NOV/DEC 2013

IN THIS ISSUE...

In October...

Nonfarm Employment
   Connecticut..................... **1,650,700**
      Change over month .... **-0.01%**
      Change over year .... **+0.6%**

   United States **136,554,000**
      Change over month .... **+0.15%**
      Change over year .... **+1.7%**

Unemployment Rate
      Connecticut............................ **7.9%**
      United States **7.3%**

Consumer Price Index
      United States **233.546**
      Change over year .... **+1.0%**

Note: The November and December issues are combined as a result of the federal government shutdown.

WHERE WE WORK: Connecticut's Commuting Patterns

By Daniel W. Kennedy, Ph.D., Senior Economist

According to the American Community Survey[1] conducted every year by the U.S. Census Bureau, on average, over the 2006-10 period, 1,713,272 Connecticut residents commuted to their jobs every workday. From Table 1, 1,618,120 of those Connecticut residents commuted to jobs within Connecticut, while 107,976 commuted to jobs at worksites outside Connecticut. In addition to the Connecticut residents who commuted to their jobs within the state, another 95,152 workers from surrounding states commuted to their jobs at worksites in Connecticut. The net result is that Connecticut exports 12,824 more workers to the surrounding states than it imports form the surrounding states. That makes Connecticut a net exporter of workers.

A FRAMEWORK FOR IDENTIFYING COMMUTER FLOWS

To get a more detailed sense of the geography of Connecticut's commuter sheds, and the dynamics of the region's labor markets, the following discussion analyzes county-level commuting patterns based on a framework known as an ***Origin-Destination Matrix***. Again, as noted above, this is based on average flows over the 2006-to-2010 period from the American Community Survey, which replaced the Journey-to-Work commuter survey, done in each Decennial Census, until 2010.

Transportation Planners and Traffic Engineers employ a four-step transportation forecasting model to plan for the expansion, or upgrading, of the transportation infrastructure:

1. Trip Generation
2. Trip Distribution
3. Mode Choice
4. Route Assignment

Focusing on the second component, Trip distribution matches origins and destinations of trips to develop a "trip table", a matrix that displays the number of trips going from each origin to each destination.[2] Table 2 is an example Origin-Destination Matrix. If the analyst is interested in the commuter flows among five areas then they would construct a table where the trip originates (**Origin**) is listed down the rows, and where the trip terminates (**Destination)** across the columns. This is the construction of Table 2,

TABLE 1: Summary of Connecticut's Commuter Flows (2006-10 Average)

	CT ORIGIN	NON-CT ORIGIN	TOTAL ORIGIN	CT DESTINATION	NON-CT DESTINATION	TOTAL DESTINATION	CT NET FLOW	NON-CT NET FLOW	TOTAL NET FLOW
Number	1,618,120	95,152	1,713,272	1,618,120	107,976	1,726,096	0	12,824	12,824
Percent	94.45	5.55	100.00	93.74	6.26	100.00	0.00	100.00	100.00

SOURCE: American Commuity Survey, U.S. Census and CTDOL-Research/Author's calculations.

TABLE 2: Example Origin-Destination Matrix

ORIGIN	DESTINATION				
	AREA 1	AREA 2	AREA 3	AREA 4	AREA 5
AREA 1	A1-to/from-A1	A1-to-A2	A1-to-A3	A1-to-A4	A1-to-A5
AREA 2	A1-from-A2	A2-to/from-A2			
AREA 3	A1-from-A3		A3-to/from-A3		
AREA 4	A1-from-A4			A4-to/from-A4	
AREA 5	A1-from-A5				A5-to/from-A5

with areas 1 to 5 listed across both the row and column headings. The area could be any areas of interest in which trip origins and destinations are to be tracked. Note that the cells along the diagonal are those trips that originate and terminate in the same area. The cell identified as ORIGIN=Area 1, DESTINATION=Area 2, represents those trips that originate in Area 1 and terminate in Area 2. The cell identified as ORIGIN=Area 2, DESTINATION=Area 1, represents those trips that originate in Area 2, and terminate in Area 1.

IDENTIFYING REGIONAL LABOR-MARKET DYNAMICS: County-Level Commuter Flows

To implement the analysis discussed in the previous section, so as to get a more detailed sense of the geography of Connecticut's commuter sheds, and the dynamics of the region's labor markets, an Origin-Destination Matrix was constructed for Connecticut's eight counties as well as to and from the surrounding states that play a significant role in Connecticut's commuting patterns. Table 3, the Origin-Destination (OD) Matrix for Connecticut and its counties follows the framework laid out in Table 2.

The core of the Connecticut OD Matrix is presented in Tables 3A, 3B, and 3C. Table 3A is the within-state commuting patterns among the eight counties. Table 3B shows the origin of the commute by out-of-state commuters to their jobs in Connecticut counties. Table 3C presents the destination of Connecticut commuters to the out-of-state destinations to their jobs. The out-of-state areas depicted in Tables 3B and 3C play a significant role in Connecticut's commuting

patterns. All analysis that follows draws either directly or indirectly on the information contained in Tables 3A, 3B, and 3C.

Table 4 summarizes the total intra- and interstate commuter-flows in and out of Connecticut and its eight counties.

Interesting features of Table 4 are further explored in the following graphical analysis. Graph 1A presents the largest to smallest inflow of commuters. The top four counties that attract the most workers are not only the most populous counties, but also those that contain the central cities of MSAs. The largest is Hartford County which attracts 500,841 workers, including 473,876 workers from Hartford County itself. Next is Fairfield County, which attracts 455,882 workers, including 412,183 within-county commuters. Next is New Haven County, in which 382,412 workers commute to work, with 302,412 within-county commuters. New London County attracts 142,279 workers, with 132,074 coming from New London County itself.

From Graph 1B, the largest exporter of commuters is Fairfield County. Fairfield has 428,570 workers commuting to their jobs, with 335,872 commuting to jobs within Fairfield County, 30,186 commuting to jobs in other Connecticut counties, and 62,512 to counties outside of Connecticut. Hartford County's outflow is second, with 426,837, with 364,836 in-county commuters, 50,144 commuting other Connecticut counties, and 11,857 commuting to jobs in counties outside Connecticut.

New Haven County sends 415,140 workers to their jobs every day, 302,471 commuters traveling to jobs within New Haven County,

TABLE 3A: ORIGIN-DESTINATION MATRIX FOR CONNECTICUT COUNTIES--CT-TO-CT DESTINATIONS

ORIGIN CT	DEST. CT Fairfield	DEST. CT Hartford	DEST. CT Litchfield	DEST. CT Middlesex	DEST. CT New Haven	DEST. CT New London	DEST. CT Tolland	DEST. CT Windham	DEST. CT CT-to-CT OF
Fairfield County	335,872	2,644	2,976	405	23,357	326	378	100	366,058
Hartford County	3,058	364,836	3,724	12,323	19,237	2,377	8,715	710	414,980
Litchfield County	12,458	13,794	51,410	473	14,609	93	64	35	92,936
Middlesex County	1,315	19,829	132	42,932	13,902	3,761	508	211	82,590
New Haven County	58,319	25,901	8,144	8,813	302,471	1,781	519	161	406,109
New London County	538	7,679	65	4,249	2,004	113,010	1,084	3,061	131,690
Tolland County	462	35,583	57	1,299	1,488	1,939	30,234	3,305	74,367
Windham County	161	3,620	32	414	300	8,787	4,757	31,319	49,390
CT-to-CT INFLOW	412,183	473,886	66,540	70,908	377,368	132,074	46,259	38,902	1,618,120

TABLE 3B: ORIGIN-DESTINATION MATRIX FOR CONNECTICUT COUNTIES--TOTAL INFLOW

ORIGIN CT	DEST. CT Fairfield	DEST. CT Hartford	DEST. CT Litchfield	DEST. CT Middlesex	DEST. CT New Haven	DEST. CT New London	DEST. CT Tolland	DEST. CT Windham	DEST. CT CT-to-CT OF
CT-to-CT INFLOW	412,183	473,886	66,540	70,908	377,368	132,074	46,259	38,902	1,618,120
INFLOW FROM OTH CT COUNTIES	76,311	109,050	15,130	27,976	74,897	19,064	16,025	7,583	346,036
INFLOW FROM MA	772	22,285	766	535	1,098	619	1,768	1,700	29,543
INFLOW FROM NY	36,559	1,444	1,771	179	1,753	1,065	187	75	43,033
INFLOW FROM RI	255	527	18	155	342	7,592	92	1,102	10,083
TOT INFLOW FROM MA, NY, RI	37,586	24,256	2,555	869	3,193	9,276	2,047	2,877	82,659
INFLOW FROM OTH ST/COUNTRIES	6,113	2,699	318	317	1,851	929	146	120	12,493
TOTAL INFLOW FROM OUTSIDE CT	43,699	26,955	2,873	1,186	5,044	10,205	2,193	2,997	95,152
TOTAL INFLOW	455,882	500,841	69,413	72,094	382,412	142,279	48,452	41,899	1,713,272

TABLE 3C: ORIGIN-DESTINATION MATRIX FOR CONNECTICUT AND COUNTIES

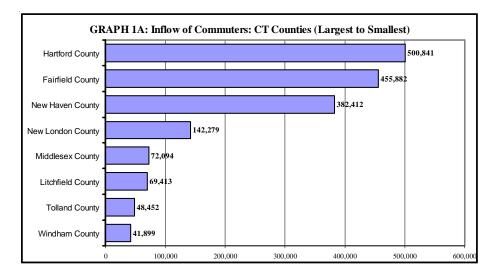| ORIGIN CT	DEST. CT CT-to-CT OF	DEST. OUTFLOW OTH CT CNT	DEST. OUTFLOW TO MA	DEST. OUTFLOW TO NY	DEST. OUTFLOW TO RI	DEST. OUTFLOW TO MA, NY, RI	DEST. OUTFLOW OTH ST/CNT	DEST. OUTFLOW TOT OUT CT	DEST. OUTFLOW TOTAL
Fairfield County									
Hartford County	366,058	30,186	608	56,886	36	57,530	4,982	62,512	428,570
Litchfield County	414,980	50,144	8,167	1,441	216	9,824	2,033	11,857	426,837
Middlesex County	92,936	41,526	646	3,249	46	3,941	622	4,563	97,499
New Haven County	82,590	39,658	312	679	179	1,170	410	1,580	84,170
New London County	406,109	103,638	883	6,152	118	7,153	1,878	9,031	415,140
Tolland County	131,690	18,680	778	848	3,647	5,273	800	6,073	137,763
Windham County	74,367	44,133	3,204	170	147	3,521	462	3,983	78,350
CT-to-CT INFLOW	49,390	18,071	5,602	151	2,283	8,036	341	8,377	57,767
INFLOW FROM OTH CT COUNTIES	1,618,120	346,036	20,200	69,576	6,672	96,448	11,528	107,976	1,726,096

another 103,638 commuting to jobs in other Connecticut counties, and 9,031 to jobs in counties outside Connecticut. New London has 137,763 residents commuting to their jobs, with 113,010 commuting within New London County, 18,680 commuting to jobs in other Connecticut counties, and 6,073 commuting to counties outside Connecticut.
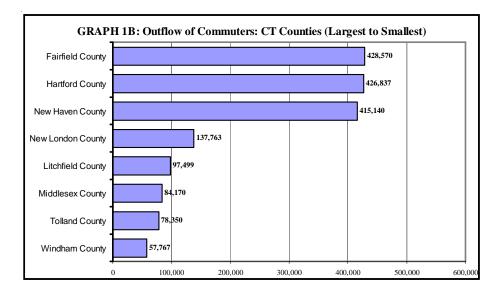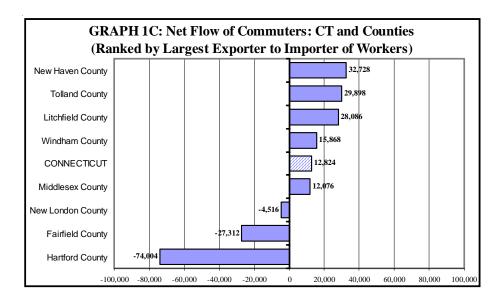
An interesting result is presented in Graph 1C, which depicts the Net Flows of commuters. A county with a positive value is a net exporter of workers, those with a negative value are net importers of workers, and a zero value would indicate, that on net, the county is neither, a net importer, or net exporter, of workers. Graph 1C ranks the counties by highest positive (net exporter) to highest negative (highest importer). Beginning with the counties with the highest negative values in Graph 1C, it is clear that Hartford, Fairfield, and New London counties are net importers of workers. This makes sense, as those counties that contain the central cities of MSAs are usually net importers of workers. Thus, Harford County with the City of Hartford, Fairfield County with Bridgeport, Stamford, and Danbury, and New London County with cities of New London, Groton, and Norwich are all net importers of workers. What is unusual is that New Haven County, with New Haven, the central city of an MSA, and Waterbury, the central city of an MSA, is not just a net exporter of workers, but the largest exporter of workers in Connecticut (+32,728). The other net-export counties in Connecticut do not contain central cities of MSAs, and are generally "suburban" counties (although Middletown, in Middlesex County,

TABLE 4: CT and Counties: Inflows, Outflows, and Net Flows*

CT COUNTY	INFLOW	OUTFLOW	NET FLOW
Fairfield County	455,882	428,570	-27,312
Hartford County	500,841	426,837	-74,004
Litchfield County	69,413	97,499	28,086
Middlesex County	72,094	84,170	12,076
New Haven County	382,412	415,140	32,728
New London County	142,279	137,763	-4,516
Tolland County	48,452	78,350	29,898
Windham County	41,899	57,767	15,868
CONNECTICUT	1,713,272	1,726,096	12,824

GRAPH 1A: Inflow of Commuters: CT Counties (Largest to Smallest)

County	Value
Hartford County	500,841
Fairfield County	455,882
New Haven County	382,412
New London County	142,279
Middlesex County	72,094
Litchfield County	69,413
Tolland County	48,452
Windham County	41,899

GRAPH 1B: Outflow of Commuters: CT Counties (Largest to Smallest)

County	Value
Fairfield County	428,570
Hartford County	426,837
New Haven County	415,140
New London County	137,763
Litchfield County	97,499
Middlesex County	84,170
Tolland County	78,350
Windham County	57,767

GRAPH 1C: Net Flow of Commuters: CT and Counties (Ranked by Largest Exporter to Importer of Workers)

County	Value
New Haven County	32,728
Tolland County	29,898
Litchfield County	28,086
Windham County	15,868
CONNECTICUT	12,824
Middlesex County	12,076
New London County	-4,516
Fairfield County	-27,312
Hartford County	-74,004

was, at one time, defined as the central city of an MSA). And, as mentioned above, Connecticut is a net exporter of labor (+12,824).

Detailed County-Level Commuter Flows

Some more detailed analysis is reported in this section for the four largest Connecticut counties: Fairfield County, Hartford County, New London County, and New Haven County.

Outside of Fairfield County itself, the next largest source of commuters into Fairfield County is New Haven County (58,319), followed by Westchester County (17,654), and Litchfield County (12,458). Outside the county itself, Fairfield County sends its commuters to New York County [Manhattan (27,264)], followed by New Haven County (23,357), and Westchester County (21,342).

The county sending the most commuters to Harford County, outside of the county itself, is Tolland (35,583), followed by New Haven County (25,901), and Middlesex County (19,829), Hampton County (18,595), and Litchfield County (13,794). Outside the county itself, Hartford sends 19,237 commuters to New Haven County, 12,323 to Middlesex County, 8,715 to Tolland County, and 6,164 commuters to Hampden County. ∎

[1] U.S. Census, Table 1. Residence County to Workplace County Flows for the United States and Puerto Rico Sorted by Residence Geography: 2006-2010 < http://www.census.gov/population/metro/data/other.html > Accessed on July 28, 2013 and Table 2. Residence County to Workplace County Flows for the United States and Puerto Rico Sorted by Workplace Geography: 2006-2010 < http://www.census.gov/population/metro/data/other.html > Accessed on July 28, 2013.

[2] Wikipedia. Accessed on July 28, 2013.