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Social, Economic, Spatial, and Commuting Patterns of Dual Jobholders

Date: April 2007
Prepared by: Paul Ong & Matthew R. Graham
Contact: U.S. Census Bureau
4600 Silver Hill Rd.
LEHD Program
Attn: Jeremy S. Wu, Rm 6H141
Suitland, MD 20746 USA

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Social, Economic, Spatial, and Commuting Patterns of Dual Jobholders*
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Paul Ong**
School of Public Affairs
UCLA

Matthew R. Graham
Abt Associates and
U.S. Census Bureau

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** Corresponding Author: pmong@ucla.edu
School of Public Affairs, UCLA

Abstract

Individuals who hold multiple jobs have complex working lives and complex commuting patterns. Economic and spatial information on these individuals is not readily available in standard datasets, such as the 2000 Decennial Census Long Form, because the survey questions were not designed to collect details on multiple jobs. This study takes advantage of firm-based data from the Unemployment Insurance administrative wage records, linked with the Census Bureau's household-based data, to examine multiple jobholders – and specifically a sentinel group of dual jobholders. The study uses a sample from Los Angeles County, California and examines the dual jobholders by their demographic characteristics as well as their economic, commuting, and spatial location outcomes. In addition this report evaluates whether multiple jobholders should be included explicitly in future labor-workforce analyses and transportation modeling.

Keywords

Multiple jobholders; labor-workforce; commuting patterns; modal split; transportation modeling; OD-matrix; Los Angeles; California; administrative wage records; US Census Bureau; Longitudinal Employer-Household Dynamics; LEHD.

Abbreviations

ACS	– American Community Survey
CPS	– Current Population Survey
JH	– Jobholder
LEHD	– Longitudinal Employer-Household Dynamics
LF	– 2000 Decennial Census, Long Form Average 1-in-6 Sample
NAICS	– North American Industry Classification System
POR	– Place of Residence
POW	– Place of Work
PIK	– Protected Identification Key
PMSA	– Primary Metropolitan Statistical Area

INTRODUCTION

This is the first of three technical briefs examining workers who are difficult to study because of the unique nature of their labor-market status: multiple jobholders, informal jobholders, and self-employed jobholders. This report covers the analysis of multiple jobholders. The analyses in these reports provide new insights by combining data from two sources: the 2000 Census and the LEHD Program, both of which are described later. Each dataset has strengths (the Census data is population-based while the LEHD data is firm-based), and when combined, they provide complementing coverage and data items (Wu et al., 2005). The analyses have a number of objectives, but one of the most important is to examine the commute characteristics of multiple jobholders relative to the commute characteristics for other workers, who constitute the majority of the total workforce. While there are numerous studies that examine the personal characteristics of persons holding multiple jobs and their employment outcomes, there is a paucity of information on the commute itself: the travel mode, time, and distance, as well as origins and destinations. These characteristics are critical both to the study of the spatial structure of metropolitan labor markets and to transportation analysis and modeling.

The analysis in this report focuses on dual jobholders, a subset of multiple jobholders.* Multiple jobholders contribute to a discrepancy in employment counts because population-based surveys estimate only the number of employed persons, rather than the total number of payroll jobs held by those persons. In 2004, there were an estimated 7.8 million multiple jobholders (BLR, 2005), and while they account for only 5-6 percent of the employed labor force, they represent a larger share of total jobs (BLR, 2005). Throughout this report the more easily analyzed group of dual jobholders is used as a proxy for all multiple jobholders, and the region of study is limited to the Los Angeles-Long Beach Primary Metropolitan Statistical Area (PMSA)*.

In this analysis of multiple jobholders there are two key questions that should be resolved: (1) Is the multiple jobholder population sufficiently large that they cannot be ignored in labor-

* Dual jobholders are defined herein as workers identified by the LEHD data who worked exactly two of the same jobs in Q1 and Q2 of 2000. Not included are multiple jobholders who held more than two jobs in the first half of 2000 or who held different sets of jobs between Q1 and Q2. Single jobholders are defined as those individuals holding the same single job during Q1 and Q2 of 2000.

workforce analyses and transportation modeling? and (2) Are the personal, employment, and commuting characteristics of this population sufficiently different from single jobholders that they need to be explicitly factored into labor-workforce analyses and transportation modeling? In addressing the first question, the relatively small size of the dual jobholder pool (3.8 percent) suggests the conclusion that this group of workers is of marginal importance for future analyses of the metropolitan labor market and modeling of the commute-to-work patterns.[†] However, if other multiple jobholders are factored in and jobs (rather than workers) are the unit of observation, we believe that this group should not be ignored. Our answer to the second question is also conditional. The overall commute and spatial patterns among single and dual jobholders are not dramatically different, but there are some important specific differences, which lead us to the conclusion that multiple jobholders should be explicitly included in future transportation analyses and modeling.

BACKGROUND

Since 1994 approximately 6 percent of the U.S. workforce has held multiple jobs annually (Juhn and Potter, 1999). The trend shows that the rate of multiple jobholding in the U.S. peaked in 1996 at 6.2 percent and has since decreased every year to hover near 5 percent (Campbell, 2004). According to 2004 Current Population Survey (CPS) data, employed women are more likely to be multiple jobholders than are employed men. In 2004 the rate of multiple jobholding among women was 5.6 percent, compared with 4.9 percent for men (BLS, Table 35, 2005). Furthermore, the proportion of multiple jobholders who are female has steadily increased from 15.7 percent in 1970 to 49.7 percent in 2004 (BLS, Table 25, 2005). Retired persons aged 65 and older are the least likely to hold multiple jobs, while young adults 20-24 years of age are the most likely to be multiple jobholders (BLS, Table 36, 2005). Whites have the highest rates of multiple jobholding among the races sampled in the CPS, while individuals of Asian and Hispanic/Latino ancestry have the lowest rates (BLS, Table 26, 2005). In addition, multiple

* The Los Angeles-Long Beach Primary Metropolitan Statistical Area (PMSA) and Los Angeles County are coterminous and lie completely within the five-county Los Angeles-Riverside-Orange County Consolidated Metropolitan Statistical Area (CMSA).

[†] The estimates in this report are based on responses from a sample of the population. As with all surveys, estimates may vary from the actual values because of sampling variation or other factors. All statements made in this report have undergone statistical testing and are significant at the 90-percent confidence level, unless otherwise noted.

jobholders are more likely to work on any particular weekday, weekend, or holiday for more hours per day than are single jobholders (BLS, Table 4, 2004).

Consistent with U.S. data, a Canadian review has also found that employed women are more likely to be multiple jobholders than are employed men. In 1999, 5.6 percent of employed women held multiple jobs compared to 4.4 percent of male workers (Marshall, 2002). Multiple jobholders are also more likely to be younger and have higher educational attainment than are single jobholders. In 1996 the median age among multiple jobholders was 33 compared to 38 among single jobholders, and 54 percent of the former held post-secondary degrees compared to only 47 percent of the latter (Marshall, 2002). In any given month, about 6 percent of Canadian workers have experienced multiple jobholding compared to 10 percent over a 12-month period (Marshall, 2002). In addition, about 10 percent of workers have held multiple jobs for at least 15 days at least once during the period between 1993 and 1999 (Marshall, 2002).

None of the literature reviewed has analyzed the relationship of commuting patterns or between the spatial distribution of place of residence and employment with the class of workers holding multiple jobs. However, given the reported differences in jobholder status across socioeconomic groups, it is expected that commuting and spatial differences would also exist.

DATA, SAMPLE, AND METHODS

The Census Bureau's Longitudinal Employer-Household Dynamics (LEHD) Program works with partner states to gather quarterly Unemployment Insurance (UI) data and develop data products for the states' use based upon that data. These UI data are collected by the states from employers, and the datasets thus provide data primarily on jobs rather than on individuals. However, each worker is tagged with a Protected Identification Key (PIK) and thus can be linked to other Census datasets following appropriate confidentiality processing so that socioeconomic factors can be matched with quarterly UI earnings records.

The socioeconomic Census data used in this analysis was from the 2000 Decennial Census Long Form (LF) dataset, which is an average 1-in-6 sample of the entire U.S. population. Each record represents one respondent from the Decennial Census and contains socioeconomic data as well

as commuting data and geographical data on the individual's residence and place of work. It also includes a weighting factor that allows the full population to be imputed.

By using LEHD data matched to Census LF data, we were able to identify multiple jobholders and develop some insights into the characteristics of their jobs by industry and earnings, as well as by places of work and residence. Of course, not every worker in LEHD with more than one employer per quarter is a multiple jobholder, and as mentioned earlier this analysis selects out for study only those workers identified as dual jobholders. Since an individual may have changed employers during the quarter rather than being a multiple jobholder, we restrict our sample to individuals with the same two employers in two consecutive quarters (the first and second quarters of 2000). Also selected out for analysis are those workers who held one single job across the same two quarters; this group served as a "control" for comparing with the dual jobholders. Overall, this method generates a conservative estimate of multiple jobholders. Also included as a part of the analysis, was the differentiation between primary and secondary jobs for dual jobholders. For a worker with two or more jobs, the primary job is defined as the one with the largest combined earnings for the jobholder in Q1 and Q2 of 2000.*

Four analyses were performed with the information generated by the above dataset, and the Los Angeles metropolitan area was used as a case study for the four analyses. The first analysis examines and compares the social characteristics of single jobholders and dual jobholders by using the merged data from the LF sample of the 2000 Census. By merging individual-level data from the 2000 Census, it is possible to examine the individual and household characteristics associated with being a dual jobholder. Specifically we considered sex, age, educational attainment, race/ethnicity, and nativity.

The second analysis focuses on employment outcomes, particularly sectoral (industrial) distribution and earnings. Quarterly earnings data from LEHD, rather than annual earnings from the LF, was used because it provides additional information on primary and secondary job

* It is possible that the "primary job" as defined here is not the primary job in each quarter. In such cases, each job would be the primary job in one of the two quarters under consideration; then the total of Q1 and Q2 wages is the "tie-breaker" to determine which is the primary job. Other definitions would require considering other quarters of data.

earnings for dual jobholders.

The third analysis examines and compares the travel patterns of single jobholders and dual jobholders by using the LF data on the commute to work, specifically travel mode and travel time. A separate comparison of distance between residence and work (or origin-destination) used the LEHD locational information because it provided geocoded locations for both primary and secondary POWs for dual jobholders, whereas the LF data only provides one POW which is assumed to be the site of the primary job. Because of uncertainty in the geocoding results of the locations – particularly the POWs – jobholders’ residences and the firm locations were aggregated at the tract level and all distances were calculated between the tract centroids.

The fourth analysis examines and compares the spatial distribution of POWs and PORs for single jobholders, primary jobs held by dual jobholders, and secondary jobs held by dual jobholders. Making use of the origin-destination matrix (by tract) constructed and summarized in the previous analysis, we compared the spatial distribution of PORs against POWs for each type of jobholder as well as across the primary/secondary job classification. Additional comparisons were performed between classes of POWs. Two analytical methods were used to compare the spatial distributions. The first was a simple correlation of tract origins and destinations. The second was the calculation of dissimilarity indices, a method which is described below.

We calculated dissimilarity indices, which is a widely used measurement in the study of residential segregation (Iceland et al., 2002), as one method of comparing the spatial distribution of single and dual jobholders. The index ranges from 0 to 100 and roughly indicates the percentage of a group that would have to move to achieve full integration across the universe of geographical units with another group. The following is an example of its application to the analysis in this technical report.

$$DI = 100 \cdot \sum_i \frac{1}{2} \left| \frac{p_i}{P} - \frac{q_i}{Q} \right|$$

where DI = Dissimilarity Index (0-100)

p_i = Count of first population in geographical unit i .

P = Count of first population across the universe of geographical units.

q_i = Count of second population in geographical unit i .

Q = Count of second population across the universe of geographical units.

In this report several different dissimilarity indices were calculated (e.g., between the POR of single jobholders and the POR of dual jobholders). The geographical unit of analysis in this case is the Census Tract, and the universe of units is Los Angeles County.

FINDINGS

Overall, 3.8 percent of our sample are dual jobholders. This is lower than the rate reported for multiple jobholders in the literature, and our lower rate is due to the eligibility criteria of dual jobholders for inclusion in our study, criteria which only include those with the most stable employment during the first half of 2000 (continuous work through both quarters for a single job or for both jobs of dual JHs). Moreover, the sample does not include those who had three or more jobs at any point in the study period. For example, not included in the study sample are approximately 11,000 workers who held two continuous jobs as well as other noncontinuous jobs through the first two quarters of 2000. If these were added to the study sample, then the share of workers considered dual jobholders would rise to 4.7 percent, approaching the 5-6 percent that might be expected. Of course, this is still not including the workers who have even more complicated multiple-jobholding patterns or who were in the midst of changing between multiple jobs during the first half of 2000. Also of note is that a small fraction of observations were not properly geocoded either because of lack of addresses (usually in the POW) or because of the poor quality of the recorded address, which produced an inaccurate geocode. In these cases, where they were identifiable, the observations were left out of the analysis. The final sample includes 1,143,265 workers, and the demographic composition is summarized in Table 1.

Consistent with findings from the literature, our study found that employed women have a higher rate of dual jobholding than do men – 4.1 percent of female workers were dual jobholders, compared to only 3.5 percent of employed men. (See Figure 1.) Similar to the findings in the literature our results showed that of those who hold two jobs, the proportion of men is slightly greater than that of women – 51.2 percent compared with 48.8 percent, respectively. (See Table 1.) A greater proportion of men (55.5 percent) held a single job than did women (44.5 percent)

which is similar to their overall proportions within the total workforce (54.0 percent male, 46.0 percent female).

	Total Sample [%]	Single JHs [%]	Dual JHs [%]	Total Workforce [%]*
Sex				
Male	55.3	55.5	51.2	54.0
Female	44.7	44.5	48.8	46.0
Age				
16-24	10.2	10.2	9.9	15.3
25-44	55.9	55.8	57.6	54.4
45-64	31.3	31.3	30.7	28.0
65+	2.6	2.7	1.9	2.4
Education				
Less than HS	21.7	21.9	18.7	20.9
HS	17.7	17.7	15.8	18.7
Some College	31.1	31.0	33.1	32.9
BA/BS+	29.6	29.5	32.4	27.5
Nativity				
U.S. Born	57.3	57.5	52.6	60.4
Naturalized	21.1	21.0	24.2	18.8
Non-citizen	21.6	21.5	23.2	20.7
Race/Ethnicity				
NH White [†]	41.8	41.8	41.1	39.3
Black	5.8	5.7	7.4	8.0
Asian	14.5	14.4	16.7	13.4
Hispanic	33.0	33.1	29.1	33.7
Others	5.0	5.0	5.8	5.5

Sources: U.S. Census Bureau, Census 2000; U.S. Census Bureau, LEHD Program 2005.

Notes:

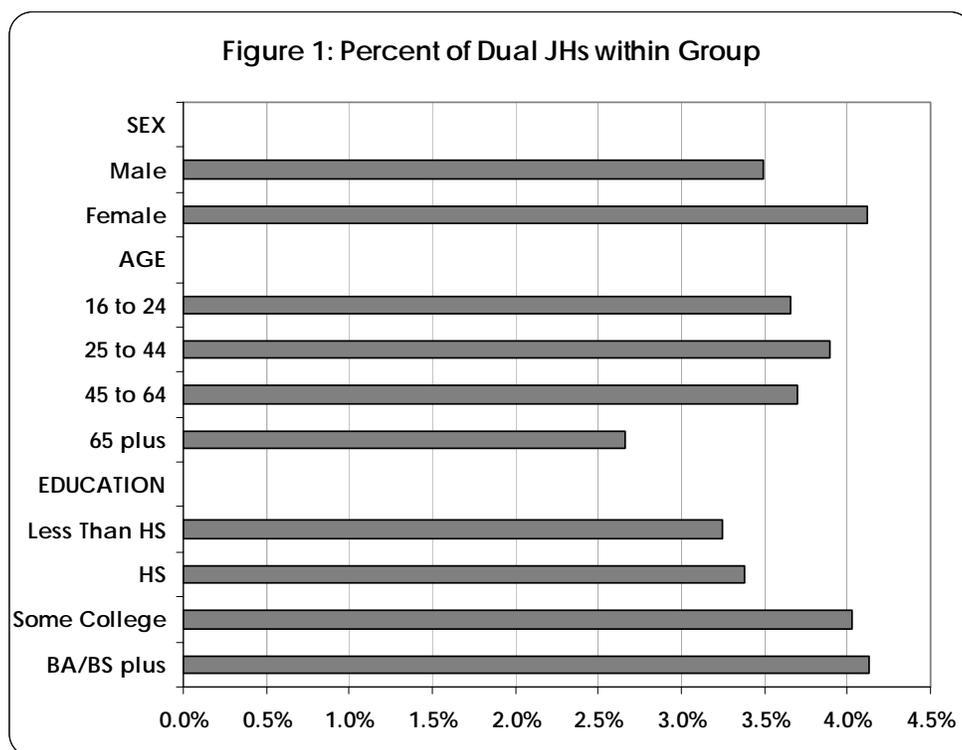
1. Total % for each group may not equal 100% due to rounding.
2. Certain values in this table may not be significantly different from one another.
3. Data based on sample. For information on confidentiality protection, sampling error, and definitions, see <<http://www.census.gov/prod/cen2000/doc/sf3.pdf>>.
4. For further information on confidentiality protection and definitions with respect to UI data, see <<http://lehd.did.census.gov/led/library/techpapers/tp-2006-01.pdf>>.

Also as expected from the literature, workers of retirement age (65 years of age or older) had the lowest rate of dual jobholding at 2.7 percent among all four of the age cohorts in our study while among workers aged 25-44 3.9 percent were dual jobholders, which was not significantly

* Here and throughout, the universe for the Total Workforce is all jobholders in combined LEHD and Census LF records at private firms who identified themselves as “Employed, At Work” during the LF enumeration period.

[†] Because Hispanics may be of any race, data in this report for Hispanics overlap with data for racial groups. Based on Census 2000 sample data, the proportion Hispanic was 8.0 percent for Whites, 1.9 percent for Blacks, 14.6

different from the percent of dual jobholders among workers aged 16-24 and 45-64 (3.7 percent for each). Accordingly, workers 25-44 years of age constituted the largest proportion of the dual jobholders in our sample (57.6 percent), which is slightly higher than their overall portion of the total workforce (54.4 percent). They are followed by workers aged 45-64 (30.7 percent), 16-24 (9.9 percent), and 65 or older (1.9 percent), who represent the following fractions of the total workforce: 28.0 percent, 15.3 percent, and 2.4 percent, respectively. The most notable discrepancy is the youngest age group, which maintains a 5.4 percent advantage in dual jobholders over its share of all workers. The distribution of single jobholders by age is quite similar to that of dual jobholders, suggesting that discrepancies between these rates and shares within the total workforce are accounted for by other, more complex employment patterns.



Sources: U.S. Census Bureau, Census 2000; U.S. Census Bureau, LEHD Program 2005.

Notes:

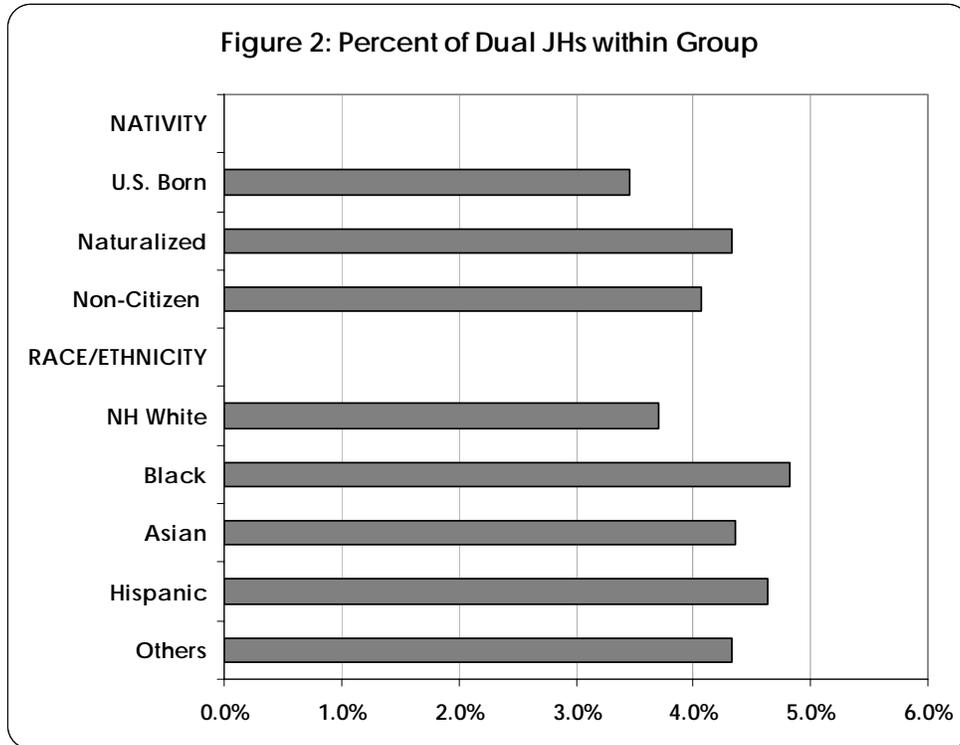
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percent for American Indians and Alaska Natives, 1.0 percent for Asians, 9.5 percent for Pacific Islanders, 97.1

Dual jobholding seems to be positively associated with educational attainment as was suggested by some of the reviewed literature. Workers with bachelor's or more advanced degrees had a rate of dual jobholding (4.1 percent) not significantly different from those with some college education (4.0 percent) and those with high school diplomas (3.4 percent). In addition, those workers with some college education composed 33.1 percent of the dual jobholders in our sample, which was not significantly different from the 32.4 percent of those with advanced degrees. Also, 18.7 percent of those with high school education or less and 15.8 percent of those who had graduated from high school were dual jobholders. Comparing these with the overall shares of the workforce (32.9, 27.5, 20.9, and 18.7 percent, respectively) it can be seen that discrepancies of a few percentage points appear for those with advanced degrees as well as those with high school diplomas or less education.

When broken down by nativity (see Figure 2), the foreign-born workers in our sample had the higher rates of dual jobholding at 4.3 percent of naturalized citizens and 4.1 percent of non-citizens compared to 3.5 percent of U.S.-born workers. It is important to note not only the direct percentage comparison, but also the relative shares of the total workforce. While U.S.-born workers constitute the largest proportion of dual jobholders (52.6 percent), this is about eight percentage points below their share of the total workforce (60.4 percent). At the same time rates of dual jobholding were higher among naturalized citizens (24.2 percent) and non-citizens (23.2 percent) than their shares of the workforce would suggest (18.8 and 20.7 percent, respectively). For single jobholders, who constitute a much larger portion of the total workforce, the relative percentages were much closer to the overall shares.

percent for those reporting Some other race, and 31.1 percent for those reporting Two or more races.



Sources: U.S. Census Bureau, Census 2000; U.S. Census Bureau, LEHD Program 2005.

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Though not significantly different from one another, it was found that 4.8 percent of employed African Americans work two jobs, compared with 4.4 percent of Asians, 3.7 percent of whites, and 3.3 percent of Hispanics. Yet a large plurality (41.1 percent) of the dual jobholders in our sample were non-Hispanic whites, followed by Hispanics (29.1 percent), Asians (16.7 percent), and lastly, blacks (7.4 percent). The ethnic/racial distribution of single jobholders follows a similar trend.

	Single Jobholder [%]	Dual JH (Primary Job) [%]	Dual JH (Secondary Job) [%]
Agriculture, Forestry, Fishing & Hunting	0.2	0.4	0.8
Construction, Mining, Utilities	4.8	4.0	3.6
Manufacturing	21.3	12.2	7.0
Wholesale, Retailing	19.8	16.0	12.6
Information, FIRE, Prof/Mgmt/Admin Services	29.7	28.0	27.5
Educational, Health and Social Services	12.1	22.1	19.3
Arts, Entertainment, Recreation, Hospitality	6.6	9.2	13.2
Other Services	5.3	7.9	16.0
nec	0.2	0.2	0.1
Total	100.0	100.0	100.0

Sources: U.S. Census Bureau, Census 2000; U.S. Census Bureau, LEHD Program 2005.

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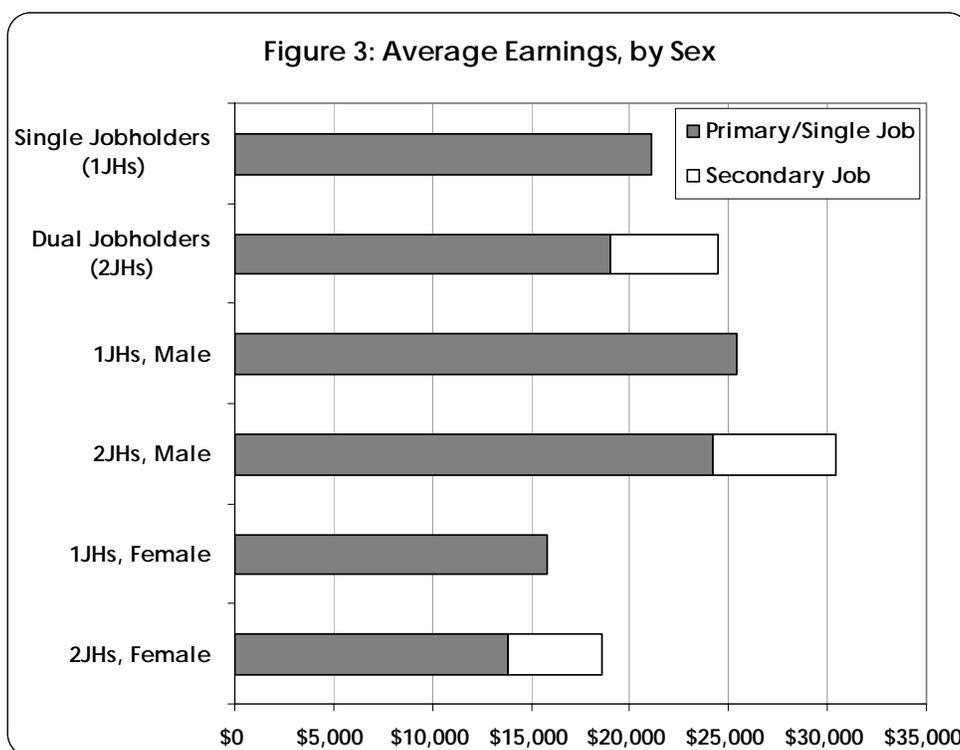
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Table 2 shows the distribution of jobs by industrial sector using the North American Industrial Classification System (NAICS) 1-digit groupings. The differences by sector – where they appear – are quite distinct. Manufacturing, wholesale, and retail attract distinctly larger shares of the single jobholder population than the dual jobholder population, and to a lesser extent the Information, FIRE, Prof/Mgmt/Admin Services, Construction, Mining, and Utilities present the same trend. For all these sectors the difference is particularly strong when comparing single jobholders to the secondary jobs of dual jobholders. The sectors that attract relatively lower shares of single jobholders than dual jobholders are Education, Health, Social Services, Arts, Entertainment, Recreation, Hospitality, and Other Services. Again, the differences in shares are particularly pronounced between the single jobholder and the secondary job of the dual jobholder. Also notable are the Arts/Entertainment and the Other Services sectors, where secondary jobs are relatively more common. This is not surprising given the low wages/infrequent payments that characterize many of the jobs in these two industries.

On average, total earnings from primary and secondary jobs, combined, are higher for dual jobholders than for single jobholders.* The mean annual income for dual jobholders is 16.3

* This suggests that workers are not merely using second jobs to gain a comparable level of income available to them as single jobholders.

percent higher than that of single jobholders. When the data is analyzed by sex, both male and female dual jobholders also earn more annually than do their single jobholder counterparts. As is true in the general population, female workers earned on average less than their male counterparts both as single and dual jobholders. This trend also held across the educational attainment spectrum: dual jobholders earned more than single jobholders and those with more education earned more on average. Also worth noting is the fact that the importance of secondary earnings (as a percentage of the total dual JH earnings) was negatively associated with overall earnings. That is, as dual jobholders earned more, whether the result of sex or educational attainment, secondary earnings became less important pieces of their total income. For jobholders with less than a high school degree, secondary jobs made up about 28 percent of their total income, while those with college degrees relied on secondary jobs for about 20 percent of their incomes.

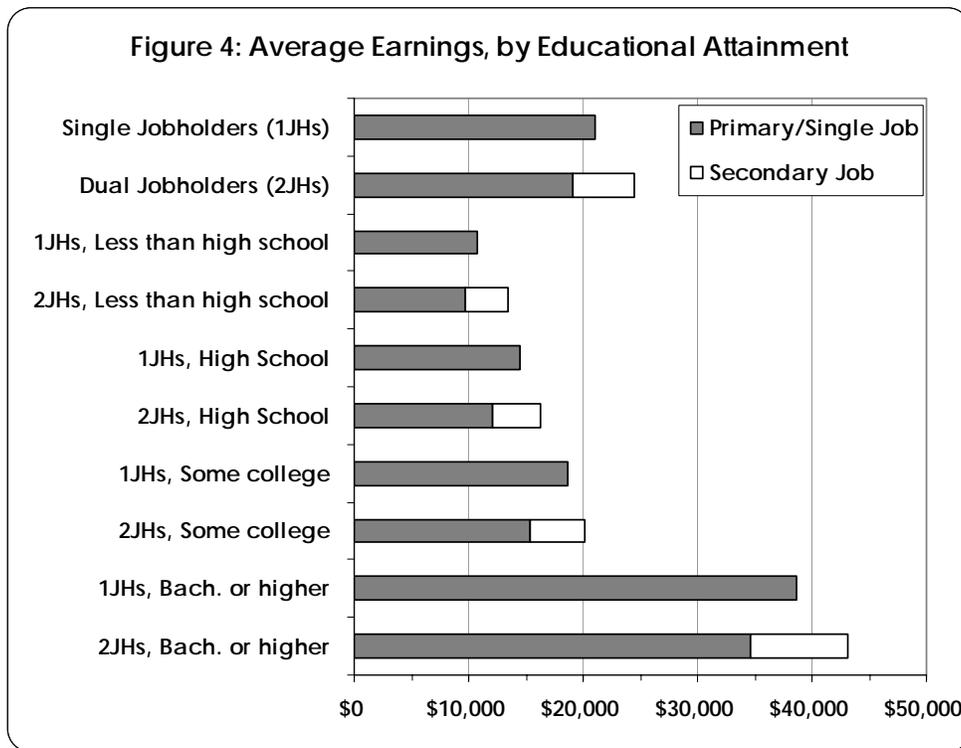


Sources: U.S. Census Bureau, Census 2000; U.S. Census Bureau, LEHD Program 2005.

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The commute characteristics for the primary jobs of both single and dual jobholders are slightly different; 75.8 percent of single and 79.6 percent of dual jobholders drive alone to their primary jobs. (See Table 3.) Two likely reasons might explain this: (1) On average, multiple jobholders may have higher income, which translate into greater ability to own and use automobiles; or (2) Multiple jobholders have more complex commutes than single jobholders that result from the needs of two jobs and which are difficult to coordinate with others or with public transit schedules. Many single and dual jobholders also travel to work using carpools, although a higher proportion of single jobholders utilizes this mode of commute (14.9 percent vs. 12.2 percent). Lastly, a very small percentage of workers use public transit to get to their places of employment – 4.3 percent of single jobholders and 3.5 percent of dual jobholders.



Sources: U.S. Census Bureau, Census 2000; U.S. Census Bureau, LEHD Program 2005.

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	Single Jobholder [%]	Dual Jobholder (Primary Job) (Secondary Job) [%]	
Commute Mode			
Drive Alone	75.8	79.6	NA
Carpool	14.9	12.2	NA
Public Transit	4.3	3.5	NA
Other	5.0	4.7	NA
Commute Time			
0 to 14	20.8	21.0	NA
15 to 29	34.5	34.8	NA
30 to 59	33.9	33.9	NA
60 plus	10.8	10.4	NA
Commute Distance			
Same Tract	2.9	2.7	2.2
5 miles or less	32.1	31.8	28.9
5 to 15 miles	41.3	41.6	42.4
Over 15 miles	23.7	23.8	26.4

Sources: U.S. Census Bureau, Census 2000; U.S. Census Bureau, LEHD Program 2005.

Notes:

1. There is no mode or time information for the secondary job of dual jobholders because that data is taken from the LF dataset, which contains only information on the commute to one job site and is assumed to be the primary job.
2. Certain values in this figure may not be significantly different from one another.
3. Data based on sample. For information on confidentiality protection, sampling error, and definitions, see <<http://www.census.gov/prod/cen2000/doc/sf3.pdf>>.
4. For further information on confidentiality protection and definitions with respect to UI data, see <<http://lehd.did.census.gov/led/library/techpapers/tp-2006-01.pdf>>.

In terms of commute time, both single and dual jobholders predominantly spend between 15-59 minutes commuting to their places of employment. About one-fifth of both jobholder classifications have commutes under 14 minutes, and about one-tenth of single and dual jobholders travel for an hour or longer. What is not captured here is the additional commute time that is necessary to get to and from the secondary job for dual jobholders, and so we may consider the commute times for dual jobholders as conservatively low.

Unlike commute mode and commute time, the tabulations for commute distance* were constructed from LEHD data because locations of both primary and secondary jobs were available, whereas the Census LF data only contains information on the location of the job at which the respondent spent the most time during the enumeration period (assumed here to be the primary job). Single and dual jobholders are most likely to have commute distances in the 5-15

mile range as measured from Census Tracts of residence to the Census Tracts of employment. Overall, this distance-to-work distribution is quite similar between single and dual jobholders' primary jobs. What is interesting, though, is the shift for secondary jobs toward longer commute distances; the share of each group having commutes for distances greater than 15 miles shifts from 26.4 percent of secondary jobs for dual jobholders to 23.7 percent for single jobholders. In all cases, this would suggest that even if both the primary and secondary jobs of dual jobholders were located in the same direction with respect to the POW, dual jobholders are still traveling longer distances than single jobholders. This ultimately suggests, assuming a relatively consistent relationship between distance and commute time across all workers, that the averages for commute times for dual jobholders are indeed low and probably do not factor in the time required to get to the secondary job.

Group Comparison	Dissimilarity Index
Single JH POW vs. Dual JH Primary POW	28.7
Single JH POW vs. Dual JH Secondary POW	35.7
Dual JH Pri. POW vs. Dual JH Sec. POW	33.2
Single JH POR vs. Dual JH POR	27.3
Single JH POR vs. Single JH POW	53.9
Dual JH POR vs. Dual JH Primary POW	61.2
Dual JH POR vs. Dual JH Secondary POW	58.5

Sources: U.S. Census Bureau, Census 2000; U.S. Census Bureau, LEHD Program 2005.

Notes:

1. Certain values in this table may not be significantly different from one another.
2. Data based on sample. For information on confidentiality protection, sampling error, and definitions, see <<http://www.census.gov/prod/cen2000/doc/sf3.pdf>>.
3. For further information on confidentiality protection and definitions with respect to UI data, see <<http://lehd.did.census.gov/led/library/techpapers/tp-2006-01.pdf>>.

Table 4 lists the various dissimilarity indices among the jobholder classes within this study. As is borne out in the correlation table below, the most dissimilar distributions occur between places of work (POWs) and places of residence (PORs) among all groups of single and dual jobholders. These locations are by no means completely segregated, a fact which is reflected below in the lack of negative correlations between PORs and POWs. In turn, low dissimilarity indices occur between the POW groupings for the different classes of jobholders and type of job (primary/secondary) held among dual jobholders as well as between the PORs of single and dual jobholders.

* These commute distances are calculated as straight-line distances from the centroid of the residence tract to the centroid of the work tract.

	Dual JH POR	Single JH POW	Dual JH Pri. POW	Dual JH Sec. POW
Single JH POR	0.560 (<0.0001)	0.110 (<0.0001)	0.140 (<0.0001)	0.152 (<0.0001)
Dual JH POR		0.049 (0.0281)	0.086 (0.0001)	0.111 (<0.0001)
Single JH POW			0.851 (<0.0001)	0.658 (<0.0001)
Dual JH Pri. POW				0.822 (<0.0001)

Sources: U.S. Census Bureau, Census 2000; U.S. Census Bureau, LEHD Program 2005.

Notes:

1. Certain values in this table may not be significantly different from one another.
2. Data based on sample. For information on confidentiality protection, sampling error, and definitions, see <<http://www.census.gov/prod/cen2000/doc/sf3.pdf>>.
3. For further information on confidentiality protection and definitions with respect to UI data, see <<http://lehd.did.census.gov/led/library/techpapers/tp-2006-01.pdf>>.
4. Standard errors were calculated using SAS 9 and adjusted using the Census 2000 long form design factors.

Table 5 lists the correlation coefficients among all the jobholder classes when PORs and POWs are aggregated by Census Tract for the Los Angeles metropolitan area. The statistical significance levels are in parentheses. The POWs for primary jobs of dual jobholders correlate best with the POW of single jobholders and the POW of secondary jobs for dual jobholders, although these two groups do not correlate as well with each other. Also correlating fairly well are the PORs between single and dual jobholders. As for the other groupings, they have mostly low correlation coefficients. The lack of any negative correlations between PORs and POWs may be a function of the particularity of Los Angeles' multipolar urban economic structure.

CONCLUSION

After considering the results of this analysis, we must return to the two primary questions posited in the first section of this report: (1) Is the pool of multiple jobholders too large to be ignored in further analysis? and (2) Is the pool of multiple jobholders too different from other jobholders to be ignored in further analysis?

In addressing the first question, inspection of the relative size of the dual jobholder pool (3.8 percent) suggests the conclusion that this group is at the margins of the size that would warrant

the additional work and effort required to incorporate them explicitly into future analyses of the metropolitan labor market and into models of commute-to-work patterns. However, as has been mentioned, our class of dual jobholders is a conservative estimate of a specific subgroup within the larger multiple jobholder pool. Evidence here suggests that this group could approach the literature's range of 5-6 percent. In addition, as multiple jobholders, there is a natural multiplier effect when we consider their impact on the economy's pool of jobs. That is, they may only be 5 percent of the workforce, but they represent at least twice their number in jobs within the economy. Thus we conclude that this group, while not a very large portion of the overall population, is on the threshold in terms of its importance to future socioeconomic and transportation analysis.

Certainly the two classes of jobholders analyzed in this study are predictably different in terms of socioeconomic indicators such as sex and educational attainment. However, in answering the second question, we must consider the differences in both commute patterns as well as spatial distributions of the jobholders' residences and places of work. For the most part, commute times (as determined from LF data) and commute distances (as calculated from LEHD data and Census Tract centroids) are quite similar between the two groups – though as mentioned above, distance-to-work data suggests that commute times for multiple jobholders may be biased low. More significant differences appear in the choices of commute mode. There is a roughly 4 percent difference in the percentage of single jobholders who drive alone versus the percentage of dual jobholders who drive alone. This is balanced by slightly larger percentages of single jobholders who make use of carpools and public transit. One plausible explanation of this fact is that multiple jobholders are more likely to require transportation flexibility than are those jobholders who need only to commute between two points.

The second consideration in answering this question is the spatial distribution of these two classes of jobholders. Overall, there are no strong correlations between places of work and places of residence for either single or dual jobholders. According to the dissimilarity indices, they tend not to be evenly distributed among tracts, but that association is not particularly strong. The main difference between the two classes of jobholders is that PORs and POWs of single jobholders appear to be more evenly distributed among tracts than are the PORs and POWs of dual

jobholders. This difference in segregation of PORs and POWs might help explain the differences in rates of driving alone among the two classes.

Overall, it appears that the commute and distribution patterns among single and dual jobholders (and multiple jobholders by proxy) are not strongly different across the various measures used in this study. Nonetheless, there are some important differences. In a few specific cases – notably driving alone to work – the existing discrepancies may be enough to warrant further inclusion of this class of jobholders in future transportation analyses and modeling.

While the findings from the analysis presented in this technical brief are insightful and useful, one significant caveat that must be mentioned is the likelihood that these results are strongly linked to the urban structure and economic spatial distribution of Los Angeles itself. As a multipolar city-region with complex commute patterns, these results may not be as applicable for those cities with a more classical polar/CBD structure. Another potential factor worth further study in comparisons with other metropolitan areas is the affect of recent immigration and low-wage workers. In part, these factors will be considered in additional technical briefs.

As for the analysis itself that was used for this study, the methodology of linking UI data and socioeconomic data from the Census LF appears to offer a rich resource in studying transportation among particular classes of workers. In addition, it appears that this methodology can be ported easily to analyses involving the American Community Survey, which has a smaller sample size but more current statistics than the Decennial Census.

ACCURACY OF THE ESTIMATES

The data contained in this report are based on the sample of households who responded to the Census 2000 long form. Nationally, approximately one out of every six housing units was included in this sample. As a result, the sample estimates may differ somewhat from the 100-percent figures that would have been obtained if all housing units, people within those housing units, and people living in group quarters had been enumerated using the same questionnaires, instructions, enumerators, and so forth. The sample estimates also differ from the values that would have been obtained from different samples of housing units, and hence of people living in those housing units, and people living in group quarters. The deviation of a sample estimate from the average of all possible samples is called the sampling error.

In addition to the variability that arises from the sampling procedures, both sample data and 100-percent data are subject to nonsampling error. Nonsampling error may be introduced during any of the various complex operations used to collect and process data. Such errors may include: not enumerating every household or every person in the population, failing to obtain all required information from the respondents, obtaining incorrect or inconsistent information, and recording information incorrectly. In addition, errors can occur during the field review of the enumerators' work, during clerical handling of the census questionnaires, or during the electronic processing of the questionnaires.

While it is impossible to completely eliminate error from an operation as large and complex as the decennial census, the Census Bureau attempts to control the sources of such error during the data collection and processing operations. The primary sources of error and the programs instituted to control error in Census 2000 are described in detail in Summary File 3 Technical Documentation under Chapter 8, "Accuracy of the Data," located at <http://www.census.gov/prod/cen2000/doc/sf3.pdf>.

Nonsampling error may affect the data in two ways: (1) errors that are introduced randomly will increase the variability of the data and, therefore, should be reflected in the standard errors; and (2) errors that tend to be consistent in one direction will bias both sample and 100-percent data in that direction. For example, if respondents consistently tend to underreport their incomes, then

the resulting estimates of households or families by income category will tend to be understated for the higher income categories and overstated for the lower income categories. Such biases are not reflected in the standard errors.

All statements in this Working Paper have undergone statistical testing and all comparisons are significant at the 90-percent confidence level, unless otherwise noted. The estimates in tables, maps, and other figures may vary from actual values due to sampling and nonsampling errors. As a result, estimates in one category used to summarize statistics in the maps and figures may not be significantly different from estimates assigned to a different category. Standard errors for the Dissimilarity Index estimates were calculated using derived methods based upon folded normal distribution theory. See Elandt, 1961. Further information on the accuracy of the data is located at <<http://www.census.gov/prod/cen2000/doc/sf3.pdf>>. For further information on the computation and use of standard errors, contact the Decennial Statistical Studies Division at 301-763-4242.

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