.9 [144.7–159.1]	(–7.5%)*	168.9 [161.1–176.6]	(–1.6%)
120 min (baseline+60 min)	142.5 [133.6–151.5]	(–13.3%)*	164.8 [153.3–176.3]	(–4.0%)
150 min (baseline+90 min)	136.1 [122.3–149.9]	(–17.2%)*	159.5 [139.4–179.5]	(–7.1%)
<i>Time with own children</i>				
Total commute duration	Adjusted minutes with children, male [95% CI]	% Change from 60 min^a	Adjusted minutes with children, female [95% CI]	% Change from 60 min^a
30 min (baseline–30 min)	119.6 [114.7–124.5]	(+7.7%)*	135.7 [130.7–140.8]	(+1.6%)
60 min (baseline)	111.0 [105.4–116.6]	–	133.7 [127.9–139.5]	–
90 min (baseline+30 min)	102.0 [95.7–108.2]	(–8.2%)*	130.6 [123.9–137.3]	(–2.3%)
120 min (baseline+60 min)	92.4 [84.7–100.2]	(–16.7%)*	126.5 [116.5–136.4]	(–5.4%)
150 min (baseline+90 min)	82.4 [70.5–94.3]	(–25.8%)*	121.4 [104.0–138.7]	(–9.2%)
<i>Time with friends</i>				
Total commute duration	Adjusted minutes with friends, male [95% CI]	% Change from 60 min^a	Adjusted minutes with friends, female [95% CI]	% Change from 60 min^a
30 min (baseline–30 min)	45.6 [41.2–50.0]	(+6.9%)*	41.8 [37.2–46.4]	(+1.4%)
60 min (baseline)	42.7 [37.6–47.7]	–	41.2 [35.9–46.4]	–
90 min (baseline+30 min)	39.3 [33.7–44.9]	(–7.9%)*	37.0 [31.0–43.1]	(–10.1%)*
120 min (baseline+60 min)	35.5 [28.5–42.5]	(–16.8%)*	29.3 [20.4–38.3]	(–28.8%)*
150 min (baseline+90 min)	31.3 [20.5–42.1]	(–26.6%)*	18.1 [2.4–33.7]	(–56.1%)*

All estimates are time in minutes. Adjusted means are calculated using Seemingly Unrelated Regressions. Covariates are daily minutes spent working, daily minutes information is recorded on who else is present during activities, age, race and ethnicity, education, presence of spouse/partner and spouse/partner's employment status, wage and household income, the number of other adults and youths present in the household, and the diary date day of the week, month, and year. Continuous variables are entered with both linear and squared terms. Included survey weights are applied.

^a Parentheses contain percentage changes relative to estimates at the baseline 60 minute commuting duration. Asterisks indicate statistical difference at the $\alpha=0.05$ level with the estimate at baseline commuting time.