Dynamics of Economic Well-Being: Labor Force Turnover, 1996-1999

Household Economic Studies

As measured by the most recent labor force data available (from the Current Population Survey or CPS), over the last year, the unemployment rate for the United States has remained about the same – 5.8 percent in March 2003 and 5.7 percent in March 2004. That statistic compares a "snapshot" of individuals in March 2003 with another "snapshot" of different individuals for March 2004, but it is not a picture of what happened to the same individual's labor force behavior over that time period. Underlying these figures is the continual labor market interaction between workers and employers as they both seek to make employment decisions. Labor force turnover – the combined movement of people into, out of, and between jobs – is a dynamic process that continually changes the size and composition of the workforce in the United States.

This report uses the most recent longitudinal data available (from the Survey of Income and Program Participation or SIPP) to follow the same people over the 1996 to 1999 period to examine the characteristics of those who are newly employed, those who moved directly from one job to another, those who changed jobs with a spell of unemployment, and so on (see text box "SIPP – A Longitudinal Survey" for more information concerning SIPP).[1]

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[1] 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 and other factors. All comparisons made in this report have undergone statistical testing and are significant at the 90-percent confidence level unless otherwise noted. This report is an update of a section of a previous report, P70-48: "Dynamics of Economic Well-Being: Labor Force, 1991 – 1993," August 1995, which contained a statistical analysis of unemployment spells, labor turnover, and new job earnings using the 1991 SIPP panel. This report updates the labor force turnover portion of the earlier report by examining labor force turnover by major industry and occupation group and using the 1996 SIPP panel. Due to the redesign of the 1996 SIPP panel, the reader should use caution in making comparisons between the 1996 SIPP panel and other SIPP panels.

SIPP – A Longitudinal Survey

Turnover event estimates relate to the civilian noninstitutionalized population of the United States 15 years old and over at the end of the 1996 SIPP panel in December 1999. SIPP is a longitudinal panel survey that interviews a representative sample of U.S. households every four months. The population represented (the population universe) is the civilian noninstitutionalized population of the United States.

The core content of SIPP identifies demographic characteristics, labor force participation, government program participation, and various income sources of members of sampled households. The longitudinal estimates presented here are based on people who were interviewed in all waves of the reference period, or for whom imputed information exists. Efforts were made during the life of the panel to ensure that the sample remained representative of the noninstitutionalized population of the United States. If the people included in the estimates have different experiences of employment and unemployment than the people who did not respond initially, left the sample, or missed two or more consecutive waves, these longitudinal estimates may be biased. Each wave of the SIPP panel consists of four rotations interviewed in consecutive months. For rotations with missing data at the beginning of 1996 or end of 1999, these months are excluded from the analysis in this report.

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The report is divided into two parts. The first describes labor force turnover for the entire labor force and looks at how monthly turnover measures vary across the calendar year. The second part examines the average turnover rates for major industry and occupation groups from 1996 to 1999.[2]

MEASURING TURNOVER

A turnover event is a change in employment status or in employer (see box "Definitions of Labor Force Turnover"). The measures of labor force turnover used in this report are based on the number of adults (people aged 15 years and over) who experience a turnover event between 2 consecutive months.[3]

Turnover events are defined here in terms of employment. The turnover measures count only one turnover event between consecutive months for each individual; they exclude people who were self-employed at their primary job in either month. In addition, changes from the not-in-labor-force status to the unemployed (on layoff or looking-for-work) status are excluded from these turnover event

Definitions of Labor Force Turnover

Turnover Event: A labor turnover event is a change in employment status or in employer between two consecutive months. Three kinds are measured in this report:

Job Accession: A person goes from being not employed (that is, either unemployed or not in the labor force) in the first month to being employed in the second month.

Job Separation: A person goes from being employed in the first month to being not employed in the second month.

Employer Change: A person goes from having one primary employer in the first month to having a different one in the second month.

Primary Employer: The employer for which the person worked the most hours during the month.

measures. The measures also do not include changes occurring within a month and job changes within the same company. For these reasons, the turnover measures in this report underestimate the true amount of labor force turnover.[4] Appendix A provides some background on this measure. Appendix B provides standard errors for the estimates presented in this report.

HIGHLIGHTS

- In an average month over the March 1996–November 1999 period, 6.3 million workers (5.5 percent of the workforce) experienced a job turnover event.

- Monthly turnover rates displayed seasonal patterns: peak turnover coincided with the beginning and end of summer (May-June through August-September).

- On average, from month-to-month over the period, accessions accounted for 35.5 percent of turnover actions, separations for 33.8 percent, and employer changes for 30.7 percent.[5]

- Average monthly turnover rates varied by industry. Retail Trade (9.8 percent) and Entertainment and Recreation Services (12.9 percent) had high turnover rates. Manufacturing (4.4 percent); Transportation, Communications, and Other Public Utilities (4.8 percent); and Public Administration (3.2 percent) had low rates.

Turnover Data by Demographic Characteristic

Labor Force Turnover data by demographic characteristic have not yet been calculated from SIPP. The next edition of this report, covering 2001, 2002, and 2003, will contain such tabulations.

Table 1.
Labor Force Turnover Rates and the Composition of Labor Force Turnover, 1996-1999

(Numbers in thousands)

Year	Monthly period	Average monthly employment in period*	Total number of turnover events	Turnover rate (percent)	Composition of turnover (percent)		
					Turnover due to accessions	Turnover due to separations	Turnover due to employer changes
1996–1999 Average..................		113,393	6,274	5.5	35.5	33.8	30.7
90–percent Confidence Interval**		±958	±333	±0.3	±2.6	±2.6	±2.6
1996...............................	Mar.–Apr	110,030	6,261	5.7	46.7	28.9	24.4
	Apr.–May	111,120	6,774	6.1	45.3	29.6	25.1
	May–June	112,390	8,242	7.3	46.6	28.7	24.7
	June–July	113,185	6,898	6.1	37.0	35.3	27.7
	July–Aug.	113,435	7,131	6.3	37.5	32.0	30.5
	Aug.–Sept.	112,825	9,318	8.3	27.6	44.9	27.5
	Sept.–Oct.	112,040	6,728	6.0	35.6	34.9	29.4
	Oct.–Nov	112,155	6,087	5.4	36.3	33.2	30.5
	Nov.–Dec.	112,070	5,895	5.3	32.6	38.7	28.7
	Dec.–Jan.	111,995	6,458	5.8	37.8	34.4	27.8
1997...............................	Jan.–Feb.	111,980	5,805	5.2	33.1	37.4	29.5
	Feb.–Mar	112,015	5,716	5.1	36.0	30.5	33.4
	Mar.–Apr	112,400	5,734	5.1	38.1	30.1	31.8
	Apr.–May	112,925	5,905	5.2	40.2	30.1	29.7
	May–June	113,835	7,578	6.7	44.7	28.5	26.8
	June–July	114,355	6,976	6.1	33.2	35.8	31.0
	July–Aug.	114,270	6,905	6.0	33.6	33.4	33.0
	Aug.–Sept.	113,870	8,438	7.4	31.1	40.8	28.1
	Sept.–Oct.	113,420	6,142	5.4	33.6	34.9	31.5
	Oct.–Nov	113,310	5,636	5.0	32.3	34.8	33.0
	Nov.–Dec.	113,250	5,028	4.4	34.2	33.7	32.1
	Dec.–Jan.	113,170	6,090	5.4	32.6	35.5	31.8
1998...............................	Jan.–Feb.	113,065	5,151	4.6	34.7	35.3	30.0
	Feb.–Mar	113,400	5,658	5.0	40.3	27.9	31.9
	Mar.–Apr	113,720	5,646	5.0	31.3	32.3	36.4
	Apr.–May	113,925	5,820	5.1	37.9	29.9	32.1
	May–June	114,485	7,009	6.1	39.5	30.2	30.3
	June–July	114,515	6,724	5.9	28.9	37.6	33.5
	July–Aug.	114,415	6,436	5.6	37.5	31.4	31.0
	Aug.–Sept.	114,055	7,299	6.4	26.9	42.1	31.0
	Sept.–Oct.	113,620	6,082	5.4	35.0	31.2	33.8
	Oct.–Nov	113,860	5,359	4.7	34.8	30.3	35.0
	Nov.–Dec.	113,890	5,054	4.4	31.2	34.6	34.2
	Dec.–Jan.	113,740	5,532	4.9	33.9	36.1	29.9
1999...............................	Jan.–Feb.	113,705	5,266	4.6	34.0	33.1	32.9
	Feb.–Mar	113,845	5,271	4.6	36.6	32.1	31.3
	Mar.–Apr	114,025	5,033	4.4	34.6	32.0	33.4
	Apr.–May	114,370	5,922	5.2	39.8	30.4	29.8
	May–June	114,890	6,519	5.7	38.4	31.0	30.6
	June–July	114,850	5,861	5.1	29.0	38.5	32.5
	July–Aug.	114,560	6,014	5.2	33.3	33.7	33.0
	Aug.–Sept.	114,245	7,167	6.3	29.5	38.0	32.5
	Sept.–Oct.	114,005	5,904	5.2	34.1	31.9	34.0
	Oct.–Nov	114,030	5,567	4.9	31.5	32.9	35.6

*Average monthly employment in period represents the average number of people with a "primary" job in each month of the 2–month period and who are not in an active duty military industry group.
**The 90–percent confidence intervals for the individual 2–month periods are of similar magnitude.

Source: U.S. Census Bureau, Survey of Income and Program Participation, 1996 panel.

- Turnover rates also differed by occupation. Turnover was highest for the Farming, Forestry, and Fishing group (11.6 percent) and lowest for the Managerial group (3.9 percent).[6]

LABOR FORCE TURNOVER: 1996 TO 1999

Over the time period examined in this report, there was a tightening of the labor market; as measured by the CPS, the unemployment rate went from 5.5 percent in March 1996 to 4.1 percent in November 1999. In general, tight labor markets mean that employers find it more difficult to find workers, while employees gain leverage to demand pay raises and better fringe benefits, and greater flexibility to switch jobs.

For the March 1996–November 1999 period as a whole, Table 1 shows that the number of people with a turnover event averaged 6.3 million per month, producing an average monthly turnover rate of 5.5 percent. The number of people with turnover events ranged from a peak of 9.3 million in August-September 1996 to a low of 5.0 million, which occurred in several periods. These periods also had the highest (8.3 percent) and lowest (4.4 percent) turnover rates, respectively. On average over the period, accessions accounted for 35.5 percent of turnover events, separations for 33.8 percent, and employer changes for 30.7 percent.

Figures 1 and 2 present the components of labor force turnover by monthly period for 1996-1999 in absolute amounts (Figure 1) and as a

[6] The turnover rate for the Farming, Forestry, and Fishing occupation group was not significantly different from the Sales and Service occupation groups. The turnover rate for the Managerial occupation group was not significantly different from the Professional Specialty and Technical occupation groups.

Figure 1.
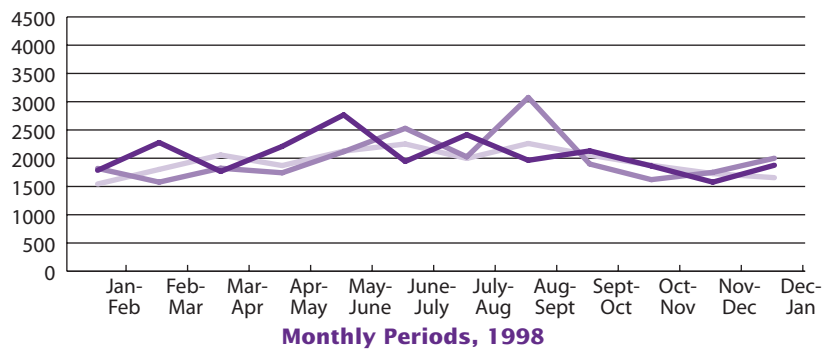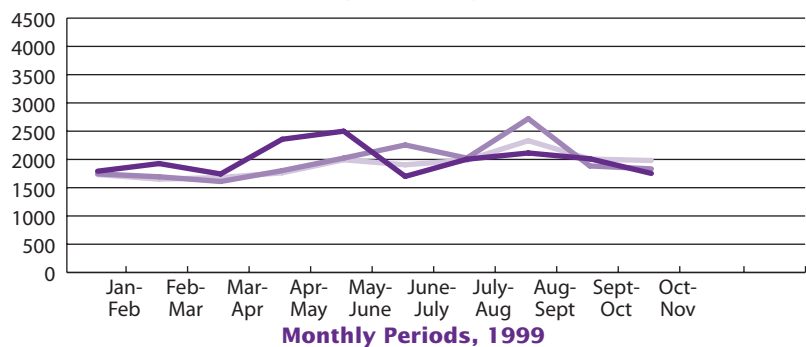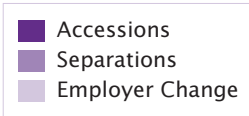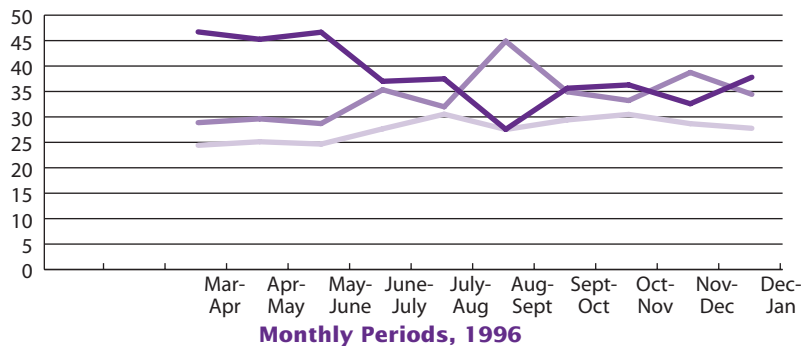## Components of Labor Force Turnover, 1996-1999
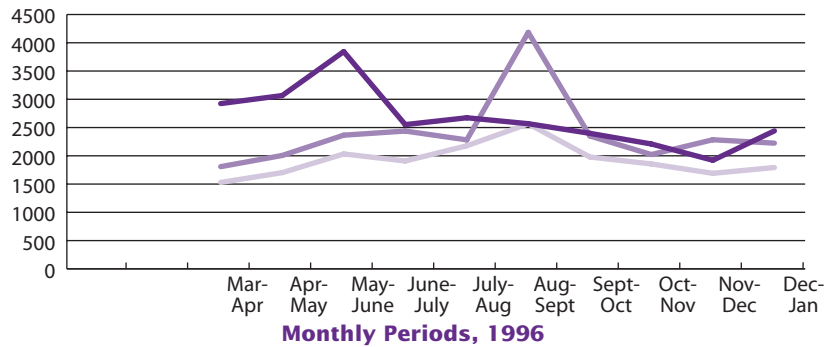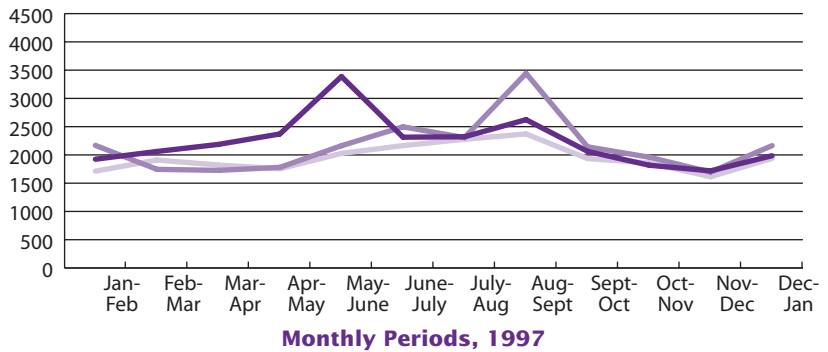
Source: U.S. Census Bureau, Survey of Income and Program Participation, 1996 panel.

Figure 2.

Components of Labor Force Turnover as a Percentage of Total Turnover, 1996-1999
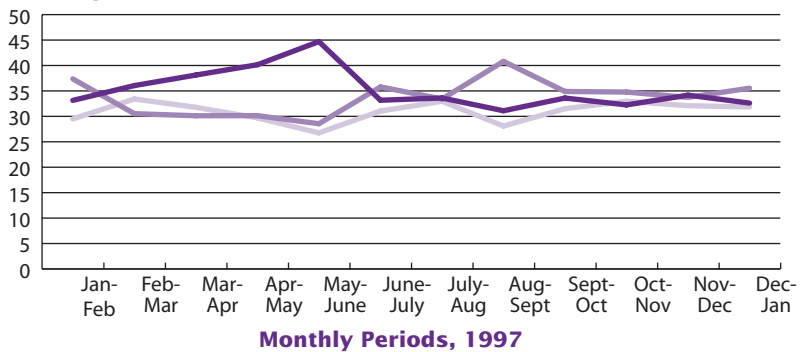
Legend: Accessions | Separations | Employer Change

Percentage of Total Turnover

Monthly Periods, 1996

Percentage of Total Turnover

Monthly Periods, 1997

Percentage of Total Turnover

Monthly Periods, 1998

Percentage of Total Turnover

Monthly Periods, 1999
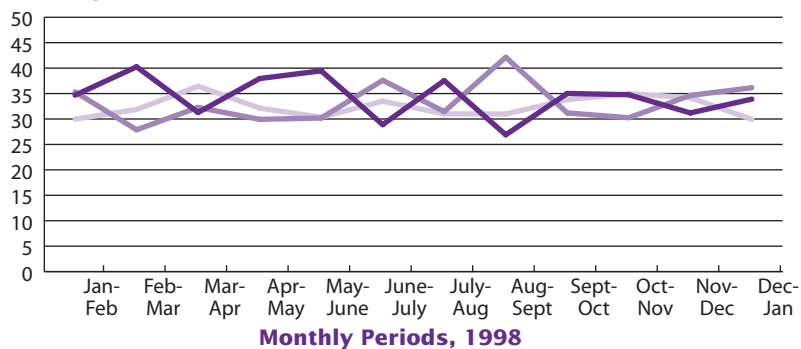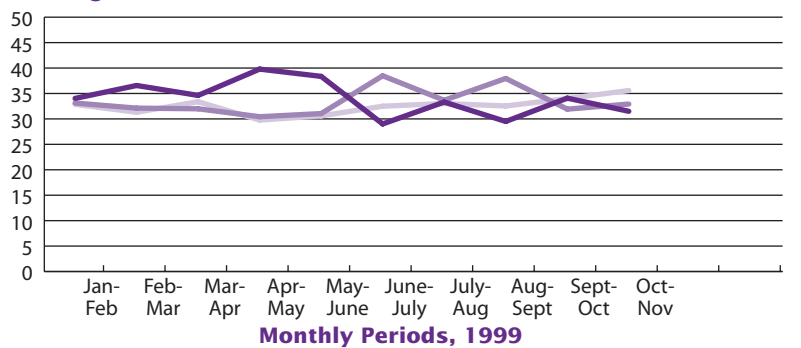
Source: U.S. Census Bureau, Survey of Income and Program Participation, 1996 panel.

percentage of total turnover (Figure 2).[7] The figures show that, in general, the numbers and percentages of events were fairly evenly distributed among the three components. The absolute and relative levels of the components mostly moved upward and downward in step with each other.

Figures 1 and 2 also reveal that labor force turnover contained a strong seasonal component. In 1996, the monthly turnover rate increased steadily from 5.7 percent in March-April to 7.3 percent in May-June (see Table 1).[8] This rise in turnover activity reflects the labor dynamics associated with the spring retail surge, the onset of agricultural activity, improving weather, and the influx of young workers into the workforce at the end of the school year. The turnover rate declined somewhat over the summer months in 1996, to peak again in the late summer and early fall (8.3 percent in August–September), as young workers returned to school and many seasonal agricultural jobs ended. The highest percentage of turnover events attributed to separations, 44.9 percent, was associated with this latter peak. This same seasonal pattern can also be seen for years 1997, 1998, and 1999, though the strongest pattern occurred in 1996.

LABOR FORCE TURNOVER BY INDUSTRY

Turnover events occur within an industry framework: a person either enters an industry, leaves an industry, or changes jobs within the same

[7] The detailed statistics on which Figures 1 and 2 are based are shown in Table 1.

[8] Since this presentation focuses on seasonality, we chose to use 1996 data since they are less affected by attrition than later data.

Table 2.
Average Monthly Employment, Average Total Turnover, Rate of Turnover, and Composition of Labor Force Turnover by Industry Group: 1996-1999
(Numbers in thousands)

Industry group[1]	Average monthly employ–ment[2]	Average total industry turnover[2]	Industry turnover rate[3] (percent)	Turnover due to accessions	Turnover due to separa–tions	Turnover due to employer changes		
						Inter–industry[4]		Intra–industry
						Due to inflow from other industries	Due to outflow to other industries	Due to within–industry group
Agriculture, forestry, and fisheries....	2,163	229	10.6	36.7	33.6	10.6	12.8	6.2
Mining...........................	598	30	5.0	26.4	28.1	15.0	15.8	14.7
Construction	5,733	440	7.7	29.3	27.6	15.8	12.6	14.7
Manufacturing	19,494	853	4.4	27.3	30.9	15.9	13.4	12.5
Transportation, communications, and other public utilities	7,764	375	4.8	26.2	27.6	20.0	14.3	11.8
Wholesale trade	4,598	248	5.4	25.3	25.4	22.6	20.0	6.7
Retail trade	18,453	1,805	9.8	32.6	30.1	10.2	14.2	12.8
Finance, insurance, and real estate ..	6,940	356	5.1	25.7	25.1	20.0	16.0	13.1
Business and repair services........	6,407	671	10.5	30.2	24.8	17.3	19.5	8.3
Personal services.................	3,115	326	10.5	33.0	30.5	13.7	16.2	6.5
Entertainment and recreation services	2,107	272	12.9	31.4	29.5	16.2	18.3	4.5
Professional and related services....	29,113	1,505	5.2	31.2	29.2	12.8	11.2	15.6
Public administration	6,908	224	3.2	27.9	29.5	18.4	16.6	7.6
All industries[5]	113,393	7,333	6.5	30.3	28.9	14.5	14.5	11.9

[1]Industry group categories are based on the 1990 Census Industry Classification System.

[2]Refers to the average across the 1996–1999 time frame used in this report; percentages are calculated on that basis.

[3]Industry turnover rate equals average total industry turnover divided by average monthly employment.

[4]The movement of a worker between industry groups is counted twice: once at the point of exit (former industry) and once again at the point of entry (new industry). In the aggregate, the levels of inflow and outflow across all industries are equivalent.

[5]A turnover event involving a movement between industries is tallied as a turnover event for each of the two industries. For this reason, the data in the "All industries" row of Table 2 does not agree with the corresponding data in Table 1. A turnover movement within an industry is tallied only once, as an employer change. Also, due to differences in industry and occupation group classification systems, some individu–als who are classified as having a military occupation are classified as working in a nonmilitary industry group. Hence, the "All industries" row in Table 2 and the "All occupations" row in Table 3 will not be identical.

Source: U.S. Census Bureau, Survey of Income and Program Participation, 1996 panel.

industry. Table 2 shows how turnover varies by industry group.[9]

Over the 1996-1999 period, the Retail Trade industry had a relatively high turnover rate, 9.8 percent, and accounted for the largest number of average industry turnover events (1.8 million out of 7.3 million for all industries). The Entertainment and Recreation Services industry had one of the highest turnover rates among industries (12.9 percent).[10] The Agriculture, Forestry, and Fishing group – an industry highly influenced by seasonal change – also had a high turnover rate (10.6 percent), as did Business and Repair Services (10.5 percent) and Personal Services (10.5 percent).[11] Except for Construction (7.7 percent), all other industries had turnover rates between 3 percent and 5 percent, with Public Administration being one of the lowest at 3.2 percent.

Each of the major components of industry turnover – accessions, sepa-rations, and employer changes – accounted for about one-third of overall industry turnover (see the "Composition of Turnover" columns in Table 2). The sub-categories of the employer-change component – inflows from other industries, out-flows to other industries, and within-industry transfers – also accounted for about one-third each of the over-all contribution of the employer-changes component to total industry turnover.

[9]A turnover event involving a movement between industries is tallied as a turnover event for each of the two industries. For this reason, the data in the "All Industries" row of Table 2 does not agree with the corresponding data in Table 1. A turnover movement within an indus-try is tallied only once, as an employer change.

[10]The turnover rate for the Entertainment and Recreation Services industry group was not statistically different from the turnover rates for the Agriculture, Forestry, and Fishing; Retail Trade; Business and Repair Services; and Personal Services industry groups.

[11]The turnover rates for the Agriculture, Forestry, and Fishing; Business and Repair Services; and Personal Services industry groups were not statistically different from each other.

Table 3.
Average Monthly Employment, Average Total Turnover, Rate of Turnover, and Composition of Labor Force Turnover by Occupation Group: 1996-1999
(Numbers in thousands)

Occupation group[1]				Composition of turnover (percent)				
						Turnover due to employer changes		
						Inter–occupation[4]		Intra–occupation
	Average monthly employ–ment[2]	Average total occupation turnover[2]	Occupa–tion turnover rate[3] (percent)	Turnover due to acces–sions	Turnover due to separa–tions	Due to inflow from other occupa–tions	Due to outflow from other occupa–tions	Due to within occupation group
Managerial	14,947	577	3.9	22.8	27.6	18.9	17.8	12.9
Professional specialty.	17,212	798	4.6	29.9	27.5	13.9	12.3	16.5
Technical.	4,008	194	4.8	25.1	24.2	21.4	18.3	11.0
Sales	12,465	1,080	8.7	31.8	28.3	13.0	16.2	10.7
Administrative support	18,620	1,140	6.1	30.5	28.4	14.8	13.3	13.0
Service	15,046	1,424	9.5	33.7	30.7	10.5	13.0	12.0
Farming, forestry, and fishing	2,261	262	11.6	37.0	34.0	10.5	12.0	6.5
Precision production, craft, and repair.	11,637	593	5.1	26.4	28.4	16.1	13.0	16.3
Operators, fabricators, and laborers.	17,160	1,206	7.0	31.5	30.9	13.1	11.9	12.6
All occupations[5]	113,356	7,274	6.4	30.6	29.2	13.8	13.8	12.7

[1]Occupation group categories are based on the 1990 Census Occupation Classification System.
[2]Refers to the average across the 1996–1999 time frame used in this report; percentages are calculated on that basis.
[3]Occupation turnover rate equals average total occupation turnover divided by average monthly employment.
[4]The movement of a worker between occupation groups is counted twice: once at the point of exit (former occupation) and once again at the point of entry (new occupation). In the aggregate, the levels of inflow and outflow across all occupation are equivalent.
[5]A turnover event involving a movement between occupations is tallied as a turnover event for each of the two occupations. For this reason, the data in the "All occupations" row of Table 3 does not agree with the corresponding data in Table 1. A turnover movement within an occupation is tallied only once, as an employer change. Also, due to differences in industry and occupation group classification systems, some individuals who are classified as having a military occupation are classified as working in a nonmilitary industry group. Hence, the "All indus–tries" row in Table 2 and the "All occupations" row in Table 3 will not be identical.

Source: U.S. Census Bureau, Survey of Income and Program Participation, 1996 panel.

LABOR FORCE TURNOVER BY OCCUPATION

Not surprisingly, the degree of labor turnover varies by occupation as well as by industry, as shown in Table 3.[12] Occupational turnover data often reflect, to a large degree, the patterns observed in the industry turnover data because particular occupations are often closely associated with certain industries.

Over the 1996-1999 period, the occupational group Farming, Forestry, and Fishing had one of the highest occupational turnover rates (11.6 percent).[13] This occupation group is closely associated with the Agriculture, Forestry, and Fisheries industry, which, as described above, also had a very high turnover rate. The Service occupation group experienced a large number of turnover events (1.4 million) and had a high turnover rate (9.5 percent). Many of the jobs in this occupation group are in the Retail Trade and Entertainment and Recreation Services industries.

The Managerial (3.9 percent), Professional Specialty (4.6 percent), and Technical (4.8 percent) occupation groups had low turnover rates.[14]

Employer changes were particularly significant for Managers and Technicians, contributing to about half of the turnover actions for these occupations. The contribution of accessions to total turnover for most of the occupations was relatively balanced by that of separations.

[12]A turnover event involving a movement between occupations is tallied as a turnover event for each of the two occupations. For this reason, the data in the "All Occupations" row of Table 3 does not agree with the corresponding data in Table 1. A turnover movement within an occupation is tallied only once, as an employer change.

[13]The turnover rates for the Farming, Forestry, and Fishing; Sales; and Service occupation groups were not statistically different from each other.

[14]The turnover rates for the Managerial; Professional Specialty; and Technical occupation groups were not significantly different from each other.

SOURCE OF THE DATA

The population represented (the population universe) in the 1996 Survey of Income and Program Participation (SIPP) is the civilian noninstitutionalized population of the United States. The data in this report refer to the period from March 1996 through November 1999. The institutionalized population, which is excluded from the population universe, is composed primarily of the population in correctional institutions and nursing homes (91 percent of the 4.1 million institutionalized population in Census 2000).

ACCURACY OF THE ESTIMATES

Statistics from surveys are subject to sampling and nonsampling error. All comparisons presented in this report have taken sampling error into account and are significant at the 90-percent confidence level. This means the 90-percent confidence interval for the difference between the estimates being compared does not include zero. Nonsampling errors in surveys may be attributed to a variety of sources, such as how the survey was designed, how respondents interpret questions, how able and willing respondents are to provide correct answers, and how accurately the answers are coded and classified. The Census Bureau employs quality control procedures throughout the production process, including the overall design of surveys, the wording of questions, review of the work of interviewers and coders, and statistical review of reports to minimize these errors.

The Survey of Income and Program Participation (SIPP) weighting procedure uses ratio estimation, whereby sample estimates are adjusted to independent estimates of the national population by age, race, sex, and Hispanic origin. This weighting partially corrects for bias due to undercoverage, but biases may still be present when people who are missed by the survey differ from those interviewed in ways other than the age, race, sex, and Hispanic origin. How this weighting procedure affects other variables in the survey is not precisely known. All of these considerations affect comparisons across different surveys or data sources.[15]

For further information on the source of the data and accuracy of the estimates, including standard errors and confidence intervals, go to <http://www.sipp.census.gov/sipp/sourceac/S&A96_030228.Long.pdf> or contact John L. Boies, Demographic Statistical Methods Division, at <John.L.Boies@census.gov>.

USER COMMENTS

The Census Bureau welcomes the comments and advice of users of its data and reports. If you have suggestions or comments, please send an email inquiry to: <hhes-info@census.gov>.

SUGGESTED CITATION

Gottschalck, Alfred O. *Dynamics of Economic Well-Being: Labor Force Turnover, 1996-1999.* Current Population Reports, P70-96. U.S. Census Bureau, Washington, DC. 2004.

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[15] For a more detailed discussion of SIPP sampling and weighting, see *http://www.sipp.census.gov/sipp/sam_and_wt.html.*

APPENDIX A.
MEASURING LABOR FORCE TURNOVER

The following steps were used to calculate the labor force turnover rate for pairs of consecutive months shown in Table 1:

Step 1 Count the number of people who experienced a turnover event between the given pair of consecutive months: Total number of turnover events = accessions + separations + employer changes.

Step 2 Calculate the average monthly number of employed people in the two months: (number of employed people in first month + number of employed people in second month) divided by 2.

Step 3 Divide the sum calculated in Step 1 by the monthly average calculated in Step 2. Multiply the quotient by 100 to obtain a percentage.

By definition, labor force turnover represents a change in employment status or employer between a given pair of consecutive months (month n and month n+1) during the observation period. At least four possible measures could be used as the base (denominator) of the turnover rate formula outlined in Step 3 above:

Base 1 = Number of people employed in month n.

Base 2 = Number of people employed either in month n or in month n+1.

Base 3 = Number of people employed in both n and month n+1.

Base 4 = The sum of the number of people employed in month n plus the number of people employed in month n+1, divided by 2.

Base 1 considers all people employed in the first month as the base for calculating turnover. Although this method ignores some individuals in the numerator (total turnover incidence), such as those out of the labor force in the first month and in the labor force in the second month, it misses only half as many people as does Base 3, which was used in the previous Census Bureau report on labor force turnover (Series P-70-48, Dynamics of Economic Well- Being: Labor Force, 1991 to 1993, U.S. Government Printing Office, Washington, DC, August 1995).

With Base 2, all people counted in the numerator are also included in the denominator. This method biases upward the monthly average number of people in the labor force, which, in turn, biases downward the calculated turnover rate.

Base 3, on balance, is too restrictive (generates the smallest base) and over-estimates labor force turnover. If turnover is calculated using Base 3, people who are out of the labor force in either month 1 or month 2 are not included in the base, but would be included in the numerator.

Base 4 was used in calculating the data for the figures and tables presented in this report. Since turnover is possible between months, it can be argued that the formula base should be an average of the number of people in the labor force during the two-month period.

Table B–1.
Standard Errors for Average Monthly Employment, Labor Force Turnover Rates, and the Composition of Labor Force, 1996-1999

(Numbers in thousands)

Year	Monthly period	Average monthly employment in period*	Total number of turnover events	Turnover rate (percent)	Composition of turnover (percent)		
					Turnover due to accessions	Turnover due to separations	Turnover due to employer changes
1996–1999 Average....................		599	208	0.2	1.6	1.6	1.6
1996.............................	Mar.–Apr	601	208	0.2	1.7	1.5	1.4
	Apr.–May	600	216	0.2	1.6	1.5	1.4
	May–June	599	237	0.2	1.5	1.3	1.3
	June–July	599	217	0.2	1.5	1.5	1.4
	July–Aug.	599	221	0.2	1.5	1.5	1.5
	Aug.–Sept.	599	251	0.2	1.2	1.4	1.2
	Sept.–Oct.	600	215	0.2	1.6	1.5	1.5
	Oct.–Nov	599	205	0.2	1.6	1.6	1.6
	Nov.–Dec.	600	202	0.2	1.6	1.7	1.6
	Dec.–Jan.	600	211	0.2	1.6	1.6	1.5
1997.............................	Jan.–Feb.	600	200	0.2	1.6	1.7	1.6
	Feb.–Mar	600	199	0.2	1.7	1.6	1.7
	Mar.–Apr	599	199	0.2	1.7	1.6	1.6
	Apr.–May	599	202	0.2	1.7	1.6	1.6
	May–June	598	228	0.2	1.5	1.4	1.4
	June–July	598	219	0.2	1.5	1.5	1.5
	July–Aug.	598	218	0.2	1.5	1.5	1.5
	Aug.–Sept.	598	240	0.2	1.3	1.4	1.3
	Sept.–Oct.	599	206	0.2	1.6	1.6	1.6
	Oct.–Nov	599	197	0.2	1.7	1.7	1.7
	Nov.–Dec.	599	187	0.2	1.8	1.8	1.8
	Dec.–Jan.	599	205	0.2	1.6	1.6	1.6
1998.............................	Jan.–Feb.	599	189	0.2	1.8	1.8	1.7
	Feb.–Mar	599	198	0.2	1.7	1.6	1.7
	Mar.–Apr	599	197	0.2	1.6	1.7	1.7
	Apr.–May	598	200	0.2	1.7	1.6	1.6
	May–June	598	219	0.2	1.6	1.5	1.5
	June–July	598	215	0.2	1.5	1.6	1.5
	July–Aug.	598	210	0.2	1.6	1.5	1.5
	Aug.–Sept.	598	223	0.2	1.4	1.5	1.4
	Sept.–Oct.	599	205	0.2	1.6	1.6	1.6
	Oct.–Nov	598	192	0.2	1.7	1.7	1.7
	Nov.–Dec.	598	187	0.2	1.7	1.8	1.8
	Dec.–Jan.	598	195	0.2	1.7	1.7	1.6
1999.............................	Jan.–Feb.	599	191	0.2	1.7	1.7	1.7
	Feb.–Mar	598	191	0.2	1.8	1.7	1.7
	Mar.–Apr	598	187	0.2	1.8	1.8	1.8
	Apr.–May	598	202	0.2	1.7	1.6	1.6
	May–June	598	212	0.2	1.6	1.5	1.5
	June–July	598	201	0.2	1.6	1.7	1.6
	July–Aug.	598	204	0.2	1.6	1.6	1.6
	Aug.–Sept.	598	222	0.2	1.4	1.5	1.5
	Sept.–Oct.	598	202	0.2	1.6	1.6	1.6
	Oct.–Nov	598	196	0.2	1.7	1.7	1.7

*Average monthly employment in period represents the average number of people with a "primary" job in each month of the 2–month period and who are not in an active duty military industry group.

Source: U.S. Census Bureau, Survey of Income and Program Participation, 1996 panel.

Table B–2.
Standard Errors for Average Monthly Employment, Total Turnover, Rate of Turnover, and Composition of Labor Force Turnover by Industry Group: 1996-1999
(Numbers in thousands)

Industry group[1]				Composition of turnover (percent)				
						Turnover due to employer changes		
						Inter–industry[4]		Intra–industry
	Average monthly employ–ment[2]	Average total industry turnover[2]	Industry turnover rate[3] (percent)	Turnover due to accessions	Turnover due to separa–tions	Due to inflow from other industries	Due to outflow to other industries	Due to within–industry group
Agriculture, forestry, and fisheries....	123	40	1.8	8.5	8.3	5.4	5.9	4.2
Mining............................	65	15	2.4	21.5	21.9	17.4	17.8	17.3
Construction	199	56	0.9	5.8	5.7	4.6	4.2	4.5
Manufacturing.....................	354	78	0.4	4.1	4.2	3.3	3.1	3.0
Transportation, communications, and other public utilities	230	52	0.6	6.1	6.1	5.5	4.8	4.4
Wholesale trade	179	42	0.9	7.4	7.4	7.1	6.8	4.2
Retail trade	345	113	0.6	2.9	2.9	1.9	2.2	2.1
Finance, insurance, and real estate ..	218	50	0.7	6.2	6.1	5.6	5.2	4.8
Business and repair services........	210	69	1.0	4.7	4.4	3.9	4.1	2.8
Personal services..................	148	48	1.5	6.9	6.8	5.1	5.4	3.6
Entertainment and recreation services	122	44	1.9	7.5	7.4	6.0	6.2	3.4
Professional and related services....	421	103	0.3	3.2	3.1	2.3	2.2	2.5
Public administration	218	40	0.6	8.0	8.1	6.9	6.6	4.7
All industries[5]	599	224	0.2	1.4	1.4	1.1	1.1	1.0

[1]Industry group categories are based on the 1990 Census Industry Classification System.

[2]Refers to the average across the 1996–1999 time frame used in this report; percentages are calculated on that basis.

[3]Industry turnover rate equals average total industry turnover divided by average monthly employment.

[4]The movement of a worker between industry groups is counted twice: once at the point of exit (former industry) and once again at the point of entry (new industry). In the aggregate, the levels of inflow and outflow across all industries are equivalent.

[5]A turnover event involving a movement between industries is tallied as a turnover event for each of the two industries. For this reason, the data in the "All industries" row of Table B–2 does not agree with the corresponding data in Table B–1. A turnover movement within an industry is tallied only once, as an employer change. Also, due to differences in industry and occupation group classification systems, some individuals who are classified as having a military occupation are classified as working in a nonmilitary industry group. Hence, the "All indus–tries" row in Table B–2 and the "All occupations" row in Table B–3 will not be identical.

Source: U.S. Census Bureau, Survey of Income and Program Participation, 1996 panel.

Table B–3.
Standard Errors for Average Monthly Employment, Total Turnover, Rate of Turnover, and Composition of Labor Force Turnover by Occupation Group: 1996-1999

(Numbers in thousands)

Occupation group[1]	Average monthly employ–ment[2]	Average total occupation turnover[2]	Occupa–tion turnover rate[3] (percent)	Composition of turnover (percent)				
				Turnover due to accessions	Turnover due to separa–tions	Turnover due to employer changes		
						Inter–occupation[4]		Intra–occupation
						Due to inflow from other industries	Due to outflow from other industries	Due to within–occupation group
Managerial.........................	314	64	0.4	4.7	5.0	4.3	4.2	3.7
Professional specialty	334	75	0.4	4.3	4.2	3.3	3.1	3.5
Technical	167	37	0.9	8.3	8.2	7.8	7.4	6.0
Sales.............................	288	87	0.7	3.8	3.6	2.7	3.0	2.5
Administrative support..............	347	90	0.5	3.6	3.6	2.8	2.7	2.7
Service...........................	315	100	0.6	3.3	3.3	2.2	2.4	2.3
Farming, forestry, and fishing	126	43	1.8	7.9	7.8	5.0	5.3	4.1
Precision production, craft, and repair	279	65	0.5	4.8	4.9	4.0	3.7	4.0
Operators, fabricators, and laborers	334	92	0.5	3.6	3.5	2.6	2.5	2.5
All occupations[5]	599	223	0.2	1.4	1.4	1.1	1.1	1.0

[1]Occupation group categories are based on the 1990 Census Occupation Classification System.

[2]Refers to the average across the 1996–1999 time frame used in this report; percentages are calculated on that basis.

[3]Occupation turnover rate equals average total occupation turnover divided by average monthly employment.

[4]The movement of a worker between occupation groups is counted twice: once at the point of exit (former occupation) and once again at the point of entry (new occupation). In the aggregate, the levels of inflow and outflow across all occupations are equivalent.

[5]A turnover event involving a movement between occupations is tallied as a turnover event for each of the two occupations. For this rea–son, the data in the "All occupations" row of Table B–3 does not agree with the corresponding data in Table B–1. A turnover movement within an occupation is tallied only once, as an employer change. Also, due to differences in industry and occupation group classification systems, some individuals who are classified as having a military occupation are classified as working in a nonmilitary industry group. Hence, the "All industries" row in Table B–2 and the "All occupations" row in Table B–3 will not be identical.

Source: U.S. Census Bureau, Survey of Income and Program Participation, 1996 panel.