

**December 2001**

**Bureau of Labor Statistics**  
**Office of Productivity and Technology**  
**2000 HOURS AT WORK SURVEY**

Based on the Hours at Work Survey (HWS) of establishments, ratios of hours at work to hours paid and their changes from the previous year (with standard errors in parentheses) for the year 2000 were:

	<b>2000 Ratios of hours at work to hours paid</b>	<b>Changes in Ratios from 1999 to 2000</b>
<b>Nonfarm Establishments</b>	0.934 (.001)	-0.003 (.003)
<b>Manufacturing(Mfg.)</b>	0.916 (.001)	-0.004 (.002)
<b>Durable Mfg.</b>	0.914 (.002)	-0.004 (.002)
<b>Nondurable Mfg.</b>	0.920 (.002)	-0.004 (.003)
<b>Nonmanufacturing</b>	0.938 (.002)	-0.003 (.004)

The Hours at Work Survey is used to construct ratios of hours at work to hours paid for production and non-supervisory workers for each of the major industrial sectors of the nonagricultural economy on an annual basis. The Bureau of Labor Statistics (BLS) of the U. S. Department of Labor has been conducting this survey since 1981 for use in measuring productivity.

**Background**

Data on average weekly hours collected by the BLS Current Employment Statistics (CES) program represent hours paid. Hours paid include paid leave for holidays, vacations, sick, and personal or administrative leave (e.g. personal business, funeral leave, and jury duty). These forms of paid leave represent time not devoted to production. Hours at work exclude paid leave while hours paid do not. Productivity is better measured as the ratio of output to hours spent in production.

The HWS survey is used to develop *ratios of hours at work to hours paid* for 29 industries (20 in manufacturing and 9 in non-manufacturing). These ratios then are used to convert CES measures of hours paid for nonagricultural production and non-supervisory employees to measures of hours at work. All historical data for labor productivity are measured as the ratio of output to hours at work. The historical series are based on HWS results and other BLS data sources (see *Hours at work: a new base for BLS productivity statistics*, Monthly Labor Review, February 1990).

### **Survey Results**

The ratio of hours at work to hours paid (HW/HP) declined in each of the aggregate sectors. These declines reversed increases in the ratios between 1998 and 1999. From 1999 to 2000, the ratio for nonfarm establishments declined annually 0.3 percent. Historically, the ratio for nonfarm establishments has exhibited neither a trend nor sharp changes. Ratios have ranged from 0.925 to 0.938 since 1983 (see Table 1). The manufacturing sector HW/HP ratio declined 0.4 percent (from 0.921 in 1999 to .916 in 2000), while the nonmanufacturing sector ratio fell 0.3 percent (from 0.941 in 1999 to 0.938 in 2000). Within manufacturing, the HW/HP ratio for durable goods fell 0.4 percent (from 0.918 in 1999 to 0.914 in 2000) while the ratio fell 0.5 percent for nondurable goods (from 0.925 in 1999 to 0.920 in 2000).

Manufacturing industries have consistently offered more paid leave (where the paid leave rate is defined as  $(1.0 - \text{hours at work ratio}) * 100$  percent) than nonmanufacturing industries (see chart 1). For example, the paid leave rate in manufacturing was 8.4 percent compared to 6.2 percent in nonmanufacturing in 2000. Nonmanufacturing employees account for more than 80 percent of nonfarm business sector employment in 2000.

At the industry level, the HW/HP ratio rose in only 10 industries (2 durable manufacturing, 5 nondurable manufacturing and 3 nonmanufacturing), while 19 industries (8 durable manufacturing, 5 nondurable manufacturing and 6 nonmanufacturing) reported declines.

Many industries reported large declines in the HW/HP ratios between 1999 and 2000 (see Table 2). Miscellaneous manufacturing, chemicals, apparel, paper, communications, electric, gas, and sanitary services, retail trade and finance, insurance, and real estate (FIRE) posted declines of more than 1 percent, although tobacco manufacturers increased its ratio by more than 1 percent. Two manufacturing industries, apparel and other textiles registered their lowest ratios since the survey began, while tobacco manufacturers exceeded its historically highest ratio.

In 2000, ratios for tobacco manufacturers wholesale trade and services reversed sharp declines reported in the previous year. This pattern of reversals was quite common at the industry level. Of the 19 industries with falling ratios in 2000, 15 industries had increases in their ratios in 1999. Ratios for only two industries, lumber and wood products and electrical equipment, fell in both the 1999 and 2000 survey years.

The HWS is based on a sample of about 5,500 establishments. Because it is a sample survey, ratios are subject to sampling errors. For the first 14 years of the survey, the Hours at Work Survey achieved at least a 75 percent response rate. However, response rates have dropped sharply the last five years. Since the redesign in 1996, the collection criteria for the computer assisted telephone interviews are more stringent. The response rate has fallen further despite new collection methods designed to improve survey response.

In 2000 the response rate was only 50 percent. As a result, the variances of the estimates, particularly at the detailed industry level, were higher than in earlier years. The increased variances have made it slightly more difficult to determine whether the changes in the ratios are significant. In services, for example, the ratio increased by 0.007 (from 0.934 in 1999 to 0.941 in 2000). However, the standard error of this change was 0.009, which is relatively large, making the change in the HWS ratio statistically insignificant.

In addition, the low response rates increase the likelihood that responding establishments are not representative of the entire industry or sector. For example, it could be the case that only those establishments that can most easily comply with the survey requests have responded. These establishments may be better able to respond because their records are

computerized. It may be that the likelihood that an establishment responds is correlated to the amount of paid leave offered to its employees. If so, the survey responses could be unrepresentative of nonfarm establishments and the reported ratios could be biased. A bias that originates in this fashion is referred to as “non-response bias”.

The risk for non-response bias is minimized by maintaining a high overall response rate. The continued decline in the HWS response rate from 75 percent in 1994 to 50 percent in 2000 should give users of these data reason for caution. Because of added variance of the 1995-2000 HWS surveys as well as the added risk of non-response bias, it may be preferable to average the 1999 and 2000 survey results especially if the primary focus is on the level of the ratios rather than on changes in the ratios.

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