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MONTHLY LABOR REVIEW

Labor Month In Review

QUALITY OF WORKLIFE. The Labor-Management Services Administration of the U.S. Department of Labor invited 24 experienced practitioners of labor-management cooperation to Airlie, Va., September 9 to 11, to examine the outlook for quality of worklife and similar programs of employee involvement. The group—corporate executives, union representatives, academic researchers, and consultants—addressed several specific questions.

What should be the relationship between the collective bargaining process and quality of worklife programs?

In the view of some participants, quality of worklife programs should be kept entirely separate from the collective bargaining process because collective bargaining involves parties on opposite sides of the table, exchanging threats and demands, concealing critical information, with the more powerful party prevailing in the win-lose game; while quality of worklife involves labor and management working together as equals, based on trust, solving problems by openly communicating and sharing relevant information, and making decisions on the basis of consensus, with the result that problems are resolved and both parties win. Collective bargaining is adversarial, quality of worklife cooperative.

Others urged that extensive overlap of quality of worklife and the collective bargaining process—with the consequent joint problem-solving based on trust, open communications and sharing of information, and consensus decisionmaking—will lead to solving work problems more effectively than through the traditional collective bargaining process and will create greater benefit to labor and management than keeping the two processes separate.

Most participants favored *some* separation between the two processes, agreed that quality of worklife programs have a better chance where a strong collective bargaining relationship exists, and agreed that quality of worklife programs can and do solve problems that would otherwise go to the bargaining table.

Does the long-term success of quality of worklife programs require financial paybacks to employees?

Most agreed that some sort of financial payback is vital to the success of any quality of worklife program. Paybacks may include group incentives such as Scanlon Plans and productivity bonuses or "skill-based pay" approaches, which motivate workers to learn new skills by paying them for what they *know,* rather than what they do.

Some argued that the long-term success of employee involvement programs can only be achieved through employee ownership.

To maintain the success of a program over the long term, must quality of worklife move beyond participation and consultation into shared decisionmaking, and representation on boards of directors?

The participants agreed that quality of worklife concepts should move from the shop and office floors to higher levels of organizations, but acknowledged that such diffusion is rare so far, mainly because quality of worklife is power-sharing, whereas managers, professionals, and staff are concerned with maintaining and increasing power and control over people lower in the organization than themselves.

Several participants told of senior executives who *directed* their staffs to install quality of worklife, as if such programs could be plugged in from the top. Most agreed that—even when top executives espouse quality of worklife—middle managers usually resist until they can be shown that it will help them do their jobs and not be another responsibility added to their already full plate.

Some considered worker representation on boards of directors inevitable, others unrealistic.

What does it mean in practice to design technology to meet human and organizational concerns? What role should employees have in the design and decisionmaking regarding new technology?

The participants agreed that new technology must be designed not only to meet management's cost, productivity, and quality goals but also to guard against detrimental effects upon workers' job security and the quality of their working and personal lives. Extended advance notice, joint labor-management committees on new technologies, and employment security provisions are helping to allay employee concern over technological change.

Most participants acknowledged that involving workers in designing technological change can logically lead to participation of workers and their unions in the kinds of corporate decisionmaking activities that, in the past, have been considered sacrosanct by management.

A detailed report on the September conference is to be published by the Labor-Management Services Administration later this year. □

Arbitrating discrimination grievances in the wake of *Gardner-Denver*

*Some observers believed that the Supreme Court's 1974 ruling
blunted the usefulness of arbitration in resolving
Title VII-related grievances; a recent survey of lawyers
shows that most regard arbitration as still viable
but believe that changes would make
the process a more effective means of redress*

MICHELE M. HOYMAN AND LAMONT E. STALLWORTH

In its 1974 decision in the case of *Alexander v. Gardner-Denver Co.*,[1] the Supreme Court held that a worker who had lost a grievance alleging race discrimination in arbitration was not precluded from subsequently seeking recourse under Title VII of the Civil Rights Act of 1964.[2] The holding of the Court in *Gardner-Denver* ran counter to the conventional wisdom that the decision of a labor arbitrator is final and binding upon the employer, the grievant, and the labor organization. Many observers predicted that the Court's decision would lead to a proliferation of similar cases which would jam the dockets of courts and equal opportunity commissions, and undermine the sanctity of the union contract. This article examines empirically the state of discrimination grievance arbitration in the aftermath of *Gardner-Denver*,[3] as perceived by a sample of labor law attorneys.

A look at the issues

In the Supreme Court's landmark 1960 decision, the *Steelworkers' Trilogy*,[4] labor arbitration was endorsed as the favored mechanism for resolving labor disputes.[5] In making this pronouncement, the Court limited the scope of judicial review of arbitral awards by holding that an award is not reviewable on the merits and might be set aside only in cases of fraud or gross misconduct or in cases that are contrary to public policy. However, with the enactment of Title VII of the Civil Rights Act of 1964 there arose the possibility of conflict between a Federal labor policy which emphasizes the private resolution of industrial disputes through grievance arbitration and a national social policy which attempts to eliminate employment discrimination. Specifically, it was unclear whether an employee could commence an independent private cause of action under Title VII in addition to the grievance arbitration procedure, thereby getting "two bites at the apple."

This issue was finally resolved with the Supreme Court's 1974 *Gardner-Denver* decision, which involved Harrell Alexander, a black employee who had been a drill press trainee for the Gardner-Denver Co. After the employer fired him for producing an "excessive" amount of scrap, Alexander filed a grievance alleging that he had been discharged without just cause. He also filed a discrimination charge with the Colorado Civil Rights Commission, which referred the case to the U.S. Equal Employment Opportunity Commission. In 1969, the arbitrator found that Alexander had been "discharged for just cause." However, the arbitrator did not make any ruling in regard to the racial discrimination claim raised at the hearing.[6]

In 1970, the Equal Employment Opportunity Commission (EEOC) advised Alexander of his right to institute civil action

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in Federal district court.[7] But the district court ruled that, having submitted his claim to arbitration, Alexander was precluded from relitigating the same issue in court.[8] Alexander appealed his case to the Tenth Circuit Court of Appeals which, in August 1972, affirmed the decision and reasoning of the lower court.[9] Alexander then appealed his case to the Supreme Court.[10]

The issue before the Supreme Court was whether an employee's individual statutory right to a trial *de novo* (anew) under Title VII was foreclosed by a prior submission of his claim to final arbitration under a nondiscrimination clause of a collective bargaining agreement. In a 9–0 decision, the Court reversed the lower courts' ruling, holding that neither the Federal policy favoring arbitration of employment disputes, the doctrine of election of remedies,[11] nor the waiver doctrine,[12] precluded the claimant from being awarded a trial *de novo* under Title VII.

In so ruling, the Court indicated that it was the intent of Congress that Title VII supplement rather than supplant other discrimination remedies, and that to decide otherwise amounted to asking individuals to forfeit statutory rights in favor of contractual rights. The Court further supported its reasoning by arguing that a full harmony of interest might not exist between the individual employee and the union, also noting that, because the union represents the interests of a majority of its members, the degree of protection accorded the individual's rights in arbitration would not be the same as that provided under Title VII.[13] And in responding to the election of remedies argument, the Court asserted that Title VII clearly provided for relief in several nonexclusive forums.[14]

The Court did not dismiss the role of arbitration in resolving contract disputes, but did address the comparative inappropriateness of conventional arbitration as the sole and final forum for the resolution of Title VII cases:

> Arbitral procedures, while well suited to the resolution of contractual disputes, make arbitration a comparatively inappropriate forum for the final resolution of rights created by Title VII. This conclusion rests first on the special role of the arbitrator, whose task is to effectuate the intent of the parties rather than the requirements of enacted legislation.[15]

This basically reaffirmed the traditional role of the labor arbitrator in relation to external public law. The Court reinforced this view by stating that there are basic "infirmities" in the conventional arbitral process, including questions of the authority and the competence of the arbitrator to decide legal issues. However, rather than "sounding the death knell for arbitration,"[16] the Court set forth the amount of evidentiary weight which might be accorded by the trial courts to a relitigated Title VII-related arbitral award:

> . . . Relevant factors include the existence of provisions in the collective bargaining agreement that conform substantially with Title VII, the degree of procedural fairness in the arbitral forum, adequacy of the record with respect to the issue of discrimination, and the special competence of particular arbitrators.

Where an arbitral determination gives full consideration to an employee's Title VII rights, a court may properly accord it great weight. This is especially true where the issue is solely one of fact, specifically addressed by the parties and decided by the arbitrator on the basis of an adequate record.[17]

Study scope and method

Obviously, a host of significant questions remain to be answered in the wake of *Gardner-Denver*. Among the more important.

- What have been the reactions of those involved in labor relations to the *Gardner-Denver* decision? Do they agree with the practice of relitigating Title VII-related arbitral awards? What are the parties' opinions concerning the role of the arbitrator in relation to the external public law, such as Title VII?
- How much relitigation before the courts, the U.S. Equal Employment Opportunity Commission, or State antidiscrimination agencies has actually taken place following *Gardner-Denver*? How often has such relitigation resulted in a reversal of the arbitrator's decision?
- What degree of evidentiary weight have the courts accorded the arbitrator's decision in relitigated Title VII-related actions?
- Has *Gardner-Denver* resulted in any noteworthy changes to contract grievance procedures? And, are there other workable proposals for minimizing the review of Title VII-related arbitral awards?

During the spring and summer of 1981, the authors conducted a survey of attorneys who typically represent either management or labor in grievance arbitration, to address these issues. Questionnaires were sent to a random sample of persons whose names had been drawn from an American Bar Association list of labor law attorneys and from a list of attorneys who are employed directly by international unions.[18] (Attorneys for the parties were surveyed, rather than the parties themselves, because of anticipated difficulties in contacting the appropriate labor and management representatives in specific cases, and because it was felt that labor relations attorneys were best qualified to answer general questions on the subject of judicial review.) In all, 659 attorneys provided usable responses to the close-ended items on our 10-page survey form.[19]

Who supports *Gardner-Denver*?

Gardner-Denver represented a judicial policy shift from deferral to arbitration to a guarantee of review. Because this policy shift was controversial at the time, it is worth noting how much popular support the *Gardner-Denver* rationale has. The survey questionnaire included a series of items designed to elicit respondents' opinions of: (1) the *Gardner-Denver* decision itself; (2) the Court's 1981 holding in the case of *Arkansas-Best Freight*,[20] the equivalent of *Gardner-Denver* under the Fair Labor Standards Act (see box); and,

(3) the proper role of the arbitrator in relation to external law.

A majority, 60.3 percent, of the respondents disagreed with the Court's decision in the *Gardner-Denver* case. However, 71.9 percent of those attorneys who typically represent labor in the grievance process supported the decision, while only 28.2 percent of the management representatives did so. The difference between the two groups of attorneys probably is attributable to labor's traditional role as advocate of employee rights. Thus, a union would want its members to have several avenues of redress.

It was initially contemplated that those attorneys who had the experience of having a Title VII-related grievance reviewed and perhaps reversed would be less likely to support the *Gardner-Denver* decision. The data suggest that neither review nor reversal by the courts has a significant impact on the parties' attitudes toward the decision. The experience of review by the EEOC or State agencies, on the other hand, is positively and significantly associated with disagreement with *Gardner-Denver*; 75 percent of respondents who have had cases reviewed administratively opposed the decision, compared with 55 percent of the other attorneys. However, this comparison should be made cautiously, given the relatively small number of cases submitted to courts for review.

With regard to the Court's 1981 decision in *Arkansas-Best Freight*, approximately 53 percent of the respondents expressed an opinion in opposition. But, as expected, there were significant differences in attitude between labor and management representatives, with 66 percent of the labor respondents agreeing with the decision, compared with 43 percent of management respondents. Experience with administrative or judicial review or reversal did not appear to affect the opinions of the parties on the *Arkansas-Best Freight* decision.

Role of the arbitrator. Because a central issue in the *Gardner-Denver* case was whether the arbitrator's role should be solely to interpret the labor agreement or also to consider and apply external law, we questioned our respondents on this point. In the literature, there are essentially two schools of thought regarding the proper role of the grievance arbitrator. The first is represented by Bernard Meltzer of the University of Chicago Law School, who asserts that, where there is a conflict between a labor agreement and the external public law, the arbitrator is obliged to "ignore the law and apply the contract."[12] Robert Howlett represents the other school, arguing that the arbitrator should consider and "apply the law."[22]

The Court's reasoning in *Gardner-Denver* supports the Meltzer school of thought.[23] In brief, the Court defined the "arbitrator's task as effectuating the intent of the parties."[24] Quoting from the classic *Enterprise Wheel & Car Corp.* case, the Court reasoned that:

> If an arbitral decision is based solely on the arbitrator's view of the requirements of enacted legislation, rather than on an

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The issue in *Arkansas-Best Freight*

In 1981, the Supreme Court held (7–2) that the question of an individual employee's rights under the Fair Labor Standards Act (FLSA) with respect to a wage claim was properly before the court, even after the claim had been rejected by a joint grievance committee pursuant to the provisions of a collective bargaining agreement.

Lloyd Barrentine and several other truckdrivers had filed a grievance under the labor agreement between Teamsters Local 878 and the employer, Arkansas-Best Freight System, Inc. Their grievance challenged the empolyer's refusal to pay them for time spent performing a mandatory safety inspection before each trip. The dispute was submitted to a joint labor-industry panel, which rejected the claim without explanation. The grievants then filed suit in Federal district court, claiming damages, costs, and attorney's fees under FLSA. The truckdrivers also charged that the union and its president had violated their duty of fair representation by entering into a "side deal" to end the dispute.

The Supreme Court, reversing an Eighth Circuit decision barring assertion of the wage claim, held that the FLSA grants employees broad access rights to the courts, and that the individual employee's right to a minimum wage and payment for overtime cannot be abridged or waived by the contract. Justice Brennan, writing for the Court, declares, "Not all disputes between an employee and his employer are suited for binding resolution in accordance with the procedures established by collective bargaining." Justice Brennan further declares that "while courts should defer to an arbitral decision where the employee's claim is based on rights arising out of the collective-bargaining agreement, different considerations apply where the employee's claim is based on rights arising out of a stature designed to provide minimum substantive guarantees to individual workers."

In so ruling, the Court applied to wage and hours claims the same protection granted to discrimination claims under its 1974 holding in *Alexander v. Gardner-Denver*, which had established that resort to arbitration does not prevent an employee from bringing suit under the 1964 Civil Rights Act.

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interpretation of the collective-bargaining agreement, the arbitrator has exceeded the scope of his submission and the award cannot be enforced. (*United Steelworkers of America v. Enterprise Wheel & Car Corp.* 363 U.S. at 597, 46 LRRM at 2425).[25]

Our survey results confirm the general acceptance of the Meltzer philosophy. Specifically, 41.6 percent of the sur-

veyed attorneys agreed with the Meltzer school, and another 41.4 percent agreed conditionally.[26] Only 17 percent of the respondents unconditionally support the Howlett school of thought that arbitrators should import external Title VII case law into the arbitral forum. However, the fact that even this many respondents agree with Howlett is noteworthy, particularly in light of the *Gardner-Denver* Court's express limitation on the authority of the arbitrator to "invoke public laws that conflict" with the labor agreement.[27] Our data suggest that the Meltzer-Howlett debate continues among advocates and labor arbitrators, although the majority of respondents still subscribe to the traditional role of the arbitrator.[28]

Labor and management apparently differ in their opinions about the appropriate role of the arbitrator; 58 percent of the union attorneys maintain the view that the arbitrator should apply the law, as opposed to 37 percent of the management respondents.[29] Also of interest is the way the parties' concept of the arbitrator's proper function correlates with their attitudes toward the *Gardner-Denver* decision, for although the Court's ruling reaffirmed the traditional role, respondents who said that they subscribed to the Meltzer school disagreed with the decision more frequently (65 percent) than did those who believe the arbitrator should apply the external law (53 percent).

Incidence of review and reversal

A major concern of labor relations professionals in the wake of *Gardner-Denver* was that the already crowded dockets of the EEOC and the courts would be deluged with previously arbitrated discrimination claims. Accordingly, we asked the members of our sample to quantify their experience with discrimination grievances since 1974.

Of the 1,761 unique cases handled by the respondents, 484 (27 percent) had been reviewed by the EEOC or State antidiscrimination agencies, and 307 (17 percent) had been reviewed by the courts.[30] In our opinion, this is a large amount of review activity, although it is impossible to say how much of it is directly attributable to the *Gardner-Denver* decision without baseline data for the years before 1974, during which relitigation was permitted only in very specific circumstances. While many fewer cases were heard before trial courts than before the administrative agencies, the volume of court activity was still very high, given that judicial review imposes substantial legal and court costs on the plaintiff, while administrative review generally does not.

Of greater significance is the frequency with which review results in a reversal of the arbitral decision. According to the surveyed attorneys, 77 (15.9 percent) of the 484 cases brought before the EEOC or State agencies were reversed, but only 21 (6.8 percent) of the 307 arbitral decisions reviewed by the trial courts were overturned.[31] From the point of view of the parties, it is also important to know how frequently reversal occurs out of *all* potential cases: Of the total of 1,761 arbitration cases reported by the respondents,

the 77 that were reversed by the EEOC or State agencies accounted for only 4.4 percent, and the 21 reversed by the courts were a mere 1.2 percent. This means that, in the two forums to which a grievant might take his or her case, there is either a 1 of 25 chance for administrative reversal or a 1 of 100 chance of reversal by the courts.

Thus, while there has been a substantial amount of review activity since the *Gardner-Denver* decision, our study indicates that a very small fraction of all discrimination arbitration findings are subsequently reversed. It seems reasonable to conclude from this that the impact of the ruling has been felt primarily in the area of review activity rather than reversal. The decision appears to have had more procedural importance than practical substantive importance, unless review activity has provoked substantive change by increasing the cost, time, or effort involved in arbitration, or by altering the attitudes of the arbitrator and the parties toward the processing of Title VII-related grievances.

Evidentiary weight of an arbitral award

In addition to the "nagging" possibility of relitigation, a number of commentators were also concerned at the time of the *Gardner-Denver* decision with the degree of evidentiary weight which would thereafter be accorded an arbitral decision by the reviewing body. One observer believed that a "de facto deferral" policy could evolve at the trial court level,[32] while others thought that *Gardner-Denver* would bring about the end of discrimination grievance arbitration.[33] Only 7.2 percent of the attorneys responding to our survey stated that great evidentiary weight has been accorded the relitigated arbitral decision in the post-*Gardner-Denver* years, while 56.4 percent indicated that the award has been given either no weight or little evidentiary weight. However, considering the Court's strong statements concerning the plenary authority of the courts in this area, and the "comparative inappropriateness" of conventional arbitral procedures in discrimination cases, it might have been expected that even less evidentiary weight would have been accorded by the trial courts.

The surveyed attorneys also indicated their opinions concerning the degree of evidentiary weight that *should* be accorded a relitigated arbitral case. Of those responding to this question, 7.7 percent believed that no weight should be accorded the decision, while 15.3 percent felt it should receive little weight. Thus, approximately 77 percent of the respondents thought that either considerable or great evidentiary weight should be accorded the ruling.

Given the cost and time involved in preparing and presenting any grievance in arbitration, it seems reasonable that the advocate would, at a minimum, want the arbitral decision to have more than a little evidentiary value. We therefore attempted to determine whether the parties have made an effort to remedy the shortcomings of discrimination grievance arbitration as enumerated by the *Gardner-Denver* Court.

Has arbitration changed?

As stated earlier, the Court considered arbitration "a comparatively inappropriate forum for the final resolution of rights created by Title VII."[34] Specifically, the Court expressed concern over the competence of arbitrators, whose skills pertain "primarily to the law of the shop, not the law of the land"[35]; the inadequacy of the record maintained in many arbitral hearings; and the quality of the factfinding process in arbitration, as compared to judicial factfinding. The attorneys in our survey were asked what changes, if any, have been made in the arbitration process to counter the Court's criticisms.

Selecting the arbitrator. Because the Supreme Court indicated concern over the qualifications of the labor arbitrators who would decide discrimination grievances, the respondents in our study were asked to rank, on a scale of 1 ("Very important") to 4 ("Not at all important"), a set of nine characteristics that might be considered by the parties in selecting an arbitrator for such a case: age; sex; race; membership in the National Academy of Arbitrators; number of years of arbitration experience; possession of a law degree; special competence in Title VII case law; previous experience in discrimination cases; and general labor and industrial relations background. The factors that were ranked "very important" or "important" by more than four-fifths of the respondents were general labor relations background (86.7 percent); previous experience with discrimination grievances (86.4 percent); number of years of arbitration experience (83.0 percent); the holding of a law degree (81.6 percent); and special competence in Title VII law (80.6 percent). The demographic characteristics of the arbitrator and, surprisingly, membership in the National Academy of Arbitrators were not considered as important.

Beyond the elementary requirement of a labor relations background, the weight attached by surveyed attorneys to special competence in Title VII law and the holding of a law degree is particularly worth noting. Together, these observations suggest that the parties are acknowledging the fact that arbitrators have traditionally been more competent in the "law of the shop" than in the "law of the land," and today are seeking arbitrators with proficiency in the Title VII area. More important, this finding may reveal an attempt to comply with one of the "relevant factors" which the trial courts may take into consideration when determining the degree of evidentiary weight to be accorded a relitigated Title VII-related arbitral award.[36]

The arbitral record. Another concern of the *Gardner-Denver* Court was the lack of a complete record of arbitral proceedings. Our survey respondents were asked two questions in this area. The first was whether they would favor or oppose the establishment of a special grievance procedure that would require the parties to maintain an adequate record of the arbitral proceeding by using either a court reporter or a tape recording. The second asked whether the parties had actually adopted—either informally or contractually—the practice of using a formal written transcript or tape recording of the arbitral hearing in the wake of *Gardner-Denver*.

Of the responding attorneys, 84.2 percent said that they either favor or strongly favor the adoption of a special grievance procedure that would require the use of a court reporter. However, when asked if they had actually adopted the use of a formal transcript in their own dealings, only 56.4 percent of the respondents answered in the affirmative. It is equally noteworthy that even fewer of the respondents (25.9 percent) indicated that they had ever used a tape recording to maintain a complete record of the arbitral hearing. Assuming that the parties wish to address the criticisms of arbitration voiced by the *Gardner-Denver* Court, it is surprising that there has not been more use of tape recording, given the low cost of this medium relative to that of formal written transcripts.

Arbitral factfinding. The Supreme Court's concern about the relatively inferior factfinding process in arbitration is considerably more complex for the parties to accommodate. This is because it involves such critical issues as the adoption of the strict rules of evidence and the right of pretrial discovery. By implication, the Court's comments in this area suggest that trial attorneys should be used in the arbitration process.

In our survey, 55.2 percent of the respondents reported that they advise their clients always to have an attorney represent them in discrimination grievances. While it might be expected that attorneys would render such advice, it is also reasonable to conclude that both employers and unions would tend to want representation by counsel where such "thorny" contractual and statutory issues of alleged discrimination are in dispute.

The less-than-strict application of the rules of evidence has traditionally been cited as one of the advantages of arbitration, making it a relatively efficient and inexpensive means for resolving contractual disputes. (The requirement of strict rules of evidence stringently limits the types of proof that can be introduced in a judicial hearing.) In the past, parties to arbitration have sometimes enforced the strict rules of evidence, but this has been the exception rather than the rule. However, nearly a quarter (22.2 percent) of our respondents indicated that, on at least one occasion since the *Gardner-Denver* decision, they have either informally or contractually adopted the strict rules of evidence in arbitrating a discrimination grievance.

The infrequent use of pretrial discovery, the procedures by which the parties to a dispute may gain access to pertinent information held by the opposition before litigation begins, was also cited by the Court as a failing of the arbitral process. Although there are a number of existing means by which

an advocate in arbitration may obtain the benefits of pretrial discovery, these have rarely been used in the arbitral forum. Apparently the *Gardner-Denver* decision did not provoke much change in this area, for only 14.8 percent of respondents indicated that they subsequently have either informally or contractually granted pretrial discovery rights.

Is waiver the answer?

The *Gardner-Denver* Court did not extensively set forth its concern over the individual's rights in the arbitral forum along with the other perceived inadequacies of the process. However, by recognizing the fundamental thrust of Title VII, the Court raised the individual's statutory rights above those rights that may inhere in the collective bargaining agreement. The Court was particularly concerned that individual rights might be subordinated to the collective or majoritarian rights of the labor organization. Furthermore, the Court intimated that it was cognizant of the triangular type of discrimination that may exist where a claim of racial discrimination has been alleged, observing in this regard that Alexander had told the arbitrator at the hearing that he "could not rely on the union" to represent him.[37]

The volume of Title VII-related "breach of duty of fair representation" suits since *Gardner-Denver* lends support for the Court's thinking. Under this form of relitigation, which predates *Gardner-Denver*, an individual could claim, for example, that he or she had not been fairly represented by the union in the grievance process because of race, sex, or any other reason considered unlawful under Title VII. The attorneys in our survey reported having been involved in 647 such cases since 1974.

About two-thirds (430) of these cases were heard in more than one forum—that is, some combination of the National Labor Relations Board, the courts, and State or Federal antidiscrimination agencies. In 75 cases, there were conflicting outcomes concerning the discrimination claim and the duty of fair representation claim. This degree of conflict probably is attributable to the varying evidentiary standards and factfinding processes of the agencies involved, and argues strongly against the *practicality* of affording a claimant multiple avenues of redress.

It therefore seems reasonable that the parties, and particularly labor organizations, might consider granting the individual grievant greater participation in the resolution of his or her grievance. The surveyed attorneys were asked whether this "third party intervention" approach would be acceptable. There were three possible forms this could take: (1) the individual would be allowed to retain his or her own private legal counsel; (2) the individual grievant, with the advice of counsel, would participate with the union and management in the selection of the arbitrator; and, (3) enactment of a statute requiring the individual grievant and his or her counsel to agree in writing to be bound by the arbitrator's decision before a grievance is taken to arbitration. It was contemplated that this last possibility would

be the *quid pro quo* for granting the grievant the right to other forms of "third party intervention" status. (In all of these situations, the questionnaire stipulated that the union had already decided to submit the discrimination claim to arbitration, and thus would retain control of the critical decision to arbitrate.)

Because the traditional notions of labor relations hold that the union and the employer, and not the individual employee, are the principal parties to the collective bargaining process and the labor agreement, it is not surprising that a sizable majority of the surveyed attorneys either oppose or strongly oppose the idea of granting the grievant unqualified third party intervention status. However, it is worth noting that 38.6 percent of the respondents either strongly favor or favor granting the grievant private legal counsel to serve as co-counsel with the representative of the labor organization. Likewise, more than a third of the respondents (35.3 percent) either favor or strongly favor the joint selection of the arbitrator by the union, management, and the employee with advice of counsel. Again, this finding is surprising, given the traditionally strong opposition to employee "self help" or third party intervention in the arbitral process.[38]

It is of considerable interest that a large proportion (71.5 percent) of respondents either strongly favor or favor granting the individual third party intervention status if the grievant would, before the arbitral hearing, sign a legally binding agreement to accept the arbitral award and waive any related future Title VII cause of action. This finding is in accord with innovations proposed by such noted labor relations experts as William Gould, Winn Newman, Alfred Blumrosen, and Arthur B. Smith,[39] and suggests that, with appropriate statutory changes, arbitration can continue to be useful in the resolution of Title VII-related grievances.[40]

THE DATA FROM OUR STUDY indicate that *Gardner-Denver* has had more of a procedural effect than a substantive effect on the arbitral process. Relitigation has not occurred in the majority of cases, and where it did occur in either the administrative or judicial forum, the determination of the arbitrator was rarely contradicted. If the frequency of relitigation and reversal is an indicator of the effect of *Gardner-Denver*, it seems reasonable to conclude that arbitration still serves as a viable dispute settlement device for the resolution of Title VII-related grievances.

Even so, we believe the volume of relitigation is unnecessarily high. Although our respondents voiced much support for certain changes in the arbitration procedure that might address the issues raised by the *Gardner-Denver* Court, there is less evidence that these changes have actually been implemented. Furthermore, the surveyed attorneys exhibit more support for procedural changes, which tend to legitimize the results of the arbitral hearing, than for substantive changes, such as the application of external Title VII law by the arbitrator or third party intervention by the grievant (in the absence of a statutory waiver provision). There re-

mains, then, the fundamental issue as to how the parties might best respond to increasing government intervention in industrial relations while still preserving their control over the collective bargaining process. □

-------FOOTNOTES-------

[1] *Alexander v. Gardner-Denver Co.*, 7 FEP Cases 81 (1974).

[2] Section 704 (a) of the act provides:

It shall be an unlawful employment practice for an employer to discriminate against any of his employees or applicants for employment, for an employment agency, or joint labor-management committee controlling apprenticeship or other training or retraining, including on-the-job training programs, to discriminate against any individual, or for a labor organization to discriminate against any member thereof or applicant for membership, because he has opposed any practice made an unlawful employment practice by this subchapter, or because he has made a charge, testified, assisted, or participated in any manner in an investigation, proceeding, or hearing under this subchapter.

For the purpose of our study, a Title VII-related grievance is a grievance which alleges discrimination based upon race, sex, national origin, color, or religion.

[3] Since *Gardner-Denver*, the Supreme Court has also held that the prior submission of a grievance to arbitration does not preclude subsequent recourse under the Fair Labor Standards Act. See *Barrentine et al. v. Arkansas-Best Freight System, Inc.*, 450 U.S. 67 L. Ed. (2d) 641, 101 S. Ct. 1437 (1981), and box p. 5 of this issue.

[4] *United Steelworkers v. American Manufacturing Co.*, U.S. 564 (1960); *United Steelworkers v. Warrior & Gulf Navigation Co.*, 363 U.S. 574 (1960); and *United Steelworkers v. Enterprise Wheel & Car Corp.*, 363 U.S. 593 (1960). Also see *Textile Workers v. Lincoln Mills of Alabama*, 77 S. Ct. 912 (1957).

[5] Prior to the *Steelworkers' Trilogy*, the courts did not take such a favorable view of arbitration. See, for example, *International Association of Machinists v. Cutler-Hammer, Inc.*, 271 App. Div. 917, 67 N.Y.S. (2d) 317 (First Dept. 1947). The *Cutler-Hammer* doctrine has since been repudiated by statutory amendment. See N.Y. Civ. Prac. Law 7501 (1963).

[6] Alexander raised the discrimination claim for the first time at the pre-arbitration step. Prior to the actual arbitration hearing, he filed with the Colorado Civil Rights Commission on Nov. 15, 1969. He informed the arbitrator at the hearing that he had filed a claim, asserting that among other things he "could not rely on the union." On Dec. 30, 1969, the arbitrator sustained the discharge of Alexander; however, he made no finding concerning the discrimination claim.

[7] In the event the EEOC does not make a "probable cause" finding, the claimant has the right to pursue the matter independently in Federal district court. See 42 U.S.C. 2000e-5(b), (e), and (f). See also *McDonnel Douglas Corp. v. Green*, 411 U.S. at 789.

[8] *Gardner-Denver Co. v. Alexander*, 346 F. Supp. 1012, 4 FEP Cases 1205 (1971).

[9] *Alexander v. Gardner-Denver Co.*, 466 F. (2d) 1209, 4 FEP Cases 1210 (1972).

[10] *Alexander v. Gardner-Denver Co.*, 7 FEP Cases 81 (1974).

[11] That is, an individual claimant's decision to seek recourse through one forum operates to preclude him or her from subsequently or concurrently seeking recourse of the same claim in another forum.

[12] That is, an individual claimant either expressly or implicitly waives his or her rights to seek subsequent recourse of a claim in another forum. In *Gardner-Denver*, the Court suggested that a claimant could "knowingly and willingly" enter into such a waiver.

[13] In addition to noting Alexander's statement that he "could not rely on the union," the Court also referred to this problem in footnote 19 of the decision:

A further concern is the union's exclusive control over the manner and extent to which an individual grievance is presented. See *Vaca v. Sipes*, 386 U.S. 171, 74 LRRM 2369 (1967); *Republic Steel Co. v. Maddox*, 379 U.S. 650, 58 LRRM 2193 (1965). In arbitration, as in the collective-bargaining process, the interests of the individual employee may be subordinated to the collective interests of all employees in the bargaining unit. See *J.I. Case Co. v. Labor Board*, 321 U.S. 332, 14 LRRM 501 (1944). Moreover, harmony of interest between the union and the individual employee cannot always be presumed, especially where a claim of racial discrimination is made. See, e.g., *Steele v. Louisville & N.R. Co.*, 323 U.S. 192, 15 LRRM 708 (1944); *Tunstal v. Brotherhood of Locomotive Firemen*, 323 U.S. 210, 15 LRRM 715 (1944). And a breach of the union's duty of fair representation may prove difficult to establish. See *Vaca v. Sipes*, supra; *Humphrey v. Moore*, 375 U.S. 335, 342, 348–351, 55 LRRM 2031. In this respect, it is noteworthy that Congress thought it necessary to afford the protections of Title VII against unions as well as employers. See 52 USC S 2000-3-2(c).

[14] Senator Joseph Clark, one of the sponsors of the bill, had earlier introduced an interpretative memorandum on this issue. The Court noted this and other evidence of congressional intent in *Alexander v. Gardner-Denver Co.*, 7 FEP Cases (1974) at 85:

"Nothing in Title VII or anywhere else in this bill affects the rights and obligations under the NLRA or the Railway Labor Act. . . . Title VII is not intended to and does not deny to any individual, rights and remedies which he may pursue under other Federal and State statues, if a given action should violate both Title VII and the National Labor Relations Act, the National Labor Relations Board would not be deprived of jurisdiction." 110 Cong. Rec. 7207 (1964). Moreover, the Senate defeated an amendment which would have made Title VII the exclusive Federal remedy for most unlawful employment practices. 110 Cong. Rec. 13650–13652 (1964). And a similar amendment was rejected in connection with the Equal Employment Opportunity Act of 1972. See H.R. 9247, 92d Cong., 1st Sess. (1972), pp. 2137, 2179, 2181–2182. The report of the Senate Committee responsible for the 1972 Act explained that the "provisions regarding the individual's right to sue under Title VII, nor any of the provisions of this bill, are meant to affect existing rights granted under other laws." S. Rep. No. 415, at 24, 92d Cong., 1s Sess. (1971).

For a detailed discussion of the legislative history of the 1972 Act, see George Sape and Thomas Hart, "Title VII Reconsidered: The Equal Opportunity Act of 1972, 40 *George Washington Law Review*, July 1972, p. 824.

[15] *Alexander v. Gardner-Denver Co.*, 7 FEP Cases (1974) at 89.

[16] *Gardner-Denver Co. v. Alexander*, 346 F. Supp. at 1019, 4 FEP Cases at 1209 (1971). Both the district court and the court of appeals thought that to permit a later resort to the judicial forum would substantialy undermine the employer's incentive to arbitrate and would "sound the death knell for arbitration clauses in labor contracts."

[17] *Alexander v. Gardner-Denver Co.*, 7 FEP Cases (1974) at 90.

[18] Specifically, respondents' names were drawn from the official mailing list for the Labor and Employment Law Division of the American Bar Association and from the National Directory of Labor Organizations list of "in-house" union attorneys.

[19] There were 661 surveys completed and returned, for an overall response rate of 33.2 percent. Because two of the completed surveys could not be used, the final sample size was 659.

The majority of the respondents (67.5 percent) represented management—a total of 445 individuals. The 101 union representatives accounted for 15.3 percent. The remaining respondents included attorneys who represent individual plaintiffs in discrimination suits, EEOC or State antidiscrimination commission attorneys, National Labor Relations Board or State labor relations attorneys, law professors, part-time and full-time arbitrators,

judges, and retirees. For most of our analysis, only the responses of management and labor advocates are of concern.

[20] Supra, note 3.

[21] See, for example, Bernard Meltzer, "Ruminations about Ideology, Law and Labor Arbitration: The Arbitrator, the NLRB, and the Courts," in *Proceedings of the 20th Annual Meeting of the National Academy of Arbitrators* (Washington, Bureau of National Affairs, 1967), pp. 1–20.

[22] See Robert Howlett, "The Arbitrator, the NLRB, and the Courts," in *Proceedings of the 20th Annual Meeting of the National Academy of Arbitrators* (Washington, Bureau of National Affairs, 1967), pp. 64–74.

[23] The court cites Meltzer in support of its view. See *Alexander v. Gardner-Denver Co.*, 7 FEP Cases (1974) at 87, note 16.

[24] Id. at 87.

[25] Id. at 87.

[26] Respondents who agreed conditionally with the Meltzer school were those who believed that the arbitrator should not apply exernal Title VII law in the arbitral forum "except when the parties expressly grant such authority."

[27] *Alexander v. Gardner-Denver Co.*, 7 FEP Cases (1974) at 87.

[28] In an earlier survey of members of the National Academy of Arbitrators, it was shown that 66 percent of respondents agree with Meltzer and 33 percent agree with Howlett: See Harry Edwards, "Arbitration of Employment Discrimination Cases: An Empirical Study," in *Arbitration—1975, Proceedings of the 28th Annual Meeting of the National Academy of Arbitrators* (Washington, Bureau of National Affairs, 1974), pp. 59–92.

[29] Our study showed that 18 percent of employer attorneys agreed with Meltzer, 45.3 percent agreed conditionally, and 36.6 percent agreed with Howlett. Of labor union attorneys, 15.6 percent agreed conditionally with Meltzer and 58.3 percent agreed with Howlett.

[30] A number of the 1,761 cases may have been reviewed by the courts after investigation by the EEOC or State agencies, and thus may be included in the counts for both forums.

[31] The smaller number of reversals by the trial courts is probably attributable to two factors: (1) The previously cited costs of litigation in the courts, and (2) the fact that the evidentiary standards of trial courts are more strict than those applied by administrative agencies. In the last regard, an administrative investigation requires the establishment of a "prima facie" case or a finding of "probable cause" before proceeding to administrative hearing or trial. The evidence gathered in such investigation is not necessarily "probative" or "conclusive." However, the trial courts would not make a determination of discrimination based solely on probable cause, but would instead require a higher quality of proof and evidence.

[32] See Harry Edwards, "Labor Arbitration at the Crossroads: The Common Law of the Shop v. External Law," *Arbitration Journal*, June 1977, pp. 65–95.

[33] See, for example, David Feller, "Arbitration: The Days of Its Glory Are Numbered," *Industrial Relations Law Journal*, Spring 1977, pp. 97–130.

[34] *Alexander v. Gardner-Denver Co.*, 7 FEP Cases (1974) at 89. Interestingly, the Court noted that the same factors for which it criticizes arbitration enable arbitration to be a relatively efficient and inexpensive means for resolving contractual disputes.

[35] Supra. See also *United Steelworkers v. Warrior & Gulf Navigation Co.*, 363 U.S. 574 at 581–83. Relying on *Warrior & Gulf Navigation Co.*, the *Gardner-Denver* Court reasoned that:

> Parties usually choose an arbitrator because they trust his knowlege and judgment concerning the demands and norms of industrial relations. On the other hand, the resolution of statutory or constitutional issues is a primary responsibility of courts, and judicial construction has proven especially necessary with respect to Title VII, whose broad language frequently can be given meaning only by reference to public law concepts.

The Court further noted that a substantial proportion of labor arbitrators are not lawyers. See "Note, the NLRB and Deference to Arbitration," 77 *Yale Law Journal*, 1968, pp. 1191, 1194, note 28.

[36] The Court, in relevant part, stated, "We adopt no standards at to the weight to be accorded an arbitral decision, since this must be determined in the court's discretion with regard to the facts and circumstances of each case. Relevant factors include . . . the special competence of particular arbitrators." *Alexander v. Gardner-Denver Co.*, 7 FEP Cases (1974) at 90, note 21.

[37] The Court noted that "harmony in interest between the union and the individual employee cannot always be presumed, especially where a claim of racial discrimination is made. . . . It is noteworthy that Congress thought it necessary to afford the protections of Title VII against unions as well as employers." See *Alexander v. Gardner-Denver Co.*, 7 FEP Cases (1974) at 89, note 19. For more discussion of the triangular type of discrimination, see William Gould, "Labor Arbitration of Grievances Involving Racial Discrimination," *University of Pennsylvania Law Review*, 1969–70, pp. 40–68.

[38] For a discussion of this issue, see William Gould, "Third Party Intervention: Grievance Machinery and Title VII," *Black Workers in White Unions* (Ithaca, N.Y., Cornell University Press, 1977), pp. 223–34; Bernard Dunau, "Employee Participation in the Grievance Aspect of Collective Bargaining," *Columbia Law Review*, June 1950, pp. 731–60; and Gregory Kamer, "Employee Participation in Settlement Negotiations and Proceedings Before the OSHRC," *Labor Law Journal*, April 1980, pp. 208–22.

One of the primary arguments against the third party intervention approach is that it runs against the concept of exclusivity established under the National Labor Relations Act. See George Schatzki, "Majority Rule, Exclusive Representation, and the Interests of Individual Workers: Should Exclusivity Be Abolished?" *University of Pennsylvania Law Review*, 1975. Having one's counsel or representative in a third party intervention procedure could also effectively operate against the grievant, because the union may choose not to cooperate in the preparation of the case. See James Atleson, "Disciplinary Discharge, Arbitration and NLRB Deference," *Buffalo Law Review*, Vol. xx, 1971; and Bernard Meltzer, "Labor Arbitration and Overlapping and Conflicting Remedies for Employment Discrimination," *University of Chicago Law Review*, Vol. 39, 1971, pp. 45–46. Another concern is that civil rights groups might attempt to intervene in such disputes without being designated by the grievant. See William Gould, "Third Party Intervention," pp. 233–34.

[39] See Harry Edwards, "Arbitration of Employment Discrimination Cases: A Proposal for Employer and Union Representatives," *Labor Law Journal*, Vol. 27, 1976, pp. 265–77; Winn Newman, "Post-*Gardner-Denver* Developments in Arbitration—1975," in *Proceedings of the 28th Annual Meeting of the National Academy of Arbitrators* (Washington, Bureau of National Affairs, 1975); Alfred Blumrosen, "Labor Arbitration, EEOC Conciliation and Discrimination in Employment," *Arbitration Journal*, Vol. 24, no. 2, 1969, pp. 88–105; Alfred Blumrosen, "Bargaining and Equal Employment Opportunity," *Fair Employment Practices: Summary of Latest Developments*, 1980; and Arthur B. Smith, "The Impact on Collective Bargaining of Equal Employment Opportunity Remedies," *Industrial and Labor Relations Review*, April 1975, p. 376 at note 31.

[40] Coincidentally, Chief Justice Warren Burger has also strongly advocated the expanded use of arbitration in such civil matters, instead of litigation through the courts. See Chief Justice Warren E. Burger, "Isn't There A Better Way?" *Annual Report on the State of the Judiciary at the Midyear Meeting American Bar Association*, Chicago, Ill., Jan. 24, 1982.

In two post-*Gardner-Denver* decisions—*Lyght v. Ford Motor Co.*, 458 F. Supp. 137 (E.D. Mich. 1978) and *Strozier v. General Motors Corp.*, 442 F. Supp. 475 (N.D. Ga. 1977)—the district court noted the fact that the grievants had been involved directly in the presentation of their Title VII-related grievances, and had, to some degree, been provided with individual legal counsel or the advice of "expert personnel" as part of the arbitration procedure. The court consequently found that the claimants had "voluntarily and knowingly" waived future Title VII actions, and thus were bound by their respective arbitral awards. These holdings tend to support the viability of some form of third party intervention in Title VII-related grievances. However, the U.S. Court of Appeals for the Sixth Circuit has recently reversed *Lyght*, granting the claimant the opportunity to have his discrimination claim for backpay heard in Federal court, notwithstanding the Michigan Civil Rights Commission's written notice that the grievant's claim had been "adjusted" and the case closed. In the appellate court's opinion, "Though Title VII evinces a congressional preference for conciliation over litigation, the facts remain that a person who claims injury from discrimination in employment practices is entitled to a hearing in Federal court." *Lyght v. Ford Motor Co.*, 54 Daily Labor Report, 1981, pp. A–8, CA6.

Instruments to measure electricity: industry's productivity growth rises

*Growth in labor productivity has been spurred
by the spread of automated production machinery
and increased use of integrated circuits
in instruments; nonproduction workers—
professional and technical—are a growing
proportion of industry employment*

BARBARA BINGHAM

Output per employee hour in the manufacture of instruments
for measuring electricity—such as oscilloscopes, and volt-
age and watt-hour meters—rose at an average annual rate
of 2.4 percent between 1972 and 1981, compared with a
1.9-percent annual rate for all manufacturing. Both output
and hours increased substantially over the period—output
at 8.6 percent a year, employee hours at 6.0 percent.[1]

The advance in labor productivity was partially associated
with the diffusion of automated production machinery, par-
ticularly in wiring and for installing integrated circuitry in
measuring instruments. The growing use of small- and large-
scale integrated circuits in electronic instruments was also
a factor that spurred productivity improvement.

Year-to-year movements in output per hour deviated con-
siderably from the long-term rate, ranging from a gain of
7.4 percent (in 1980) to a drop of 1.3 percent (in 1979). In
general, the year-to-year fluctuations were linked with large
increases in output that in turn were accompanied by large
increases in employment and hours. (See table 1.) This
linkage caused productivity to dip or to rise only slightly in
a number of years when growth in output was quite strong.
For example, in 1978, output rose 15.5 percent, but em-
ployee hours rose 15.2 percent, resulting in virtually no
change in labor productivity. Again, in 1979, an output rise

of nearly 11 percent was accompanied by an employee-hour
rise of 12 percent, so productivity decreased slightly.

The exception to this pattern occurred in 1975, a recession
year. Productivity rose by more than 4 percent, chiefly be-
cause of a steep drop in hours which was associated with
a somewhat lesser drop in output.

Strong output growth

With the exception of 1974–75, output increased every
year from 1972 to 1981. Six of the years studied showed
double-digit percentage increases. The rate of output growth
was especially strong from 1975 to 1980. The modest in-
crease of 2.4 percent in 1981 reflects the 1980 economic
slowdown. (Recessionary effects tend to be delayed in this
industry.)

The four major industrial markets served by this industry
are aerospace, communications, electric utilities, and com-
puter and other electronics manufacturers—the last being
the strongest growth market. (Telecommunications and data
communications demand are also sizable.) The communi-
cations, aircraft, and aerospace industries together use the
widest variety of instruments to measure electricity, fol-
lowed closely by research laboratories and electric utilities.
(See table 2.)

Foreign demand has helped fuel the increase in output.
Exports now account for a significant proportion of instru-
ments for measuring electricity—32.5 percent in 1981, up

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Table 1. Productivity and related indexes for the industry which produces instruments to measure electricity, 1972–81

[1977 = 100]

Year	Output per employee hour	Output	Employee hours	Employees
1972	84.7	71.7	84.7	82.3
1973	90.8	84.2	92.7	90.5
1974	92.0	94.0	102.2	102.1
1975	95.9	85.9	89.6	91.6
1976	95.5	87.3	91.5	91.9
1977	100.0	100.0	100.0	100.0
1978	100.3	115.5	115.2	115.2
1979	99.0	128.0	129.3	127.2
1980	106.3	151.0	142.0	142.7
1981	109.1	154.6	141.7	142.6
Average annual rates of change (in percent)				
1972–81 . . .	2.4	8.6	6.0	6.3
1976–81 . . .	2.4	12.7	10,1	10.1

from 19.5 percent in 1972.[2]

The strong increase in output was largely a response to the rapidly expanding application of electronic components. The electronics industry uses instruments that measure electricity in testing semiconductor components, in research and development laboratories, and in engineering.[3]

Other functional applications in many industries include monitoring energy usage for conservation purposes; troubleshooting automatic process operations; recording and analyzing shutdown and startup sequences; operating test and inspection stations; classifying and diagnosing power-line or voltage disturbances; and servicing electrical field equipment.

The industry makes general-purpose as well as customized instruments which can be either electrical or electronic. General-purpose (or broad-spectrum) instruments are produced in relatively large quantities. They include oscilloscopes, signal generators, and demand meters, which are sold mostly in industrial markets. Simpler, less expensive instruments, such as multitesters, are frequently big sellers in the nonindustrial market.

Customized products are often technologically more sophisticated instruments, designed to solve specific measurement problems. However, they also include less complex equipment such as panel meters, which are made to order for utility companies.

Complex, electronic instruments such as combination and group test sets or some voltage, current, and resistance measuring equipment have become very important to this industry's growth.[4] Because of advances in electronics technology, these instruments are able to perform many different functions, thereby replacing several simpler instruments. The demand for new electronic instruments has been a major factor behind the industry's output growth.

Thus, changes in electronics technology have not only indirectly fueled demand through the explosive growth in semiconductor components (which in turn generated the need for more measuring instruments), but, by influencing the form and function of products, have brought new instruments and growth directly into their markets.

Product improvements have also contributed to the growth in demand by widening markets. For instance, many instruments now have direct digital readouts and automatic calibration for ease of operation, and are designed so that minimal training is required to use them.[5] These instruments are designed to be "user-friendly" and to perform some data analysis prior to printout, thereby allowing companies without engineers or other technical personnel to make use of them.

Growing employment

The number of persons employed in the industry expanded greatly over the period studied (73 percent), with especially large increases from 1977 to 1980. Employment rose at an average annual rate of 2.4 percent between 1972 and 1976, and of 9.7 percent from 1977 to 1981:

Average annual rates of change

Years	All employees	Production workers	Nonproduction workers
1972–81	6.3	4.1	9.5
1972–76	2.4	1.4	4.0
1977–81	9.7	5.9	14.9

The proportion of nonproduction workers rose from 37 percent in 1972 to 47 percent in 1981. (Such workers accounted for 30 percent of all manufacturing employees in 1981.)

Total employment dropped only twice over the 9-year period studied—and one decline (1980–81) was very small, 0.1 percent. As the following table shows, average layoffs per 100 employees were less than one quarter the average for all manufacturing industries. Average recalls, separations, quits, and layoffs from 1972 to 1980 all ran well below the average for all manufacturing, reflecting industry efforts to minimize turnover and retain skilled workers:

Average per 100 employees (1972 to 1980)

	Instruments to measure electricity	All manufacturing
Recalls (1976–80) . .	0.14	0.88
Separations	2.39	4.17
Quits	1.46	2.00
Layoffs	0.29	1.30

Production workers. These employees, mainly assemblers and testers, declined in number twice—in 1975 and in 1981. The number of production workers increased 45 percent from 1972 to 1981, to 50,200. Until recently, average weekly and hourly earnings generally ran below the manufacturing average.[6]

Women account for an unusually high proportion of production workers. (The average percentage of women in this industry's total work force from 1972 to 1981 was well above the average for all manufacturing—46 percent versus 31 percent.) At many companies the assemblers are almost all women. Reasons given for women's dominance of assembly jobs vary from "tradition" to "manual dexterity."[7]

Many assembly jobs require little prior job training, thus attracting women with no previous employment experience. Some industry sources also claim women are able to cope better with the exacting but tedious assembly work.

In addition to the training all production workers receive on the job, testers often have trade school education in electronics. Because of the significant investment in training, companies prefer not to lay workers off during a downturn. Instead, many businesses reduce payroll costs through shortened workweeks and temporary plant shutdowns. Many companies, particularly the smaller ones, seek to avoid lay-offs because of strong employee-company loyalty.[8]

There are two types of testers found in most plants: incoming parts or quality control testers and technicians (as defined by the industry). Testers for incoming parts need less training and are usually lower-paid than technicians. Technicians test complex assemblies and final assemblies, and usually are required to have trade school experience. Women do not appear to dominate in these work groups.

Nonproduction workers. The rising percentage of nonproduction workers in the industry is largely related to trends in product design. A significant proportion of the companies in this industry manufacture increasingly complex, sophisticated instruments at low production rates. Thus, large support groups of engineers and technicians are needed for research and design. An expenditure of 6 to 7 percent of sales for research and development is common in this industry. Considerable investment in research and development is needed to keep up with both the changing technology in the products whose "electricity is to be measured" and the advances in electronics that can improve the measuring instruments' capabilities.[9]

Professional and technical workers, especially engineers, represent a significantly larger proportion of the industry's work force than of all manufacturing employees.[10] Managers and clericals account for a slightly larger proportion when compared with all manufacturing. These general trends in white-collar occupations reflect the importance of engi-

Table 2. Significant users of specific product groups from SIC 3825, Instruments to Measure Electricity[1]

Product groups and 1977 value of shipments (in million of dollars)	Semiconductor and computer manufacturers	Computer users (all industries)	Computer installers/ servicers	Refiners and chemical plants	Communications, aircraft, radio, TV, aerospace industries	Utilities/ private power companies	Automobile manufacturers	Appliance, TV, and radio repairers	Auto garages	Hospitals and other specialized power users	Labs (all industries)
AC watt-hour and demand meters ($151.7)	—	—	yes	—	yes	yes	—	—	—	—	—
Voltage, current, and resistance measuring equipment and multimeters ($171.4)	yes	yes	yes	yes	yes	yes	—	yes	—	yes	yes
Power and energy measuring equipment ($9.1)	—	—	yes	yes	—	yes	—	—	—	—	—
Frequency and time measuring equipment ($86.4)	yes	—	—	—	yes	yes	—	yes	—	—	yes
Oscilloscopes and signal generating equipment ($380.4)	yes	yes	yes	—	yes	—	—	yes	yes	—	yes
Field strength and intensity measuring equipment ($59.0)	yes	—	yes	—	yes	—	—	—	—	—	yes
Impedance and standing wave ratio measuring equipment ($17.3)	—	—	—	—	yes	yes	—	—	—	—	yes
Electronic x-y plotters ($69.3)	—	—	—	yes	yes	—	—	—	—	—	yes
Multifunction test and measuring equipment[2] ($349.6)	yes	yes	—	—	yes	—	—	yes	—	—	yes
Standards and calibration equipment ($40.1)	—	—	—	—	yes	—	—	—	—	—	yes
Microwave test equipment ($48.5)	—	—	—	—	yes	yes	—	—	—	yes	yes
Internal combustion engine analyzers ($151.7)	—	—	—	—	—	—	yes	—	yes	—	—
Panel meters ($138.8)	—	—	—	yes	yes	yes	—	—	—	—	—
Switchboard instruments ($14.1)	—	—	—	yes	—	yes	—	—	—	—	—
Elapsed time meters ($15.3)	—	—	—	—	yes	yes	yes	—	—	—	—
Electrical recording instruments ($184.9)	—	—	—	yes	—	yes	—	—	—	yes	yes
Parts and accessories, including transducers ($30.8)	yes	—	—	—	yes	—	yes	yes	yes	yes	—

[1]"Users" include both civilian and military purchasers.
[2]Including semiconductor test equipment.

NOTE: Information provided by industry sources.

neers and related workers to the establishments in the industry.

Changes in technology

There are several basic steps in the production of a typical electronic instrument designed to measure electricity: The needed parts are purchased, or made in-house. These parts are checked and then prepared (wired, preformed, and so forth) for production. The components are inserted in printed circuit boards which are then soldered. Assemblies are tested, interconnected, and installed in cases. Additional testing and calibration of the finished instruments follow.

Parts needed for production in this industry range from complex printed circuit boards made in-house to semiconductor devices ordered from catalogs. Many of the incoming parts and components are performance tested (usually through sampling). Some firms make their own custom electronic parts, thereby ensuring complete quality control of critical components. Most firms purchase a large proportion of their components from vendors. Thus, they must adapt their product designs to accommodate standardized parts, sacrificing some quality control. (The failure rate during quality control of incoming parts is often higher than that accepted for in-house production.)

There has been an increased effort, particularly by medium to large-sized firms, to design products so that they comprise several subassemblies (modules) which are interconnected electrically and mechanically at the end of the manufacturing process. This subassembly design concept has many advantages which can lead to lower unit costs, increased productivity, and more reliable products. One advantage is that subassemblies can be better adapted to automated assembly and testing. Also, several different instruments can be designed so that they include nearly identical subassemblies, thus increasing subassembly production quantities. In addition, varied customer preferences (options) can be more efficiently added or deleted from the basic instruments.

The use of integrated circuits and microprocessors in the more technologically advanced instruments has also enabled producers to reduce the number of components, thus reducing assembly time.

When purchased parts are received, they must be counted and checked. Equipment is now available that weighs parts in lieu of manually counting them. Inventoried components like resistors and capacitors must then be preformed and harnesses wired. (Harnesses are grouped bundles of wires.) Wiring of harnesses can be done manually or by mass termination machines, which can do in 5 minutes what takes 1-½ to 2 hours to do by hand. These machines attach ribbon wire to connectors, which are then attached to printed circuit boards. Even in companies that have mass termination machines, however, hand wiring may still be done for older products because of the extensive time and large outlays required to redesign products in order to make use of these machines. (Hand wiring is also used for connecting high voltage wires, or where small numbers of wires are going to many points.)

Next, components (both integrated circuits and discrete parts like diodes) must be stuffed (inserted) into printed circuit boards using assembly drawings as guides. This is done either manually or automatically by insertion machines (which require a substantial investment). (The first insertion machines purchased by a company are generally used for handling integrated circuits.) The machines are preprogrammed (usually by production engineering staff) and then loaded with the necessary preformed components. (It is the expense of programming, in addition to the relatively high capital outlay, that prohibits the use of insertion machines in small batch production runs.) The machine then inserts components into printed circuit boards automatically. At higher volumes of production, insertion machines save about 80 percent of labor compared with manual insertion of integrated circuits, and 15 to 20 percent over manual stuffing of discrete parts.

Another advantage of these machines is an increase in production consistency, which is especially important as boards become packed more tightly. (Five years ago, there were about 50 components on a typical board; now there may be 350.) Thus, it is more and more difficult and time-consuming to ensure that boards are assembled correctly. The first newly-designed board stuffed by machine is thoroughly checked and approved. Once that is done, all subsequent boards stuffed by the insertion machines will be of higher quality and greater reliability than if they had been assembled manually. Actual postproduction testing time is not reduced, however.

Manual insertion methods may range from bench assembly, where one person inserts all components into the printed circuit board, to progressive subassembly, where several individuals each insert a number of components.

Stuffed boards are then routed to solder flow machines, which have been in use for about 15 years. These are probably the most widely diffused machines in the industry, and represent a major technological improvement over hand soldering. After soldering, cables are manually connected to the boards and the boards are tested for solder shorts and opens, incorrectly inserted components, and malfunctioning components. Subassemblies then go through final assembly and are put in cases. The product is then tested and calibrated. Completed instruments are often run for extended periods under controlled conditions to test them for accuracy and reliability (the burn-in process).

Test equipment. Testing is a critical process in this industry because of the nature of the products. Testing is usually done at several steps in the manufacturing process—when purchased components are received, after subassemblies are completed, and after final instrument assembly. Improvements in test equipment for incoming parts have enabled

quality control personnel to make more extensive tests and to check a larger percentage of parts. In most tests, there is some degree of automation involved in that measurement instruments are used. However, *fully* Automatic Test Equipment (ATE) is now available—although it is costly. This computer-based equipment can test bare printed circuit boards or assembled (inserted) printed circuit boards. It is used mostly for the latter purpose. Automatic Test Equipment (parts of which are measuring instruments) is state-of-the-art electronic equipment, capable of performing multiple, complex tests. Some labor savings are realized when it is used. It also allows testers to perform more tests on each product, thus keeping up with the growing complexity of the instruments. More consistent, higher quality products result.

Computers. There are four general areas of computer use: Management control systems, computer-aided engineering, warehouse automation systems, and computer-aided manufacturing (CAM).[11] Computer usage is usually limited to research and design and to simple business functions such as maintaining payroll and sales records. In most companies that have computers, several computer systems are employed, but the databases are rarely integrated. Some increase in nonproduction worker productivity has resulted from engineers' extensive use of computers in product design and development, and from drafters' utilization of computer-aided-design (CAD) systems to draw circuit layouts and schematics for printed circuit boards. Improved software tools for engineers and better CAD systems for drafters have allowed them to further reduce the time spent in designing products and making design changes, in writing customized programs, in communicating with other parts of their organization, and in finding errors.[12]

Advanced business computers can be used to reduce costs through better purchasing practices and inventory control. Some systems are also capable of scheduling work, keeping track of employee hours, or controlling material levels, but these are employed less frequently. For the companies that use them, advanced, integrated CAD/CAM systems are capable of increasing labor productivity, in addition to permitting more efficient use of materials, greater reliability, faster turnaround (from design to finished product), and smaller inventories.[13] Automatic testing systems, used to check assemblies during production, are also computerized. They are used as quality control tools and as a means to improve productivity.

Implementation of most of the technological advances in the production process mentioned requires significant capital outlays. New capital expenditures by this industry increased over 600 percent (in current dollars) between 1972 and 1981. In dollars per production worker, the increase was also very large, 389 percent, compared with a 226-percent increase for all manufacturing. These percentage increases ran substantially above the increase in value of shipments over the same period. The spending surge is an indication of the move to more automated production systems. The spread of automated equipment is also reflected in the 176-percent increase in value added per production worker over the study period. In 1972, value added per production worker in this industry was 13 percent higher than for all manufacturing; in 1981, it was 31 percent higher.

Industry structure

When firms are grouped by number of employees or sales volume, there are identifiable differences in both the technology employed in production and the type of products produced. The smaller companies often produce nonelectronic instruments, many of which are broad-spectrum or general use types (for example, some signal generators and multimeters), as well as customized electronic and mechanical equipment in low volume operations. The advent of prepackaged and pretested electronic components has allowed small companies with limited skills to produce more sophisticated instruments.

Medium-sized companies employ varying amounts of automatic equipment and are often at the forefront of the new technology in instruments that measure electricity.[14] Production usually takes place in limited runs. These firms face some direct competition, but often try to find market niches in which only their products will fit. (Sales are frequently made through sales representatives who sell instruments from several companies.)

The larger companies account for most of the low-cost, high-volume products as well as some of the more costly and complex instruments. It is in high-volume operations that the most automated production processes are found. Along with the additional capital required to automate, these firms face extensive development costs. Thus, only firms with high-volume production facilities can take advantage of reduced unit labor and materials costs, and cover large capital and developmental expenditures. (In a few cases, automatic equipment may also be installed if there is a very high error rate or if repair and troubleshooting costs are exorbitant.)[15] The following tabulation presents the 1977 percent distribution of establishments, employment, and new capital expenditures in the industry, by establishment size:[16]

	Establishments	Employment	New capital expenditures
Total	100.0	100.0	100.0
Establishments with average employment of:			
1–19	58.4	3.5	2.3
20–99	23.7	11.3	7.5
100–499	13.4	28.4	23.7
500–999	2.7	18.3	20.4
1000 or more . .	1.8	38.6	46.1

The number of establishments in this industry rose from 632 in 1972, to 671 in 1977. (The estimate for 1981 is

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653.)[17] From 1972 to 1977, the corresponding percentage increase in number of *companies* (2 percent) was lower than that for *establishments* (6 percent). The number of employees per establishment also increased—from 87 in 1972 to 99 in 1977.

Outlook

The capabilities of measuring instruments will grow as their manufacturers incorporate advances in electronics technology, especially microprocessors and related devices, into their products.[18] The instruments themselves will become smaller. More components will be produced and tested automatically. Testing of assemblies and final products will continue to be a major concern as product complexity increases and improvements in instruments' accuracy and reliability remain important competitive tools.

Smaller companies will be able to install more automatic equipment as lower prices for such equipment permit a favorable return on investment even with low-volume production. The large white-collar work force should become more efficient as business computers are utilized more fully and improvements in software aid both engineers and drafters in their product development work.

The electronics industry, the largest market for measuring instruments, should continue to expand as the economy recovers and capital spending picks up. In addition, electronics firms (which include companies that produce instruments to measure electricity) are expected to install more automatic controls and to concentrate on producing high-quality products—both of which goals will necessitate more accurate and precise measuring capabilities. The increase in sales of instruments that are a part of ATE should be especially strong as electronics firms strive to reduce labor costs, improve product quality, and keep up with the growing complexity of electronic components.[19] Logic analyzers, used to test microprocessor-based systems, should also be big sellers. The data and telecommunications industries are also expected to experience strong output growth—thereby stimulating purchases of measuring equipment.[20] Exports should continue to increase because of growing worldwide use of electronic components, and the unique products offered by some U.S. companies.

Rapidly changing electronics technology will be both a pushing and a pulling force as it continues to fuel demand and improve both the products and productivity in this industry.

Workers will become more dependent on computers as automated production processes, business computers, and ATE spread throughout the industry. The demand for computer-trained production workers, and for programmers and engineers who maintain the machines, will thus increase. There will continue to be a strong need for design and development engineers as research and development levels stay high. □

------FOOTNOTES------

[1] The 1972 Standard Industrial Classification manual classifies Instruments for Measuring and Testing of Electricity and Electrical Signals as Industry 3825. The major products included are: AC watt-hour meters; demand meters; voltage, current, and resistance measuring equipment; multimeters; power and energy measuring equipment; frequency measuring equipment; waveform measuring and/or analyzing equipment (oscilloscopes); signal generating equipment; field strength and intensity measuring equipment; impedance and standing wave ratio measuring equipment; electronic time measuring and counting equipment; electronic x-y plotters; combination and/or group test sets; component part test sets (semiconductor test equipment); standards and calibration equipment; analyzers for testing characteristics of internal combustion engines; panel meters; switchboard instruments; elapsed time meters; portable instruments; and electrical recording instruments.

Average annual rates of change presented in this article are based on the linear least squares of the logarithm of the index numbers. Extensions of the indexes will appear in the annual BLS Bulletin, *"Productivity Measures for Selected Industries."*

[2] U.S. Department of Commerce, Industry and Trade Administration, *1982 U.S. Industrial Outlook* (Washington, Government Printing Office, 1982), p. 274.

[3] Al Esser, "Modular ATE satisfies gamut of testing needs," *Electronic Design*, Oct. 28, 1982, pp. 127–28.

[4] The increase in value of product shipments for all of SIC 3825 was 93 percent between 1972 and 1977. For combination and group test sets, the increase was 250 percent; for multimeters, 195 percent; and for electronic analog voltage, current, and resistance measuring equipment, the increase was 320 percent.

[5] Roger Allen, "DVMs, DMMs advance on several fronts: Low costs systems performance," *Electronic Design*, Oct. 15, 1981, pp. 129–46.

[6] Earnings data for SIC 3825, as a percent of all manufacturing:

	Average weekly earnings	Average hourly earnings
1972	88.5	87.4
1973	86.3	84.8
1974	86.0	83.9
1975	89.6	89.9
1976	99.4	100.2
1977	99.0	98.8
1978	98.8	96.9
1979	101.3	97.5
1980	105.5	101.7
1981	96.7	95.7
1982	101.0	98.7

[7] Industry sources.

[8] Industry sources and U.S. Department of Commerce, *1982 U.S. Industrial Outlook*, p. 274.

[9] Industry sources and "Semiconductor orders to lead recovery for electonics in 2nd half, industry says," *Wall Street Journal*, June 16, 1982, p. 12.

[10] Discussion is based on unpublished BLS occupational data for SIC 382. SIC 3825 makes up about 38 percent of SIC 382.

[11] "CAD/CAM systems shape up for total automation," *Electronic Design*, Oct. 14, 1982, p. 226.

[12] Industry sources.

[13] *Electronic Design*, Oct. 14, 1982, p. 228.

[14] Observation of industry operations, and industry sources.

[15] Observation of industry operations, and industry sources.

[16] Data are from *1977 Census of Manufactures, Part 3* (Bureau of the Census), p. 38A–17, table 4.

[17] U.S. Department of Commerce, *1982 U.S. Industrial Outlook*, p. 274.

[18] "Test/Measurement," *Electronic Engineering Times*, Jan. 1, 1981, p. 18.

[19] "Electronics-electrical/basic analysis," *Standard and Poors' Industry Survey*, Jan. 14, 1982, p. E18.

[20] U.S. Department of Commerce, *1982 U.S. Industrial Outlook*, pp. 274–75.

APPENDIX: Measurement techniques and limitations

Indexes of output per employee hour measure changes in the relation between the output of an industry and employee hours expended on that output. An index of output per employee hour is derived by dividing an index of output by an index of industry employee hours.

The preferred output index for manufacturing industries would be obtained from data on quantities of the various goods produced by the industry, each weighted (multiplied) by the employee hours required to produce one unit of each good in some specified base period. Thus, those goods which require more labor time to produce are given more importance in the index.

In the absence of physical quantity data, the output index for the industry which produces instruments to measure electricity was constructed using a deflated value technique. Value of shipments of the various product classes was adjusted for price changes by appropriate Producer Price Indexes to derive real output measures. These, in turn, were combined with employee hour weights to derive the overall output measure. These procedures result in a final output index that is conceptually close to the preferred output measure.

The indexes of output per employee hour relate total output to one input—labor time. The indexes do not measure the specific contribution of labor, capital, or any other single factor. Rather, they reflect the joint effect of factors such as changes in technology, capital investment, capacity utilization, plant design and layout, skill and effort of the work force, managerial ability, and labor-management relations.

Productivity improvements in two fabricated metals industries

*Output per employee-hour has risen faster
in valves and pipe fittings than it has
in fabricated pipe and fittings, both
industries show high levels of capital spending*

HORST BRAND AND CLYDE HUFFSTUTLER

Labor productivity trends vary widely in two industries in the fabricated metals group—valves and pipe fittings and fabricated pipe and fittings—in part, because the technologies applied in the manufacture of their products differ.[1] Furthermore, although valves and pipe fittings are classified as a single industry, their products are fundamentally unlike in the ways in which they are manufactured, and in the extent of scale economies and industry support required in servicing them after they have been installed. Products of both industries are used to control and transmit liquid and gaseous fluids.

In the valves and pipe fittings industry, productivity, as measured by output per employee hour, rose at an average annual rate of 1.3 percent between 1954 and 1981, as output increased 3.0 percent and employee hours, 1.7 percent. In fabricated pipe and fittings, productivity advanced 0.3 percent a year between 1958 and 1981, as a 4.3-percent gain in output was offset by a 4.1-percent increase in employee hours. Productivity in all manufacturing industries averaged 2.5 percent during the 1954–81 period, as output increased 3.3 percent and employee hours, 0.8 percent.

Three distinct periods marked the long-term productivity trend, during which annual rates deviated significantly from that trend. These rates moved as follows (in percent):

Period	Valves and pipe fittings	Fabricated pipe and fittings	Manufacturing
1959–65 ...	3.7	1.5	3.7
1965–73 ...	1.0	0.8	2.8
1973–81 ...	1.0	−2.6	1.5

The reasons for the productivity slowdown are not clear. In both industries, employee hours rose more rapidly in relation to output after 1965 than in the earlier part of the 1954–81 period. While the employee-hour rate for valves and pipe fittings was less than a third of the output rate over the 1959–65 span, and a little more than half for fabricated pipe, it rose to nearly two-thirds of the output rate in 1973–81 for the former industry, and to 1½ times the output rate for the latter. In brief, hiring accelerated relative to output gains in the 1970's and tended to dampen productivity advances. The pattern was similar for all of manufacturing.

Year-to-year movements in output per employee hour of the two industries also show a high degree of volatility. In valves and pipe fittings, productivity declined in 10 of the 27 years studied, in fabricated pipe, in 9 of 23. It dropped as much as 9 percent in the former (in 1958), and 11 percent in the latter (in 1970), and climbed as much as 12 percent in both (in 1955 and 1959). In all manufacturing, productivity dipped in only 4 years between 1954 and 1981, and by more than 0.5 percent in but one of the years—1974.

In most years of productivity decline in the two industries, output as well as employee hours decreased, but these at a

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lesser rate. In some years, output rose, but less than employee hours.

Demand spurs output growth

Output of valves and pipe fittings more than doubled between 1954 and 1981, setting a record of 113 in 1981 (1977 = 100). Output of fabricated pipe also doubled over the 1958–81 span, reaching its peak of almost 108 in 1978.[2]

Output trends underwent sizable year-to-year swings,[3] as well as alternations between periods of rapid and greatly slowed expansion. (See the following tabulation.) These movements did not parallel total manufacturing output after 1973, when output of the two industries was spurred by intensified worldwide demand from extractive industries.

	Valves and pipe fittings	Fabricated pipe and fittings	Manufacturing
1959–65	7.0	3.4	5.5
1965–73	1.7	1.7	4.1
1973–81	2.6	4.5	1.2

Average annual rates of change (in percent)

Among key determinants of the rise in the production of valves and pipe fittings, and of fabricated pipe and fittings, were the expansion in industrial and public utility demand, particularly during the boom years of the early and mid-sixties; gains in the construction of sewer and water works during much of the period studied; and intensified needs of energy-related extractive and pipeline industries, again mostly during the 1970's. In addition, expanding foreign trade in valves and pipe fittings importantly contributed to output, especially during the 1970's, with exports moving up from 10 percent of the industry's value of shipments in 1972 to 14 percent in 1979.[4]

Among large-scale users of valves and pipe fittings (as well as of fabricated pipe) was the chemicals industry. Following the 1960's, the industry accounted for about one-sixth of total domestic valve shipments and probably about the same proportion of shipments of pipe fittings and fabricated pipe.[5] (The markets for these industries and components are identical or closely related.) Chemicals almost doubled plant and equipment outlays (adjusted for price changes) in the early 1960's, then reduced them. After 1973, however, the industry raised real outlays once again, and, in 1979, they stood nearly twice as high as 1973 levels.

Nearly one-half of industrial valves output was absorbed in recent years by energy-related extracting, processing, and distributing industries. Growth in extractive activities, especially in the installation of drilling platforms, spurred demand for fabricated pipe.[6] In the 1960's, drilling of oil and gas wells dropped sharply, but after 1970, the decline was reversed. In 1979, both the number of wells and footage drilled ran roughly 75 percent above 1970 levels.

Expansion of electrical generating capacity also bolstered output of the two industries reviewed here, their products being essential in the circulation of water and steam (and in the condensation of steam). Whereas the total number of electrical generating stations barely changed over the period covered, the proportion of stations generating 500,000 kilowatts or more rose from under 3 percent in 1960 to 13 percent in 1980. The number of nuclear and gas-turbine driven power-generating plants likewise increased. These increases spelled a shift to larger, more capacious and heat- and pressure-resistant valves and fabricated pipe.

Water supply systems and sewage facilities also represented important markets for valves and pipe fittings, as well as for fabricated pipe, claiming more than 11 percent of valve shipments alone. The rate at which water and sewage systems were put in place was comparatively steady in the 1950's and 1960's. It accelerated in the 1970's, slackening, however, after 1978. Among reasons for the faster rate in the 1970's was funding under the Water Pollution Control Act of 1972, which spurred the construction of advanced waste water plants for the elimination and dilution of chemicals and other industrial pollutants.[7] Responding to the growth and locational shifts in population and housing, put-in-place water supply facility construction rose from an average annual rate of 1 percent in the 1950's to nearly 7 percent in the 1960's, thereafter slowing to little more than 2 percent.

Changes in production technology

Improvements in the manufacture of valves and pipe fittings, and to an extent of fabricated pipe, have usually hinged on technological advances in metalworking machinery and pertinent electronic controls. Some of the larger valve manufacturers sought to overcome the drawbacks of small lot production by adopting group technology.

Small lot production—often involving tens or hundreds of products made to specification—characterizes the manufacture of many kinds of valves and pipe fittings[8]. Nevertheless, the efficiency of turning out varieties of valves and pipe fittings, each in relatively small lots, has steadily improved. Increasingly, automated machining devices speed production. In a growing number of establishments, families of parts common to different product varieties are machined, then distributed to bins for final assembly. The assembly worker, hitherto stationary while the parts and the products to be assembled moved to and away from him, now moves between the various bins and the various products to be assembled.[9]

The manufacture of families of common parts saves labor in setting up machine tools, as well as in streamlining the flow of production. The authors of a text on group technology—a term that covers methods of manufacturing common parts particularly suited to small lot production—state: "In the typical manufacturing plant, the excessive setup time, caused by the product mix and small lot sizes, may be the most significant part of total production time."[10] Because reduction of setup time remains a key problem for valve manufacturers, more and more establishments are re-

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organizing key production operations, so that parts common to a variety of products may be machined sequentially, rather than on a product-by-product basis.[11]

Adoption of computer-controlled machine tool technology has facilitated small lot production. One example is a numerically controlled lathe featuring automatic tool changers and capable of machining parts of a variety of weights (5 to 600 pounds) and shapes. The range of lot sizes machined on the lathe varies from single, complex components to more than 700. The increasing diversity of valve specifications,[12] together with the small lot sizes ordered, favors wider adoption of automated production machinery, whose users also benefit from its high rate of metalworking speeds.

Computer-aided design (CAD) has facilitated the production of high-performance valves. Such valves require close tolerances in their dimensions, and, as noted, must often be capable of operating under high pressure and temperature extremes, internal as well as environmental. In some establishments, CAD has saved up to 50 percent of engineering work in some operations in comparison with conventional methods, and hence has also achieved optimality of valve design more rapidly.[13] The manufacture of valves to close tolerances requires numerically-controlled and, increasingly, computer numerically-controlled turret lathes and other lathes, as well as horizontal spindle machining centers capable of great accuracy in repeat performances. Some firms program families of common parts into the computers controlling their machine tools, reportedly reducing programers' time by one-quarter to one-third, compared to earlier programing procedures.[14]

Advances in the productivity of pipe and tube fittings manufacture have, in general, also hinged on the use of sophisticated metalworking equipment. When fittings are mass produced, they enter the machining process as forgings. These forgings are drilled to specified diameters, threaded or beveled, and deburred. Setup often appears still to be manual, because runs are comparatively long, making setup time less of a cost variable, compared with small lot production. Manual, rather than automatic, feeding of the forgings to the metalcutting machinery also prevails in many establishments. Apparently, this type of mass production operation has experienced little improvement in productivity.[15]

Advances in technology specifically keyed to the manufacture of fittings include ballistic and hydraulic flaring machines. (Flares on fittings serve as seals.) Prior to the advent of these machines, flaring was accomplished by handtools, and could not be peformed on heavier wall tubing or fittings. A large group of fittings, however, is not flared. Flareless fittings are joined either by biting into the metal or by compression. In compression, the seal consists of a rubber ring recessed into the metal. The technology used in fabricating these fittings is considerably more complex and exacting than in manufacturing flared fittings, and therefore demands greater operator skill.[16]

Tubes and fittings are often worked and readied for application by means of specialized handtools. These handtools have been significantly improved over the period reviewed here. For example, the cutting edge of tube cutters has been made more efficient through adaptable contouring and harder materials. Benders have come to be adjustable for wear, as well as for bending hard or soft tubing. Flaring tools have been improved so as virtually to eliminate the risk of thinning the flared tube wall or applying excessive torque. Burnishing of the flared face, which makes for a tighter seal, has become more efficient, and has been made part of the manual flaring operation.[17]

Fabricated pipe is cut, bent, threaded, and welded to customer specifications. Specifications vary within fairly narrow ranges, and production processes are fairly standardized.

The industry has recently adapted computerized patterning controls for precision cutting of pipe. These controls have replaced templates in the technically more advanced shops. (Templates were made in-house, and required a skilled operator in their use.) Time between cuts is reduced because the positioning, preheating, and start and depth of cut are computer controlled. Preparation of appropriate computer programs takes as little as one-fifth of the time required for a conventional template. In addition, computer-controlled systems are more accurate, and can be applied so as to minimize waste.[18]

Pipe welding has been largely mechanized since the 1960's, except for smaller jobs, where manual welding is preferred. The "duty cycle" of welding—minutes per 8-hour period actually spent by the operator—has been significantly increased, as has the deposition rate of the filler metal that makes the weld.[19] The bending of pipe has been speeded up by computer controlled induction heating. This facilitates bending by various leveraging devices. The operation continues to require considerable skill.

Employment

During the 1954–81 period, employment in valves and pipe fittings rose at an annual rate of 1.8 percent, a figure not significantly different from the 1.7-percent rate for employee hours. The 1981 employment and hours levels ran about 50 percent above those for 1954. (However, in 1982, employment dropped sharply; currently, it numbers fewer than 85,000 workers.)

Employee hours rose rapidly in the early part of the review period, slowed down from 1965 to 1973, and acceleratead once again thereafter, as the following tabulation shows, using average annual rates of change in percent:

	Valves and pipe fittings	Fabricated pipe
1954–81	1.7	4.3*
1959–65	3.1	1.9
1965–73	0.7	0.9
1973–81	1.6	7.3

*1951–81

Year-to-year fluctuations in employee hours were pronounced, particularly in periods of recession and recovery. The largest increase in year-to-year movements, 11 percent in 1974, was followed by the largest decline, 10 percent in 1975.

Employment in the fabricated pipe and fittings industry more than doubled between 1958 and 1981, rising at an average annual rate of 4.3 percent, as did employee hours. Employee hours rose faster in the early 1960's than in the following years, but increased at a very high rate between 1973 and 1981. Year-to-year swings, associated with movements in the business cycle, ranged from a 14-percent drop in 1961 to an 11-percent gain in 1967. In the 1970's, large annual increments—of as much as 22 percent in 1976—swamped dips of 3 percent in 1975 and 4 percent in 1980.

Accessions and separations in valves and pipe fittings averaged little more than two-thirds of the average for durables during the 1970's (data for earlier years are not available). Comparatively low labor turnover is probably related, in part, to the skill, composition, and high proportion of nonproduction employees in the industry's work force.

Nonproduction workers accounted for 30 percent of total employment in valves and pipe fittings in the late 1970's and in 1981, as against an estimated 22 percent in the mid-1950's. Employment of nonproduction workers rose at an average annual rate of 2.9 percent between 1954 and 1981, of production workers at 1.3 percent. The greater increase in nonproduction workers was linked largely to expanded hiring of engineers and other professionals needed to design the growing diversity of products manufactured in the industry, together with the appropriate production processes. In fabricated pipe, the proportion of nonproduction workers declined slightly to 22 percent over the 1958–81 span, reflecting the somewhat greater expansion of the production than of the nonproduction work force (4.7 percent annually versus 3.3 percent).

Data on the occupational composition of the two industries are available only for the miscellaneous fabricated products group as a whole. The two industries account for about one-half of the group's employment. Their occupational mix probably does not deviate much from the group's for most occupations. The distribution of professional and technical workers in miscellaneous fabricated metals in 1980 was slightly lower than for manufacturing (7 versus 10 percent)—except that the group's proportion of mechanical engineers and drafters was slightly higher. Indications are that that proportion is exceeded in valves and pipe fittings, but not quite so high in the fabricated pipe industry. The group also employed relatively more clerical workers. Metalworking craftworkers represented 6 percent of the group's employment, twice the proportion for manufacturing. Here, again, fabricated pipe may have run below the group average; valves and pipe fittings above. The proportion of operatives, 45 percent, was roughly the same, although semiskilled metalworking operatives (including welders and lathe machine operators), who accounted for 20 percent of the group's total employment, had nearly three times the proportion for manufacturing. In general, the occupational mix of the group closely paralleled that for durables manufacturing, particularly for blue-collar workers. This is also suggested by average hourly earnings levels, which have coincided with the durables manufacturing average since data became available in 1972.

Capital expenditures

Plant and equipment expenditures by establishments making valve and pipe fittings and fabricated pipe exceeded the average for all manufacturing during the period reviewed. After adjusting for changes in the cost of new machinery and equipment and new structures,[20] capital outlays by valve and pipe fittings manufacturers rose at an average annual rate of almost 7 percent between 1958 and 1980, those by fabricated pipe firms by 11 percent—compared with little more than 5 percent for all manufacturing establishments.

These expenditures rates fluctuated considerably in the course of the review period. Real plant and equipment expenditures weakened much less in the 1960's and early 1970's in valves and pipe fittings than in all manufacturing, and was comparatively strong for fabricated pipe. All the rates shown accelerated during the 1970's, reflecting, for the two industries, strong pressures on capacity from stepped-up domestic and foreign demand, especially from oil and

Table 1. Productivity and related indexes for the valves and pipe fittings industry, 1954–81

[1977 = 100]

Year	Output per employee hour	Output	All employee hours	Employees
1954	70.3	50.9	72.4	70.7
1955	78.7	58.4	74.2	70.2
1956	82.7	64.2	77.6	74.1
1957	79.3	61.9	78.1	75.3
1958	72.2	51.6	71.5	70.7
1959	76.5	54.0	70.6	69.9
1960	75.0	51.8	69.1	69.0
1961	81.3	57.7	71.0	70.3
1962	83.4	63.8	76.5	74.8
1963	84.3	63.8	75.7	74.0
1964	86.6	68.7	79.3	75.3
1965	96.4	81.0	84.0	80.9
1966	95.1	85.0	89.4	84.8
1967	91.3	82.9	90.8	87.7
1968	92.3	82.5	89.4	87.9
1969	94.1	86.1	91.5	88.5
1970	93.6	86.7	92.6	89.7
1971	98.3	86.5	88.0	86.7
1972	100.7	88.1	87.5	86.8
1973	103.3	98.4	95.3	93.2
1974	94.3	99.5	105.5	99.0
1975	92.4	87.3	94.5	94.2
1976	91.1	86.9	95.4	94.5
1977	100.0	100.0	100.0	100.0
1978	100.9	104.7	103.8	104.0
1979	104.3	112.8	108.2	107.9
1980	101.4	109.6	108.1	107.9
1981	103.5	113.1	109.3	109.0
Average annual rates of change				
1954–81	1.3	3.0	1.7	1.8
1975–81	2.2	5.0	2.8	2.8

gas extraction. The following tabulation shows average annual rates, in percent, based on constant dollars:

	Valves and pipe fittings	Fabricated pipe and fittings	Manufacturing
1958–80	6.5	10.9	5.2
1959–65	5.6	0.0	8.8
1965–73	2.3	5.6	0.3
1973–79	6.6	10.0	5.1

Both industries (as well as manufacturing) spent a higher proportion of their capital outlays on machinery and equipment in the 1970's than in earlier years—exceeding 75 percent of total outlays, and in some years, topping 80 percent. Earlier, the proportion was usually well below those levels. In the 1950's and 1960's, firms very often moved their operations into spacious one-story structures at preferred locations, making subsequent expenditures on structures less necessary. At the same time, they continued to update their equipment throughout the 1970's.[21]

Capital expenditures per employee, $2,120, in 1978, for the valves and pipe fittings industry, had not changed significantly relative to the comparable fiture for all manufacturing over the preceding two decades, remaining at 75 percent of the all manufacturing figure. In fabricated pipe, per-employee expenditures, $1,924 in 1978, rose considerably relative to manufacturing, with the ratio rising to 67 percent in 1978 from 46 percent in 1958.

Structure of industry

Between 1958 and 1977, the number of establishments rose 50 percent in valves and pipe fittings, and doubled in the fabricated pipe industry. In all manufacturing, that number rose by less than one-fifth over the period. Nearly three-fourths of the increase in valve and pipe fittings manufacturing establishments occurred in the 1–99-employee size classes—which accounted for less than a third of the increase in employment. All but one-eighth of the increase in the number of fabricated pipe establishments came in the smaller employment size classes (with less than 100 employees), where one-half of the rise in jobs developed.

The size distribution of employment did not change much between 1958 and 1977 in either of the two industries. For example, about 70 percent of all establishments in valve and pipe fittings, and 90 percent in fabricated pipe employed fewer than 100 employees in 1977, as well as in 1958 and in other quinquennial census years during the 19-year interval. In all these years, the smaller valves and pipe fittings establishments accounted for 15 percent of industry employment, the smaller fabricated pipe establishments accounted for 40 percent. The number of establishments with 500 employees or more rose but slightly. The overall trend was toward smaller, probably more specialized firms. This is suggested by declining concentration ratios: in 1977, the eight largest manufacturers of valves and pipe fittings accounted for 21 percent of the industry's value of shipments, compared with 27 percent in 1958. In fabricated pipe, the comparable ratios were 29 and 39 percent.[22]

Continued productivity gains likely

Continued gains are likely in the labor productivity of the two industries examined here as numerically controlled and computer machine tools diffuse, computer-aided design and manufacturing techniques are more widely adopted, and greater efficiency in small-lot production by such means as group technology spreads among establishments. Underutilization of capacity, however, has plagued both industries since about mid-1981, and may be expected to continue to retard productivity improvement for some time.[23] Output of valves and pipe fittings, and fabricated pipe, was recently reduced as demand from the extractive and chemical industries weakened; demand is unlikely in the near future to reach the levels of the 1970's. The Alaskan Gas Transportation System, for example, which would require large amounts of valves and fittings, will not materialize until the late 1980's or the 1990's.[24] The part of the industry's output destined for use in offshore drilling projects, oil and gas pipelines, refineries, and petrochemical plants is not expected to expand in the near future, nor are exports related to such output. This also holds for power generating facilities, affecting fabricated pipe in particular. In contrast, it is anticipated that water and waste water projects will expand in the near-term future, as housing starts are expected to increase and replacement of obsolete facilities is scheduled.[25]

Thus, advances in labor productivity hinge not only on the adoption of more up-to-date labor-saving equipment and production organization, but possibly also on eliminating less efficient plants, which were allowed to operate in the 1970's because of pressures on capacity utilization.   □

Table 2. Productivity and related indexes for the fabricated pipe and fittings industry, 1958–81

[1977 = 100]

Year	Output per employee hour	Output	All employee hours	Employees
1958	84.9	47.8	56.3	53.9
1959	94.7	47.8	50.5	47.2
1960	84.9	43.3	51.0	47.9
1961	97.5	42.6	43.7	41.8
1962	98.5	44.9	45.6	42.9
1963	93.0	45.0	48.4	46.1
1964	97.3	51.1	52.5	49.6
1965	100.9	57.4	56.9	54.6
1966	100.3	62.0	61.8	57.8
1967	96.9	66.4	68.5	64.5
1968	100.1	69.6	69.5	65.2
1969	105.8	67.9	64.2	58.5
1970	94.0	57.7	61.4	57.4
1971	97.0	58.5	60.3	58.5
1972	106.0	67.3	63.5	62.1
1973	110.2	77.6	70.4	68.8
1974	111.4	85.8	77.0	74.1
1975	104.0	78.1	75.1	73.4
1976	97.4	89.5	91.9	90.4
1977	100.0	100.0	100.0	100.0
1978	100.7	107.9	107.2	107.1
1979	90.1	107.0	118.8	116.7
1980	89.9	102.8	114.3	113.5
1981	93.1	106.8	114.7	113.5
Average annual rates of change				
1958–81	0.3	4.3	4.1	4.3
1975–81	−2.1	4.7	6.9	7.1

[1] The valves and pipe fittings manufacturing industry is designated as SIC 3494, and the fabricated pipe and fabricated pipe fittings industry as SIC 3498 in the Standard Industrial Classification (SIC) Manual of the Office of Management and Budget (1972 ed.). Valves and pipe fittings are used to control the flow of liquids or gases in pipes and mains, and in machinery; plumbers' brass goods are not included. Establishments in the fabricated pipe and pipe fittings industry cut, bend, thread, and otherwise work purchased pipe.

Average annual rates of change are based on the linear least squares of the logarithms of the index numbers. Extensions of the measures of productivity and related variables will appear in the annual BLS Bulletin, *Productivity Measures for Selected Industries*.

[2] As noted, valves are used to regulate fluids. Pipe fittings and fabricated pipe and fittings are likewise associated with the regulation of fluids, but they are structurally less complex than valves and have no functionally moving parts. Valves are not classified uniformly, but variously by type of closing member, actuating principle, or the material of which they are made. A closing member may be such as to permit throttling, or limit flow to a single direction, or allow the rapid opening and closing of a conduit. The actuating principle may be hydraulic, pneumatic, or electric. Materials, while predominantly steel, may also include brass and iron. The industry seems to prefer classification by type of closing member—for example, ball, butterfly, gate, globe—each type, together with the size of the valve and the material of which it is made, being adapted to erosive or corrosive fluid characteristics, as well as to temperature and pressure. See Valve Manufacturers Association, *Valves for Industry*, p. 6.

Pipe fittings account for about one-fifth of the value of shipments of the valves and pipe fittings industry and are usually manufactured in separate establishments. They include flanges and other shapes forged or extruded so as to conform to the pipe or vessel to which they would be welded or otherwise fastened. They further include socket weld and threaded fittings and couplings, unions, plugs, and bushings.

The census classifies fabricated pipe only by the ferrous or nonferrous material of which it consists. Shops manufacturing pipe fittings, or fabricating pipe, purchase preshaped forgings or extrusions from specialized mills (classified in the primary metals industry). The forged or extruded pipe may be cut, bent, welded, heat-treated, or otherwise worked upon according to user specifications. It should be noted that pipe used, for example, for oil and gas or water conduits is not normally "fabricated," but simply welded onsite.

[3] Year-to-year movements

	Valves and Pipe fittings	Fabricated pipe and fittings	Manufacturing
		(In percent)	
Largest rise	18 (1965)	15 (1973)	11 (1973)
Largest drop	12 (1975)	15 (1970)	6 (1970)

[4] See John Duke, "Construction machinery industry posts slow rise in productivity," *Monthly Labor Review*, July 1980, pp. 33–36; Horst Brand and Clyde Huffstutler, "Productivity in pump and compressor manufacturing," *Monthly Labor Review*, December 1982, pp. 38–45; John Duke and Horst Brand, "Cyclical behavior of productivity in the machine tool industry," *Monthly Labor Review*, November 1981, pp. 27–34.

[5] Information from Valve Manufacturers Association, Washington, D.C.

[6] Information from Pipe Fabricating Institute, Pittsburgh, Pa.

[7] Joseph T. Finn., *Labor and Material Requirements for Sewer Works Construction*, Bulletin 2003 (Bureau of Labor Statistics, 1979), p. 2.

[8] For an examination of the problems of small-lot manufacturing, see *Manufacturing Technology—A Changing Challenge to Improved Productivity* (Report to the Congress by the Comptroller General of the United States, June 3, 1976).

[9] Industry source.

[10] Marvin F. De Vries and others, *Group Technology: An Overview and Bibliography* (Cincinnati, Ohio, Machinability Data Center, 1976, p. 2), Publication No. MDC 76–601.

[11] Industry source.

[12] The increasing variability of valve and pipe fitting products is, in part, reflected in the rising number of 7-digit product lines in the quinquennial Census of Manufactures. The number of such lines used in developing the BLS output measure for the industry rose as follows:

1954–58:26
1958–63:30
1963–67:31
1967–72:64
1972–77:83

Each product line usually includes a range of dimensions and special features of the given generic product.

[13] Greg Jendreas, "CAD Speeds Valve into Production," *American Machinist*, October 1982, pp. 116–19.

[14] *Ibid.*, p. 119.

[15] Industry source.

[16] "A Basic Guide to Hydraulic Tube Fittings," *Know Your Hoses, Tubing, and Fittings*, a compendium of articles from *Hydraulics and Pneumatics*, 1983, pp. 6–12.

[17] L. Kowal, "A Guide to Good Tube Working Practices," *Know Your Hoses, Tubing, and Fittings*, pp. 21–25. Information also from industry sources.

[18] Industry sources. See also Charles L. Bell, "Fabricated Structural Metal," *The Impact of Technology on Labor in Five Industries*, BLS Bulletin 2137 (Bureau of Labor Statistics, 1982), p. 38.

[19] *Ibid.* Information also from industry sources.

[20] To adjust for changes in the cost of new machinery and structures, the pertinent implicit price deflators published in table B–3 of the February 1983 *Economic Report of the President* were used.

[21] Industry source.

[22] *Concentration Ratios in Manufacturing* (Washington, 1977 Census of Manufactures, 1981), table 7.

[23] Industry sources.

[24] See *1983 U.S. Industrial Outlook* (U.S. Department of Commerce, 1983), p. 24–3.

[25] *Ibid.*, ch. 1.

APPENDIX: Measurement techniques and limitations

Indexes of output per employee hour measure changes in the relation between the output of an industry and employee hours expended on that output. An index of output per employee hour is derived by dividing an index of output by an index of industry employee hours.

The preferred output index for manufacturing industries would be obtained from data on quantities of the various goods produced by the industry, each weighted (multiplied) by the employee hours required to produce one unit of each good in some specified base period. Thus, those goods which require more labor time to produce are given more importance in the index.

In the absence of physical quantity data, the output indexes for the valves and pipe fittings, and the fabricated pipe and fittings industries were constructed using a deflated value technique. The value of shipments of the various product classes was adjusted for price changes by appropriate Producer Price Indexes to derive real output measures. These, in turn, were combined with employee hour weights to derive the overall output measure. These procedures result

in a final output index that is conceptually close to the preferred output measure.

The indexes of output per employee hour relate total output to one input—labor time. The indexes do not measure the specific contribution of labor, capital, or any other single factor. Rather, they reflect the joint effect of factors such as changes in technology, capital investment, capacity utilization, plant design and layout, skill and efforts of the work force, managerial ability, and labor-management relations.

Productivity pluses and minuses

In trying to solve the productivity equation, certain forces will exert a negative influence, others a positive influence. An examination of the plus side of the productivity equation reveals marked qualitative improvements in the American work force, a potential talent boom in the prime-age 25–44 group, and a growing awareness of the importance of the human factor. It also demonstrates that the human resources available to American organizations have an enormous untapped potential; that union-management relations are not a serious or insurmountable obstacle to improved worker productivity; that inflation provides a strong economic incentive to press hard for improved productivity; and, finally, that the shift to the Sun Belt offers a new base of investment and opportunity for growth.

An analysis of the minus side of the equation confirms that obstacles to productivity do exist. Productivity is discouraged when employees have no real job security and fear layoffs due to plant closures and economic recession; when the real purchasing power of employees is eroded by inflation; when workplaces do not keep up with the changes in society; and when technology is so poorly introduced that it antagonizes the work force. The productivity of organizations also suffers when negative attitudes toward other workers discourage them from using full potential and when information is hoarded to the detriment of work in progress. Yet every negative can be converted to a positive in the sense that it is a problem that has a solution. To the extent that management policies face these problems, they can transform obstacles into opportunities.

—JEROME M. ROSOW, ed.
Productivity: Prospects for Growth
(New York, Van Nostrand Reinhold Co.,
1981), pp. 273–74.

Task force encourages diffusion of microelectronics in Canada

*Task Force on Micro-electronics and Employment
issued 30 recommendations designed to maximize
the positive and minimize the negative impact
of new technology on union-management relationships,
training and education, and quality of worklife*

HARISH C. JAIN

Constant technological change has long been an important characteristic of industrial evolution in the Western world. We are now witnessing the emergence of microelectronics technology. It is different from the previous technological innovations in that it can be adopted in practically all sectors of the economy, and thereby affect a wide range of activities from production to distribution to consumption. Microelectronics promises to bring about unprecedented socioeconomic transformations in both work and nonwork activities. In 1982, a Task Force on Micro-electronics and Employment was established to examine the implications of the use of microelectronics technology on Canadian workers.[1]

The task force was instructed to examine the impact of microelectronics technology on office workers,[2] both union and nonunion, covered by the Canada Labour Code, as well as health and safety concerns related to office equipment. It issued 30 recommendations designed "to maximize the positive impacts and minimize the negative consequences, thus ensuring a more equitable distribution of burdens and benefits of microelectronics."[3]

This article summarizes some of the recommendations of the task force, and discusses the rationale behind the proposals.

Harish C. Jain, professor of personnel and industrial relations, McMaster University, Hamilton, Ontario, was a member of the Task Force on Micro-electronics and Employment. However, the views expressed in this article are not necessarily those of the task force.

Diffusion of microelectronics urged

The task force clearly and unequivocally endorsed the introduction of microelectronics technology in Canada. It recommended that Canada encourage and support the continued development of high technology industries. This recommendation is based on the belief that microelectronics technology has the potential to create jobs, increase productivity, improve economic growth, and enrich personal development.

The task force believes a direct link exists between microelectronics technology and jobs, and that to resist the adoption of this technology would be counterproductive. Several studies commissioned by the task force and public presentations[4] clearly indicated that Canadians would lose more jobs by resisting the introduction of microelectronics technology than by adopting it; Canada's export dependence would be severely and adversely affected (about 30 percent of Canada's output is sold in foreign markets); and autonomy of decisionmaking (which in turn affects the quality of management jobs and research and development) would be seriously affected because firms would not have control over such technology.

The most important recommendation of the task force called for establishment of a federally funded center of technology, work, and human priorities, with representation from labor, management, government, academia, and other sectors of the economy. Among other duties, the center would promote job creation by encouraging high technology

industries to locate in Canada, and by providing assistance to small and medium-sized microelectronics businesses willing to locate in economically depressed areas; carry out information programs to assure better appreciation of the need for and acceptance of microelectronics, and conduct research on the short- and long-term impact of microelectronics on productivity; and monitor the implementation of the task force's recommendations.

In April, the establishment of such a center, to be called the National Centre for Productivity and Employment Growth, was announced in the budget speech by Canada's finance minister. In August, the federal government appointed a steering committee to make proposals concerning the objectives, mandate, role, structure, and financing of the center.

Industrial relations

One task of the proposed National Centre for Productivity and Employment Growth will be to encourage continuous consultations between labor and management. Microelectronics technology cannot be implemented efficiently in an environment of confrontation and agitation resulting from a conflict between "management's prerogatives" and workers' concern for job security. Labor-management cooperation is essential because the fast changing microelectronics technology requires joint problemsolving; society holds business and labor accountable for acting responsibly; there is a call for greater participation of the rank-and-file in the direction of collective bargaining and for some form of "industrial democracy" within both union and management; and sustained rapid productivity growth requires cooperation among workers, unions, and management (as productivity growth is vital to all three parties). In addition, there is greater acceptance of individual and group entitlements and rights as indicated by three recent developments in Canada: the enactment of human rights statutes, the Charter of Rights and Freedoms as part of the newly repatriated Constitution, and the Freedom of Information legislation.[5]

Based on these assumptions, the task force recommended that:

- The current (1972) definition of technological change in the Canada Labour Code be amended and broadened to ensure that discussion between labor and management is started as soon as management proposes to introduce any new equipment or material which could affect, either directly or indirectly, the working conditions or job security of any employee.[6]
- Mandatory joint technology committees be established in both union and nonunion establishments of 50 or more employees under the jurisdiction of the Canada Labour Code. These committees would deal with issues such as training, retraining, redundancy, worksharing, productivity improvements, and other matters related to technological changes at the workplace.[7]

- Employers be required to give a minimum of 180 days notice of a proposed technological change (instead of the present requirement of 90 days). This would act to ease the negative effects of a technological change on the employment of all workers.
- Disputes concerning the powers and functions of joint technology committees or the adequacy of proposed plans be settled by binding arbitration.

The most important and far-reaching industrial relations-related recommendation calls for establishment of a joint technology committee at all enterprises of 50 or more employees under federal jurisdiction. However, this recommendation merely extends existing legislation. For example, in 1979, a federally appointed Commission of Industry Inquiry on redundancies and layoffs recommended "effective joint consultation" on a regular basis at the enterprise level, and suggested that a standing "works council" be established for initiating such consultation. The resulting legislation, the Labour Adjustment Benefits Act (an Act to provide for the payment of benefits to laid-off employees and to amend the Canada Labour Code) goes beyond the Commission's recommendation. Under the Act, if an employer plans to terminate 50 or more employees within a 4-week period, a joint planning committee must be established. (In case of mass layoff, the employer is required to provide 16 weeks of advance notice.) In nonunion establishments, employees can choose one-half of the committee members. If the committee fails to agree on all issues within 6 weeks, the unresolved issues may be submitted for arbitration. The arbitrator may first try to mediate but, if this effort is not successful, must decide on the outstanding issues within 4 weeks. This legislation establishes a bargaining relationship, as opposed to the consultation process envisioned by the Commission of Industry Inquiry. The Task Force on Microelectronics and Employment, convinced that technological change can only be successful if workers are consulted in advance of a change, went one step further and recommended mandatory joint technology committees.

The task force decisions regarding industrial relations were influenced by policy developments in Western Europe, and especially in the Scandinavian countries[8] where employers are required to provide detailed information and to consult with their employees prior to introducing a technological change. The mandatory creation of bipartite committees, operating at the level of individual establishments, to help plan for change is a common feature of the regulatory schemes. Most schemes provide for dispute settlement, and many provide for compensation for displaced workers, either through a layoff plan or through a general redundancy fund.

Employment

At the enterprise level, joint technology committees are viewed as a mechanism to design plans to offset any antic-

ipated negative employment effects of technological change. At the macro level, however, two different views have evolved on the impact of microelectronics technology on employment and on mechanisms to deal with this impact. One, a pessimistic view, might be called "massive unemployment"; the other is an optimistic, or "business as usual," view.[9]

The perceived problems of massive unemployment resulting from microelectronics technology haunt the pessimists. They believe new technology by and large does not create new jobs or services, but only increases productivity, thus destroying jobs.[10]

The optimists, on the other hand, believe that the effect of technological change on employment is very difficult to measure. The employment effects are indirect and diffused because technological change does not take place in isolation. Technological changes interact with, and are modified by, other factors that affect employment, such as changes in output, consumer tastes, and international competition. There is, however, abundant evidence in the last three decades to indicate that as long as the economy has expanded and demand increased, steady technological advance has been compatible with rising employment.[11]

Consensus on the question of the net job balance created by the development and expansion of the new technologies will not be possible without further study. There have been no serious efforts, over time, to determine the possible effects of even one aspect of the new technology on employment totals. Such an analysis would have to include not only the direct net employment effects, but also the effects of the technology on the infrastructure and on companies connected to new technology by forward and backward linkages, on the general form of employment associated with the provision of services to all enterprises, and on employment derived from expenditures or incomes earned by all the factors of production participating in the technological change. Most forecasts to date relate only to the effects on the infrastructure of the technology and on companies connected to the new technology that have been extrapolated to the whole economy.[12]

The task force leaned toward "cautious optimism" regarding the effect of microelectronics on employment. On the one hand, such technology creates new jobs such as "systems analysts, programmers, software researchers and designers, and data analysts. These positions require high qualifications. The hardware area needs skilled people with an electrical engineering background to design the chips and their applications, whereas the software area is booming with openings for those who understand control, production, and operational systems."[13]

On the other hand, microelectronics technology can cause job destruction in very specific segments of the labor market, such as for new labor force entrants, older workers—who have less flexibility in retraining, reeducation, and relocation—middle managers, and lower-level skilled workers.

Women are particularly vulnerable because they are clustered in a few job ghettos, such as clerical, sales, and service occupations, which are largely nonunion and generally offer low wages, little job security, and poor benefits. Moreover, existing skills of many female workers may not be those that will be needed in the future.[14]

While microelectronics may not lead to massive unemployment for workers, it will have important implications for their training, especially in the case of the worker groups noted above. In the past, technology has created enough new employment opportunities to enable societies to adjust to economic changes within reasonable periods of time. If this is to persist as a pattern in the future, training, retraining, and other adjustment policies will be needed.

The task force recommended that Statistics Canada (a government agency) regularly collect and publish data on the age, sex, educational characteristics, occupation, industry, region, and mobility of the labor force. Such information would allow more accurate employment projections, and thereby assist in mounting appropriate training and retraining programs.

Training and education

The task force believes that all Canadian citizens should be given equal opportunities to upgrade skills for the purpose of getting and holding jobs and to participate in broader, higher-education programs to better understand the process of change. It concluded that adapting to change is an individual concern, but that governments, employers, and educators are obligated to adjust the systems and structures of society so that no person is left technologically illiterate.[15]

The task force made several recommendations concerning education and training, including:

- Establishment of educational policies and programs that emphasize flexibility and adaptability to change by promoting a philosophy of lifelong learning and the teaching of such lifetime skills as problemsolving and decision-making.
- Establishment of a Registered Training and Education Leave Saving Plan to help individuals plan and pay for their educational and training needs.
- A requirement that unions negotiate educational leave provisions in collective bargaining agreements.
- Training for displaced workers to assist them in developing new and marketable skills.
- The addition of courses on computer literacy to school curricula.

Quality of worklife

The task force also examined the impact of microelectronics technology on quality of working life issues such as health and safety of video display terminal operators, measurement of work performance, and the organization of work time.

Health and safety. Video display terminals are being used increasingly in workplaces, amid growing concern about the potential effects of their use on the health and well-being of operators. Not surprisingly, the area of greatest concern in the submissions to the task force involved the possible effects of low-level radiation emission from the terminals.[16]

Extensive research has been conducted on radiation emissions by video display terminals. Results show that radiation emissions are so low as to be negligible, and that there is more natural radiation in the general environment than emitted from the terminals. However, several presentations to the task force pointed out miscarriages among pregnant operators. Therefore, the fear is real.

The task force concluded that the available research indicates very little about the long-term effects of exposure to low-level radiation. However, if the task force was to err, it wanted to do so on the side of caution. It therefore recommended the implementation of ''interim precautionary measures'' until conclusive evidence could be obtained. The choice of these measures was based on the assumption that no level of exposure to radiation is absolutely safe and that it would be best to reduce avoidable x-ray exposure to an absolute minimum. At the same time, the task force urged continued funding of medical and other research by the federal and provincial governments on the adequacy of standards for currently acceptable levels of radiation and the methods of testing for radiation emission, as well as testing and research concerning other possible risks.

Additional physical complaints of video display terminal operators include increased visual load (relative to typing); head, shoulder, and neck problems; and back and wrist problems due to postural immobility. Some of these physical problems might be caused by ergonomic considerations related to either the equipment itself or the worksite, such as legibility of the display screen, nonadjustable office furniture (especially seating), and the general standard and layout of illumination, to name a few.

The task force issued interim guidelines for employers of video display terminal operators until health, safety, and ergonomic standards for office automation and equipment and workplaces are adopted:

- Pregnant operators can request reassignment to other positions without loss of pay, seniority, or benefits.
- The time spent working at a terminal should not exceed 5 hours per day.

- Rest breaks must be provided hourly.
- Initial eye tests, followed by annual retesting, must be conducted at the employer's expense.
- Corrective lenses specially adapted to the visual demands of terminal work must be provided, where necessary.

Electronic monitoring. The task force believes that the most serious drawback of the new electronic office equipment is the use of such technology for monitoring the quantity of work performance. This type of monitoring limits workers' freedom to move around; they appear to be tied to their machines under the ever-watching and ever-recording devices.

The task force regards close monitoring of work as an employment practice based on mistrust and lack of respect, an infringement of the rights of individuals, and an undesirable precedent that, unless restricted, might be extended to other environments.[17] It recommended that close electronic monitoring be prohibited as inconsistent with human rights legislation.

Worktime. Additional concerns addressed by the task force included organization of worktime and isolation caused by shift work, part-time work, and home work. The introduction of microelectronics technology is expected to result in an increase in part-time work and in the number of individuals working from home (''cottage industry''). This can be a positive development because part-time work can provide opportunities for training, retraining, and promotions. In addition, working from home could be an ideal setup for some workers, including specialized professionals, disabled workers, those living in rural areas, and women with young children. However, part-time work and working from home can also have deleterious effects if part-time workers do not receive wages and benefits commensurate with the hours they spend on the job, and otherwise forgo benefits of unionization. There is a serious danger of exploitation of home workers in the absence of effective labor standards governing wages, working conditions, and sickness, accident, and pension benefits.

To address these concerns, the task force recommended that (1) those working at home with microelectronics equipment be assured proper conditions of work and benefits by employers; (2) those who work at home be protected by minimum labor standards; and (3) part-time workers receive prorated benefits. □

-----*FOOTNOTES*-----

[1] The members of the task force were: E. Margaret Fulton, Mount Saint Vincent University, Halifax, Nova Scotia; Harish C. Jain, McMaster University, Hamilton, Ontario; Jeannine David McNeil, École des Hautes Études Commerciales, Montreal, Québec; Ratna Ray, Women's Bureau, Ottawa, Ontario; and Zavis Zeman, Institute for Research on Public Policy, Toronto, Ontario.

[2] The task force did not seriously study the impact of microelectronics technology on factory workers because of lack of time and resources.

However, more than 50 percent of Canadian workers are employed in offices.

[3] The recommendations are published in *In the Chips: Opportunities, People, Partnerships* (Ottawa, Ontario, Task Force on Micro-Electronics and Employment, 1982).

[4] The task force commissioned research on the Canada Labour Code, employment concerns, health and safety concerns, triggering technologies, and case studies of several industries under federal jurisdiction, such as

banking, transportation, and communications. Whereas in the United States, a majority of the labor force falls under federal jurisdiction as far as legislative enactments are concerned, in Canada, only about 10 to 15 percent of the labor force comes under federal jurisdiction. However, the indirect effect of federal legislation is that it helps to establish precedents and influences provincial enactments.

The task force held hearings in Toronto, Montreal, Halifax, Vancouver, Edmonton, and Ottawa. Also, it received numerous oral and written presentations from trade unions, employers, women's organizations, federal government departments and agencies, and citizens.

[5] *In the Chips.*

[6] A recent decision by the Canada Labour Relations Board, a study commissioned by the task force, and oral and written presentations by trade unions and other groups pointed out that the current technological change provisions of the Canada Labour Code (1) contain numerous examples of ambiguous language, (2) do not cover all types of changes that may result from an introduction of technology, (3) have too many "opting out" provisions relieving an employer of the statutory obligation to give notice or to recommence bargaining, and (4) allow management to provide inadequate information about its plans to introduce new technology.

[7] Statistics show that the majority of agreements in the federal jurisdiction contain neither procedural nor substantive provisions on technological change. For instance, 72 percent of the agreements make no provision for prior notice of a technological change. A much higher percentage have no substantive provisions for adjustment to change such as training, retraining, relocation allowances, labor-management committees, and so forth. A part of the reason for this lack of provisions may be that Canadian unions, for the most part, have not given high priority to microelectronics technology. This may be due to resistance by management to discuss such issues, and the reactive approach taken by unions in bargaining which has prevented them from dealing with the matter until it creates a crisis in the work force and affects their members. See Stephen G. Peitchinis, "The attitude of trade unions towards technological changes," *Relations Industrielles*, Vol. 38, No. 1, 1983, pp. 104–19. Also see Wilfred List, "Unions ignoring high-tech's impact," *Globe and Mail*, May 1983, p. B2. Thus, the results of the last 10 years of experience with the current legislative approach suggest that a permissive approach confined to the bargaining area is no longer sufficient.

[8] For instance, union-management rights and obligations are spelled out in Sweden's Co-Determination at Work Act, the Norwegian Work Environment Act, and the agreement in Denmark on new technology, signed by Denmark's central union and employer organizations.

The Swedish Act gives the local trade unions the right to information about their company's production, finances, investment plans, and personnel policies, and this information must be kept current by the employer. In addition, union representatives may request to see and audit relevant company books and accounts. Also, the employer must negotiate with the unions before deciding on important changes in production, administration, or other matters that substantially affect working conditions or terms of employment.

The Norwegian Act treats technology, working conditions, and the work environment as a synergistic issue, and requires a legal synthesis of "management perogatives" and employees' "proprietary interests" in rights over the jobs. Under the act, a working environment committee is mandatory in all enterprises that normally employ at least 50 workers. Employers who intend to make significant changes to the working environment must consult with this committee beforehand and provide sufficient time and proper worker involvement, joint decisionmaking, and training for meeting the requirements of the changes.

The Danish agreement covers the introduction of, and any significant alterations to, production technology, including data-based technology and systems. It provides for specially created "new technology committees" and obliges employers to inform these committees in advance of any technological plans or changes and to discuss their likely consequences for workers in the undertaking.

[9] *In the Chips.*

[10] *Ibid.*

[11] *Ibid.*

[12] *Ibid.*

[13] *Ibid.*

[14] Similar forecasts have been made in the United States. Eleanor Holmes Norton, head of the National Council on the Future of Women in the Workplace, indicated that many of the occupations traditionally held by U.S. women, including much of the clerical work, are becoming obsolete, and that jobs such as keypunchers and simple programmers are likely to disappear almost entirely due to microelectronics. She suggested that job opportunities will be greatest in the more skilled occupations for which women are not receiving the education and training they need to fill these jobs. See *Newsletter* (University of Hawaii, Industrial Relations Center, March/April 1983).

[15] *In the Chips.*

[16] *Ibid.*

[17] *Ibid.*

Communications
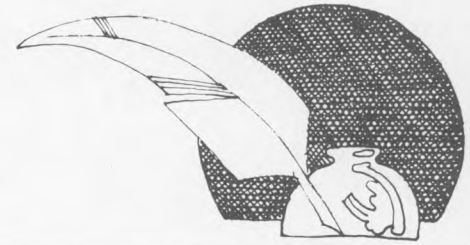
A further adjustment needed to estimate lost earning capacity

KENNETH J. BOUDREAUX

In the April 1983 issue of the *Monthly Labor Review*, David M. Nelson argued that the worklife tables published in the March 1982 issue are inappropriate for the calculations performed by economists in forming opinions about individuals' lost earning capacities.[1] His view is that "earning capacity" is time-determined by the period until final separation of the individual from the labor force. It is difficult to argue with this assertion. However, the implication that an individual should receive lost income compensation for that entire period could lead to severe errors in such calculations.

The new increment-decrement tables (detailed in the 1982 issue) include the allowance for interim periods of separation from the labor force. During those periods, because individuals would not be earning income, compensation from that source is not required. Using the tables produced in the April 1983 communication would erroneously provide this compensation, if unadjusted.

Adjusting for the periods of separation from the labor force can be performed in a number of ways. The March 1982 tables for worklife, if used in economic loss calculations, effectively adjust by forcing an assumption that all such separations occur at the end of the worklife. This assumption is likely to result in an overestimate of the loss to an individual because such separations are not generally clustered at the end of worklife, and the discounting processes used would thereby underestimate the effect of separations which were more evenly distributed across the time until final separation. Nevertheless, this process is likely to be the one embraced by economists because it is easy to calculate. Even with its bias, use of these increment-decrement tables for earning loss calculations is obviously far superior to ignoring separations altogether, as would be done in using the unadjusted period to final separation.

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Without much difficulty, economists can perform a somewhat more sophisticated adjustment by using the entire pe-

Table 1. Differences between worklife and years to final separation from the labor force, by sex and age, 1977

Age	Men			Women		
	Years of remaining worklife	Median years until final separation	Percent difference	Years of remaining worklife	Median years until final separation	Percent difference
24	34.2	37.5	8.8	23.6	37.0	36.2
25	33.4	36.5	8.5	23.0	36.0	36.1
26	32.6	35.5	8.2	22.3	35.1	36.5
27	31.8	34.5	7.8	21.7	34.1	36.4
28	30.9	33.5	7.8	21.1	33.2	36.5
29	30.1	32.5	7.4	20.5	32.3	36.5
30	29.2	31.5	7.3	19.9	31.4	36.6
31	28.3	30.5	7.2	19.3	30.4	36.5
32	27.4	29.5	7.1	18.7	29.4	36.4
33	26.5	28.5	7.0	18.1	28.3	36.0
34	25.6	27.5	6.9	17.5	27.2	35.7
35	24.7	26.5	6.8	16.8	26.1	35.6
36	23.8	25.5	6.7	16.2	25.1	35.5
37	22.9	24.6	6.9	15.6	24.1	35.3
38	22.0	23.6	6.8	14.9	23.1	35.5
39	21.2	22.6	6.2	14.3	22.1	35.3
40	20.3	21.6	6.0	13.7	21.1	35.1
41	19.4	20.7	5.8	13.0	20.1	35.3
42	18.5	19.9	6.1	12.4	19.1	35.1
43	17.6	18.7	5.9	11.8	18.1	34.8
44	16.8	17.8	5.6	11.2	17.1	34.5
45	15.9	16.8	5.4	10.5	16.2	35.2
46	15.0	15.9	5.7	9.9	15.3	35.3
47	14.2	14.9	4.7	9.3	14.4	35.4
48	13.3	14.0	5.0	8.7	13.5	35.6
49	12.5	13.1	4.6	8.1	12.6	35.7
50	11.7	12.2	4.1	7.5	11.8	36.4
51	10.9	11.3	3.5	7.0	10.9	35.8
52	10.1	10.4	2.9	6.4	10.1	36.6
53	9.3	9.6	3.1	5.9	9.8	39.8
54	8.5	8.7	2.3	5.3	8.5	37.7
55	7.8	7.9	1.3	4.8	7.7	37.7
56	7.0	7.1	1.4	4.3	6.9	37.7
57	6.3	6.3	0.0	3.8	6.1	37.7
58	5.6	5.5	−1.8	3.4	5.5	38.2
59	4.9	4.8	−2.1	2.9	4.1	29.3
60	4.3	4.2	−2.4	2.5	4.0	37.5
61	3.7	3.7	0.0	2.2	3.9	43.6
62	3.1	3.5	11.4	1.8	3.6	50.0
63	2.7	3.2	15.6	1.5	3.6	58.3
64	2.3	3.0	23.3	1.3	3.5	62.9
65	1.9	3.1	38.7	1.1	3.6	69.4
66	1.6	3.3	51.5	0.9	3.8	76.3
67	1.4	3.5	60.0	0.8	3.9	79.5
68	1.2	3.7	67.6	0.6	4.0	85.0
69	1.1	3.9	71.8	0.5	4.1	87.8
70	0.9	4.0	77.5	0.5	4.0	87.5
71	0.8	4.0	80.0	0.4	4.0	90.0

riod until final separation, but reducing the loss amounts by the overall percentage of interim separations in that period. I have calculated such percentage adjustments for men and women from the tables in the March 1982 and April 1983 articles, and these appear in table 1. (I would caution economists dealing in post-tax calculations that using simple percentage adjustments may complicate that process.) These numbers are also for all individuals, whether or not they are in the labor force.

The table reveals the magnitude of earning years overestimates that would be caused by using the unadjusted period until final separation. The columns headed "Percent difference" show the percentage of the time until final separation during which an individual would not be in the labor force. These numbers can be interpreted as the necessary reductions in economic loss if an individual's worklife endured the entire period until final separation, and separations were spread evenly across the period. Though there are dramatic differences for both sexes, the differences for women are uniformly of large magnitude.

For example, a man age 30 with an annual income capacity of $25,000 (using a current market discount rate of 11 percent and an annual income increase of 4.5 percent) under the 31.5-year final separation criterion has a present value of future income equal to $341,857; under the 29.2 years of remaining worklife criterion, $332,914; and under the 7.3 percentage reduction criterion, $316,901. A woman age 30 has a 31.4-year final separation present value of $341,493; a 19.9-year worklife present value of $280,966; and a 36.6 percentage reduction present value of $216,506. □

---FOOTNOTES---

[1]David M. Nelson, "The use of worklife tables in estimates of lost earning capacity," *Monthly Labor Review*, April 1983, pp. 30–31, and Shirley J. Smith "New worklife estimates reflect changing profile of the labor force," *Monthly Labor Review*, March 1982, pp. 15–20.

Using the appropriate worklife estimate in court proceedings

SHIRLEY J. SMITH

The comments of Nelson and Boudreaux are representative of others we have received from expert witnesses involved in liability proceedings, where the Bureau of Labor Statistics' working life tables play an important role. Their differing viewpoints illustrate an important problem in worklife estimation: At present there is no universally acceptable

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procedure for determining lost earnings. Courts in various jurisdictions are accustomed to viewing the issues differently, and require that claims brought before them be stated accordingly. For instance, some disputes center on the number of years the claimant would have been in the labor force over a lifetime.[1] In such cases, worklife estimates must be discounted for periods of midlife inactivity, and the possibility of premature death. The concepts represented in the BLS tables for 1977 fully satisfy these data needs. Other courts narrow the issue simplistically by assuming that the claimant would have lived out his or her life expectancy, had it not been for the event which brought about the lawsuit. In such trials, the expert witness must quantify worklife duration assuming a zero probability of death. (Witnesses involved in these trials frequently complain that the BLS tables force them to "double count" mortality.) Another court-imposed viewpoint is that compensation, when warranted, must be awarded for the entire period of "earnings capacity," whether or not the claimant would have been continuously employed. If the issue is stated in these terms, the expert witness must identify the claimant's probable age at final retirement. Nelson's tables relate to this issue.[2]

Boudreaux correctly observes that this last approach may compensate the claimant for (often very long) periods of economic inactivity. Some courts feel that this is appropriate, because the injured party has been deprived of the option to work. Others define it as "overcompensation." Boudreaux's tables illustrate the magnitude of the difference which follows from court-imposed perspectives.

Frequently, economists want to look past the lifetime-worklife expectancy figure to study the timing of the potential earnings stream. When inflation and discounting factors are introduced, timing can make a sizable difference in the final estimate of earnings lost.[3] Boudreaux's tables allow the analyst to distribute years of activity over the entire period until final retirement, by assuming that inactivity would be evenly spread over the interval. This is a useful refinement of the figures presented in the tables of working life for 1977. However, it brings to mind an even more useful measure, one which can be computed by single year of age from the published tables.

The issue Boudreaux and many other witnesses wish to focus on is precisely *when* the claimant would have been active, and to what degree. Lifetime worklife expectancies are in fact the summation of yearly expectancies for successive ages. The age-specific expectancies are implicit in the tables, but are not explicitly displayed. It is possible to determine them from the life table functions of "stationary population living at exact age x," and "person years lived" and "person years of activity lived" within the given age:

$$l_x, \quad L_x, \quad \text{and} \quad L_x^a.$$

The formula used will depend on whether the figures are expected to take account of the possibility of death, or

whether the claimant is assumed to survive until final retirement. When the ongoing possibility of death is assumed, the individual's "worklife expectancy during age x" is simply:

$$(1) \quad {}_{x+1}e^a_x = \frac{L^a_{x+1}\; x}{l_x}$$

In words, it is the average time spent active during the age, for all persons alive at the beginning of that age. If it has been assumed that the claimant would survive to final retirement and therefore not die during age x), the corresponding formula would be:

$$(2) \quad {}_{x+1}e^a_x = \frac{L^a_{x+1}\; x}{L_x}$$

or the proportion of all person-years lived in that age which are lived in the active state.

Persons using the tables for these computations should bear in mind two important limitations to the data. The first is that the tables deal with years of labor force involvement, and not just periods of employment. The second is that they make no allowance for differences in work schedules (as between part-time, full-time, and overtime work). Thus, these refinements expose the distribution of workyears over a lifetime which is implicit in the basic tables. They improve the age precision of the data, but do not tighten it with respect to "time on the job."

Estimates (1) and (2) are computed for the population as a whole. They do not zero in on probabilities of participation by current activity status. Such estimates can be derived from status-specific tables like that for persons age 16, shown in BLS Bulletin 2135. However, they cannot be obtained without a substantial amount of untabulated data.

Subsequent publications of worklife estimates may include some of these alternate functions, because the data needs of readers seem to vary quite widely with court-imposed restrictions. □

————FOOTNOTES————

[1] This is the question typically addressed in working life tables. Future tables may look more closely at the question of years of employment.

[2] See David M. Nelson, "The use of worklife tables in estimates of lost earning capacity," *Monthly Labor Review*, April 1983, pp. 30–31.

[3] The use of inflation and discounting factors is by no means universal.

Research Notes

Comparable worth

In "Comparable Worth—the Compensation Issue of the 1980's?" Ronald M. Green examines recent attempts to apply the doctrine of comparable worth, designed to combat pay discrimination, particularly against women. Success, the author indicates, has been limited.

Green notes various court setbacks to the concept that, going beyond equal pay for equal work in one job setting, endeavors to compare the intrinsic value or difficulty of different jobs in the same community, industry, or market. Plaintiffs have been denied redress under Title VII of the Civil Rights Act of 1964, and the Equal Employment Opportunity Commission is uncertain whether the law empowers it to press comparable worth claims. Particularly disappointing to those seeking judicial clarification of the doctrine was the 1981 Supreme Court ruling in *County of Washington v. Gunther*, which did not address the issue because of the "narrowness of the question" before the court. As a result, comparable worth has been in "judicial limbo," according to the author.

Meanwhile, there have been scattered efforts by States, unions, and other to fashion remedies. Green cites a California law "setting salaries of female-dominated State occupations in reference to comparable worth" and a Hawaiian resolution "encouraging all employers to commit themselves to comparable worth." Union-negotiated moves toward compensation include establishment of a pay equity fund for a group of health care workers and a proposed job evaluation system for nonmanagerial employees of a large corporation.

This paper was prepared for the 35th annual meeting of the Industrial Relations Research Association in New York in December 1982.—Merv Knobloch, MLR □

Employment effects of minimum wages

In *The Economics of Wage Floors*, Jacob Mincer of Columbia University and the National Bureau of Economic Research outlines various consequences in the labor market

"Research Notes" are brief reports on selected research published elsewhere that is related to the work of the Bureau. They are prepared by the authors, the MLR staff, or others.

when above-equilibrium wages, or wage floors, are imposed by (1) minimum wage legislation and by (2) labor unions. Mincer first describes and then criticizes the standard "double-cross" analysis, which shows a decrease of covered-sector employment in response to an increase in, or the imposition of, a minimum wage. The analysis also shows that the induced total excess supply of labor to the covered sector (unemployment) is larger than the reduction in employment (disemployment) in the sector as workers move from the noncovered sector in search of covered-sector jobs. The author criticizes the traditional analysis conclusion, reasoning that labor supply responds not only to a wage level, but also to the probability of obtaining employment at that wage level. In analyzing the effect of the labor market in response to an imposition of the minimum wage, Mincer reviews equations and conclusions from his 1976 study which indicate that increases in the minimum wage and its coverage result in outflows of labor from the covered sector into the noncovered sector as well as out of the labor force.

The author notes several implications of the imposition of wage floors. For example, employer-financed training might be reduced or eliminated due to increased labor costs. Reduction of training slows job and wage advancement of the young and the inexperienced in the labor market and eventually increases turnover in those jobs which previously contained specific training opportunities. Because minimum wages tend to discourage the formation of "general" (transferable), as well as firm-specific, skills, they probably boost the rate of return on prolonged schooling (for those intellectually and financially able to undertake it); moreover, wage floors may induce the substitution of more- for less-educated labor, and student exemptions to the floor may promote the employment of student, rather than non-student, labor. Finally, the evidence suggests that higher minimum wages do not lure individuals away from welfare dependence or crime into gainful employment; rather, the unemployment caused by wage floors may lead to a greater frequency of both problems.

Because of the imposed increase in wages, employers have greater incentive to ration jobs systematically, by hiring the more productive workers in order to reduce the increase in unit labor costs. The author also notes that the excess supply of labor enables some employers to indulge their appetites for discrimination and nepotism.

The author then discusses the minimum wage model in contrast with union wage effects. Unlike minimum wage literature, which focuses on employment effects, union effects literature focuses on union-nonunion wage differentials. For example, the author describes the "threat effect," or the idea that in response to any increase in union wage rates, nonunion firms raise their wages to reduce the probability that a union will organize their employees. This effect, however, does not eliminate the "spillover" effect: as wages increase, demand for labor is reduced, and labor eventually moves to other sectors or into unemployment.

Systematic job rationing, or selective hiring, is more prevalent when employers do the hiring directly in order to achieve greater productivity and a partial offset of increased labor costs (higher wages); where unions play a part in hiring, however, job rationing is more probabilistic. The author continues his analysis by discussing union effects on training, fringe benefits, and quit rates.

This paper was presented on April 13, 1983, at the Department of Labor Seminar Series.—Debra Dobbins, MLR ☐

What lies ahead?

Clearly, times and conditions are changing, and our labor relations philosophy must keep pace with those changes. Too many of our perceptions about the relationship between labor and management are still rooted in a bygone era that will never return. Clinging to a collective bargaining relationship that was forged a half century ago—regardless of how well it served us—can only be a prescription for mutual disaster, not mutual survival. If economic and social progress is the name of the game, then labor-management cooperation should now be the preeminent rule under which it is played.

And there are substantial benefits to be derived from labor-management cooperation—benefits that include improved product quality, reduced costs, fewer disruptions, and a better quality of working life for employees. Studies have shown that when a company promotes cooperative efforts its workers usually respond by showing greater loyalty to the firm and pride in its products.

—Remarks by SECRETARY OF LABOR RAYMOND J. DONOVAN
before the Regioinal White House Productivity Conference on
Human Resources, St. Louis, Mo., June 23, 1983

Major Agreements Expiring Next Month
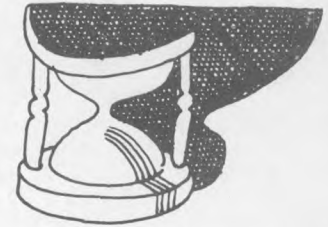
This list of selected collective bargaining agreements expiring in November is based on contracts on file in the Bureau's Office of Wages and Industrial Relations. The list includes agreements covering 1,000 workers or more.

Employer and location	Industry	Labor organization[1]	Number of workers
Boeing Co., 2 agreements (Interstate)	Transportation equipment	Seattle Professional Engineering Employees Association (Ind.)	22,500
Chain and independent grocery stores (Texas)[2]	Retail trade	Food and Commercial Workers	1,900
Gibson Products Corp. (Michigan)	Electrical products	Auto Workers	3,000
Goulds Pumps, Inc. (Seneca Falls, N.Y.)	Machinery	Steelworkers	1,100
Louisville Gas and Electric Co. (Kentucky)	Utilities	Electrical Workers (IBEW)	2,800
Olin Corp. (East Alton, Ill.)	Fabricated metal products	Machinists	3,500
Phonograph record labor agreement (Interstate)[2]	Amusements	Musicians	15,000
Public Service Company of Colorado (Colorado)	Utilities	Electrical Workers (IBEW)	2,700
RCA Corp. (Interstate)	Electrical products	Electrical Workers (IUE)	4,600
RCA Corp., RCA Service Co. Division (Interstate)	Services	Electrical Workers (IBEW)	2,500
RCA Global Communications Inc., Communications Trade Division (Interstate)	Communication	Teamsters (Ind.)	1,000
Textile Maintenance Institute of Chicagoland, 2 agreements (Illinois)	Services	Textile Processors, Service Trades, Health Care, Professional and Technical Employees (affiliated with Teamsters-Ind.)	3,900
Trane Co. (Clarksville, Tenn.)	Machinery	Machinists	1,700
Tropicana Products, Inc. (Bradenton, Fla.)	Food products	Teamsters (Ind.)	1,800
Westvaco Corp., Bleached Board Division (Interstate)	Paper	Paperworkers	1,200

[1] Affiliated with AFL–CIO except where noted as independent (Ind.).
[2] Industry area (group of companies signing same contract).

Developments in
Industrial Relations
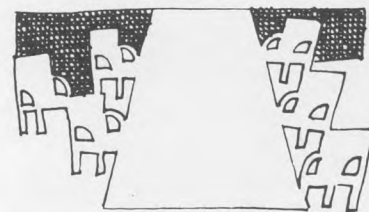
Job security featured in telephone contracts

The first nationwide strike in the telephone industry since 1971 ended when American Telephone & Telegraph Co. (AT&T) and three unions agreed on similar 3-year contracts. The agreements featured provisions to protect employees from the results of accelerating technology in the communications industry and the scheduled 1984 breakup of the Bell System. The three unions involved in the 22-day stoppage were the Communications Workers of America (CWA), representing 525,000 employees; the International Brotherhood of Electrical Workers, representing 100,000 employees; and the Telecommunications International Union, representing 50,000 employees.The strike was the largest since the steel strike of 1946, which involved 750,000 workers.

Because the telephone system is highly automated, nonunion professional and management employees were able to maintain more or less normal operating service throughout the stoppage, but equipment installation was severely curtailed. Union representatives contended that if the walkout had continued, the system—which handles 500 million calls a day—would have had increasing breakdowns because of the absence of skilled repair and maintenance workers.

CWA President Glenn E. Watts said, "Most important to us this year was the issue of employment security. And in this settlement, we have broken real ground in protecting our members from dislocations due to changes in technology and in the structure of the industry. And beyond protecting existing jobs, we have moved ahead toward providing career development opportunities for our members in this volatile information age."

One aspect of the job protection effort was new personal or career development training programs to be established within 1 year by each entity of the Bell System. This training will be separate from existing "job specific" instruction. The training will be:

- designed to "assist employees in their personal development or preparing themselves for career progression opportunities or job changes with the company";

- "generic" as opposed to "job specific" and will cover technical, sales, clerical, and other fundamental skills;
- available to all employees with at least 1 year of service;
- voluntary and unpaid with all training to be conducted outside of working hours; and
- taken into account by the company when considering the employee for promotion or transfer.

The parties also agreed to develop a job displacement training program within 1 year. It will:

- aid workers whose jobs are being terminated or reclassified to lower pay grades by enhancing their ability to qualify for anticipated job vacancies with the company;
- inform employees of potential job terminations as soon as possible and offer them any training required for anticipated job openings;
- be available to all regular employees regardless of length of service; and
- provide unpaid training outside scheduled work hours, except in instances where the company determines that it is more appropriate to conduct the training during working hours.

A Training Advisory Board will be established at each company in the system to advise the company on training needs and curricula; review and make recommendations on training systems (such as community colleges and technical schools); evaluate the effectiveness of courses and systems; and encourage employee participation in training courses. Each board will have three management and three union representatives.

Improvements also were made in the Supplemental Income Protection Plan, which provides financial benefits to employees who leave the company because of technological change or other reasons which will result in layoffs or involuntary reassignments to lower paying jobs or to work locations requiring a change of residence. Eligibility is limited to employees under the company's normal retirement age who have 20 years of service, and whose age plus years of service total 75. The monthly benefit of up to $400 will continue for 48 months or until attainment of normal retirement age, whichever comes first. Within 60 days after leaving the company, participants will also receive a lump-

sum payment of $2,000 for those with less than 25 years of service, $2,500 for those with 25 to 30 years of service, and $3,000 for those with 30 years or more service. The monthly and lump-sum payments are limited to a combined $22,200.

Employees who elect to leave the company because their jobs are threatened, but who do not have the service required for coverage by the Supplemental Income Protection Plan are eligible for benefits under a new Voluntary Income Protection Program if they have 2 years of service. The monthly payments, which will continue for 60 months or until attainment of normal retirement age, whichever occurs first, will be calculated at 1 week of pay for each year of service up to 10 years, plus 2 weeks of pay for each year of service from 10 to 20 years, plus 3 weeks of pay for each year of service from 20 to 30 years. The workers also will receive an immediate lump-sum payment of $500 for each year of service (to a maximum of $2,500) to be used for relocation, training, or other purposes.

The Reassignment Pay Protection Plan was revised to provide that 15-year workers who are downgraded because of technological change will retain their pay rate for 36 months, followed by a 4-stage reduction to the lower pay rate over a 13-week period. Under the previous contract, affected workers were guaranteed their current pay rate only for the balance of that contract, followed by reduction to the lower rate.

There also were changes in the medical care plan. Employees with at least 5 years of service who are laid off or choose to leave under the two income protection programs will be eligible for coverage for 1 year—6 months at company expense and 6 months at their own expense. Those with 1 to 5 years of service will be covered by the company for 3 months, followed by 9 months at their own expense. Those with less than a year of service will be eligible for 12 months of coverage at their own expense. Changes in health benefits included full reimbursement (formerly 95 percent) of some surgical procedures, and improvements in some payments for outpatient procedures.

Pensions were increased by 3.5 percent for workers retiring on or after October 1, 1983, and by an additional 3.5 percent for those retiring on or after October 1, 1985. After the 1985 increase, monthly pensions will be calculated at rates ranging from $15.83 to $38.54 (varying by preretirement earnings) for each year of service. Workers who retired before January 1, 1983, will receive a 4.5-percent increase in pensions beginning on January 1, 1985.

Wage rates for each grade at the top of the progression schedule (which cover about 90 percent of the workers) were increased by 5.5 percent, intermediate steps were increased by smaller amounts. Starting rates for each grade were not changed. However, all employees already on the payroll—including those in starting steps—were assured a raise of at least $2.50 a week. In August of 1984 and 1985, pay rates will be increased by amounts ranging from 1.5

percent at the top step to nothing at the starting step. On both dates, all workers will be eligible for automatic cost-of-living pay adjustments calculated at the existing rate of 55 cents a week plus 0.65 percent of the individual's weekly pay rate for each 1-percent rise in the BLS Consumer Price Index for Urban Wage Earners and Clerical Workers during the immediately preceding May-to-May period.

CWA President Watts valued the wage portion of the settlement package at 16.4 percent, based on the assumption that the CPI will rise by 4.5 percent during the first May-to-May period, and by 5.4 percent during the second period.

Other provisions of the settlement include an allocation of money (not to exceed 0.15 percent of total basic wages at each company) for local wage adjustments; improvements in the Long-Term Disability Plan; adoption of a Motor Vehicle Usage Program under which employees assigned company vehicles will be permitted to take them home; establishment of committees on containment of health insurance costs; and establishment of "common interest forums" to discuss business developments of common interest and to review approaches to improving the company's competitive position and improve employment security.

The parties did not agree on the manner in which they will bargain after January 1984 when the 22 operating companies are scheduled to be separated from AT&T and reconstituted into seven new companies. Indications were that the unions would prefer to continue bargaining on a national basis with the companies, which could form an association for that purpose. If the companies reject this approach, the unions could revert to the pattern bargaining approach, under which they settle with one company on terms that are extended to the others.

Chrysler workers win pay increases

Following an unsuccessful effort in July, Chrysler Corp. and the United Auto Workers reached agreement in September after only 5 hours of bargaining. In the July talks, Chrysler had offered pay increases totaling $1.41 an hour over a 26-month contract term. This offer was rejected because it was $1 an hour short of the amount the union said was necessary to regain pay parity with General Motors Corp. and Ford Motor Co. workers. The disparity had developed because Chrysler workers, in 1979, 1980, and 1981, had accepted wage-and-benefit concessions to aid the struggling company. In recent months, the union's expectations, and those of the 55,000 active and 30,000 laid-off employees, had been buoyed by the fact that Chrysler had earned a profit of $482 million in the first half of the year and had paid off, 7 years ahead of schedule, the remaining two-thirds ($813.5 million) of the government guaranteed loans that saved the company from bankruptcy in 1980 and 1981.

Chrysler Chairman Lee A. Iacocca characterized the rejected offer as "concrete evidence" of the company's willingness to share its prosperity because the proposal would

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have resulted in an $880 income gain for the average worker before the January 1984 scheduled expiration date of the existing 13-month agreement. Iacocca indicated that Chrysler was ready to resume discussions at any time. Union officials also were eager to renew negotiations, and the parties' cooperative attitude was apparent in the brief time required to reach agreement.

The new agreement is effective until October 15, 1985. It provides for an initial wage increase of $1 an hour, followed by increases of 3 percent (averaging 30 cents an hour) on June 4, 1984; 40 cents an hour on both March 4 and June 3 of 1985; and 32 cents on September 2, 1985. This would eliminate the *current* pay disparity between Chrysler employees and Ford-GM employees. However, it does not take into account possible wage changes that could result when Ford and GM renew their current contracts, which expire in September 1984.

In addition to the specified increases, Chrysler employees will receive a projected total of $1.38 an hour in automatic quarterly cost-of-living adjustments, according to the union's assumption that the parties' composite consumer price index (which is derived from U.S. and Canadian government indexes) will rise 3.5 percent during the balance of 1983, 5.5 percent in 1984, and 6 percent in 1985. Ford and GM workers are covered by the same pay adjustment formula.

According to a Chrysler official, the settlement package raises Chrysler's wage-and-benefit costs about 29 percent, to $27 an hour (formerly $21). Current wage-and-benefit costs were reportedly about $22 at GM and $23 at Ford, but these levels are subject to scheduled increases, as well as to possible changes resulting from the 1984 bargaining.

Like the rejected offer, the new agreement provides for equalizing Chrysler's employee pension and life insurance benefits with those of GM and Ford. This will be done in two steps, in September of 1983 and 1984. In a change from the rejected offer, the contract does not call for suspending the cost-of-living pay allowance following any quarter in which Chrysler suffers a loss. The contract also does not call for the parties to strive for a $15 million a year reduction in health insurance costs, with any shortfall to be deducted from the cost-of-living allowance.

Auto industry update

Ford Motor Co. announced that it will cut health care benefits for 56,000 active salaried employees and 27,000 retired salaried employees and surviving spouses. The company said the cut, to begin on January 1, 1984, was necessary to counter "alarmingly high" medical cost increases. Ford estimated that its health care costs for all its U.S. employees will total $800 million for 1983, up from $763 million in 1982 or about $338 per vehicle produced in 1983, up from $130 in 1978.

As a result of the cut, Ford employees, pensioners, and survivors will be required to pay up to $750 a year in deductibles and coinsurance previously paid by Ford. Coinsurance costs also were increased for some dental benefits, to 30 percent, from 10 percent.

The impact of these changes was softened somewhat when Ford announced it would end lifetime limits on hospital coverage for employees, and end the $50 to $100 a year payment that retirees previously made toward their health insurance. The company also will resume adding the cost-of-living allowance to paid time off, such as holidays and vacations, and will resume contributing to the stock purchase plan at the rate of 60 cents for each $1 invested by the worker.

Earlier, Ford had announced a resumption of merit pay increases for employees in its lowest eight salary grades. The July 1 increases, ranging from about 5 to 7 percent, were the first in 3 years for employees in these grades. Merit increases for workers in higher grades were resumed early in 1981.

At General Motors, workers at the Packard Electric Division plants in Warren, Ohio, rejected a proposal that new people hired to assemble automobile wiring packages be paid $4.50 an hour plus $1.50 in benefits. All 8,000 current workers would have been guaranteed their current compensation, which averaged $19 an hour, and greater job security.

The proposal was supported by the workers' bargaining representative, Local 717 of the International Union of Electrical Workers. About 200 new workers located in a separate plant would have been affected.

Packard Electric said the change was necessary because labor accounts for 60 percent of the cost of assembling wire packages, and the division's labor costs were far higher than overseas competitors. According to the company, the rejection could lead to the shifting of some work to company plants in Mississippi if workers there accept such a proposal. Also, Packard might lose the right to supply parent General Motors, which announced that it will buy wiring assemblies from the lowest bidder by 1986.

At American Motors Corp.'s Kenosha, Wis., plant, there was controversy over a company offer to give each of the 7,000 workers a 25-cent-an-hour wage increase if they agreed to reduce the number of shop stewards to 130 from 285. American Motors said the reduction was necessary to eliminate a competitive disadvantage that resulted because the plant has one steward for every 25 employees, compared with one for every 200 to 250 at the other domestic auto manufacturers. Stewards are paid the same wages and benefits as other workers but spend all of their worktime protecting the interests of the workers they represent.

Steel industry update

During the first half of 1983, U.S. steel mills operated at about 54 percent of capacity. The results were further adverse developments for the Steelworkers union and its members.

In Johnstown, Pa., some employees of Bethlehem Steel Corp. agreed to wage concessions in addition to the $1.25 an hour temporary cut the union had accepted in earlier negotiations for all Bethlehem facilities and those of other major companies. (See *Monthly Labor Review*, May 1983, pp. 47–48.) The latest concessions at Bethlehem's Johnstown works varied by type of operation. At the railroad car shop—which has been shut down for a year—workers accepted a pay cut of $2.52 an hour to aid the company in bidding on jobs. The two pay cuts amount to 35 percent, but the workers will still earn about $10 an hour if they are recalled.

A Steelworkers local union of mechanical department employees gained "lifetime" job security in return for giving Bethlehem Steel the right to hire outside contractors to perform work company employees are too busy to perform. The vote was 386 to 32.

Workers in the rod and wire operations at Bethlehem Steel voted 273 to 96 to accept a package that included an immediate cut of 55 to 60 jobs, but could result in a doubling of the working members in 1984.

Phoenix Steel Corp. filed for bankruptcy and cut wages and benefits for all employees, including those represented by the Steelworkers union. The cuts for union-represented employees in Claymont, Del., and Phoenixville, Pa., included a $1 an hour reduction in pay, elimination of premium pay for certain shifts and for Sunday work, elimination of a bonus incentive plan and dental insurance, and an increase in medical insurance deductibles. Earlier this year, the two Steelworkers locals had agreed to larger wage-and-benefit concessions than those the union had negotiated with the Coordinating Committee Steel Companies in February. Phoenix Steel, which has a total of 1,600 employees, lost $17.5 million in 1982 and $12.4 million during the first half of 1983. The company produces steel pipe, tube, and plate.

In a more optimistic development from the Steelworkers' viewpoint, U.S. Steel Corp. agreed to form a joint task force to discuss modernization of the company's mill in Fairless Hills, Pa. Despite this development, U.S. Steel said it was continuing negotiations on possible purchase of steel slabs from Britain's state-owned steel company for finishing at the Pennsylvania mill. If this occurs, the U.S. Steel plant would cease producing steel; this action is of particular concern to the union because it could lead other U.S. companies to adopt the same approach. U.S. Steel said it "will be fully responsive" to any union proposals, but that "formation of the task force is independent" of the company's talks with British Steel. The major problem of the Fairless Works is that it uses the outmoded open-hearth steelmaking process. U.S. Steel has estimated that it would cost $1.5 billion to substitute the more efficient basic oxygen process.

Steelworkers President Lloyd McBride and other leaders moved to stem a $1.5 million monthly operating loss resulting from the severe drop in membership attributed to the decline in the steel industry. At midyear, McBride announced the elimination of 236 jobs or 20 percent of its total employment. Earlier in 1983, the union had reduced its staff by 220 workers through early retirement and layoffs.

The Steelworkers union negotiated a contract with the independent Staff Representatives Union that called for a 10.5-percent pay cut. Similar terms were then negotiated for members of Steelworkers Local 3657, which represents technical and clerical employees. The pay cut will be restored over the 3-year contract term in the same manner as the cut resulting from the Steelworkers' settlement with the major steel companies.

Employees purchase steel company

The largest employee-owned company in the Nation was created when 8,000 employees agreed to purchase National Steel Corp.'s Weirton (W.Va.) Division. The employees are represented by the Independent Steelworkers union (not affiliated with the United Steelworkers union) and the Independent Guards Union. National Steel had broached the idea of selling the "marginally profitable" operation to the workers in 1982 and a preliminary sale agreement was reached early this year, but final concurrence was delayed until the workers obtained a purchase loan, created the structure of the new company, and selected operating officers.

The major aspect of the buy-out was an 18.1- to 20.9-percent cut in compensation that was intended to ensure the profitability of the enterprise. Originally, the workers' financial advisers forecasted a 32-percent cut, but that was lowered when National Steel agreed to retain responsibility for certain pension and life and health insurance costs.

Other provisions of the new labor contract negotiated in conjunction with the sales contract included elimination of the provision for automatic quarterly cost-of-living pay adjustments (which will be replaced by a profit-sharing plan) and substantial reductions in vacation, overtime, and supplemental unemployment benefits. Pension calculation rates were not changed, and National Steel retained responsibility for all pension liabilities prior to the sale's closing date and agreed to provide future benefits to retirees for service accrued prior to the change of ownership. National Steel also agreed to finance special early retirement benefits for all workers if the plant is closed within 5 years after November 1, 1983.

The plant has lost an estimated $41 million so far in 1983. It was once West Virginia's largest employer, with 12,000 employees. When the parties reached final agreement, it had 7,000 active workers and 3,000 on layoff.

Completion of the sale could be delayed by several lawsuits filed by groups of employees who contended that the sale violated Federal labor and pension law.

Panels formed to deal with foreign competition

In an effort to counter growing pressure for protectionist steps to insulate American industries such as steel, textiles,

and electronics from foreign competition, President Ronald Reagan established a national Commission on Industrial Competitiveness. Some officials said the commission might act to hold down wage-and-benefit costs if the improving economy spurs unions to raise their demands to compensate for moderate settlements during the recent recession. However, the President said the role of the Commission ''is not to dictate detailed plans or solutions to problems for particular companies or industries,'' but is to ensure that the ''rules of free and fair trade, both at home and abroad, are properly observed.''

John A. Young, president and chief executive officer of Hewlett-Packard Co., will serve as commission chairman. The other 20 members of the panel are from business, industry, and universities. There are no union representatives. Young said that while private industry should lead the drive to improve competitiveness, the Federal Government also has a major role because it provides 50 percent of the money invested in research and development. The commission will strive to aid domestic industry in adopting technological changes and preventing foreign companies from illegally using the changes. Specific steps will include easing antitrust restrictions on joint technological research, increasing tax credits for such research, and increasing the research capabilities of American universities.

In a move aimed specifically at the steel industry, President Reagan and members of the Congressional Steel Caucus agreed to form a committee to recommend ways of helping the industry. The committee will focus on forming joint ventures in steel research and development, retraining out-of-work steelworkers, and developing strategy for combatting unfair foreign competition. The committee will include representatives of industry, labor, and government, and will be headed by Secretary of Commerce Malcolm Baldrige. It is similar to the expired Carter Administration Steel Tripartite Commission.

'Rules on Containers' revised

The International Longshoremen's Association and shipping associations from Maine to Texas agreed on new requirements governing the ''Rules on Containers,'' which are designed to assure that only longshoremen pack and unpack container freight within 50 miles of a port. The new requirements, negotiated under a reopener provision of a ''master'' contract scheduled to expire in September 1983, will be incorporated into that agreement and also will be part of the succeeding master contract. The requirements call for:

- establishing a joint ILA-Management Executive Committee to meet on 24 hours notice to resolve disputes;
- requiring steamship carriers to give the union more information on the volume and movement of container freight;
- permitting the International Longshoremen's Association to withhold labor from employers who fail to correct their violations of the ''Rules on Containers''; and
- implementing liquidated damages for all violations of the Rules on Containers after May 26, 1983.

Resolution of the dispute cleared the way for resumption of negotiations in each port on local issues that will be incorporated into supplements to the master contract which will become effective on October 1, 1983. Earlier, the union and the shippers agreed on seven items applicable to all 50,000 employees in the 36 ports. Included were:

- Wage increases of $1 an hour on October 1 of 1983, 1984, and 1985, bringing the straight-time rate to $17 an hour;
- a 25-cent-an-hour increase in employer financing of pension benefits on October 1 of 1983, 1984, and 1985, along with 17, 17, and 16-cent-an-hour increases in employer financing of welfare benefits on the dates (levels of pensions and health benefits will vary by port because they are negotiated locally); and
- adoption of a new standard for each port to use in determining when money from the Job Security Program (an insurance plan financed by ocean carriers) can be used to finance guaranteed income, pension, and welfare benefits (the new standard is the number of hours worked or tonnage of cargo handled in each port during the year ending September 30, 1983—if hours worked or tonnage handled drops below the standard, money can be diverted from the Job Security Program).

Despite the parties' accord on the new provisions governing container cargo, a major uncertainty arose when the Federal Maritime Administration asked a Federal court to prohibit implementation of the plan until a review of its legality and economic impact is completed. The plan, established in the early 1970's, has survived a number of legal challenges by shippers and the Government.

Book Reviews

A quiet revolution

As Minority Becomes Majority: Federal Reaction to the Phenomenon of Women in the Work Force, 1920–1963. By Judith Sealander. Westport, Conn., Greenwood Press, 1983. 201 pp. $27.95.

When the Women's Bureau of the U.S. Department of Labor was established by an act of the Congress in 1920, Secretary of Labor William B. Wilson explained, "We are safeguarding the mothers of tomorrow. All will agree that women in industry would not exist in an ideal scheme" (p. 3). The Progressive movement had urged the creation of such an agency to protect the family and future generations by guarding the health and welfare of single and married women forced by circumstances into the labor market.

The view of women as workers requiring more protection than their male counterparts reflected and reinforced the 1908 Supreme Court decision (*Muller* v. *Oregon*), when Louis Dembitz Brandeis successfully defended the legality of State legislation setting maximum hours of work for women. Similar legislation had earlier been declared an unconstitutional infringement of "freedom of contract" for male bakers (*Lochner* v. *N.Y.*, 1905). Thus, from its inception, the Women's Bureau had a serious and central philosophical problem in fulfilling its charge to "promote the welfare of wage-earning women." While the Bureau called for "equal pay for equal work," its officials campaigned for an 8-hour day, weight-lifting limitations, and other special conditions for women workers—thereby weakening or nullifying women's claims to equal job access or equal pay. The period covered by the study, 1920–63, is characterized by efforts to achieve the impossible—simultaneously to achieve equal job opportunity for the woman worker, while insisting on protective measures which raised her cost to employers.

The study traces the response of the Federal Government to the concerns of working women, covering the period from the 1920 founding of the Women's Bureau, to the 1963 enactment of the Equal Pay Act. It provides an excellent historical documentation of an agency which was usually bested in bureaucratic infighting, underfunded by The Congress, ignored by scholars, and which has had, to this day, limited public visibility (the latter not unrelated to funding levels). Again and again, Federal action and in-action on women's issues mirrored the political powerlessness of the Women's Bureau. In the 1920's and 1930's, with women only newly enfranchised, and with economic depression arousing public antipathy to employment for married women, excessive pressure by Bureau officials might have been counterproductive. But, in addition to these external problems, and to the internal problem of the incompatibility of demands for equal pay and special protection for women, Bureau leaders were unskilled in playing the political game. Part of this political ineptitude may be charged to the inexperience, naiveté, and confrontational style of women unfamiliar with the political "old boys' network"; but the cavalier treatment and minuscule funding recommended by male bureaucrats and provided by the Congress reflects most directly the lack of an effective pressure group. As the first Bureau director, Mary Anderson, bitterly pointed out at the congressional hearings held prior to establishing the Bureau:

> In the past 2 years, Congress has approved $600,000 for the prevention of hog cholera and $1,500,000 for the eradication of tuberculosis in animals, and now you resist a meager grant of $75,000 to improve the cause of working women (p. 38).

The farm group had an effective lobby in 1920—women did not. The Congress finally passed the $75,000 total agency appropriation, but over the following years, funding remained inadequate to the dimensions of the problem.

The failures as well as the successes of the Bureau leadership are recorded here, as well as the dedication of the small staff of Bureau investigators, struggling under frustrating conditions to arouse public awareness of the working conditions of factory women. It would be easy, from the vantage point of the 1980's, to criticize Bureau staff for political ineptitude, or the often-condescending response of well-educated Bureau professionals to blue-collar, immigrant, or black women. But, in Peter Gay's phrase, these women reformers were constrained by their role of "outsiders as insiders." As "outsiders," they were critics of industry and unions, often accused of espousing radical doctrines subversive of the established order; but as "insiders," they were part of the system which saw women workers first as family members. Secretary of Labor William N. Doak, in 1930, praised the Women's Bureau for its potential "to help unite women and the family in times of economic crisis and change" (p. 39). But, as Sealander

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points out, "if the members of the Women's Bureau had agitated during the 1920's, 1930's, and 1940's for a government perception of women workers that saw them as individuals first, and secondarily as pillars of family stability, they not only would have performed a monumental feat of transcending their own values and culture but they would also have been so far ahead of their colleagues and sponsors that they would have been fired" (p. 159).

The change in Federal response to women in the labor force parallels the change from minority to majority status. When the female labor force consisted mainly of young, single workers, who were primarily employed in blue-collar or low-skilled clerical areas, and planning to withdraw from the labor market following marriage, the response of politicians to working women was minimal. But as lifelong employment became a reality for many women, and as they became more organized, and vocal, the political climate changed accordingly, via the Equal Pay Act of 1963, the Civil Rights Act of 1965, Executive orders, and supporting regulations which favor equal employment opportunity for the sexes. The passage of State Equal Rights legislation, and the drive for a constitutional amendment, also politicized women.

To a great extent, during the early years of Bureau activity, the deplorable situation of women workers—very low pay, long hours, and unsafe working conditions—reflected the antilabor temper of the times, rather than specific animus against women workers. While legislation in the 1960's effectively nullified special safeguards for women, protection for both male and female workers had already been established by the Wagner Act, Wage and Hour legislation, and, subsequently, by the Occupational Safety and Health Act. Consequently, the Women's Bureau was freed of its philosophical dilemma, and shifted its energies from seeking to prevent the exploitation of factory women, to the encouragement of women's aspirations to become mathematicians and physicists.

The 1920–63 time frame provides a logical demarcation of the historical activities of the Women's Bureau as a separate agency, but does not permit a critical discussion of its present role, although the author briefly sketches subsequent legislative developments and changes in the Bureau's activities (chapter 7). Is there a need today for a Federal Women's Bureau in view of legislative changes since 1920 which protect the rights of all workers, especially the Equal Pay and Civil Rights Acts which grant particular protection to women and minorities? Is the Women's Bureau a "sexist" agency, providing outdated activities? Some observers might note that the need for an advocate within the Federal bureaucracy is undiminished, if we observe the historical trend in comparative earnings of men and women. The Bureau of Labor Statistics periodically reports that the annual earnings of a female worker average less than two-thirds that of a male worker, both working full time and full year. (See Nancy F. Rytina, "Earnings of men and

women: a look at specific occupations," *Monthly Labor Review*, April 1982, pp. 25–31.) This reviewer would like to see more studies commissioned and funded by the Women's Bureau, to be carried out by the Bureau of Labor Statistics or the Bureau of the Census, through the Current Population Survey; in many areas, researchers have been hindered by a lack of categorization by sex in published data.

More and more women now have a lifetime commitment to the labor force; more and more families are being headed, or substantially supported, by a woman. Yet, as we enter the third decade following the signing of the Equal Pay Act, the disparity in earnings of men and women persists, largely because of occupational segregation. Recent studies have indicated that female high school graduates continue to "choose" the traditional, low-paid fields where women have predominated in the past. What is the contribution of secondary and postsecondary institutions, academic and vocational, to the career decisions of young women? What is the contribution of business and industrial leaders? To explore these questions, the Women's Bureau would require additional funds which, in turn, would require stronger political organization by women.

To sum up, this is a very useful study for historians and for specialists in women's studies; it is also a pertinent reminder that an effective voice for women at the Federal level requires political commitment by women of all ages.

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Beyond the guidelines

Labor Displacement and Public Policy. By Philip L. Martin. Lexington, Mass., D.C. Heath and Co., Lexington Books, 1983. 125 pp., bibliography.

Philip Martin wrote this book with the premise that U.S. workers are more vulnerable than ever to increased unemployment caused by technological change, unprecedented demand shifts (resulting from shifts in consumer preferences), and changes in government policies (for example, lower tariffs followed by increased imports). While this premise seems to represent an accepted fact, documentation does not appear anywhere in the book. Yet, documentation would seem necessary to the implementation of public policy. For example, problems recently experienced by the auto and steel industries probably began between 1978 and 1979, well before the two recessions of the 1980's. Are there other "troubled industries" whose woes are expected to be of longer term than those of the recent recessions? Is the extent of the problem more serious than in earlier economic downturns? Have we not always been concerned with "troubled industries?"

Martin sees two basic policy options for coping with the

displaced-worker problem. The first entails policies which would work toward preserving the jobs of workers who are subject to displacement. The second entails policies which would permit or encourage economic changes while at the same time providing aid for displaced workers. Martin endorses the latter option and proposes broad-based unemployment insurance reform to encompass the displaced-worker problem. In Martin's opinion, the current unemployment insurance programs are not adequate to cushion the hardship experienced by the typical displaced worker. His specific proposals would effectively nationalize the State unemployment insurance systems. He calls for increased uniform benefits across all States, as well as uniform eligibility requirements and tax treatment. These reforms include: (a) additional assistance to workers who were laid off as a result of changing government policies; (b) mandatory advance notice of at least 6 months to an employee prior to permanent dismissal; (c) committees composed of business, labor, and government officials to promote retraining and local job creation; (d) higher unemployment insurance taxes to firms exhibiting high rates of labor turnover; and (e) positive unemployment insurance payments to be paid to workers on short-time arrangements (for example, 20 to 30 hours per week).

Several problems are associated with these proposed reforms. Identifying the displaced worker population is a very difficult matter, let alone identifying those who are displaced because of changing government policies. Practically speaking, how would one characterize a displaced worker beyond observing a situation of indefinite layoff? Would it be an indefinite layoff in a ''troubled'' industry? Who would determine the set of ''troubled'' industries? The restriction of a 6-month notice to any employee who has been permanently dismissed would seem to lead to a greater incidence of ''temporary'' layoffs that never lead to recall. Finally, the issuance of unemployment insurance payments to workers on short-time arrangements could represent (depending on the extent of experience rating) a subsidy to cyclical industries, not ''troubled'' industries where situations encompass longer-term problems.

Martin believes workers are encouraged to change careers because of generous assistance programs but evidence does not support this belief. The Trade Adjustment Assistance program provided benefits (in addition to unemployment insurance payments) to displaced workers, presumably for retraining and relocation. In 1976, 72 percent of these recipients returned to their previous job and employer. Obviously, the program did not succeed in identifying and aiding displaced workers. Instead, generous subsidies were provided to workers who were temporarily laid off. No matter what program is proposed, the *ex ante* identification of permanent versus temporary layoffs would seem impossible with the exception of plant closings. Even then, a determination of whether the plant closing resulted from ''bad management,'' changing government policies, tech-

nological change, or unexpected demand shifts would seem extremely difficult.

Martin has written an interesting and thought-provoking book. Anyone interested in public policy issues should find the book worth reading. Chapter 1 discusses the role of government and the attributes of a changing economy. Chapter 2 discusses displacement costs to workers. The extent of unemployment duration and wage concession on a new job are also explored. Conceptually, the latter issue (that is, the wage when displaced net of the wage of new job) is not relevant as a cost to displacement, as Martin suggests. Instead, the relevant comparison is the present value of wages had the old job continued net of the present value of the new employment opportunity. Once again, an estimate of this magnitude can be difficult to ascertain. A discussion of worker protection programs in the United States is presented in chapters 3 and 4. Specific programs include the unemployment insurance system, various private protection programs (usually associated with unions), and various special protection programs set in place by the Federal Government. Chapter 5 outlines some of the European worker protection programs. Finally, reform issues are presented and discussed in chapter 6.

Martin has written a provocative book describing many past and current protection programs for displaced workers. He is bold enough to offer some fairly specific policy proposals involving major unemployment insurance reforms, even though the practical underlying definitions of affected groups is not offered. While there are many important policy questions to be treated prior to any major reform, this book provides useful background information and thought-provoking policy suggestions.

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Remarkably clear and enlightening

The Visual Display of Quantitative Information. By Edward R. Tufte. Cheshire, Conn., Graphics Press, 1983. 200 pp. 250 illustrations. $34.

In his introduction to this splendid book, Edward R. Tufte says he wants to persuade viewers and makers of charts never to view or create statistical graphics the same way again.

He begins by inviting the reader to ''rejoice in the graphical glories'' of some of the best charts ever published, including the first-known time series of economic data, published in 1786 by William Playfair, an English political economist, and a classic map by Charles Joseph Minard, showing the devastating losses suffered in Napoleon's Rus-

sian campaign of 1812, which, in Tufte's view "may well be the best statistical graphic ever drawn."

Tufte contrasts these classics and an array of excellent contemporary graphics, including computer charts, with some examples of graphic lapses, lost opportunities, and outright deceptions.

Graphic excellence, says Tufte, consists of complex ideas communicated with clarity, precision, and efficiency. It gives the viewer the greatest number of ideas in the shortest time, with the least ink in the smallest space.

Tufte tells how to detect and avoid graphical deception, explains how to compute the "lie factor" when viewing charts, and shows how a chart can deceive by being out of context.

Inept graphics flourish, says Tufte, because many graphic artists believe that statistics are boring and need to be decorated to make them palatable. The result is what the author calls chartjunk, ink that does not tell the viewer anything new, unnecessary colors, patterns, and grids. ("Varying shades of gray show varying quantities better than color.")

"If statistics are boring," declares Tufte, "then you've got the wrong numbers. Finding the right numbers requires as much specialized skill—statistical skill—and hard work as creating a beautiful design or covering a complex news story."

Edward Tufte, who teaches political science, statistics, and graphic design at Yale University, has called on all of these disciplines to produce a convincingly reasoned, expertly illustrated, beautifully designed, and elegantly written book which both viewers and producers of statistical graphics will find useful, challenging, and enjoyable.

—HENRY LOWENSTERN
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Current
Labor Statistics

NOTES ON CURRENT LABOR STATISTICS

This section of the *Review* presents the principal statistical series collected and calculated by the Bureau of Labor Statistics. A brief introduction to each group of tables provides definitions, notes on the data, sources, and other material usually found in footnotes.

Readers who need additional information are invited to consult the BLS regional offices listed on the inside front cover of this issue of the *Review*. Some general notes applicable to several series are given below.

Seasonal adjustment. Certain monthly and quarterly data are adjusted to eliminate the effect of such factors as climatic conditions, industry production schedules, opening and closing of schools, holiday buying periods, and vacation practices, which might otherwise mask short-term movements of the statistical series. Tables containing these data are identified as "seasonally adjusted." Seasonal effects are estimated on the basis of past experience. When new seasonal factors are computed each year, revisions may affect seasonally adjusted data for several preceding years.

Seasonally adjusted labor force data in tables 3–8 were revised in the February 1983 issue of the *Review*, to reflect experience through 1982.

Beginning in January 1980, the BLS introduced two major modifications in the seasonal adjustment methodology for labor force data. First, the data are being seasonally adjusted with a new procedure called X-11/ARIMA, which was developed at Statistics Canada as an extension of the standard X-11 method. A detailed description of the procedure appears in *The X-11 ARIMA Seasonal Adjustment Method* by Estela Bee Dagum (Statistics Canada Catalogue No. 12-564E, February 1980). The second change is that seasonal factors are now being calculated for use during the first 6 months of the year, rather than for the entire year, and then are calculated at mid-year for the July-December period. Revisions of historical data continue to be made only at the end of each calendar year.

Annual revision of the seasonally adjusted payroll data shown in tables 11, 13, and 15 were made in August 1981 using the X-11 ARIMA seasonal adjustment methodology. New seasonal factors for productivity data in tables 29 and 30 are usually introduced in the September issue. Seasonally adjusted indexes and percent changes from month to month and from quarter to quarter are published for numerous Consumer and Producer Price Index series. However, seasonally adjusted indexes are not published for the U.S. average All Items CPI. Only seasonally adjusted percent changes are available for this series.

Adjustments for price changes. Some data are adjusted to eliminate the effect of changes in price. These adjustments are made by dividing current dollar values by the Consumer Price Index or the appropriate component of the index, then multiplying by 100. For example, given a current hourly wage rate of $3 and a current price index number of 150, where 1967 = 100, the hourly rate expressed in 1967 dollars is $2 ($3/150 × 100 = $2). The resulting values are described as "real," "constant," or "1967" dollars.

Availability of information. Data that supplement the tables in this section are published by the Bureau of Labor Statistics in a variety of sources. Press releases provide the latest statistical information published by the Bureau; the major recurring releases are published according to the schedule given below. More information from household and establishment surveys is provided in *Employment and Earnings,* a monthly publication of the Bureau. Comparable household information is published in a two-volume data book–*Labor Force Statistics Derived From the Current Population Survey,* Bulletin 2096. Comparable establishment information appears in two data books–*Employment and Earnings, United States,* and *Employment and Earnings, States and Areas,* and their annual supplements. More detailed information on wages and other aspects of collective bargaining appears in the monthly periodical, *Current Wage Developments.* More detailed price information is published each month in the periodicals, the *CPI Detailed Report* and *Producer Prices and Price Indexes.*

Symbols

p = preliminary. To improve the timeliness of some series, preliminary figures are issued based on representative but incomplete returns.

r = revised. Generally, this revision reflects the availability of later data but may also reflect other adjustments.

n.e.c. = not elsewhere classified.

Schedule of release dates for BLS statistical series

Series	October releases	Period covered	November releases	Period covered	December releases	Period covered	MLR table number
Employment situation	October 7	September	November 4	October	December 2	November	1–11
Producer Price Index	October 14	September	November 10	October	December 16	November	23–27
Consumer Price Index	October 25	September	November 23	October	December 21	November	19–22
Real earnings	October 25	September	November 23	October	December 21	November	12–16
Productivity							
Nonfarm business and manufacturing. . . .	October 27	3rd quarter	. . . .	. . . .	. . . .	. . . .	28–31
Nonfinancial corporations	. . . .	. . . .	November 30	3rd quarter	. . . .	. . . .	28–31
Major collective bargaining settlements	October 28	1st 9 months	. . . .	. . . .	. . . .	. . . .	35–36
Employment Cost Index	. . . .	. . . .	November 3	3rd quarter	. . . .	. . . .	32–34
U.S. Import and Export Price Indexes	. . . .	. . . .	November 9	3rd quarter	. . . .	. . . .	. . . .

EMPLOYMENT DATA FROM THE HOUSEHOLD SURVEY

EMPLOYMENT DATA in this section are obtained from the Current Population Survey, a program of personal interviews conducted monthly by the Bureau of the Census for the Bureau of Labor Statistics. The sample consists of about 60,000 households selected to represent the U.S population 16 years of age and older. Households are interviewed on a rotating basis, so that three-fourths of the sample is the same for any 2 consecutive months.

Definitions

Employed persons include (1) all civilians who worked for pay any time during the week which includes the 12th day of the month or who worked unpaid for 15 hours or more in a family-operated enterprise and (2) those who were temporarily absent from their regular jobs because of illness, vacation, industrial dispute, or similar reasons. Members of the Armed Forces stationed in the United States are also included in the employed total. A person working at more than one job is counted only in the job at which he or she worked the greatest number of hours.

Unemployed persons are those who did not work during the survey week, but were available for work except for temporary illness and had looked for jobs within the preceding 4 weeks. Persons who did not look for work because they were on layoff or waiting to start new jobs within the next 30 days are also counted among the unemployed. The **overall unemployment rate** represents the number unemployed as a percent of the labor force, including the resident Armed Forces. The **unemployment rate** for all civilian workers represents the number unemployed as a percent of the civilian labor force.

The **labor force** consists of all employed or unemployed civilians plus members of the Armed Forces stationed in the United States. Persons **not in the labor force** are those not classified as employed or unemployed; this group includes persons who are retired, those engaged in their own housework, those not working while attending school, those unable to work because of long-term illness, those discouraged from seeking work because of personal or job market factors, and those who are voluntarily idle. The **noninstitutional population** comprises all persons 16 years of age and older who are not inmates of penal or mental institutions, sanitariums, or homes for the aged, infirm, or needy, and members of the Armed Forces stationed in the United States. The **labor force participation rate** is the proportion of the noninstitutional population that is in the labor force. The **employment-population ratio** is total employment (including the resident Armed Forces) as a percent of the noninstitutional population.

Notes on the data

From time to time, and especially after a decennial census, adjustments are made in the Current Population Survey figures to correct for estimating errors during the preceding years. These adjustments affect the comparability of historical data presented in table 1. A description of these adjustments and their effect on the various data series appear in the Explanatory Notes of *Employment and Earnings*.

Data in tables 2–8 are seasonally adjusted, based on the seasonal experience through December 1982.

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1. Employment status of the noninstitutional population, 16 years and over, selected years, 1950–82
[Numbers in thousands]

Year	Noninstitutional population	Labor force										Not in labor force
		Number	Percent of population	Employed						Unemployed		
				Total	Percent of population	Resident Armed Forces	Civilian			Number	Percent of labor force	
							Total	Agriculture	Nonagricultural industries			
1950	106,164	63,377	59.7	60,087	56.6	1,169	58,918	7,160	51,758	3,288	5.2	42,787
1955	111,747	67,087	60.0	64,234	57.5	2,064	62,170	6,450	55,722	2,852	4.3	44,660
1960	119,106	71,489	60.0	67,639	56.8	1,861	65,778	5,458	60,318	3,852	5.4	46,617
1965	128,459	76,401	59.5	73,034	56.9	1,946	71,088	4,361	66,726	3,366	4.4	52,058
1966	130,180	77,892	59.8	75,017	57.6	2,122	72,895	3,979	68,915	2,875	3.7	52,288
1967	132,092	79,565	60.2	76,590	58.0	2,218	74,372	3,844	70,527	2,975	3.7	52,527
1968	134,281	80,990	60.3	78,173	58.2	2,253	75,920	3,817	72,103	2,817	3.5	53,291
1969	136,573	82,972	60.8	80,140	58.7	2,238	77,902	3,606	74,296	2,832	3.4	53,602
1970	139,203	84,889	61.0	80,796	58.0	2,118	78,678	3,463	75,215	4,093	4.8	54,315
1971	142,189	86,355	60.7	81,340	57.2	1,973	79,367	3,394	75,972	5,016	5.8	55,834
1972	145,939	88,847	60.9	83,966	57.5	1,813	82,153	3,484	78,669	4,882	5.5	57,091
1973	148,870	91,203	61.3	86,838	58.3	1,774	85,064	3,470	81,594	4,355	4.8	57,667
1974	151,841	93,670	61.7	88,515	58.3	1,721	86,794	3,515	83,279	5,156	5.5	58,171
1975	154,831	95,453	61.6	87,524	56.5	1,678	85,845	3,408	82,438	7,929	8.3	59,377
1976	157,818	97,826	62.0	90,420	57.3	1,668	88,752	3,331	85,421	7,406	7.6	59,991
1977	160,689	100,665	62.6	93,673	58.3	1,656	92,017	3,283	88,734	6,991	6.9	60,025
1978	153,541	103,882	63.5	97,679	59.7	1,631	96,048	3,387	92,661	6,202	6.0	59,659
1979	166,460	106,559	64.0	100,421	60.3	1,597	98,824	3,347	95,477	6,137	5.8	59,900
1980	169,349	108,544	64.1	100,907	59.6	1,604	99,303	3,364	95,938	7,637	7.0	60,806
1981	171,775	110,315	65.2	102,042	59.4	1,645	100,397	3,368	97,030	8,273	7.5	61,460
1982	173,939	111,872	64.3	101,194	58.2	1,668	99,526	3,401	96,125	10,578	9.5	62,067

2. Employment status of the population, including Armed Forces in the United States, by sex, seasonally adjusted

[Numbers in thousands]

Employment status and sex	Annual average 1981	1982	1982 Aug.	Sept.	Oct.	Nov.	Dec.	1983 Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
TOTAL															
Noninstitutional population[1,2]	171,775	173,939	174,200	174,360	174,549	174,718	174,864	175,021	175,169	175,320	175,465	175,622	175,793	175,970	176,122
Labor force[2]	110,315	111,872	112,303	112,528	112,420	112,702	112,794	112,215	112,217	112,148	112,457	112,418	113,600	113,539	113,943
Participation rate[3]	64.2	64.3	64.5	64.5	64.4	64.5	64.5	64.1	64.1	64.0	64.1	64.0	64.6	64.5	64.7
Total employed[2]	102,042	101,194	101,372	101,213	100,844	100,796	100,758	100,770	100,727	100,767	101,129	101,226	102,454	102,949	103,245
Employment-population[4]	59.4	58.2	58.2	58.0	57.8	57.7	57.6	57.6	57.5	57.5	57.6	57.6	58.3	58.5	58.6
Resident Armed Forces[1]	1,645	1,668	1,689	1,670	1,668	1,660	1,665	1,667	1,664	1,664	1,671	1,669	1,668	1,664	1,682
Civilian employed	100,397	99,526	99,683	99,543	99,176	99,136	99,093	99,103	99,063	99,103	99,458	99,557	100,786	101,285	101,563
Agriculture	3,368	3,401	3,429	3,363	3,413	3,466	3,411	3,412	3,393	3,375	3,371	3,367	3,522	3,527	3,489
Nonagricultural industries	97,030	96,125	96,254	96,180	95,763	95,670	95,682	95,691	95,670	95,729	96,088	96,190	97,264	97,758	98,074
Unemployed	8,273	10,678	10,931	11,315	11,576	11,906	12,036	11,446	11,490	11,381	11,328	11,192	11,146	10,590	10,699
Unemployment rate[5]	7.5	9.5	9.7	10.1	10.3	10.6	10.7	10.2	10.2	10.1	10.1	10.0	9.8	9.3	9.4
Not in labor force	61,460	62,067	61,897	61,832	62,129	62,016	62,070	62,806	62,952	63,172	63,008	63,204	62,193	62,431	62,179
Men, 16 years and over															
Noninstitutional population[1,2]	82,023	83,052	83,173	83,231	83,323	83,402	83,581	83,652	83,720	83,789	83,856	83,931	84,014	84,099	84,173
Labor force[2]	63,486	63,979	64,055	64,301	64,300	64,414	64,384	63,916	63,996	63,957	64,207	64,276	64,816	64,864	64,814
Participation rate[3]	77.4	77.0	77.0	77.3	77.2	77.2	77.0	76.4	76.4	76.3	76.6	76.6	77.1	77.1	77.0
Total employed[2]	58,909	57,800	57,710	57,598	57,456	57,408	57,338	57,283	57,234	57,300	57,476	57,656	58,464	58,625	58,570
Employment-population rate[4]	71.8	69.6	69.4	69.2	69.0	68.8	68.6	68.5	68.4	68.4	68.5	68.7	69.6	69.7	69.6
Resident Armed Forces[1]	1,512	1,527	1,551	1,526	1,524	1,516	1,529	1,531	1,528	1,528	1,530	1,528	1,525	1,521	1,538
Civilian employed	57,397	56,271	56,159	56,072	55,932	55,892	55,809	55,752	55,706	55,772	55,946	56,128	56,939	57,104	57,032
Unemployed	4,577	6,179	6,345	6,703	6,844	7,006	7,046	6,633	6,762	6,657	6,731	6,620	6,351	6,238	6,244
Unemployment rate[5]	7.2	9.7	9.9	10.4	10.6	10.9	10.9	10.4	10.6	10.4	10.5	10.3	9.8	9.6	9.6
Women, 16 years and over															
Noninstitutional population[1,2]	89,751	90,887	91,027	91,129	91,226	91,316	91,283	91,369	91,449	91,532	91,609	91,691	91,779	91,871	91,949
Labor force[2]	46,829	47,894	48,248	48,227	48,120	48,288	48,410	48,299	48,220	48,191	48,251	48,142	48,784	48,675	49,130
Participation rate[3]	52.2	52.7	43.0	52.9	52.7	42.9	43.0	52.9	52.7	52.6	52.7	52.5	53.2	53.0	53.4
Total employed[2]	43,133	43,395	43,662	43,615	43,388	43,388	43,420	43,486	43,493	3,467	43,653	43,569	43,990	44,324	44,675
Employment-population rate[4]	48.1	47.7	48.0	47.9	47.6	47.5	47.6	47.6	47.6	47.5	47.7	47.5	47.9	48.2	48.6
Resident Armed Forces[1]	133	139	138	144	144	144	136	136	136	136	141	141	143	143	144
Civilian employed	43,000	43,256	43,524	43,471	43,244	43,244	43,284	43,350	43,357	43,331	43,512	43,428	43,847	44,181	44,531
Unemployed	3,696	4,499	4,586	4,612	4,732	4,900	4,990	4,813	4,727	4,724	4,597	4,572	4,995	4,351	4,455
Unemployment rate[5]	7.9	9.4	9.5	9.6	9.8	10.1	10.3	10.0	9.8	9.8	9.5	9.5	9.8	8.9	9.1

[1] The population and Armed Forces figures are not adjusted for seasonal variation.
[2] Includes members of the Armed Forces stationed in the United States.
[3] Labor force as a percent of the noninstitutional population.
[4] Total employed as a percent of the noninstitutional population.
[5] Unemployment as a percent of the labor force (including the resident Armed Forces).

3. Employment status of the civilian population by sex, age, race, and Hispanic origin, seasonally adjusted

[Numbers in thousands]

	Annual average 1981	Annual average 1982	1982 Aug.	1982 Sept.	1982 Oct.	1982 Nov.	1982 Dec.	1983 Jan.	1983 Feb.	1983 Mar.	1983 Apr.	1983 May	1983 June	1983 July	1983 Aug.
TOTAL															
Civilian noninstitutional population[1]	170,130	172,271	172,511	172,690	172,881	173,058	173,199	173,354	173,305	173,656	173,794	173,953	174,125	174,306	174,440
Civilian labor force	108,670	110,204	110,614	110,858	110,752	111,042	111,129	110,548	110,553	110,484	110,786	110,749	111,932	111,875	112,261
Participation rate	63.9	64.0	64.1	64.2	64.1	64.2	64.2	63.8	63.7	63.6	63.7	63.7	64.3	64.2	64.4
Employed	100,397	99,526	99,683	99,543	99,176	99,136	99,093	99,103	99,063	99,103	99,458	99,557	100,786	101,285	101,563
Employment-population ratio[2]	59.0	57.8	57.8	57.6	57.4	57.3	57.2	57.2	57.1	57.1	57.2	57.2	57.9	58.1	58.2
Agriculture	33,68	3,401	3,429	3,363	3,413	3,466	3,411	3,412	3,393	3,375	3,371	3,367	3,522	3,527	3,489
Nonagricultural industries	97,030	96,125	96,254	96,180	95,763	95,670	95,682	95,691	95,670	95,729	96,088	96,190	97,264	97,758	98,074
Unemployed	8,273	10,678	10,931	11,315	11,576	11,906	12,036	11,446	11,490	11,381	11,328	11,192	11,146	10,590	10,699
Unemployment rate	7.6	9.7	9.9	10.2	10.5	10.7	10.8	10.4	10.4	10.3	10.2	10.1	10.0	9.5	9.5
Not in labor force	61,460	62,067	61,897	61,832	62,129	62,016	62,070	62,806	62,952	63,172	63,008	63,204	62,193	62,431	62,179
Men, 20 years and over															
Civilian noninstitutional population[1]	72,419	73,644	73,774	73,867	73,984	74,094	74,236	74,339	74,434	74,528	74,611	74,712	74,814	74,927	75,012
Civilian labor force	57,197	57,980	58,064	58,354	58,363	58,454	58,443	58,048	58,177	58,170	58,454	58,506	58,804	59,016	58,945
Participation rate	79.0	78.7	78.7	79.0	78.9	78.9	78.7	78.1	78.2	78.1	78.3	78.3	78.6	78.8	78.6
Employed	53,582	52,891	52,832	52,776	52,649	52,589	52,534	52,452	52,428	52,589	52,752	52,901	53,516	53,808	53,771
Employment-population ratio[2]	74.0	71.8	71.6	71.4	71.2	71.0	70.8	70.6	70.4	70.6	70.7	70.8	71.5	71.8	71.7
Agriculture	2,384	2,422	2,433	2,436	2,444	2,434	2,389	2,426	2,374	2,420	2,404	2,443	2,529	2,544	2,496
Nonagricultural industries	51,199	50,469	50,399	50,340	50,205	50,155	50,145	50,025	50,054	50,169	50,348	50,458	50,987	51,264	51,275
Unemployed	3,615	5,089	5,232	5,578	5,714	5,865	5,909	5,597	5,749	5,581	5,702	5,605	5,288	5,208	5,174
Unemployment rate	6.3	8.8	9.0	9.6	9.8	10.0	10.1	9.6	9.9	9.6	9.8	9.6	9.0	8.8	8.8
Women, 20 years and over															
Civilian noninstitutional population[1]	81,497	82,864	83,035	83,152	83,271	83,385	83,383	83,490	83,593	83,699	83,794	83,899	84,008	84,122	84,224
Civilian labor force	42,485	43,699	44,039	43,996	43,936	44,112	44,286	44,201	44,216	44,166	44,238	44,228	44,648	44,685	45,003
Participation rate	52.1	52.7	53.0	52.9	52.8	52.9	53.1	52.9	52.9	52.8	52.8	52.7	53.1	53.1	53.4
Employed	39,590	40,086	40,368	40,286	40,112	40,123	40,215	40,238	40,291	40,277	40,509	40,484	40,789	41,164	41,394
Employment-population ratio[2]	48.6	48.4	48.6	48.4	48.2	48.1	48.2	48.2	48.2	48.1	48.3	48.3	48.6	48.9	49.1
Agriculture	604	601	590	588	578	590	628	625	c657	647	622	597	636	607	630
Nonagricultural industries	38,986	39,485	39,778	39,698	39,534	39,533	39,587	39,613	39,634	39,630	39,886	39,887	40,153	40,557	40,764
Unemployed	2,895	3,613	3,671	3,710	3,824	3,989	4,071	3,963	3,925	3,889	3,729	3,744	3,859	3,521	3,609
Unemployment rate	6.8	8.3	8.3	8.4	8.7	9.0	9.2	9.0	8.9	8.8	8.4	8.5	8.6	7.9	8.0
Both sexes, 16 to 19 years															
Civilian noninstitutional population[1]	16,214	15,763	15,702	15,671	15,625	15,579	15,580	15,525	15,478	15,429	15,389	15,342	15,303	15,257	15,204
Civilian labor force	8,988	8,526	8,511	8,508	8,453	8,476	8,400	8,299	8,160	8,148	8,094	8,015	8,480	8,173	8,313
Participation rate	55.4	54.1	54.2	54.3	54.1	54.4	53.9	53.5	52.7	52.8	52.6	52.2	55.4	53.6	54.7
Employed	7,225	6,549	6,483	6,481	6,415	6,424	6,344	6,413	6,345	6,237	6,197	6,172	6,481	6,313	6,397
Employment-population ratio[2]	44.6	41.5	41.3	41.4	41.1	41.2	40.7	41.3	41.0	40.4	40.3	40.2	42.4	41.4	42.1
Agriculture	380	378	406	339	391	442	394	361	362	308	344	327	357	376	362
Nonagricultural industries	6,845	6,171	6,077	6,142	6,024	5,982	5,950	6,052	5,983	5,929	5,853	5,845	6,124	5,937	6,035
Unemployed	1,763	1,977	2,028	2,027	2,038	2,052	2,056	1,886	1,815	1,911	1,897	1,843	1,999	1,860	1,916
Unemployment rate	19.6	23.2	23.8	23.8	24.1	24.2	24.5	22.7	22.2	23.5	23.4	23.0	23.6	22.8	23.0
White															
Civilian noninstitutional population[1]	147,908	149,441	149,536	149,652	149,838	149,887	150,056	150,129	150,187	150,382	150,518	150,671	150,810	150,959	151,003
Civilian labor force	95,052	96,143	96,375	96,640	96,453	96,719	96,864	96,176	95,987	95,996	96,287	96,362	97,250	97,341	97,602
Participation rate	64.3	64.3	64.4	64.6	64.4	64.5	64.6	64.1	63.9	63.8	64.0	64.0	64.5	64.5	64.6
Employed	88,709	87,903	87,979	87,872	98,477	87,435	87,443	87,466	87,194	87,324	87,709	87,777	88,880	89,382	89,573
Employment-population ratio[2]	60.0	58.8	58.8	58.7	58.4	58.3	58.3	58.3	58.1	58.1	58.3	58.3	58.9	59.2	59.3
Unemployed	6,343	8,241	8,396	8,768	8,976	9,284	9,421	8,711	8,793	8,672	8,577	8,585	c8,370	7,959	8,029
Unemployment rate	6.7	8.6	8.7	9.1	9.3	9.6	9.7	9.1	9.2	9.0	8.9	8.9	8.6	8.2	8.2
Black															
Civilian noninstitutional population[1]	18,219	18,584	18,626	18,659	18,692	18,723	18,740	18,768	18,796	18,823	18,851	18,880	18,911	18,942	18,966
Civilian labor force	11,086	11,331	11,400	11,443	11,398	11,475	11,522	11,542	11,548	11,554	11,631	11,672	11,783	11,764	11,745
Participation rate	60.8	61.0	61.2	61.3	61.0	61.3	61.5	61.5	61.4	61.4	61.7	61.8	62.3	62.1	61.9
Employed	9,355	9,189	9,220	9,172	9,102	9,159	9,127	9,142	9,276	9,253	9,209	9,270	9,352	9,469	9,398
Employment-population ratio[2]	51.3	49.4	49.5	49.2	48.7	48.9	48.7	48.7	49.4	49.2	48.8	49.1	49.5	50.0	49.6
Unemployed	1,731	2,142	2,180	2,271	2,296	2,316	2,395	2,400	2,271	2,302	2,423	2,402	2,432	2,295	2,347
Unemployment rate	15.6	18.9	19.1	19.8	20.1	202	20.8	20.8	19.7	19.9	20.8	20.6	20.6	19.5	20.0
Hispanic origin															
Civilian noninstitutional population[1]	9,310	9,400	9,689	9,464	9,474	9,355	9,301	9,328	9,368	9,551	9,665	9,747	9,738	9,640	9,690
Civilian labor force	5,972	5,983	6,045	5,961	5,973	5,923	5,898	5,981	5,992	6,074	6,206	6,167	6,253	6,079	6,124
Participation rate	64.1	63.6	62.4	63.0	63.0	63.3	63.4	64.1	64.0	63.6	64.2	63.3	64.2	63.1	63.2
Employed	5,348	5,158	5,162	5,097	5,075	5,012	4,998	5,053	5,042	5,088	5,304	5,318	5,379	5,331	5,333
Employment-population ratio[2]	57.4	54.9	53.3	53.9	53.6	53.6	53.7	54.2	53.8	53.3	54.9	54.6	55.2	55.3	55.0
Unemployed	624	825	883	864	898	911	900	929	950	986	902	849	874	748	790
Unemployment rate	10.4	13.8	14.6	14.5	15.0	15.4	15.3	15.5	15.8	16.2	14.5	13.8	14.0	12.3	12.9

[1] The population figures are not seasonally adjusted.
[2] Civilian employment as a percent of the civilian noninstitutional population.
c = corrected.

NOTE: Detail for the above race and Hispanic-origin groups will not sum to totals because data for the "other races" groups are not presented and Hispanics are included in both the white and black population groups.

4. Selected employment indicators, seasonally adjusted

[Numbers in thousands]

Selected categories	Annual average		1982					1983							
	1981	1982	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
CHARACTERISTIC															
Civilian employed, 16 years and over	100,397	99,526	99,683	99,543	99,176	99,136	99,093	99,103	99,063	99,103	99,458	99,557	100,786	101,285	101,563
Men	57,397	56,271	56,159	56,073	55,932	55,892	55,809	55,752	55,706	55,772	55,946	56,128	56,939	57,104	57,032
Women	43,000	43,256	43,524	43,471	43,244	43,244	43,284	43,350	43,357	43,331	43,512	43,428	43,847	44,181	44,531
Married men, spouse present	38,882	38,074	38,121	37,998	37,852	37,641	37,507	37,450	37,428	34,452	37,523	37,560	37,925	38,293	38,308
Married women, spouse present	23,915	24,053	24,235	24,159	24,081	23,985	24,155	24,205	24,070	24,171	24,371	24,229	24,335	24,640	24,972
Women who maintain families	4,998	5,099	5,208	5,118	5,107	5,025	4,985	5,038	5,050	5,097	4,944	4,942	5,016	5,088	5,104
MAJOR INDUSTRY AND CLASS OF WORKER															
Agriculture:															
Wage and salary workers	1,464	1,505	1,548	1,537	1,576	1,584	1,547	1,637	1,624	1,515	1,560	1,595	1,636	1,663	1,664
Self-employed workers	1,638	1,636	1,620	1,569	1,621	1,628	1,627	1,587	1,541	1,585	1,607	1,558	1,608	1,583	1,566
Unpaid family workers	266	261	255	254	229	241	224	231	223	260	c208	229	263	259	245
Nonagricultural industries:															
Wage and salary workers	89,543	88,462	88,576	88,562	88,064	87,936	87,976	87,813	87,794	87,912	88,187	88,395	89,354	89,765	89,995
Government	c15,689	15,516	15,562	15,681	15,436	15,514	15,477	15,386	15,501	15,452	15,518	15,523	15,498	15,615	15,697
Private industries	73,853	72,945	73,014	72,881	72,628	72,422	72,499	72,427	72,293	72,459	72,668	72,872	73,856	74,150	74,299
Private households	1,208	1,207	1,227	1,220	1,216	1,221	1,163	1,162	1,232	1,235	1,205	1,228	1,317	1,286	1,290
Other	72,645	71,738	71,787	71,661	71,412	71,201	71,336	71,265	71,061	71,225	71,463	71,644	72,539	72,864	73,009
Self-employed workers	7,097	7,262	7,338	7,422	7,332	7,349	7,335	7,465	7,385	7,453	7,528	7,408	7,493	7,598	7,658
Unpaid family workers	390	401	408	378	403	382	383	380	353	342	353	335	345	320	376
PERSONS AT WORK[1]															
Nonagricultural industries	91,377	90,552	90,486	90,884	90,232	90,238	90,219	90,903	90,207	90,271	92,267	90,941	90,539	92,253	91,986
Full-time schedules	74,339	72,245	72,045	71,723	71,394	71,442	71,499	71,786	71,564	71,878	73,594	72,975	72,978	74,004	73,495
Part time for economic reasons	4,499	5,852	5,820	6,495	6,903	6,411	6,425	6,845	6,481	6,202	6,082	5,928	5,729	5,636	5,789
Usually work full time	1,738	2,169	2,100	2,519	2,381	2,228	2,153	2,200	2,097	1,927	1,871	1,685	1,702	1,809	1,718
Usually work part time	2,761	3,683	3,720	3,976	4,022	4,183	4,272	4,645	4,384	4,275	c4,211	4,243	4,027	3,826	4,071
Part time for noneconomic reasons	12,539	12,455	12,621	12,666	12,435	12,385	12,295	12,271	12,162	12,191	12,592	12,038	11,833	12,614	12,701

[1] Excludes persons "with a job but not at work" during the survey period for such reasons as vacation, illness, or industrial disputes.

c = corrected.

5. Selected unemployment indicators, seasonally adjusted

[Unemployment rates]

Selected categories	Annual average		1982					1983							
	1981	1982	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
CHARACTERISTIC															
Total, all civilian workers	7.6	9.7	9.9	10.2	10.4	10.7	10.8	10.4	10.4	10.3	10.2	10.1	10.0	9.5	9.5
Both sexes, 16 to 19 years	19.6	23.2	23.8	23.8	24.1	24.2	24.5	22.7	22.2	23.5	23.4	23.0	23.6	22.8	23.0
Men, 20 years and over	6.3	8.8	9.0	9.6	9.8	10.0	10.1	9.6	9.9	9.6	9.8	9.6	9.0	8.8	8.8
Women, 20 years and over	6.8	8.3	8.3	8.4	8.7	9.0	9.2	9.0	8.9	8.8	8.4	8.5	8.6	7.9	8.0
White, total	6.7	8.6	8.7	9.1	9.3	9.6	9.7	9.1	9.2	9.0	8.9	8.9	8.6	8.2	8.2
Both sexes, 16 to 19 years	17.3	20.4	20.8	20.7	21.5	21.2	21.6	20.0	19.7	21.4	20.4	19.8	20.0	19.5	19.8
Men, 16 to 19 years	17.9	21.7	22.5	22.2	23.0	22.6	22.8	21.2	21.1	22.9	21.7	20.2	19.8	20.4	21.1
Women, 16 to 19 years	16.6	19.0	18.9	19.1	19.9	19.8	20.4	18.7	18.2	19.7	19.0	19.4	20.2	18.5	18.4
Men, 20 years and over	5.6	7.8	8.0	8.6	8.8	9.1	9.2	8.4	8.7	8.5	8.6	8.6	7.8	7.7	7.7
Women, 20 years and over	5.9	7.3	7.2	7.5	7.6	8.0	8.1	7.8	7.7	7.4	7.2	7.3	7.4	6.7	6.7
Black, total	15.6	18.9	19.1	19.8	2.1	20.2	20.8	20.8	19.7	19.9	20.8	20.6	20.6	19.5	20.0
Both sexes, 16 to 19 years	41.4	48.0	51.2	48.6	47.7	49.8	49.5	45.7	45.4	43.5	49.0	48.2	50.6	48.1	53.0
Men, 16 to 19 years	40.7	48.9	50.5	51.0	49.2	53.0	52.5	45.9	45.3	44.5	48.0	53.1	51.1	47.6	56.8
Women, 16 to 19 years	42.2	47.1	52.1	45.9	45.9	46.2	46.2	45.5	45.4	42.3	50.0	42.3	50.0	48.8	48.9
Men, 20 years and over	13.5	17.8	76.1	9.2	18.6	19.2	20.5	19.7	18.7	18.8	20.3	19.8	19.2	18.7	18.4
Women, 20 years and over	13.4	15.4	15.4	15.7	16.2	16.5	16.5	18.2	17.0	17.7	17.0	17.1	17.0	16.0	16.4
Hispanic origin, total	10.4	13.8	14.6	14.5	15.0	15.4	15.3	15.5	15.8	16.2	14.5	13.8	14.0	12.3	12.9
Married men, spouse present	4.3	6.5	6.8	7.2	7.5	7.6	7.8	7.1	7.2	7.1	7.1	7.0	6.6	6.1	6.3
Married women, spouse present	6.0	7.4	7.3	7.6	7.9	8.2	8.2	7.8	7.6	7.5	7.3	7.5	7.8	7.0	6.9
Women who maintain families	10.4	11.7	11.7	12.4	11.3	12.5	13.2	13.2	13.0	13.5	13.2	12.9	12.8	11.6	11.6
Full-time workers	7.3	9.6	9.7	10.2	10.5	10.6	10.8	10.3	10.4	10.3	10.2	9.9	9.7	9.4	9.4
Part-time workers	9.4	10.5	10.4	10.6	10.3	11.3	11.1	10.6	10.1	10.5	10.6	11.0	12.1	10.2	10.1
Unemployed 15 weeks and over	2.1	3.2	3.3	3.5	3.8	4.1	4.3	4.2	4.2	4.2	3.9	4.1	4.1	3.9	3.6
Labor force time lost[1]	8.5	11.0	10.9	11.7	12.0	12.4	12.7	11.7	12.0	11.8	11.4	11.5	10.8	10.4	10.6
INDUSTRY															
Nonagricultural private wage and salary workers	7.7	10.1	10.2	11.0	11.0	11.4	11.6	10.8	10.8	10.8	10.5	10.5	10.0	9.6	9.8
Mining	6.0	13.4	16.0	18.5	17.9	18.1	18.1	17.1	18.4	18.6	20.3	22.7	18.2	16.6	14.8
Construction	15.6	20.0	20.4	22.3	22.3	21.8	22.0	20.0	19.7	20.3	20.3	20.4	18.1	18.0	18.1
Manufacturing	8.3	12.3	12.4	14.1	14.1	14.8	14.8	13.0	13.3	12.8	12.4	12.3	11.5	10.5	11.2
Durable goods	8.2	13.3	13.3	16.0	16.0	17.0	17.1	14.7	14.7	14.1	13.5	13.5	12.2	11.2	11.6
Nondurable goods	8.4	10.8	11.0	11.2	11.2	11.4	11.4	10.5	11.4	11.1	10.8	10.5	10.4	9.6	10.6
Transportation and public utilities	5.2	6.8	7.1	7.9	7.9	8.3	8.0	7.8	8.0	7.8	7.7	7.0	7.8	7.0	8.0
Wholesale and retail trade	8.1	10.0	10.0	10.4	10.4	10.6	11.0	10.8	10.9	11.2	10.4	10.1	10.2	9.7	9.8
Finance and service industries	5.9	6.9	7.0	7.1	7.1	7.7	7.9	7.6	7.3	7.2	7.3	7.5	7.2	7.3	7.2
Government workers	4.7	4.9	4.7	4.9	4.9	5.1	5.1	5.7	6.0	5.9	6.1	5.8	5.1	5.5	5.0
Agricultural wage and salary workers	12.1	14.7	14.2	13.3	13.3	15.6	16.5	16.0	16.4	16.3	17.2	17.0	17.0	14.2	14.6

[1] Aggregate hours lost by the unemployed and persons on part time for economic reasons as a percent of potentially available labor force hours.

6. Unemployment rates by sex and age, seasonally adjusted

[Civilian workers]

Sex and age	Annual average		1982					1983							
	1981	1982	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
Total, 16 years and over	7.6	9.7	9.9	10.2	10.5	10.7	10.8	10.4	10.4	10.3	10.2	10.1	10.0	9.5	9.5
16 to 24 years	14.9	17.8	18.2	18.3	18.7	19.0	18.9	18.3	18.3	18.1	18.1	18.1	17.6	16.8	17.4
16 to 19 years	19.6	23.2	23.8	23.8	24.1	24.2	24.5	22.7	22.2	23.5	23.4	23.0	23.6	22.8	23.0
16 to 17 years	21.4	24.9	25.8	26.5	26.1	26.3	27.4	24.1	23.4	25.1	26.3	26.2	25.8	25.3	24.7
18 to 19 years	18.4	22.1	22.5	22.0	22.9	22.8	22.7	21.7	21.5	22.7	21.8	21.1	22.4	21.1	22.0
20 to 24 years	12.3	14.9	15.3	15.3	15.8	16.3	16.0	16.1	16.3	15.4	15.4	15.6	14.4	13.8	14.5
25 years and over	5.4	7.4	7.5	7.9	8.1	8.3	8.6	8.1	8.2	8.1	8.0	7.9	7.9	7.4	7.3
25 to 54 years	5.8	7.9	8.0	8.6	8.7	8.9	9.1	8.7	8.7	8.7	8.5	8.5	8.3	7.8	7.8
55 years and over	3.6	5.0	5.2	5.2	5.5	5.7	5.8	5.4	5.4	5.4	5.6	5.3	5.6	5.3	5.1
Men, 16 years and over	7.4	9.9	10.2	10.7	10.9	11.1	11.2	10.6	10.8	10.7	10.7	10.6	10.0	9.8	9.9
16 to 24 years	15.7	19.1	19.5	20.0	20.2	20.6	20.5	19.7	19.8	19.5	19.4	19.7	18.4	18.4	18.8
16 to 19 years	20.1	24.4	25.1	25.4	25.6	25.7	25.8	23.9	23.6	25.3	24.4	23.9	23.7	23.8	24.7
16 to 17 years	22.0	26.4	27.4	29.0	28.8	28.2	29.0	24.4	23.6	26.0	27.0	27.4	25.4	27.9	26.2
18 to 19 years	18.8	23.1	23.4	23.0	23.4	24.1	24.0	23.5	23.4	24.8	22.8	22.0	22.9	21.2	23.7
20 to 24 years	13.2	16.4	16.6	17.3	17.4	18.0	17.8	17.6	17.8	16.6	17.0	17.6	15.7	15.7	15.9
25 years and over	5.1	7.5	7.7	8.2	8.5	8.6	8.8	8.2	8.5	8.4	8.5	8.2	7.8	7.6	7.5
25 to 54 years	5.5	8.0	8.2	9.0	9.1	9.2	9.4	8.7	9.1	9.0	8.9	8.8	8.4	8.1	8.0
55 years and over	3.5	5.1	5.5	5.5	6.0	6.2	6.3	5.8	5.7	5.8	6.3	5.8	5.4	5.4	5.3
Women, 16 years and over	7.9	9.4	9.5	9.6	9.9	10.2	10.3	10.0	9.8	9.8	9.6	9.5	9.9	9.0	9.1
16 to 24 years	14.0	16.2	16.8	16.3	17.0	17.2	17.1	16.7	16.6	16.6	16.5	16.2	16.6	14.9	15.9
16 to 19 years	19.0	21.9	22.5	22.1	22.5	22.6	23.0	21.5	20.7	21.5	22.4	21.9	23.4	21.6	21.2
16 to 17 years	20.7	23.2	23.9	23.8	22.9	24.2	25.6	23.7	23.2	24.2	25.5	24.7	26.2	22.3	23.1
18 to 19 years	17.9	21.0	21.5	20.9	22.3	21.4	21.3	19.8	19.3	20.5	20.7	20.2	21.9	21.0	20.3
20 to 24 years	11.2	13.2	13.7	13.1	14.0	14.4	14.0	14.2	14.5	14.1	13.5	13.3	12.9	11.5	13.0
25 years and over	5.9	7.3	7.1	7.5	7.6	7.9	8.2	7.9	7.7	7.7	7.4	7.6	7.9	7.2	7.0
25 to 54 years	6.3	7.7	7.7	8.0	8.2	8.5	8.8	8.7	8.2	8.3	7.9	8.2	8.2	7.6	7.5
55 years and over	3.8	4.8	4.8	4.8	4.8	4.9	5.1	4.8	4.9	4.7	4.5	4.6	5.8	5.3	4.7

7. Unemployed persons by reason for unemployment, seasonally adjusted

[Numbers in thousands]

Reason for unemployment	Annual average		1982					1983							
	1981	1982	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
Job losers	4,257	6,258	6,446	6,979	7,325	7,369	7,295	6,704	6,809	6,823	6,750	6,766	6,513	6,193	6,202
On layoff	1,430	2,127	2,218	2,625	2,519	2,531	2,468	2,131	2,024	1,945	1,948	1,943	1,822	1,719	1,658
Other job losers	2,837	4,141	4,228	4,354	4,806	4,838	4,827	4,573	4,784	4,878	4,803	4,823	4,691	4,474	4,545
Job leavers	923	840	814	786	803	794	826	839	848	901	815	801	782	738	767
Reentrants	2,102	2,384	2,440	2,437	2,322	2,546	2,529	2,623	2,491	2,426	2,488	2,365	2,425	2,429	2,524
New entrants	981	1,185	1,304	1,303	1,296	1,244	1,288	1,174	1,161	1,155	1,245	1,251	1,440	1,225	1,214
PERCENT DISTRIBUTION															
Total unemployed	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Job losers	51.6	58.7	58.6	60.7	62.4	61.5	60.6	59.1	60.2	60.4	59.7	60.5	58.4	58.5	57.9
On layoff	17.3	19.9	20.2	22.8	21.4	21.2	20.5	18.8	17.9	17.2	17.2	17.4	16.3	16.2	15.5
Other job losers	34.3	38.8	38.4	37.8	40.9	40.5	40.1	40.3	42.3	43.1	42.5	43.1	42.0	42.3	42.4
Job leavers	11.2	7.9	7.4	6.8	6.8	6.6	6.9	7.4	7.5	8.0	7.2	7.2	7.0	7.0	7.2
Reentrants	25.4	22.3	22.2	21.2	19.8	21.3	21.8	23.1	22.0	21.5	22.0	21.1	21.7	22.9	23.6
New entrants	11.9	11.1	11.9	11.3	11.0	10.4	10.7	10.4	10.3	10.2	11.0	11.2	12.9	11.6	11.3
PERCENT OF CIVILIAN LABOR FORCE															
Job losers	3.9	5.7	5.8	6.3	6.6	6.6	6.6	6.1	6.2	6.2	6.1	6.1	5.8	5.5	5.5
Job leavers	.8	.8	.7	.7	.7	.7	.7	.8	.8	.8	.7	.7	.7	.7	.7
Reentrants	1.9	2.2	2.2	2.2	2.1	2.3	2.4	2.4	2.3	2.2	2.2	2.1	2.2	2.2	2.2
New entrants	.9	1.1	1.2	1.2	1.2	1.1	1.2	1.1	1.1	1.0	1.1	1.1	1.3	1.1	1.1

8. Duration of unemployment, seasonally adjusted

[Numbers in thousands]

Weeks of unemployment	Annual average		1982					1983							
	1981	1982	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
Less than 5 weeks	3,449	3,883	3,933	4,004	3,930	3,963	4,019	3,536	3,731	3,440	3,547	3,519	3,655	3,498	3,660
5 to 14 weeks	2,539	3,311	3,346	3,549	3,511	3,549	3,460	3,328	3,106	3,140	3,154	2,979	2,915	2,794	3,026
15 weeks and over	2,285	3,485	3,637	3,856	4,167	4,524	4,732	4,634	4,618	4,615	4,356	4,517	4,589	4,417	4,020
15 to 26 weeks	1,122	1,708	1,808	1,830	1,951	2,191	2,125	1,928	1,928	1,875	1,662	1,731	1,638	1,830	1,573
27 weeks and over	1,162	1,776	1,829	2,026	2,216	2,333	2,607	2,706	2,689	2,740	2,694	2,786	2,951	2,587	2,447
Mean duration in weeks	13.7	15.6	16.1	16.6	17.1	17.3	18.0	19.4	19.0	19.1	19.0	20.4	22.0	21.7	19.9
Median duration in weeks	6.9	8.7	8.3	9.4	9.6	10.0	10.1	11.5	9.6	10.3	11.3	12.3	11.8	9.9	8.9

EMPLOYMENT, HOURS, AND EARNINGS DATA FROM ESTABLISHMENT SURVEYS

EMPLOYMENT, HOURS, AND EARNINGS DATA in this section are compiled from payroll records reported monthly on a voluntary basis to the Bureau of Labor Statistics and its cooperating State agencies by 189,000 establishments representing all industries except agriculture. In most industries, the sampling probabilities are based on the size of the establishment; most large establishments are therefore in the sample. (An establishment is not necessarily a firm; it may be a branch plant, for example, or warehouse.) Self-employed persons and others not on a regular civilian payroll are outside the scope of the survey because they are excluded from establishment records. This largely accounts for the difference in employment figures between the household and establishment surveys.

Definitions

Employed persons are all persons who received pay (including holiday and sick pay) for any part of the payroll period including the 12th of the month. Persons holding more than one job (about 5 percent of all persons in the labor force) are counted in each establishment which reports them.

Production workers in manufacturing include blue-collar worker supervisors and all nonsupervisory workers closely associated with production operations. Those workers mentioned in tables 12–17 include production workers in manufacturing and mining; construction workers in construction; and nonsupervisory workers in transportation and public utilities; in wholesale and retail trade; in finance, insurance, and real estate; and in services industries. These groups account for about four-fifths of the total employment on private nonagricultural payrolls.

Earnings are the payments production or nonsupervisory workers receive during the survey period, including premium pay for overtime or late-shift work but excluding irregular bonuses and other special payments. **Real earnings** are earnings adjusted to reflect the effects of changes in consumer prices. The deflator for this series is derived from the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W). The **Hourly Earnings Index** is calculated from average hourly earnings data adjusted to exclude the effects of two types of changes that are unrelated to underlying wage-rate developments: fluctuations in overtime premiums in manufacturing (the only sector for which overtime data are available) and the effects of changes and seasonal factors in the proportion of workers in high-wage and low-wage industries.

Hours represent the average weekly hours of production or nonsupervisory workers for which pay was received and are different from standard or scheduled hours. **Overtime hours** represent the portion of gross average weekly hours which were in excess of regular hours and for which overtime premiums were paid.

The Diffusion Index, introduced in table 17 of the May issue, represents the percent of 186 nonagricultural industries in which employment was rising over the indicated period. One-half of the industries with unchanged employment are counted as rising. In line with Bureau practice, data for the 3-, 6-, and 9-month spans are seasonally adjusted, while that for the 12-month span is unadjusted. The diffusion index is useful for measuring the dispersion of economic gains or losses and is also an economic indicator.

Notes on the data

Establishment data collected by the Bureau of Labor Statistics are periodically adjusted to comprehensive counts of employment (called "benchmarks"). The latest complete adjustment was made with the release of May 1983 data, published in the July 1983 issue of the *Review*. Consequently, data published in the *Review* prior to that issue are not necessarily comparable to current data. Earlier comparable unadjusted and seasonally adjusted data are published in a *Supplement to Employment and Earnings* (unadjusted data from April 1977 through February 1983 and seasonally adjusted data from January 1974 through February 1983) and in *Employment and Earnings, United States, 1909–78*, BLS Bulletin 1312–11 (for prior periods).

A comprehensive discussion of the differences between household and establishment data on employment appears in Gloria P. Green, "Comparing employment estimates from household and payroll surveys," *Monthly Labor Review,* December 1969, pp. 9–20. See also *BLS Handbook of Methods for Surveys and Studies,* Bulletin 1910 (Bureau of Labor Statistics, 1976).

9. Employment by industry, selected years, 1950–82

[Nonagricultural payroll data, in thousands]

| Year | Total | Private sector | Goods-producing | | | | Service-producing | | | | | | | | | |
| | | | Total | Mining | Construction | Manufacturing | Total | Transportation and public utilities | Wholesale and retail trade | | | Finance, insurance, and real estate | Services | Government | | |
									Total	Wholesale trade	Retail trade			Total	Federal	State and local
1950	45,197	39,170	18,506	901	2,364	15,241	26,691	4,034	9,386	2,635	6,751	1,888	5,357	6,026	1,928	4,098
1955	50,641	43,727	20,513	792	2,839	16,882	30,128	4,141	10,535	2,926	7,610	2,298	6,240	6,914	2,187	4,727
1960[1]	54,189	45,836	20,434	712	2,926	16,796	33,755	4,004	11,391	3,143	8,248	2,629	7,378	8,353	2,270	6,083
1964	58,283	48,686	21,005	634	3,097	17,274	37,278	3,951	12,160	3,337	8,823	2,911	8,660	9,596	2,348	7,248
1965	60,765	50,589	21,926	632	3,232	18,062	38,839	4,036	12,716	3,466	9,250	2,977	9,036	10,074	2,378	7,696
1966	63,901	53,116	23,158	627	3,317	19,214	40,743	4,158	13,245	3,597	9,648	3,058	9,498	10,784	2,564	8,220
1967	65,803	54,413	23,308	613	3,248	19,447	42,495	4,268	13,606	3,689	9,917	3,185	10,045	11,391	2,719	8,672
1968	67,897	56,058	23,737	606	3,350	19,781	44,160	4,318	14,099	3,779	10,320	3,337	10,567	11,839	2,737	9,102
1969	70,384	58,189	24,361	619	3,575	20,167	46,023	4,442	14,706	3,907	10,798	3,512	11,169	12,195	2,758	9,437
1970	70,880	58,325	23,578	623	3,588	19,367	47,302	4,515	15,040	3,993	11,047	3,645	11,548	12,554	2,731	9,823
1971	71,214	58,331	22,935	609	3,704	18,623	48,278	4,476	15,352	4,001	11,351	3,772	11,797	12,881	2,696	10,185
1972	73,675	60,341	23,668	628	3,889	19,151	50,007	4,541	15,949	4,113	11,836	3,908	12,276	13,334	2,684	10,649
1973	76,790	63,058	24,893	642	4,097	20,154	51,897	4,656	16,607	4,277	12,329	4,045	12,857	13,732	2,663	11,068
1974	78,265	64,095	24,794	697	4,020	20,077	53,471	4,725	16,987	4,433	12,554	4,148	13,441	14,170	2,724	11,446
1975	76,945	62,259	22,600	752	3,525	18,323	54,345	4,542	17,060	4,415	12,645	4,165	13,892	14,686	2,748	11,937
1976	79,382	64,511	23,352	779	3,576	18,997	56,030	4,582	17,755	4,546	13,209	4,271	14,551	14,871	2,733	12,138
1977	82,471	67,344	24,346	813	3,851	19,582	58,125	4,713	18,516	4,708	13,808	4,467	15,303	15,127	2,727	12,399
1978	86,697	71,026	25,585	851	4,229	20,505	61,113	4,923	19,542	4,969	14,573	4,724	16,252	15,672	2,753	12,919
1979	89,823	73,876	26,461	958	4,463	21,040	63,363	5,136	20,192	5,204	14,989	4,975	17,112	15,947	2,773	13,147
1980	90,406	74,166	25,658	1,027	4,346	20,285	64,748	5,146	20,310	5,275	15,035	5,180	17,890	16,241	2,866	13,375
1981	91,156	75,126	25,497	1,139	4,188	20,170	65,659	5,165	20,547	5,358	15,189	5,298	18,619	16,031	2,772	13,259
1982	89,596	73,793	23,907	1,143	3,911	18,853	65,689	5,081	20,401	5,280	15,122	5,340	19,064	15,803	2,739	13,064

[1] Data include Alaska and Hawaii beginning in 1959.

10. Employment by State

[Nonagricultural payroll data, in thousands]

State	July 1982	June 1983	July 1983[p]	State	July 1982	June 1983	July 1983[p]
Alabama	1,316.2	1,319.4	1,319.3	Montana	272.0	273.7	266.6
Alaska	207.2	217.0	227.1	Nebraska	601.4	596.3	592.3
Arizona	1,002.8	1,027.1	1,019.0	Nevada	405.9	417.2	417.1
Arkansas	710.6	725.5	720.9	New Hampshire	399.4	401.3	400.7
California	9,789.4	9,924.9	9,846.9	New Jersey	3,126.4	3,132.8	3,134.3
Colorado	1,303.4	1,343.3	1,345.1	New Mexico	471.7	481.9	481.2
Connecticut	1,416.9	1,440.1	1,419.8	New York	7,251.6	7,264.5	7,201.1
Delaware	264.9	263.7	265.1	North Carolina	2,288.2	2,368.6	2,320.4
District of Columbia	612.2	597.9	610.2	North Dakota	252.8	257.2	254.2
Florida	3,693.9	3,849.4	3,801.2	Ohio	4,131.3	4,127.4	4,089.2
Georgia	2,206.1	2,254.0	2,236.2	Oklahoma	1,230.2	1,206.2	1,206.1
Hawaii	405.1	399.7	401.6	Oregon	956.9	969.3	942.2
Idaho	312.9	319.4	315.3	Pennsylvania	4,537.2	4,511.9	4,468.1
Illinois	4,604.8	4,529.4	4,537.9	Rhode Island	385.6	395.8	388.3
Indiana	1,997.8	1,991.0	1,991.7	South Carolina	1,148.7	1,180.6	1,165.9
Iowa	1,014.9	1,012.6	999.3	South Dakota	231.3	239.0	234.4
Kansas	904.5	912.8	902.1	Tennessee	1,681.8	1,680.1	1,671.4
Kentucky	1,139.9	1,173.3	1,149.8	Texas	6,276.4	6,162.9	6,164.9
Louisiana	1,607.6	1,585.0	1,583.5	Utah	557.0	561.4	558.8
Maine	415.7	418.5	418.0	Vermont	203.2	204.0	204.3
Maryland	1,681.9	1,688.1	1,685.7	Virginia	2,135.7	2,180.3	2,165.0
Massachusetts	2,598.2	2,636.5	2,591.0	Washington	1,558.8	1,600.4	1,578.7
Michigan	3,169.4	3,192.3	3,178.5	West Virginia	611.9	584.4	590.4
Minnesota	1,699.4	1,720.8	1,699.8	Wisconsin	1,868.7	1,867.7	1,858.2
Mississippi	787.9	790.3	783.0	Wyoming	217.9	218.0	214.4
Missouri	1,913.7	1,926.8	1,905.2				
				Virgin Islands	36.7	35.7	36.2

p = preliminary.

11. Employment by industry division and major manufacturing group, seasonally adjusted

[Nonagricultural payroll data, in thousands]

Industry division and group	Annual average		1982					1983						July[p]	Aug.[p]
	1981	1982	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July[p]	Aug.[p]
TOTAL	91,156	89,596	89,264	89,235	88,938	88,785	88,665	88,885	88,746	88,814	89,101	89,421	89,844	90,202	89,791
PRIVATE SECTOR	75,126	73,793	73,579	73,451	73,158	73,013	72,907	73,132	73,004	73,090	73,377	73,677	74,123	74,476	74,047
GOODS-PRODUCING	25,497	23,907	23,672	23,530	23,287	23,131	23,061	23,186	23,049	23,030	23,159	23,347	23,518	23,728	23,815
Mining	1,139	1,143	1,113	1,100	1,082	1,066	1,053	1,037	1,014	1,006	997	994	1,003	1,015	1,021
Construction	4,188	3,911	3,893	3,875	3,847	3,843	3,815	3,905	3,790	3,757	3,786	3,860	3,933	3,971	4,024
Manufacturing	20.170	18,853	18,666	18,555	18,358	18,222	18,193	18,244	18,245	18,267	18,376	18,493	18,582	18,742	18,770
Production workers	14,020	12,790	12,634	12,542	12,368	12,252	12,241	12,291	12,303	12,323	12,435	12,531	12,615	12,765	12,795
Durable goods	12,109	11,100	10,961	10,862	10,685	10,577	10,559	10,594	10,608	10,617	10,689	10,788	10,844	10,962	10,994
Production workers	8,294	7,350	7,234	7,150	6,992	6,900	6,892	6,931	6,949	6,961	7,035	7,115	7,169	7,277	7,307
Lumber and wood products	666	603	601	603	605	608	614	625	631	638	651	662	679	688	698
Furniture and fixtures	464	433	433	428	426	427	429	430	427	433	440	446	450	458	459
Stone, clay, and glass products	638	578	573	570	565	559	554	557	557	559	565	570	573	576	582
Primary metal industries	1,122	922	890	869	840	823	816	817	810	816	820	828	830	840	839
Fabricated metal products	1,590	1,435	1,416	1,402	1,378	1,362	1,359	1,364	1,364	1,362	1,369	1,379	1,384	1,393	1,416
Machinery, except electrical	2,498	2,267	2,213	2,184	2,122	2,088	2,066	2,048	2,042	2,030	2,031	2,064	2,066	2,093	2,100
Electric and electronic equipment	2,094	2,016	2,008	1,992	1,976	1,975	1,957	1,974	1,981	1,988	1,999	2,010	2,030	2,051	2,030
Transportation equipment	1,898	1,744	1,773	1,724	1,691	1,661	1,696	1,710	1,729	1,723	1,743	1,757	1,762	1,793	1,794
Instruments and related products	730	716	712	710	705	700	695	695	693	691	690	689	687	687	691
Miscellaneous manufacturing	408	386	382	380	377	374	373	374	374	377	381	383	383	383	385
Nondurable goods	8,061	7,753	7,705	7,693	7,673	7,645	7,634	7,650	7,637	7,650	7,687	7,705	7,738	7,780	7,776
Production workers	5,727	5,440	5,400	5,392	5,376	5,352	5,349	5,360	5,354	5,362	5,400	5,416	5,446	5,488	5,488
Food and kindred products	1,671	1,638	1,636	1,633	1,636	1,632	1,626	1,626	1,620	1,619	1,633	1,632	1,643	1,641	1,618
Tobacco manufactures	70	68	67	66	66	63	69	69	67	67	66	66	65	65	61
Textile mill products	823	750	736	734	733	727	727	726	726	730	733	736	745	747	754
Apparel and other textile products	1,244	1,164	1,151	1,149	1,148	1,141	1,140	1,150	1,148	1,143	1,149	1,153	1,159	1,181	1,178
Paper and allied products	689	662	657	659	653	654	653	653	652	652	654	656	657	659	661
Printing and publishing	1,266	1,269	1,267	1,266	1,265	1,263	1,263	1,266	1,265	1,269	1,274	1,276	1,281	1,285	1,288
Chemicals and allied products	1,109	1,079	1,074	1,070	1,066	1,064	1,059	1,057	1,056	1,056	1,058	1,058	1,056	1,059	1,059
Petroleum and coal products	214	201	200	202	201	200	199	200	199	199	199	198	198	197	196
Rubber and miscellaneous plastics products	737	701	698	696	689	685	685	688	691	699	707	716	721	732	741
Leather and leather products	238	221	219	218	216	216	213	215	214	216	214	214	213	214	220
SERVICE-PRODUCING	65,659	65,689	65,592	65,705	65,651	65,654	65,604	65,699	65,697	65,784	65,942	66,074	66,326	66,474	65,976
Transportation and public utilities	5,165	5,081	5,056	5,054	5,033	5,019	5,008	4,979	4,966	4,963	4,988	4,993	4,992	4,986	4,331
Wholesale and retail trade	20,547	20,401	20,410	20,380	20,344	20,320	20,256	20,355	20,343	20,350	20,329	20,356	20,494	20,528	20,544
Wholesale trade	5,358	5,280	5,265	5,252	5,237	5,212	5,192	5,185	5,181	5,176	5,180	5,197	5,222	5,233	5,247
Retail trade	15,189	15,122	15,145	15,128	15,107	15,108	15,064	15,170	15,162	15,174	15,149	15,159	15,272	15,295	15,297
Finance, insurance, and real estate	5,298	5,340	5,344	5,351	5,350	5,356	5,367	5,374	5,384	5,391	5,423	5,435	5,451	5,463	5,480
Services	18,619	19,064	19,097	19,136	19,144	19,187	19,215	19,238	19,262	19,356	19,478	19,546	19,668	19,771	19,877
Government	16,031	15,803	15,685	15,784	15,780	15,772	15,758	15,753	15,742	15,724	15,724	15,744	15,721	15,726	15,744
Federal	2,772	2,739	2,739	2,735	2,742	2,746	2,747	2,748	2,742	2,742	2,749	2,756	2,742	2,737	2,733
State and local	13,259	13,064	12,946	13,049	13,038	13,026	13,011	13,005	13,000	12,982	12,975	12,988	12,979	12,989	13,011

p = preliminary.

12. Hours and earnings, by industry division, selected years, 1950–82

[Gross averages, production or nonsupervisory workers on nonagricultural payrolls]

Year	Average weekly earnings	Average weekly hours	Average hourly earnings	Average weekly earnings	Average weekly hours	Average hourly earnings	Average weekly earnings	Average weekly hours	Average hourly earnings	Average weekly earnings	Average weekly hours	Average hourly earnings
	Private sector			Mining			Construction			Manufacturing		
1950	$53.13	39.8	$1.34	$67.16	37.9	$1.77	$69.68	37.4	$1.86	$58.32	40.5	$1.44
1955	67.72	39.6	1.71	89.54	40.7	2.20	90.90	37.1	2.45	75.30	40.7	1.85
1960[1]	80.67	38.6	2.09	105.04	40.4	2.60	112.57	36.7	3.07	89.72	39.7	2.26
1964	91.33	38.7	2.36	117.74	41.9	2.81	132.06	37.2	3.55	102.97	40.7	2.53
1965	95.45	38.8	2.46	123.52	42.3	2.92	138.38	37.4	3.70	107.53	41.2	2.61
1966	98.82	38.6	2.56	130.24	42.7	3.05	146.26	37.6	3.89	112.19	41.4	2.71
1967	101.84	38.0	2.68	135.89	42.6	3.19	154.95	37.7	4.11	114.49	40.6	2.82
1968	107.73	37.8	2.85	142.71	42.6	3.35	164.49	37.3	4.41	122.51	40.7	3.01
1969	114.61	37.7	3.04	154.80	43.0	3.60	181.54	37.9	4.79	129.51	40.6	3.19
1970	119.83	37.1	3.23	164.40	42.7	3.85	195.45	37.3	5.24	133.33	39.8	3.35
1971	127.31	36.9	3.45	172.14	42.4	4.06	211.67	37.2	5.69	142.44	39.9	3.57
1972	136.90	37.0	3.70	189.14	42.6	4.44	221.19	36.5	6.06	154.71	40.5	3.82
1973	145.39	36.9	3.94	201.40	42.4	4.75	235.89	36.8	6.41	166.46	40.7	4.09
1974	154.76	36.5	4.24	219.14	41.9	5.23	249.25	36.6	6.81	176.80	40.0	4.42
1975	163.53	36.1	4.53	249.31	41.9	5.95	266.08	36.4	7.31	190.79	39.5	4.83
1976	175.45	36.1	4.86	273.90	42.4	6.46	283.73	36.8	7.71	209.32	40.1	5.22
1977	189.00	36.0	5.25	301.20	43.4	6.94	295.65	36.5	8.10	228.90	40.3	5.68
1978	203.70	35.8	5.69	332.88	43.4	7.67	318.69	36.8	8.66	249.27	40.4	6.17
1979	219.91	35.7	6.16	365.07	43.0	8.49	342.99	37.0	9.27	269.34	40.2	6.70
1980	235.10	35.3	6.66	397.06	43.3	9.17	367.78	37.0	9.94	288.62	39.7	7.27
1981	255.20	35.2	7.25	439.75	43.7	10.04	299.26	36.9	10.82	318.00	39.8	7.99
1982	266.92	34.8	7.67	459.23	42.6	10.78	426.45	36.7	11.62	330.65	38.9	8.50
	Transportation and public utilities			Wholesale and retail trade			Finance, insurance, and real estate			Services		
1950	......	......	......	$44.55	40.5	$1.10	$50.52	37.7	$1.34	......	......	......
1955	......	......	......	55.16	39.4	1.40	63.92	37.6	1.70	......	......	......
1960[1]	......	......	......	66.01	38.6	1.71	75.14	37.2	2.02	......	......	......
1964	$118.78	41.1	$2.89	74.66	37.9	1.97	85.79	37.3	2.30	$70.03	36.1	$1.94
1965	125.14	41.3	3.03	76.91	37.7	2.04	88.91	37.2	2.39	73.60	35.9	2.05
1966	128.13	41.2	3.11	79.39	37.1	2.14	92.13	37.3	2.47	77.04	35.5	2.17
1967	130.82	40.5	3.23	82.35	36.6	2.25	95.72	37.1	2.58	80.38	35.1	2.29
1968	138.85	40.6	3.42	87.00	36.1	2.41	101.75	37.0	2.75	83.97	34.7	2.42
1969	147.74	40.7	3.63	91.39	35.7	2.56	108.70	37.1	2.93	90.57	34.7	2.61
1970	155.93	40.5	3.85	96.02	35.3	2.72	112.67	36.7	3.07	96.66	34.4	2.81
1971	168.82	40.1	4.21	101.09	35.1	2.88	117.85	36.6	3.22	103.06	33.9	3.04
1972	187.86	40.4	4.65	106.45	34.9	3.05	122.98	36.6	3.36	110.85	33.9	3.27
1973	203.31	40.5	5.02	111.76	34.6	3.23	129.20	36.6	3.53	117.29	33.8	3.47
1974	217.48	40.2	5.41	119.02	34.2	3.48	137.61	36.5	3.77	126.00	33.6	3.75
1975	233.44	39.7	5.88	126.45	33.9	3.73	148.19	36.5	4.06	134.67	33.5	4.02
1976	256.71	39.8	6.45	133.79	33.7	3.97	155.43	36.4	4.27	143.52	33.3	4.31
1977	278.90	39.9	6.99	142.52	33.3	4.28	165.26	36.4	4.54	153.45	33.0	4.65
1978	302.80	40.0	7.57	153.64	32.9	4.67	178.00	36.4	4.89	163.67	32.8	4.99
1979	325.58	39.9	8.16	164.96	32.6	5.06	190.77	36.2	5.27	175.27	32.7	5.36
1980	351.25	39.6	8.87	176.46	32.2	5.48	209.60	36.2	5.79	190.71	32.6	5.85
1981	382.18	39.4	9.70	190.62	32.2	5.92	229.05	36.3	6.31	208.97	32.6	6.41
1982	401.70	39.0	10.30	198.10	31.9	6.21	245.44	36.2	6.78	224.94	32.6	6.90

[1] Data include Alaska and Hawaii beginning in 1959.

13. Weekly hours, by industry division and major manufacturing group, seasonally adjusted

[Gross averages, production or nonsupervisory workers on private nonagricultural payrolls]

Industry division and group	Annual average		1982					1983							
	1981	1982	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July[p]	Aug.[p]
PRIVATE SECTOR	35.2	34.8	34.8	34.8	34.7	34.7	34.8	35.1	34.5	34.8	34.9	35.1	35.1	35.0	35.0
MANUFACTURING	39.8	38.9	39.0	38.8	38.9	39.0	39.0	39.7	39.2	39.5	40.1	40.0	40.1	40.2	40.3
Overtime hours	2.8	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.6	2.9	2.7	2.9	3.0	3.2
Durable goods	40.2	39.3	39.4	39.1	39.2	39.3	39.3	40.1	39.7	39.9	40.5	40.4	40.6	40.8	40.9
Overtime hours	2.8	2.2	2.2	2.1	2.1	2.1	2.2	2.2	2.3	2.5	2.8	2.6	2.8	3.0	3.3
Lumber and wood products	38.7	38.0	38.2	38.4	38.1	38.7	38.8	40.5	39.5	39.5	40.0	39.8	40.0	39.9	39.8
Furniture and fixtures	38.4	37.2	37.8	37.5	37.5	37.6	37.8	38.6	37.9	38.3	39.3	39.2	39.6	39.8	39.4
Stone, clay, and glass products	40.6	40.0	40.2	40.2	40.2	40.2	40.1	41.4	40.5	40.6	41.0	41.2	41.6	41.7	41.7
Primary metal industries	40.5	38.6	38.6	37.8	38.2	38.3	38.8	38.9	39.1	39.4	39.9	40.3	40.3	40.8	41.2
Fabricated metal products	40.3	39.2	39.2	38.9	39.0	39.2	39.2	39.9	39.6	39.7	40.5	40.4	40.5	40.7	40.8
Machinery, except electrical	40.9	39.7	39.4	39.2	39.3	39.3	39.3	39.6	39.4	39.7	40.2	40.0	40.4	40.8	41.0
Electric and electronic equipment	40.0	39.3	39.3	39.0	39.2	39.3	39.4	39.9	39.5	39.8	40.4	40.3	40.5	40.8	40.8
Transportation equipment	40.9	40.5	40.0	40.1	40.4	40.9	40.1	41.6	41.2	41.7	42.3	41.6	41.9	41.9	42.3
Instruments and related products	40.4	39.8	40.0	39.9	39.6	39.4	39.7	40.4	39.7	40.0	40.5	40.4	40.1	40.6	40.3
Nondurable goods	39.1	38.4	38.5	38.6	38.5	38.6	38.6	39.1	38.5	39.0	39.5	39.4	39.6	39.5	39.4
Overtime hours	2.8	2.5	2.5	2.6	2.6	2.5	2.5	2.6	2.6	2.7	3.0	2.9	3.0	3.0	3.1
Food and kindred products	39.7	39.4	39.2	39.4	39.5	39.4	39.1	39.3	39.0	39.2	39.6	39.4	39.8	39.4	39.4
Textile mill products	39.6	37.5	38.1	38.1	38.3	38.8	38.9	39.7	39.0	39.6	40.6	40.4	40.7	40.6	40.5
Apparel and other textile products	35.7	34.7	35.0	35.1	35.1	35.0	35.1	36.6	35.2	35.6	36.2	36.1	36.1	35.8	36.0
Paper and allied products	42.5	41.8	41.7	41.6	41.7	41.7	41.7	41.8	41.4	42.1	42.4	42.7	42.8	42.8	42.6
Printing and publishing	37.3	37.1	36.9	37.0	37.1	37.1	37.1	37.5	37.1	37.4	37.7	37.4	37.6	37.7	37.5
Chemicals and allied products	41.6	40.9	40.9	41.0	40.8	40.7	40.9	41.0	41.0	41.2	41.5	41.6	41.9	41.8	41.6
Petroleum and coal products	43.2	43.9	44.0	44.2	43.8	44.1	44.4	44.5	44.4	44.9	43.5	43.6	43.8	43.6	43.5
Leather and leather products	36.7	35.6	36.0	35.7	35.4	35.8	35.8	36.3	34.9	36.0	37.0	36.8	36.8	37.5	37.6
TRANSPORTATION AND PUBLIC UTILITIES	39.4	39.0	39.2	38.8	38.8	38.9	38.9	38.6	38.6	38.8	38.8	38.9	38.9	39.0	39.0
WHOLESALE AND RETAIL TRADE	32.2	31.9	32.0	31.9	31.9	31.8	32.1	31.9	31.4	31.7	31.7	31.9	32.0	31.9	31.8
WHOLESALE TRADE	38.5	38.4	38.5	38.4	38.4	38.4	38.4	38.5	38.2	38.4	38.5	38.6	38.7	38.6	38.5
RETAIL TRADE	30.1	29.9	29.9	29.9	29.9	29.8	30.1	29.9	29.3	29.7	29.6	29.9	29.9	29.8	29.8
SERVICES	32.6	32.6	32.6	32.8	32.6	32.6	32.6	32.9	32.5	32.7	32.7	32.9	32.7	32.6	32.6

p = preliminary.

NOTE: Miscellaneous manufacturing (a major manufacturing group, durable goods) and rubber and miscellaneous plastics products (a major manufacturing group, nondurable goods) are no longer shown.

This is because the seasonal component in these is small relative to the trend-cycle, or irregular components, or both, and consequently cannot be precisely separated.

14. Hourly earnings, by industry division and major manufacturing group

[Gross averages, production or nonsupervisory workers on private nonagricultural payrolls]

Industry division and group	Annual average		1982					1983							
	1981	1982	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July[p]	Aug.[p]
PRIVATE SECTOR	$7.25	$7.67	$7.70	$7.76	$7.79	$7.81	$7.82	$7.90	$7.92	$7.90	$7.94	$7.97	$7.97	$7.99	$7.94
Seasonally adjusted	([1])	([1])	7.73	7.73	7.76	7.78	7.82	7.88	7.91	7.91	7.95	7.97	8.00	8.03	7.97
MINING	10.04	10.78	10.88	10.99	10.96	11.01	11.03	11.21	11.25	11.19	11.28	11.20	11.25	11.31	11.16
CONSTRUCTION	10.82	11.62	11.66	11.74	11.88	11.72	11.96	11.95	12.00	11.95	11.90	11.80	11.74	11.78	11.85
MANUFACTURING	7.99	8.50	8.51	8.59	8.56	8.61	8.68	8.71	8.75	8.74	8.77	8.78	8.81	8.85	8.79
Durable goods	8.54	9.06	9.09	9.17	9.13	9.17	9.24	9.26	9.31	9.29	9.31	9.34	9.37	9.40	9.34
Lumber and wood products	6.99	7.46	7.56	7.65	7.57	7.59	7.55	7.68	7.72	7.68	7.74	7.78	7.85	7.81	7.84
Furniture and fixtures	5.91	6.31	6.37	6.40	6.40	6.43	6.46	6.49	6.50	6.51	6.51	6.52	6.60	6.64	6.68
Stone, clay, and glass products	8.27	8.86	8.92	9.03	9.03	9.04	9.08	9.10	9.10	9.13	9.16	9.20	9.28	9.34	9.31
Primary metal industries	10.81	11.33	11.48	11.54	11.41	11.49	11.49	11.56	11.53	11.24	11.25	11.28	11.23	11.36	11.29
Fabricated metal products	8.19	8.78	8.85	8.90	8.85	8.90	8.96	8.98	9.04	9.05	9.07	9.08	9.11	9.09	9.11
Machinery, except electrical	8.81	9.29	9.34	9.41	9.36	9.38	9.43	9.40	9.44	9.46	9.48	9.59	9.63	9.66	9.59
Electric and electronic equipment	7.62	8.21	8.30	8.37	8.41	8.45	8.51	8.53	8.56	8.60	8.60	8.60	8.63	8.68	8.59
Transportation equipment	10.39	11.12	11.17	11.24	11.29	11.34	11.43	11.40	11.49	11.49	11.53	11.52	11.63	11.63	11.60
Instruments and related products	7.42	8.10	8.17	8.24	8.26	8.31	8.38	8.42	8.48	8.47	8.46	8.48	8.48	8.55	8.54
Miscellaneous manufacturing	5.97	6.43	6.40	6.50	6.50	6.56	6.67	6.72	6.73	6.75	6.76	6.82	6.81	6.83	6.81
Nondurable goods	7.18	7.73	7.74	7.84	7.80	7.88	7.95	7.97	7.99	8.00	8.03	8.03	8.04	8.11	8.06
Food and kindred products	7.44	7.89	7.86	7.91	7.88	8.00	8.06	8.09	8.11	8.16	8.20	8.18	8.17	8.17	8.14
Tobacco manufactures	8.88	9.78	9.51	9.55	9.50	10.16	9.63	9.87	9.96	10.43	10.61	10.74	10.91	10.82	10.12
Textile mill products	5.52	5.83	5.83	5.86	5.88	5.92	6.04	6.08	6.10	6.11	6.14	6.14	6.16	6.16	6.19
Apparel and other textile products	4.97	5.20	5.20	5.23	5.21	5.24	5.28	5.33	5.33	5.33	5.35	5.33	5.36	5.35	5.38
Paper and allied products	8.60	9.32	9.45	9.63	9.53	9.60	9.65	9.65	9.65	9.67	9.72	9.81	9.91	10.08	10.01
Printing and publishing	8.19	8.75	8.81	8.91	8.89	8.92	9.00	8.97	8.99	9.03	9.03	9.05	9.06	9.10	9.16
Chemicals and allied products	9.12	9.96	10.01	10.19	10.26	10.26	10.32	10.34	10.41	10.39	10.43	10.50	10.52	10.56	10.59
Petroleum and coal products	11.38	12.46	12.42	12.61	12.57	12.68	12.71	13.16	13.25	13.28	13.27	13.17	13.17	13.20	13.20
Rubber and miscellaneous plastics products	7.17	7.65	7.66	7.78	7.74	7.81	7.91	7.91	7.91	7.92	7.95	7.97	7.96	8.05	7.99
Leather and leather products	4.99	5.32	5.33	5.41	5.39	5.41	5.44	5.50	5.50	5.52	5.52	5.51	5.49	5.51	5.52
TRANSPORTATION AND PUBLIC UTILITIES	9.70	10.30	10.42	10.46	10.48	10.59	10.62	10.69	10.72	10.68	10.72	10.74	10.73	10.86	10.77
WHOLESALE AND RETAIL TRADE	5.92	6.21	6.20	6.245	6.27	6.30	6.27	6.42	6.45	6.43	6.45	6.46	6.46	6.47	6.46
WHOLESALE TRADE	7.56	8.02	8.07	8.10	8.13	8.14	8.20	8.31	8.28	8.27	8.34	8.36	8.35	8.41	8.43
RETAIL TRADE	5.25	5.47	5.46	5.50	5.53	5.56	5.54	5.65	5.69	5.68	5.69	5.71	5.71	5.72	5.70
FINANCE, INSURANCE, AND REAL ESTATE	6.31	6.78	6.86	6.90	6.97	7.00	7.01	7.19	7.22	7.19	7.23	7.31	7.26	7.30	7.25
SERVICES	6.41	6.90	6.980	6.99	7.04	7.08	7.12	7.18	7.19	7.17	7.20	7.23	7.20	7.18	7.17

[1] Not available.   p = preliminary.

15. Hourly Earnings Index, for production workers on private nonagricultural payrolls, by industry

[1977 = 100]

Industry	Not seasonally adjusted					Seasonally adjusted					
	Aug. 1982	June 1983	July 1983[p]	Aug. 1983[p]	Percent change from: Aug. 1982 to Aug. 1983	Aug. 1982	Apr. 1983	May 1983	June 1983	July 1983[p]	Aug. 1983[p]	Percent change from: July 1983 to Aug. 1983
PRIVATE SECTOR (in current dollars)	149.2	154.4	154.9	154.6	3.6	149.6	154.0	154.6	154.8	155.2	155.0	−0.1
Mining	161.0	166.4	168.6	165.6	2.9	([1])	([1])	([1])	([1])	([1])	([1])	([1])
Construction	142.1	143.7	144.2	145.0	2.0	141.4	145.9	144.6	144.6	144.1	144.3	.2
Manufacturing	153.6	157.7	158.1	157.3	2.4	154.1	157.0	157.7	157.8	158.1	157.8	.2
Transportation and public utilities	150.0	155.4	157.2	157.2	4.8	149.9	155.9	156.6	156.8	158.0	157.0	−.2
Wholesale and retail trade	145.5	151.5	152.0	151.8	4.3	145.8	150.5	151.2	151.6	152.1	152.1	−.6
Finance, insurance, and real estate	150.1	158.2	155.9	158.5	5.6	([1])	([1])	([1])	([1])	([1])	([1])	([1])
Services	148.2	154.5	154.5	154.6	4.3	149.4	154.0	154.9	155.5	155.5	155.8	.2
PRIVATE SECTOR (in constant dollars)	92.6	94.3	94.3	([2])	([2])	93.0	94.8	94.7	94.8	94.6	([2])	([2])

[1] This series is not seasonally adjusted because the seasonal component is small relative to the trend-cycle, irregular components, or both, and consequently cannot be separated with sufficient precision.

[2] Not available.
p = preliminary.

16. Weekly earnings, by industry division and major manufacturing group

[Gross averages, production or nonsupervisory workers on private nonagricultural payrolls]

Industry division and group	Annual average 1981	Annual average 1982	1982 Aug.	1982 Sept.	1982 Oct.	1982 Nov.	1982 Dec.	1983 Jan.	1983 Feb.	1983 Mar.	1983 Apr.	1983 May	1983 June	1983 July[p]	1983 Aug.[p]
PRIVATE SECTOR															
Current dollars	$255.20	$266.92	$271.04	$270.05	$270.31	$271.01	$273.70	$273.34	$270.86	$274.13	$275.52	$278.15	$280.54	$282.85	281.08
Seasonally adjusted	(1)	(1)	269.00	269.00	269.27	269.97	272.14	276.59	272.90	275.27	277.46	279.75	280.80	281.05	278.95
Constant (1977) dollars	c170.13	167.87	168.24	167.42	167.06	167.81	170.11	169.88	168.24	169.85	169.55	170.33	171.37	172.15	(1)
MINING	438.75	459.23	461.31	461.58	459.22	458.02	465.47	476.43	464.63	467.74	469.25	472.64	478.13	475.02	470.95
CONSTRUCTION	399.26	426.45	438.42	433.21	440.75	423.09	440.13	440.96	424.80	434.98	436.73	441.32	444.95	450.00	449.12
MANUFACTURING															
Current dollars	318.00	330.65	331.89	334.15	333.84	338.37	344.60	341.43	339.50	346.10	349.05	350.32	355.04	354.00	353.36
Constant (1977) dollars	c212.00	207.96	206.01	207.16	206.33	209.52	214.17	212.20	210.87	214.44	214.80	214.53	216.88	215.46	(1)
Durable goods	343.31	356.06	356.33	357.63	357.90	363.13	371.45	367.62	366.81	372.53	375.19	377.34	382.30	379.76	380.14
Lumber and wood products	270.51	283.48	293.33	296.06	289.93	292.97	293.70	300.29	299.54	302.59	308.05	312.76	320.28	313.18	316.74
Furniture and fixtures	226.94	234.73	242.70	241.28	243.20	244.34	250.00	243.38	243.10	251.29	253.89	254.28	263.34	258.96	265.86
Stone, clay, and glass products	335.76	354.40	362.15	365.72	366.62	366.12	366.83	364.91	358.54	368.85	374.64	380.88	390.69	391.35	391.95
Primary metal industries	437.81	437.34	439.68	438.52	431.30	440.07	450.41	450.84	450.82	456.23	451.13	452.33	454.82	460.08	461.76
Fabricated metal products	330.06	344.18	346.04	345.32	346.04	350.66	359.30	354.71	354.37	361.10	364.61	366.83	371.69	365.42	370.78
Machinery except electrical	360.33	368.81	364.26	367.93	365.98	371.45	380.97	372.24	371.94	377.40	379.20	382.64	388.09	388.33	388.40
Electric and electronic equipment	304.80	322.65	324.53	325.59	329.67	334.62	342.95	338.64	336.41	344.00	344.86	345.72	350.38	349.80	348.75
Transportation equipment	424.95	450.36	446.80	443.98	457.25	467.21	474.35	468.54	469.94	480.28	484.26	482.69	491.95	483.81	483.72
Instruments and related products	299.77	322.38	325.98	328.78	327.10	331.57	338.55	337.64	335.81	340.49	339.25	341.74	340.90	342.86	343.31
Miscellaneous manufacturing	231.64	247.56	247.04	250.90	253.50	256.50	260.13	260.06	253.72	263.25	263.64	264.62	264.91	264.32	264.23
Nondurable goods	280.74	296.83	299.54	304.19	301.08	305.74	310.85	307.64	305.22	311.20	313.97	315.58	319.19	319.53	319.18
Food and kindred products	295.37	310.87	311.26	315.61	312.05	317.60	319.18	315.51	312.24	316.61	318.98	321.47	325.17	322.72	323.97
Tobacco manufactures	344.54	450.36	362.33	379.14	370.50	386.08	364.98	360.26	339.64	378.61	395.75	401.68	420.04	399.26	378.49
Textile mill products	218.59	218.63	223.29	223.85	227.56	231.47	236.77	237.12	236.07	242.57	246.83	248.67	253.18	247.02	251.93
Apparel and other textile products	177.43	180.44	183.56	183.57	183.91	184.97	186.38	188.68	185.48	190.28	192.07	192.41	196.18	193.14	195.83
Paper and allied products	365.50	389.58	393.12	402.53	397.40	402.24	410.13	402.41	396.62	406.14	410.18	415.94	425.14	429.41	425.43
Printing and publishing	305.49	324.63	326.85	331.45	329.82	332.72	341.10	332.79	330.83	338.63	337.72	337.57	338.84	341.25	345.33
Chemicals and allied products	379.39	407.36	407.41	419.83	416.98	420.66	427.25	421.87	425.77	428.07	432.85	435.75	440.79	439.30	438.43
Petroleum and coal products	491.62	546.99	546.48	572.49	555.59	564.26	563.05	572.46	573.73	584.32	581.23	575.73	579.48	583.44	574.20
Rubber and miscellaneous plastics products	288.95	302.94	304.10	308.09	304.18	309.28	319.56	317.19	314.03	321.55	326.75	327.57	328.75	329.25	328.39
Leather and leather products	183.13	189.39	192.95	192.06	189.73	194.22	196.38	196.90	190.30	197.06	201.48	204.42	207.52	207.73	209.21
TRANSPORTATION AND PUBLIC UTILITIES	382.18	401.70	410.55	405.85	406.62	413.01	416.30	409.43	411.65	413.32	413.79	415.64	419.54	426.80	422.18
WHOLESALE AND RETAIL TRADE	190.62	198.10	201.50	200.30	199.39	199.71	203.15	201.59	199.31	201.90	203.18	205.43	207.37	210.28	209.95
WHOLESALE TRADE	291.06	307.97	311.50	311.04	313.01	313.39	317.34	318.27	313.81	316.74	319.42	321.86	323.15	326.31	326.24
RETAIL TRADE	158.03	163.55	167.62	165.55	164.79	164.58	168.97	164.98	163.30	166.42	167.29	169.59	171.87	175.03	174.42
FINANCE, INSURANCE, AND REAL ESTATE	229.05	245.44	249.02	249.09	252.31	253.40	254.46	262.44	260.64	258.84	261.00	265.35	262.09	264.26	262.45
SERVICES	208.97	224.94	227.70	228.57	228.80	230.10	232.11	234.79	232.96	233.74	234.72	236.42	236.88	237.66	236.61

[1] Not available.
p = preliminary.
c = corrected.

17. Indexes of diffusion: industries in which employment increased

[In percent]

Time span	Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Over 1-month span	1981	57.8	52.4	52.2	65.6	60.2	58.9	62.6	49.5	42.2	33.3	29.3	30.9
	1982	28.5	45.4	36.0	39.0	47.6	32.8	38.4	37.1	34.1	29.3	32.0	42.2
	1983	56.5	45.7	62.4	69.1	71.0	64.5	p70.7	p68.5	—	—	—	—
Over 3-month span	1981	58.3	54.6	59.1	65.9	67.5	66.7	60.5	50.5	33.3	30.1	24.5	23.4
	1982	25.3	28.8	32.0	34.1	32.5	33.6	27.2	27.2	26.1	25.5	24.7	40.6
	1983	45.4	55.1	65.6	75.8	76.1	p78.0	p74.2	—	—	—	—	—
Over 6-month span	1981	68.5	65.3	63.7	69.4	64.2	58.6	45.7	34.4	29.6	24.2	25.0	22.0
	1982	20.2	23.7	25.3	29.8	26.1	26.1	23.4	19.1	21.2	26.1	26.6	35.8
	1983	50.5	63.2	73.4	p77.4	p80.1	—	—	—	—	—	—	—
Over 12-month span	1981	74.5	71.2	70.4	58.1	47.6	41.4	34.9	29.8	27.4	23.7	25.3	23.1
	1982	22.0	20.7	18.0	19.4	18.3	20.7	20.7	22.8	24.2	31.5	37.6	44.1
	1983	p50.0	p59.1	—	—	—	—	—	—	—	—	—	—

p = preliminary.

NOTE: Figures are the percent of industries with employment rising. (Half of the unchanged components are counted as rising.) Data are centered within the spans. See the "Definitions" in this section.

UNEMPLOYMENT INSURANCE DATA

NATIONAL UNEMPLOYMENT INSURANCE DATA are compiled monthly by the Employment and Training Administration of the U.S. Department of Labor from monthly reports of unemployment insurance activity prepared by State agencies. Railroad unemployment insurance data are prepared by the U.S. Railroad Retirement Board.

Definitions

Data for **all programs** represent an unduplicated count of insured unemployment under State programs, Unemployment Compensation for Ex-Servicemen, and Unemployment Compensation for Federal Employees, and the Railroad Insurance Act.

Under both State and Federal unemployment insurance programs for civilian employees, insured workers must report the completion of at least 1 week of unemployment before they are defined as unemployed. Persons not covered by unemployment insurance (about 10 percent of the labor force) and those who have exhausted or not yet earned benefit rights are excluded from the scope of the survey. **Initial claims** are notices filed by

persons in unemployment insurance programs to indicate they are out of work and wish to begin receiving compensation. A claimant who continued to be unemployed a full week is then counted in the insured unemployment figure. The **rate of insured unemployment** expresses the number of insured unemployed as a percent of the average insured employment in a 12-month period.

Average weekly seasonally adjusted insured unemployment data are computed by BLS' Weekly Seasonal Adjustment program. This procedure incorporated the X-11 Variant of the Census Method II Seasonal Adjustment program.

An **application** for benefits is filed by a railroad worker at the beginning of his first period of unemployment in a benefit year; no application is required for subsequent periods in the same year. **Number of payments** are payments made in 14-day registration periods. The **average amount of benefit payment** is an average for all compensable periods, not adjusted for recovery of overpayments or settlement of underpayments. However, **total benefits** paid have been adjusted.

18. Unemployment insurance and employment service operations

[All items except average benefits amounts are in thousands]

Item	1982						1983						
	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July[p]
All programs:													
Insured unemployment	4,495	4,398	4,283	4,391	4,635	5,074	5,459	5,437	5,134	4,642	3,947	3,481	3,274
State unemployment insurance program:[1]													
Initial claims[2]	2,655	2,358	2,342	2,443	2,661	3,080	3,143	2,065	2,075	1,874	1,666	1,742	1,805
Insured unemployment (average													
weekly volume)	3,912	3,831	3,712	3,828	4,156	4,581	4,923	4,759	4,401	3,906	3,361	3,063	3,049
Rate of insured unemployment	4.6	4.4	4.2	4.4	4.7	5.2	5.6	5.5	5.0	4.5	3.9	3.5	3.5
Weeks of unemployment compensated...	14,655	15,015	14,547	13,786	15,170	17,873	18,307	16,895	19,529	14,986	13,133	12,896	10,969
Average weekly benefit amount													
for total unemployment	$117.28	$118.97	$120.78	$122.81	$123.43	$123.42	$124.29	$124.47	$125.47	$124.85	$124.49	$123.65	$126.56
Total benefits paid	$1,679,378	$1,746,195	$1,710,573	$1,647,343	$1,820,019	$2,135,302	$2,205,551	$2,052,415	$2,367,752	$1,816,539	$1,587,888	$1,549,758	$1,298,661
State unemployment insurance program:[1]													
(Seasonally adjusted data)													
Initial claims[2]	2,317	2,814	2,902	2,688	2,680	2,586	2,187	2,138	2,148	1,952	1,993	1,836	1,575
Insured unemployment (average													
weekly volume)	3,959	4,137	4,446	4,680	4,618	4,355	3,980	3,979	3,884	3,774	3,538	3,301	3,086
Rate of insured unemployment	4.5	4.7	5.1	5.3	5.3	5.0	4.6	4.6	4.5	4.3	4.1	3.8	3.6
Unemployment compensation for ex-servicemen:[3]													
Initial claims[1]	10	11	11	10	17	24	21	16	18	15	14	16	16
Insured unemployment (average													
weekly volume)	7	7	8	9	14	26	37	37	34	30	26	25	25
Weeks of unemployment compensated...	25	24	25	28	33	90	132	143	156	117	104	107	94
Total benefits paid	$2,821	$2,793	$2,900	$3,366	$4,006	$11,191	$16,807	$18,032	$19,588	$14,776	$13,111	$13,555	$12,073
Unemployment compensation for Federal civilian employees:[4]													
Initial claims	13	12	13	16	14	15	16	10	11	10	9	13	12
Insured unemployment (average													
weekly volume)	29	27	26	28	31	33	35	33	31	26	22	21	23
Weeks of unemployment compensated..	120	118	111	110	126	146	142	131	146	109	93	90	88
Total benefits paid	$13,445	$13,140	$12,303	$12,144	$14,023	$16,114	$16,045	$15,083	$16,871	$12,422	$10,603	$10,304	$10,219
Railroad unemployment insurance:													
Applications	68	68	14	20	17	17	20	7	c8	94	4	30	55
Insured unemployment (average													
weekly volume)	55	55	61	82	81	83	102	72	65	79	90	49	49
Number of payments	100	100	137	159	162	172	219	158	169	172	183	123	92
Average amount of benefit payment . . .	$202.54	$202.54	$216.14	$212.35	$216.55	$217.00	$220.32	$214.54	$213.44	$203.87	$215.15	$203.54	$199.87
Total benefits paid	$17,998	$17,998	$31,123	$31,638	$35,061	$39,500	$44,514	$33,100	$36,243	$27,783	$29,411	$14,984	$17,551
Employment service:[5]													
New applications and renewals	. . . .	. . . .	14,320	. . . .	. . . .	4,527	. . . .	. . . .	r8,381	. . . .	. . . .	11,987	. . . .
Nonfarm placements	. . . .	. . . .	2,804	. . . .	. . . .	642	. . . .	. . . .	1,184	. . . .	. . . .	1,921	. . . .

[1] Initial claims and State insured unemployment include data under the program for Puerto Rican sugarcane workers.
[2] Excludes transition claims under State programs.
[3] Excludes data on claims and payments made jointly with other programs.
[4] Excludes data or claims and payments made jointly with State programs.

[5] Cumulative total for fiscal year (October 1-September 30). Data computed quarterly.

NOTE: Data for Puerto Rico and the Virgin Islands included. Dashes indicate data not available.
p = preliminary.
r = revised.
c = corrected.

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PRICE DATA are gathered by the Bureau of Labor Statistics from retail and primary markets in the United States. Price indexes are given in relation to a base period (1967 = 100, unless otherwise noted).

Definitions

The Consumer Price Index is a monthly statistical measure of the average change in prices in a fixed market basket of goods and services. Effective with the January 1978 index, the Bureau of Labor Statistics began publishing CPI's for two groups of the population. It introduced a CPI for All Urban Consumers, covering 80 percent of the total noninstitutional population, and revised the CPI for Urban Wage Earners and Clerical Workers, covering about half the new index population. The All Urban Consumers index covers in addition to wage earners and clerical workers, professional, managerial, and technical workers, the self-employed, short-term workers, the unemployed, retirees, and others not in the labor force.

The CPI is based on prices of food, clothing, shelter, fuel, drugs, transportation fares, doctors' and dentists' fees, and other goods and services that people buy for day-to-day living. The quantity and quality of these items is kept essentially unchanged between major revisions so that only price changes will be measured. Data are collected from more than 24,000 retail establishments and 24,000 tenants in 85 urban areas across the country. All taxes directly associated with the purchase and use of items are included in the index. Because the CPI's are based on the expenditures of two population groups in 1972–73, they may not accurately reflect the experience of individual families and single persons with different buying habits.

Though the CPI is often called the "Cost-of-Living Index," it measures only price change, which is just one of several important factors affecting living costs. Area indexes do not measure differences in the level of prices among cities. They only measure the average change in prices for each area since the base period.

Producer Price Indexes measure average changes in prices received in primary markets of the United States by products of commodities in all stages of processing. The sample used for calculating these indexes contains about 2,800 commodities and about 10,000 quotations per month selected to represent the movement of prices of all commodities produced in the manufacturing, agriculture, forestry, fishing, mining, gas and electricity, and public utilities sectors. The universe includes all commodities produced or imported for sale in commercial transactions in primary markets in the United States.

Producer Price Indexes can be organized by stage of processing or by commodity. The stage of processing structure organizes products by degree of fabrication (that is, finished goods, intermediate or semifinished goods, and crude materials). The commodity structure organizes products by similarity of end-use or material composition.

To the extent possible, prices used in calculating Producer Price Indexes apply to the first significant commercial transaction in the United States, from the production or central marketing point. Price data are generally collected monthly, primarily by mail questionnaire. Most prices are obtained directly from producing companies on a voluntary and confidential basis. Prices generally are reported for the Tuesday of the week containing the 13th day of the month.

In calculating Producer Price Indexes, price changes for the various commodities are averaged together with implicit quantity weights representing their importance in the total net selling value of all commodities as of 1972. The detailed data are aggregated to obtain indexes for stage of processing groupings, commodity groupings, durability of product groupings, and a number of special composite groupings.

Price indexes for the output of selected SIC industries measure average price changes in commodities produced by particular industries, as defined in the *Standard Industrial Classification Manual 1972* (Washington, U.S. Office of Management and Budget, 1972). These indexes are derived from several price series, combined to match the economic activity of the specified industry and weighted by the value of shipments in the industry. They use data from comprehensive industrial censuses conducted by the U.S. Bureau of the Census and the U.S. Department of Agriculture.

Notes on the data

Regional CPI's cross classified by population size were introduced in the May 1978 *Review*. These indexes enable users in local areas for which an index is not published to get a better approximation of the CPI for their area by using the appropriate population size class measure for their region. The cross-classified indexes are published bimonthly. (See table 20.)

For details concerning the 1978 revision of the CPI, see *The Consumer Price Index: Concepts and Content Over the Years*, Report 517, revised edition (Bureau of Labor Statistics, May 1978).

As of January 1976, the Producer Price Index incorporated a revised weighting structure reflecting 1972 values of shipments.

Additional data and analyses of price changes are provided in the *CPI Detailed Report* and *Producer Prices and Price Indexes*, both monthly publications of the Bureau.

For a discussion of the general method of computing producer, and industry price indexes, see *BLS Handbook of Methods*, Bulletin 2134-1 (Bureau of Labor Statistics, 1982), chapter 7. For consumer prices, see *BLS Handbook of Methods for Surveys and Studies* (1976), chapter 13. See also John F. Early, "Improving the measurement of producer price change," *Monthly Labor Review*, April 1978. For industry prices, see also Bennett R. Moss, "Industry and Sector Price Indexes," *Monthly Labor Review*, August 1965.

19. Consumer Price Index for Urban Wage Earners and Clerical Workers, annual averages and changes, 1967–82

[1967 = 100]

Year	All items		Food and beverages		Housing		Apparel and upkeep		Transportation		Medical care		Entertainment		Other goods and services	
	Index	Percent change	Index	Percent change	Index	Percent change	Index	Percent change	Index	Percent change	Index	Percent change	Index	Percent change	Index	Percent change
1967	100.0	. . .	100.0	. . .	100.0	. . .	100.0	. . .	100.0	. . .	100.0	. . .	100.0	. . .	100.0	. . .
1968	104.2	4.2	103.6	3.6	104.0	4.0	105.4	5.4	103.2	3.2	106.1	6.1	105.7	5.7	105.2	5.2
1969	109.8	5.4	108.8	5.0	110.4	6.2	111.5	5.8	107.2	3.9	113.4	6.9	111.0	5.0	110.4	4.9
1970	116.3	5.9	114.7	5.4	118.2	7.1	116.1	4.1	112.7	5.1	120.6	6.3	116.7	5.1	115.8	5.8
1971	121.3	4.3	118.3	3.1	123.4	4.4	119.8	3.3	118.6	5.2	128.4	6.5	122.9	5.3	122.4	4.8
1972	125.3	3.3	123.2	4.1	128.1	3.8	122.3	2.1	119.9	1.1	132.5	3.2	126.5	2.9	127.5	4.2
1973	133.1	6.2	139.5	13.2	133.7	4.4	126.8	3.7	123.8	3.3	137.7	3.9	130.0	2.8	132.5	3.9
1974	147.7	11.0	158.7	13.8	148.8	11.3	136.2	7.4	137.7	11.2	150.5	9.3	139.8	7.5	142.0	7.2
1975	161.2	9.1	172.1	8.4	164.5	10.6	142.3	4.5	150.6	9.4	168.6	12.0	152.2	8.9	153.9	8.4
1976	170.5	5.8	177.4	3.1	174.6	6.1	147.6	3.7	165.5	9.9	184.7	9.5	159.8	5.0	162.7	5.7
1977	181.5	6.5	188.0	8.0	186.5	6.8	154.2	4.5	177.2	7.1	202.4	9.6	167.7	4.9	172.2	5.8
1978	195.3	7.6	206.2	9.7	202.6	8.6	159.5	3.4	185.8	4.9	219.4	8.4	176.2	5.1	183.2	6.4
1979	217.7	11.5	228.7	10.9	227.5	12.3	166.4	4.3	212.8	14.5	240.1	9.4	187.6	6.5	196.3	7.2
1980	247.0	13.5	248.7	8.7	263.2	15.7	177.4	6.6	250.5	17.7	287.2	11.3	203.7	8.5	213.6	8.8
1981	272.3	10.2	267.8	7.7	293.2	11.4	186.6	5.2	281.3	12.3	295.1	10.4	219.0	7.5	233.3	9.2
1982	288.6	6.0	278.5	4.0	314.7	7.3	190.9	2.3	293.1	4.2	326.9	10.8	232.4	6.1	257.0	10.2

20. Consumer Price Index for All Urban Consumers and revised CPI for Urban Wage Earners and Clerical Workers, U.S. city average—general summary and groups, subgroups, and selected items

[1967 = 100 unless otherwise specified]

General summary	All Urban Consumers							Urban Wage Earners and Clerical Workers						
	1982	1983						1982	1983					
	July	Feb.	Mar.	Apr.	May	June	July	July	Feb.	Mar.	Apr.	May	June	July
All items	292.2	293.2	293.4	295.5	297.1	298.1	299.3	291.8	292.3	293.0	294.9	296.3	297.2	298.2
Food and beverages	280.8	281.6	283.2	284.6	285.0	284.7	284.7	281.2	282.1	283.5	284.9	285.4	285.0	285.0
Housing	319.2	318.5	318.6	320.3	321.8	323.1	324.5	319.3	317.6	319.2	320.3	321.3	322.3	323.1
Apparel and upkeep	189.7	192.0	194.5	195.5	196.1	195.6	195.0	188.7	191.0	194.0	194.8	195.3	194.7	194.0
Transportation	296.1	289.9	287.4	292.3	296.2	298.3	300.4	297.9	291.1	288.6	293.5	297.5	299.6	301.9
Medical care	330.0	351.3	352.3	353.5	354.3	355.4	357.7	328.1	348.9	350.0	351.2	352.1	353.3	355.6
Entertainment	236.6	243.1	244.6	244.6	244.8	245.4	246.0	233.5	239.5	240.8	241.1	241.3	241.9	242.5
Other goods and services	257.2	281.6	281.9	283.2	283.6	284.5	287.5	254.5	279.6	280.0	281.4	281.8	282.8	286.4
Commodities	266.5	266.7	266.7	269.2	270.9	271.6	272.5	266.9	267.8	268.4	270.9	272.7	273.3	274.2
Commodities less food and beverages	255.7	255.2	254.3	257.3	259.7	260.9	262.3	256.3	257.1	257.4	260.3	262.7	263.7	264.9
Nondurables less food and beverages	268.2	265.2	263.4	267.8	271.3	272.3	273.5	270.3	266.9	265.0	269.7	273.3	274.4	275.7
Durables	244.7	247.1	247.4	248.7	249.5	251.2	252.9	243.9	247.8	249.7	251.2	252.8	253.7	254.8
Services	337.0	338.9	339.4	341.2	342.6	344.0	345.6	337.9	337.8	338.5	339.5	340.1	341.4	342.8
Rent, residential	224.8	c233.1	233.6	234.5	235.1	235.9	237.1	224.3	232.5	233.1	234.0	234.6	235.3	236.5
Household services less rent of shelter (12/82 = 100) . . .	. . . .	101.0	101.6	102.0	103.2	104.2	104.8	. . . .						
Transportation services	297.2	299.9	299.8	300.8	301.2	301.4	302.3	295.7	296.9	296.7	297.2	297.6	297.5	298.4
Medical care services	357.3	381.5	382.2	382.8	383.5	384.6	387.2	354.7	378.2	379.0	379.7	380.5	381.7	384.4
Other services	258.0	272.6	272.9	274.2	274.7	275.6	276.3	256.6	270.2	270.6	272.0	272.6	273.5	274.2
Special indexes:														
All items less food	291.5	292.6	292.4	294.7	296.5	297.8	299.3	291.4	291.9	292.4	294.4	296.1	297.2	298.5
All items less homeowners' costs	. . . .	100.2	100.3	101.0	101.6	101.9	102.3	. . . .						
All items less mortgage interest costs								275.3	278.9	279.0	279.7	281.7	283.5	285.3
Commodities less food	253.5	253.2	252.4	255.4	257.6	258.9	260.2	254.1	255.0	255.4	258.2	260.6	261.6	262.7
Nondurables less food	263.0	260.5	258.9	263.0	266.3	267.3	268.4	265.0	262.2	260.6	265.0	268.4	269.3	270.6
Nondurables less food and apparel	304.3	299.9	296.5	302.1	306.7	308.4	310.4	305.8	301.1	297.4	303.5	308.2	309.9	312.1
Nondurables	275.7	274.6	274.4	277.3	279.3	279.7	280.3	276.8	275.6	275.3	278.4	280.4	280.8	281.4
Services less rent of shelter (12/82 = 100) . . .		101.0	101.3	101.6	102.2	102.7	103.1							
Services less medical care	332.5	332.2	332.7	334.5	336.0	337.4	338.9	333.6	331.2	332.0	333.0	333.5	334.9	336.1
Domestically produced farm foods	270.7	266.6	268.4	269.9	270.6	269.6	269.6	269.7	266.0	267.6	269.0	269.6	268.7	268.5
Selected beef cuts	287.4	272.0	272.6	279.4	281.5	278.5	275.8	288.8	273.5	274.0	280.7	283.0	279.8	277.2
Energy[1]	424.5	406.7	399.6	410.0	421.3	427.3	430.1	426.5	406.9	399.8	410.8	422.1	428.1	430.9
Energy commodities[1]	438.2	401.6	388.3	403.2	416.3	420.7	423.4	439.0	401.9	388.7	404.3	417.3	421.7	424.5
All items less energy	282.0	284.7	285.6	287.0	287.6	288.2	289.2	280.8	283.0	284.4	285.6	286.1	286.5	287.4
All items less food and energy	278.7	282.0	282.6	284.0	284.7	285.5	286.8	277.6	280.2	281.6	282.6	283.2	283.8	284.9
Commodities less food and energy	233.1	237.9	239.1	240.2	240.8	241.5	242.7	232.4	237.9	240.0	241.2	242.3	242.9	243.8
Services less energy	331.8	332.9	333.1	334.8	335.6	336.4	337.9	332.6	331.4	331.9	332.7	332.6	333.2	334.5
Purchasing power of the consumer dollar, 1967 = $1	$0.342	$0.341	$0.341	$0.338	$0.337	$0.335	$0.334	$0.343	$0.342	$0.341	$0.339	$0.337	$0.336	$0.335

See footnotes at end of table.

20. Continued—Consumer Price Index—U.S. city average

[1967 = 100 unless otherwise specified]

General summary	All Urban Consumers							Urban Wage Earners and Clerical Workers						
	1982	1983						1982	1983					
	July	Feb.	Mar.	Apr.	May	June	July	July	Feb.	Mar.	Apr.	May	June	July
FOOD AND BEVERAGES	280.8	281.6	283.2	284.6	285.0	284.7	284.7	281.2	282.1	283.5	284.9	285.4	285.0	285.0
Food	288.5	289.0	290.5	291.9	292.4	292.0	292.0	288.6	289.3	290.7	292.1	292.6	292.2	292.1
Food at home	282.8	280.3	281.9	283.4	283.8	283.0	282.8	281.9	279.7	281.2	282.5	282.9	282.1	281.8
Cereals and bakery products	284.3	288.7	289.8	291.1	291.7	292.4	293.7	283.0	287.4	288.5	289.6	290.2	291.0	292.3
Cereals and cereal products (12/77 = 100)	154.8	154.0	155.0	156.1	157.0	157.9	158.3	155.8	154.7	155.8	156.9	157.7	158.7	159.2
Flour and prepared flour mixes (12/77 = 100)	143.5	139.8	139.4	140.2	141.3	142.2	142.8	144.0	140.1	139.9	140.4	141.7	142.7	143.3
Cereal (12/77 = 100)	166.3	169.2	171.3	173.8	175.7	176.4	176.7	168.5	171.4	173.5	175.9	177.8	178.5	178.8
Rice, pasta, and cornmeal (12/77 = 100)	148.9	145.3	146.0	145.8	144.8	146.2	146.5	150.0	146.3	147.0	146.8	145.8	147.3	147.7
Bakery products (12/77 = 100)	149.0	152.4	152.8	153.3	153.5	153.7	154.4	147.8	151.2	151.6	152.0	152.2	152.4	153.2
White bread	246.1	249.8	252.0	252.1	252.6	2a3.1	254.3	241.9	245.7	247.8	247.6	248.2	248.8	249.9
Other breads (12/77 = 100)	145.1	148.7	149.0	148.8	149.7	149.8	149.5	147.0	150.6	151.1	150.7	151.8	151.8	151.6
Fresh biscuits, rolls, and muffins (12/77 = 100)	148.9	153.1	152.0	152.5	152.0	151.7	153.2	145.4	149.1	148.0	148.4	147.9	148.0	149.6
Fresh cakes and cupcakes (12/77 = 100)	148.9	154.0	153.8	154.9	154.7	154.6	155.4	147.2	152.2	152.1	153.3	153.0	152.9	153.6
Cookies (12/77 = 100)	150.0	153.7	155.1	156.8	156.1	155.7	157.0	150.9	154.6	156.0	157.6	156.8	156.4	157.9
Crackers, bread, and cracker products (12/77 = 100)	141.8	146.5	146.0	147.2	147.9	149.5	150.3	143.2	147.9	147.3	148.7	149.5	151.0	151.8
Fresh sweetrolls, coffeecake, and donuts (12/77 = 100)	148.5	154.2	154.2	153.7	154.0	153.7	154.1	151.1	156.8	156.9	156.2	156.7	156.6	156.9
Frozen and refrigerated bakery products and fresh pies, tarts, and turnovers (12/77 = 100)	156.2	155.7	156.2	157.1	157.4	158.8	159.4	149.2	149.0	149.4	150.2	150.5	152.0	152.5
Meats, poultry, fish, and eggs	268.5	264.0	264.2	264.2	263.8	261.5	260.4	268.3	263.9	264.0	263.9	263.6	261.3	260.1
Meats, poultry, and fish	276.2	271.7	271.4	271.4	270.5	268.7	267.2	275.8	271.4	271.1	271.0	270.2	268.3	266.8
Meats	278.8	273.2	272.8	273.3	272.7	270.2	267.8	278.2	272.9	272.4	272.9	272.1	269.7	267.3
Beef and veal	286.7	272.2	272.8	279.4	281.3	278.6	275.8	287.4	272.9	273.5	280.0	282.0	279.2	276.5
Ground beef other than canned	272.5	261.8	263.6	267.0	266.9	264.5	261.4	273.9	263.0	264.7	268.0	268.3	265.7	262.7
Chuck roast	296.2	286.9	284.8	291.2	289.5	277.4	277.6	305.3	295.9	293.0	300.2	298.8	285.7	286.3
Round roast	251.8	242.6	239.9	251.1	249.6	245.6	240.7	254.7	245.3	242.8	254.0	252.3	249.1	243.8
Round steak	271.2	259.8	257.9	263.9	268.8	262.1	257.8	269.4	258.0	257.1	262.0	267.7	260.5	256.5
Sirloin steak	295.6	260.3	262.8	274.8	284.3	286.1	285.2	298.0	261.7	264.5	276.0	285.9	287.5	287.5
Other beef and veal (12/77 = 100)	173.3	163.5	164.4	168.3	170.2	170.5	168.8	171.7	162.1	163.0	166.8	168.6	169.1	167.4
Pork	265.4	273.6	271.1	262.1	257.3	254.1	251.2	264.9	272.9	270.4	261.7	256.8	253.9	250.8
Bacon	283.9	294.5	288.7	276.6	272.5	267.4	267.3	288.7	299.5	293.1	281.4	276.8	271.9	271.6
Chops	248.9	252.1	246.4	241.8	237.7	234.3	232.9	247.3	250.3	244.7	239.7	235.9	232.5	231.1
Ham other than canned (12/77 = 100)	115.3	125.0	125.6	116.7	112.0	110.3	108.3	112.4	121.7	122.4	113.9	109.3	107.5	105.5
Sausage	331.9	333.9	336.9	332.5	330.6	326.5	318.9	332.9	334.8	337.0	333.1	331.1	327.3	320.0
Canned ham	255.3	276.2	277.3	272.0	266.6	260.9	256.8	258.7	280.6	282.2	277.1	271.6	266.4	262.6
Other pork (12/77 = 100)	150.3	150.4	148.1	143.5	141.4	141.7	140.0	149.5	149.5	147.3	142.8	140.6	141.1	139.3
Other meats	272.0	269.2	269.7	268.6	267.7	267.4	266.9	271.3	269.0	269.3	268.3	267.3	266.9	266.6
Frankfurters	274.2	269.4	270.8	267.4	266.7	265.8	265.9	273.4	268.6	270.1	266.4	265.2	264.9	264.9
Bologna, liverwurst, and salami (12/77 = 100)	156.5	154.5	155.2	154.4	154.2	155.6	154.0	156.6	154.5	155.1	154.3	154.1	155.6	154.1
Other lunchmeats (12/77 = 100)	137.3	139.7	139.0	139.7	137.7	136.6	137.1	135.1	137.8	137.0	137.7	135.8	134.6	135.2
Lamb and organ meats (12/77 = 100)	143.9	137.2	138.2	137.0	139.1	139.3	138.4	147.3	140.1	140.9	140.0	142.2	142.3	141.6
Poultry	199.6	194.0	193.7	191.0	192.0	193.6	198.1	197.8	191.9	191.6	189.0	190.1	191.8	196.1
Fresh whole chicken	201.2	190.6	190.7	184.5	187.7	192.1	196.6	198.8	188.4	188.4	182.3	185.7	190.4	196.6
Fresh and frozen chicken parts (12/77 = 100)	129.4	126.2	126.6	125.7	126.6	126.3	129.6	127.9	124.6	125.1	124.2	124.9	124.7	127.7
Other poultry (12/77 = 100)	127.3	127.7	126.6	127.2	125.4	125.3	126.0	126.9	127.1	125.6	126.6	124.9	124.7	125.3
Fish and seafood	370.2	379.2	380.1	379.4	372.6	371.2	368.9	368.7	377.5	378.9	377.5	371.5	369.8	367.3
Canned fish and seafood	140.5	139.1	138.3	137.9	137.2	138.6	135.7	139.9	138.5	137.8	137.4	136.8	138.1	135.2
Fresh and frozen fish and seafood (12/77 = 100)	141.3	147.6	148.6	148.4	144.7	143.0	143.3	140.8	147.1	148.3	147.7	144.4	142.5	142.8
Eggs	173.6	169.3	175.0	174.9	181.8	173.8	177.9	174.7	170.0	175.8	175.8	182.7	174.8	178.7
Dairy products	247.5	249.7	249.6	250.1	250.3	249.8	249.8	246.8	249.1	248.9	249.4	249.6	249.1	249.0
Fresh milk and cream (12/77 = 100)	135.6	136.7	136.8	136.6	136.5	136.3	136.2	135.1	136.2	136.3	136.1	136.0	135.9	135.7
Fresh whole milk	221.6	223.4	223.4	223.5	223.2	222.9	222.8	220.7	222.6	222.6	222.7	222.3	222.1	222.0
Other fresh milk and cream (12/77 = 100)	136.2	137.3	137.7	136.7	136.5	136.4	136.7	135.7	136.8	137.1	136.1	136.3	136.3	135.8
Processed dairy products	145.9	147.4	147.2	148.1	148.6	148.1	148.2	146.2	147.7	147.4	148.4	148.8	148.3	148.5
Butter	251.1	253.6	253.5	253.9	254.4	252.7	253.3	253.7	256.2	256.1	256.5	256.9	255.4	255.8
Cheese (12/77 = 100)	144.2	145.5	145.5	145.6	146.5	146.0	146.9	144.5	156.8	145.8	146.8	146.8	146.3	147.3
Ice cream and related products (12/77 = 100)	150.4	153.1	150.7	152.0	153.6	154.0	151.6	149.6	152.2	149.8	151.1	152.7	153.0	150.7
Other dairy products (12/77 = 100)	141.3	141.6	143.9	144.5	144.6	143.1	144.5	142.0	142.3	144.6	145.3	145.3	143.7	145.1
Fruits and vegetables	299.7	278.1	286.9	294.9	298.2	298.2	298.7	295.3	274.5	282.9	291.1	294.5	294.5	294.7
Fresh fruits and vegetables	313.8	272.0	288.6	304.3	311.0	310.9	310.6	307.1	267.1	283.0	298.9	305.5	305.4	304.8
Fresh fruits	332.4	270.5	282.8	291.9	300.6	310.5	326.5	320.5	261.0	272.5	282.2	290.6	299.7	315.3
Apples	331.8	244.0	249.3	259.9	266.4	281.9	287.5	333.3	243.9	249.6	260.5	266.8	283.4	288.8
Bananas	245.4	254.0	257.1	295.1	312.5	318.1	325.2	243.6	250.9	254.6	293.0	311.1	316.7	323.1
Oranges	438.2	286.3	299.1	301.3	297.2	309.1	347.9	399.9	263.1	272.7	274.4	270.2	280.1	321.5
Other fresh fruits (12/77 = 100)	161.6	145.1	154.4	155.8	162.4	166.3	173.3	156.1	139.8	149.0	150.9	156.9	160.0	166.6
Fresh vegetables	296.4	273.4	294.0	316.0	320.8	311.3	295.8	295.0	272.7	292.5	314.0	319.2	310.8	295.5
Potatoes	370.9	240.6	241.1	258.7	282.3	304.7	320.7	366.0	236.5	236.1	253.3	277.3	301.3	318.2
Lettuce	254.5	249.0	247.9	316.0	340.9	363.5	280.5	253.0	250.0	246.6	311.6	338.0	360.8	280.6
Tomatoes	270.2	265.0	352.2	327.5	307.8	262.3	243.1	274.9	269.0	358.1	332.1	313.2	267.1	247.3
Other fresh vegetables (12/77 = 100)	155.6	165.6	175.8	186.9	184.1	169.4	167.6	154.8	165.2	174.9	186.4	183.4	169.5	167.3
Processed fruits and vegetables	286.8	287.4	287.6	287.1	286.7	286.9	288.2	284.8	285.1	285.3	284.8	284.6	284.7	285.9
Processed fruits (12/77 = 100)	148.5	150.8	151.3	150.6	150.3	149.7	150.6	148.1	150.5	151.0	150.2	150.0	149.3	150.2
Frozen fruit and fruit juices (12/77 = 100)	143.5	144.6	145.0	143.9	142.3	140.0	140.6	142.6	143.7	144.1	143.0	141.4	139.0	139.8
Fruit juices other than frozen (12/77 = 100)	152.2	155.3	156.6	155.7	155.7	155.1	156.4	151.0	154.4	155.6	154.6	154.7	154.0	155.4
Canned and dried fruits (12/77 = 100)	148.8	151.0	151.0	150.8	151.3	152.0	152.6	149.4	151.7	151.5	151.4	151.8	152.6	153.1
Processed vegetables (12/77 = 100)	139.7	138.1	137.7	138.0	137.9	138.7	139.0	138.6	136.9	136.6	136.8	136.8	137.5	137.9
Frozen vegetables (12/77 = 100)	146.7	151.2	149.7	150.9	151.2	151.4	151.7	148.0	152.7	151.3	152.5	152.8	153.1	153.3

20. Continued—Consumer Price Index—U.S. city average

[1967 = 100 unless otherwise specified]

General summary	All Urban Consumers							Urban Wage Earners and Clerical Workers						
	1982	1983						1982	1983					
	July	Feb.	Mar.	Apr.	May	June	July	July	Feb.	Mar.	Apr.	May	June	July
FOOD AND BEVERAGES—Continued														
Food—Continued														
Food at home—Continued														
Fruits and vegetables—Continued														
Cut corn and canned beans except lima (12/77 = 100)	141.0	138.5	138.9	139.6	138.4	140.5	140.9	138.6	136.2	136.4	137.1	136.2	138.1	138.6
Other canned and dried vegetables (12/77 = 100)	135.4	131.1	131.1	130.6	130.8	131.2	131.7	134.1	129.8	129.7	129.2	129.5	129.8	130.2
Other foods at home	332.2	338.2	339.1	339.2	339.1	338.8	338.7	333.1	339.1	339.9	340.0	339.8	339.5	339.3
Sugar and sweets	369.5	370.7	372.8	373.2	373.1	374.5	376.1	369.7	370.6	372.5	373.0	372.9	374.1	376.0
Candy and chewing gum (12/77 = 100)	150.5	149.6	150.3	150.8	151.0	151.3	151.8	150.6	149.6	150.3	150.8	151.0	151.2	150.8
Sugar and artificial sweeteners (12/77 = 100)	164.6	165.9	166.9	168.3	167.2	168.5	169.7	166.1	167.1	168.3	169.7	168.7	169.8	171.0
Other sweets (12/77 = 100)	149.8	152.3	153.4	151.4	152.0	152.5	153.0	147.9	150.2	151.0	149.1	149.6	150.2	150.8
Fats and oils (12/77 = 100)	259.3	258.0	258.4	258.6	258.3	258.3	259.0	259.3	258.1	258.4	258.4	258.2	258.0	258.7
Margarine	258.4	255.9	255.8	259.6	257.1	259.3	259.5	258.0	255.3	254.5	258.1	255.5	257.5	257.6
Nondairy substitutes and peanut butter (12/77 = 100)	154.9	151.8	151.4	151.5	150.7	149.4	150.5	153.1	150.1	149.7	149.9	149.1	147.7	148.8
Other fats, oils, and salad dressings (12/77 = 100)	129.2	129.8	130.4	129.5	130.2	130.1	130.3	129.7	130.3	131.0	130.1	130.8	130.7	130.9
Nonalcoholic beverages	422.8	432.2	432.7	431.8	431.1	431.0	428.7	424.4	433.9	434.5	433.5	432.4	432.6	430.3
Cola drinks, excluding diet cola	302.9	312.5	314.1	313.1	311.5	312.3	310.3	300.4	310.0	311.5	310.4	308.5	309.7	307.8
Carbonated drinks, including diet cola (12/77 = 100)	143.3	147.4	146.7	146.8	147.3	146.3	145.1	141.1	144.9	144.5	144.5	144.9	143.9	142.6
Roasted coffee	364.3	365.9	363.2	361.4	360.8	359.3	356.6	359.3	360.5	357.9	356.2	355.6	354.3	351.7
Freeze dried and instant coffee	344.9	349.3	349.2	349.5	351.6	352.2	351.4	344.4	349.0	348.8	349.0	351.0	351.6	350.7
Other noncarbonated drinks (12/77 = 100)	139.2	140.6	141.1	140.6	140.1	140.5	140.4	139.5	140.8	141.3	140.9	140.4	140.7	140.7
Other prepared foods	268.0	275.1	276.0	276.9	277.2	276.1	276.8	269.8	276.8	277.5	278.5	278.8	c277.7	278.4
Canned and packaged soup (12/77 = 100)	136.9	139.0	140.0	140.9	141.6	141.6	141.9	138.9	141.1	141.9	142.7	143.6	143.4	143.7
Frozen prepared foods (12/77 = 100)	146.7	152.0	153.1	155.0	154.4	153.8	154.4	146.0	151.3	152.2	154.2	153.7	153.1	153.5
Snacks (12/77 = 100)	152.7	157.6	157.9	159.2	160.6	159.0	159.3	154.8	159.6	160.1	161.2	162.7	161.1	161.3
Seasonings, olives, pickles, and relish (12/77 = 100)	152.7	161.1	161.6	159.3	159.3	158.6	158.5	152.1	160.1	160.4	158.3	158.4	157.6	157.5
Other condiments (12/77 = 100)	151.4	154.9	154.9	155.3	155.6	155.4	156.1	153.2	156.8	156.7	157.1	157.4	157.2	157.9
Miscellaneous prepared foods (12/77 = 100)	149.3	151.5	151.7	151.6	152.0	151.2	151.6	149.5	151.7	151.9	151.8	152.3	151.5	151.8
Other canned and packaged prepared foods (12/77 = 100)	144.6	146.4	146.8	147.4	146.2	146.2	146.8	145.9	147.7	148.0	148.7	147.5	c147.6	148.0
Food away from home	307.6	315.2	316.5	318.0	318.6	319.3	319.8	310.7	318.4	319.7	321.3	321.9	322.5	323.0
Lunch (12/77 = 100)	149.6	153.3	153.7	154.4	154.6	154.9	154.9	151.2	155.0	155.3	156.1	156.2	156.5	156.5
Dinner (12/77 = 100)	148.1	151.7	152.0	152.5	152.7	153.1	153.4	149.8	153.4	153.7	154.2	154.4	154.8	155.1
Other meals and snacks (12/77 = 100)	150.5	154.5	156.0	157.1	157.9	158.2	158.6	151.1	155.1	156.5	157.7	158.4	158.7	159.1
Alcoholic beverages	209.2	213.3	215.1	216.1	216.6	217.0	217.2	211.3	215.6	217.3	218.5	219.1	219.6	219.8
Alcoholic beverages at home (12/77 = 100)	135.5	137.7	139.1	139.7	140.0	140.3	140.7	136.9	139.2	140.6	141.3	141.7	142.0	142.5
Beer and ale	211.4	217.4	219.8	222.5	222.7	224.1	224.8	210.5	216.4	218.6	221.2	221.5	222.8	223.6
Whiskey	148.9	150.9	151.3	151.4	151.3	151.6	152.1	149.8	151.6	151.9	151.9	151.9	152.1	152.6
Wine	236.5	234.7	239.1	236.3	239.1	236.3	237.1	245.0	241.8	246.8	243.9	247.0	244.1	245.2
Other alcoholic beverages (12/77 = 100)	119.6	120.7	121.5	121.5	121.5	122.1	121.7	119.6	120.5	121.2	121.3	121.4	122.0	121.8
Alcoholic beverages away from home (12/77 = 100)	140.8	145.4	145.7	146.5	147.0	147.1	146.1	142.1	146.6	146.9	147.7	148.2	148.3	147.1
HOUSING	319.2	318.5	318.6	320.3	321.8	323.1	324.5	319.3	317.6	319.2	320.3	321.3	322.3	323.1
Shelter (CPI-U)	342.8	339.2	339.3	341.7	342.7	343.6	345.3	344.6	....	....	....	....	....	....
Renters' costs	....	101.2	101.4	101.8	102.2	102.5	103.1	....	....	....	....	....	....	....
Rent, residential	224.8	233.1	233.6	234.5	235.3	235.9	237.1	....	....	....	....	....	....	....
Other renters' costs	330.0	340.8	340.6	343.7	347.5	347.9	352.3	....	....	....	....	....	....	....
Homeowners' costs[2]	....	100.9	100.9	101.7	102.0	102.2	102.7	....	....	....	....	....	....	....
Owners' equivalent rent	....	100.9	100.8	101.7	101.9	102.2	102.7	....	....	....	....	....	....	....
Household insurance	....	100.9	101.5	102.0	102.4	c102.4	102.7	....	....	....	....	....	....	....
Maintenance and repairs	334.7	339.4	339.9	343.6	344.3	345.1	346.1	....	....	....	....	....	....	....
Maintenance and repair services	366.9	373.6	376.7	382.8	382.7	381.6	383.3	....	....	....	....	....	....	....
Maintenance and repair commodities	258.7	259.3	257.7	258.7	260.0	262.3	262.6	....	....	....	....	....	....	....
Shelter (CPI-W)	....	....	....	....	....	....	....	344.6	338.8	341.1	342.4	342.9	343.3	344.1
Rent, residential	....	....	....	....	....	....	....	224.3	232.5	233.1	234.0	234.6	235.3	236.5
Other renters' costs	....	....	....	....	....	....	....	329.4	339.0	339.0	342.3	345.5	345.8	350.4
Lodging while out of town	....	....	....	....	....	....	....	354.2	353.6	353.1	358.2	363.0	363.5	370.7
Tenants' insurance (12/77 = 100)	....	....	....	....	....	....	....	144.8	151.5	152.6	153.2	154.0	153.5	153.8
Homeownership	....	....	....	....	....	....	....	388.0	376.9	379.9	381.2	381.7	381.9	382.5
Home purchase	....	....	....	....	....	....	....	286.8	293.7	298.9	301.0	303.9	303.5	303.3
Financing, taxes, and insurance	....	....	....	....	....	....	....	532.4	491.3	491.8	492.2	489.1	490.0	491.3
Property insurance	....	....	....	....	....	....	....	403.7	417.9	419.2	422.3	426.3	430.6	430.8
Property taxes	....	....	....	....	....	....	....	221.1	231.4	231.7	232.9	233.8	234.6	235.1
Contracted mortgage interest costs	....	....	....	....	....	....	....	694.0	625.1	625.7	625.5	620.1	620.8	622.5
Mortgage interest rates	....	....	....	....	....	....	....	239.2	211.1	207.5	206.0	202.4	203.0	203.8
Maintenance and repairs	....	....	....	....	....	....	....	331.5	336.2	337.5	339.0	339.9	341.0	342.0
Maintenance and repair services	....	....	....	....	....	....	....	368.1	374.5	376.6	378.9	379.5	380.0	381.4
Maintenance and repair commodities	....	....	....	....	....	....	....	252.9	254.5	254.2	253.9	255.6	257.5	258.0
Paint and wallpaper, supplies, tools, and equipment (12/77 = 100)	....	....	....	....	....	....	....	146.5	148.0	146.0	145.7	148.1	149.4	149.2
Lumber, awnings, glass, and masonry (12/77 = 100)	....	....	....	....	....	....	....	122.5	122.2	124.1	123.4	124.3	124.2	125.8
Plumbing, electrical, heating, and cooling supplies (12/77 = 100)	....	....	....	....	....	....	....	136.6	136.6	137.5	137.4	138.0	138.8	138.7
Miscellaneous supplies and equipment (12/77 = 100)	....	....	....	....	....	....	....	140.5	142.2	142.4	143.1	141.3	144.1	143.3

[1967 = 100 unless otherwise specified]

General summary	All Urban Consumers							Urban Wage Earners and Clerical Workers						
	1982	1983						1982	1983					
	July	Feb.	Mar.	Apr.	May	June	July	July	Feb.	Mar.	Apr.	May	June	July
Fuel and other utilities	354.7	364.6	363.8	363.6	369.3	373.6	375.5	356.2	365.9	365.2	365.1	370.8	375.5	377.3
Fuels	452.0	461.5	459.7	459.2	468.3	475.2	477.7	451.9	461.2	459.5	459.3	468.2	475.6	477.9
Fuel oil, coal, and bottled gas	659.9	654.0	625.3	610.6	621.0	620.0	619.3	662.9	656.0	627.3	612.8	623.4	622.4	621.7
Fuel oil	688.6	669.7	636.4	618.4	629.6	628.5	627.2	691.1	671.3	637.9	620.4	631.8	630.7	629.5
Other fuels (6/78 = 100)	166.0	187.1	185.9	186.7	188.6	188.6	189.3	167.4	188.1	187.0	187.7	189.7	189.5	190.2
Gas (piped) and electricity	402.1	414.5	418.0	420.5	429.1	437.4	440.5	401.5	413.8	417.5	420.1	428.5	437.4	440.3
Electricity	330.5	320.1	321.2	319.9	324.7	337.4	341.1	330.8	319.4	320.7	319.3	324.2	337.9	341.6
Utility (piped) gas	500.2	560.1	568.3	578.3	593.9	591.8	593.0	496.9	557.6	565.9	576.5	591.0	588.8	589.5
HOUSING														
Fuel and other utilities														
Other utilities and public services	201.4	210.9	211.4	211.7	212.5	213.2	214.2	202.1	211.6	212.2	212.5	213.4	214.1	215.3
Telephone services	163.8	171.7	172.1	171.9	172.8	173.4	173.8	164.2	172.1	172.5	172.4	173.2	173.9	174.3
Local charges (12/77 = 100)	131.9	139.9	140.3	139.9	140.9	141.8	141.8	132.3	140.2	140.6	140.3	141.3	142.2	142.3
Interstate toll calls (12/77 = 100)	119.7	121.8	121.8	121.8	121.8	121.8	121.9	120.1	122.2	122.2	122.3	122.3	122.2	122.3
Intrastate toll calls (12/77 = 100)	110.0	115.9	116.3	116.6	117.1	117.4	118.2	109.6	115.8	116.2	116.6	117.1	117.4	118.2
Water and sewerage maintenance	327.7	343.9	345.6	347.5	348.2	348.9	353.5	330.8	347.2	349.0	350.8	351.8	352.6	357.7
Household furnishings and operations	234.1	236.7	237.6	239.9	238.4	238.6	238.9	230.9	233.4	234.6	236.0	235.4	235.5	235.8
Housefurnishings	194.7	195.9	197.1	198.7	197.6	197.8	198.1	192.7	193.8	195.3	196.7	195.8	195.9	196.1
Textile housefurnishings	218.6	228.2	230.3	229.4	228.7	226.8	227.3	221.1	232.2	234.8	233.6	232.7	230.5	231.1
Household linens (12/77 = 100)	131.9	139.0	136.7	134.2	136.2	135.4	134.4	133.3	140.7	137.9	135.3	137.3	136.4	135.6
Curtains, drapes, slipcovers, and sewing materials (12/77 = 100)	140.8	145.7	150.9	152.4	149.4	147.7	149.3	143.2	149.5	156.2	157.8	154.1	152.1	154.0
Furniture and bedding	214.2	213.8	215.8	221.6	220.0	220.0	220.5	210.5	210.2	213.2	218.1	216.7	216.5	217.6
Bedroom furniture (12/77 = 100)	144.8	146.6	148.9	152.9	151.9	152.3	156.5	141.2	142.7	146.0	149.4	148.8	148.9	153.0
Sofas (12/77 = 100)	117.7	116.5	118.3	118.9	118.1	118.0	117.7	118.1	117.1	118.9	119.1	118.6	118.3	118.0
Living room chairs and tables (12/77 = 100)	121.9	121.0	122.0	126.2	123.9	124.2	123.9	122.0	121.5	122.6	126.6	124.5	124.9	125.0
Other furniture (12/77 = 100)	140.9	139.8	139.7	144.6	144.5	143.8	141.1	136.3	135.1	136.0	140.2	139.8	139.0	137.1
Appliances including TV and sound equipment	151.6	151.5	151.9	152.3	151.2	151.4	150.9	151.5	151.3	151.7	152.4	151.7	151.9	151.2
Television and sound equipment	108.7	107.1	106.9	107.1	106.1	105.9	105.2	107.8	106.1	105.9	106.2	105.1	105.0	104.3
Television	104.0	101.9	101.2	100.9	100.2	100.8	100.1	102.7	100.5	99.9	99.7	99.0	99.6	99.0
Sound equipment (12/77 = 100)	114.0	112.8	113.1	113.6	112.3	111.6	110.8	113.2	111.8	111.9	112.6	111.3	110.5	109.8
Household appliances	184.2	186.3	187.7	188.5	187.8	188.4	188.6	184.8	186.7	188.0	188.9	188.9	189.5	189.0
Refrigerators and home freezers	187.4	192.2	193.3	193.3	194.1	194.0	192.7	192.9	198.1	198.9	199.2	200.3	200.2	199.2
Laundry equipment	137.3	141.8	142.5	142.7	143.5	144.6	143.0	137.5	142.3	142.9	143.6	144.6	145.2	143.5
Other household appliances (12/77 = 100)	124.4	123.6	124.6	125.4	124.3	124.7	125.6	123.0	121.5	122.7	123.5	122.6	123.2	123.6
Stoves, dishwashers, vacuums, and sewing machines (12/77 = 100)	123.3	122.3	124.2	125.0	123.2	123.9	124.0	122.2	120.2	122.4	123.3	121.7	122.8	122.6
Office machines, small electric appliances, and air conditioners (12/77 = 100)	125.6	125.1	125.2	126.1	125.5	125.7	127.3	123.9	122.9	122.9	123.8	123.6	123.7	124.8
Other household equipment (12/77 = 100)	139.6	140.2	140.7	140.4	139.9	141.2	142.0	137.5	137.9	138.6	138.4	138.0	139.0	139.7
Floor and window coverings, infants', laundry, cleaning, and outdoor equipment (12/77 = 100)	142.7	143.3	143.0	143.2	143.2	142.2	145.1	135.4	134.9	135.0	135.3	135.5	134.3	137.3
Clocks, lamps, and decor items (12/77 = 100)	132.3	132.4	133.9	133.3	132.5	133.0	133.6	128.3	127.3	129.2	128.3	128.3	128.8	129.3
Tableware, serving pieces, and nonelectric kitchenware (12/77 = 100)	145.9	145.7	146.4	145.5	145.1	149.2	149.1	141.9	141.8	142.6	142.0	141.6	145.0	144.9
Lawn equipment, power tools, and other hardware (12/77 = 100)	133.2	135.4	135.5	135.9	135.1	135.0	135.5	138.5	140.6	140.9	141.4	140.2	139.9	140.4
Housekeeping supplies	288.4	294.8	295.4	296.9	296.6	296.3	296.8	285.0	291.6	292.2	293.9	293.6	293.2	293.5
Soaps and detergents	281.4	290.1	292.3	294.5	294.5	294.9	294.6	277.6	286.1	288.1	290.4	290.6	290.9	290.3
Other laundry and cleaning products (12/77 = 100)	145.3	149.1	149.5	150.6	150.3	151.5	151.4	144.2	147.9	148.3	149.5	149.2	150.4	150.2
Cleansing and toilet tissue, paper towels and napkins (12/77 = 100)	147.7	150.4	149.3	148.8	148.0	147.3	148.1	147.4	150.5	149.1	148.9	148.0	147.4	148.2
Stationery, stationery supplies, and gift wrap (12/77 = 100)	134.3	138.6	139.3	139.6	139.8	139.9	140.3	137.8	141.7	142.3	142.7	142.9	142.8	143.2
Miscellaneous household products (12/77 = 100)	150.3	154.3	154.4	154.5	154.4	154.0	153.9	145.1	149.1	149.2	149.2	149.1	148.7	148.6
Lawn and garden supplies (12/77 = 100)	145.3	144.4	145.0	147.2	147.3	147.8	146.6	138.1	137.4	138.5	141.4	141.4	139.4	139.7
Housekeeping services	312.5	315.9	316.4	317.1	318.0	318.5	318.7	311.6	315.6	316.1	316.5	317.5	318.0	318.3
Postage	337.5	337.5	337.5	337.5	337.5	337.5	337.5	337.5	337.5	337.5	337.5	337.5	337.5	337.5
Moving, storage, freight, household laundry, and drycleaning services (12/77 = 100)	155.3	159.8	160.6	160.8	161.7	162.3	162.2	155.4	160.0	160.7	160.8	161.7	162.3	162.3
Appliance and furniture repair (12/77 = 100)	137.5	141.2	141.5	141.7	142.9	143.3	144.0	136.0	139.5	139.8	140.0	141.2	141.6	142.2
APPAREL AND UPKEEP	189.7	192.0	194.5	195.5	196.1	195.6	195.0	188.7	191.0	194.0	194.8	195.3	194.7	194.0
Apparel commodities	178.6	180.2	182.8	183.7	184.2	183.6	182.8	178.2	179.7	182.9	183.5	183.9	183.2	182.4
Apparel commodities less footwear	174.0	176.0	178.9	179.4	180.2	179.7	179.3	173.4	175.3	178.9	179.4	179.8	179.2	178.7
Men's and boys'	182.4	184.4	186.7	187.8	189.5	189.1	188.2	182.6	184.8	187.0	187.9	189.7	189.0	188.1
Men's (12/77 = 100)	114.9	116.2	117.1	117.9	119.2	118.8	118.3	115.4	116.9	117.6	118.3	119.9	119.2	118.7
Suits, sport coats, and jackets (12/77 = 100)	105.5	106.7	109.1	c110.3	110.9	111.2	110.7	99.2	100.2	102.1	103.5	103.9	103.9	103.3
Coats and jackets	98.2	98.1	100.0	100.0	101.1	100.7	98.2	99.8	99.9	102.2	102.4	104.3	103.3	100.7
Furnishings and special clothing (12/77 = 100)	138.7	142.6	141.4	142.8	144.5	144.3	145.3	135.3	139.1	137.6	138.6	140.4	140.3	141.3
Shirts (12/77 = 100)	121.6	122.0	121.7	122.0	124.6	122.6	120.9	123.6	125.0	124.4	125.0	c127.6	125.8	124.2
Dungarees, jeans, and trousers (12/77 = 100)	109.5	110.5	111.5	112.0	113.2	113.0	112.8	115.0	116.1	117.4	117.7	119.1	118.6	118.4
Boys' (12/77 = 100)	118.6	119.3	123.2	123.5	123.3	123.7	123.0	116.9	117.7	121.4	121.5	121.4	121.6	120.9
Coats, jackets, sweaters, and shirts (12/77 = 100)	109.0	108.1	115.5	115.2	115.4	116.3	114.9	109.7	109.3	116.4	115.7	116.1	116.6	115.5
Furnishings (12/77 = 100)	132.1	132.5	134.0	134.9	134.1	136.1	135.8	134.9	128.2	128.4	129.6	130.4	131.6	131.2	130.4
Suits, trousers, sport coats, and jackets (12/77 = 100)	120.7	122.9	124.9	125.5	124.4	124.7	124.6	118.3	120.2	122.3	122.6	121.7	121.9	121.6
Women's and girls'	154.6	155.7	160.0	160.6	160.1	159.7	158.8	156.2	157.2	162.8	163.1	162.4	161.5	160.8
Women's (12/77 = 100)	102.1	103.2	106.2	106.5	106.1	106.1	105.5	103.5	104.4	108.4	108.3	107.6	107.4	107.0
Coats and jackets	154.9	160.9	170.1	168.1	164.7	164.4	164.8	161.8	165.5	178.4	177.1	172.7	171.8	169.4
Dresses	152.8	154.9	158.5	161.5	162.7	164.3	161.4	138.4	140.6	144.4	145.7	146.7	148.8	147.2

20. Continued—Consumer Price Index—U.S. city average

[1967 = 100 unless otherwise specified]

General summary	All Urban Consumers							Urban Wage Earners and Clerical Workers						
	1982	1983						1982	1983					
	July	Feb.	Mar.	Apr.	May	June	July	July	Feb.	Mar.	Apr.	May	June	July
APPAREL AND UPKEEP—Continued														
Apparel Commodities—Continued														
Apparel commodities less footwear—Continued														
Separates and sportswear (12/77 = 100)	96.7	94.6	98.5	100.1	98.1	97.7	96.3	97.6	95.3	99.2	101.0	98.9	98.4	96.9
Underwear, nightwear, and hosiery (12/77 = 100)	127.7	130.0	131.0	131.1	133.0	132.8	131.7	127.4	129.7	130.7	130.8	132.7	132.4	131.4
Suits (12/77 = 100)	77.6	79.7	83.7	80.5	77.8	77.2	81.0	93.1	95.6	104.7	99.4	95.9	93.9	99.8
Girls' (12/77 = 100)	106.3	105.1	107.6	108.2	108.4	c106.5	106.2	105.4	104.9	108.0	109.2	109.4	107.4	106.6
Coats, jackets, dresses, and suits (12/77 = 100) . . .	98.8	96.5	98.4	97.1	96.3	96.3	100.1	96.0	95.8	97.6	98.5	97.3	96.5	100.0
Separates and sportswear (12/77 = 100)	103.6	101.5	105.6	107.5	108.1	103.5	99.8	104.1	102.0	107.5	109.1	110.3	106.1	101.3
Underwear, nightwear, hosiery, and accessories (12/77 = 100)	123.8	125.8	126.4	127.8	128.6	128.6	127.7	122.7	124.9	125.6	126.9	127.4	127.5	126.8
Infants' and toddlers'	268.8	278.8	280.1	280.4	280.7	283.0	282.4	283.0	289.5	291.1	291.0	290.9	293.4	293.1
Other apparel commodities	209.7	213.4	213.4	214.4	215.0	214.0	215.9	198.7	201.7	201.9	202.5	203.3	203.0	204.6
Sewing materials and notions (12/77 = 100)	120.0	120.5	120.4	121.8	122.9	122.4	123.0	118.5	118.5	118.4	119.4	120.6	120.5	121.0
Jewelry and luggage (12/77 = 100)	142.2	145.4	145.4	145.8	145.9	145.1	146.7	133.1	135.9	136.1	136.2	136.5	136.2	137.4
Footwear	206.4	205.6	206.6	207.5	208.0	206.8	203.8	206.7	205.2	206.1	207.2	207.7	206.6	203.7
Men's (12/77 = 100)	132.3	132.2	133.2	133.9	133.7	133.7	132.8	134.3	133.9	134.8	135.6	135.4	135.5	134.7
Boys' and girls' (12/77 = 100)	131.7	131.2	131.1	130.7	131.7	130.7	128.9	134.4	133.4	133.2	133.4	134.3	133.1	131.0
Women's (12/77 = 100)	125.6	124.6	125.5	126.5	126.9	125.6	122.9	121.5	120.4	121.1	122.0	122.5	121.3	118.9
Apparel services	276.6	285.4	286.7	288.7	290.3	290.9	291.8	274.3	283.6	284.9	287.1	288.6	289.2	290.0
Laundry and drycleaning other than coin operated (12/77 = 100)	165.4	170.3	170.8	171.7	172.8	173.5	174.1	163.8	168.8	169.3	170.3	171.3	171.9	172.5
Other apparel services (12/77 = 100)	144.1	149.1	150.4	152.0	152.5	152.4	152.7	144.6	150.3	151.4	153.1	153.7	153.7	153.9
TRANSPORTATION	296.1	289.9	287.4	292.3	296.2	298.3	300.4	297.9	291.1	288.6	293.5	297.5	299.6	301.9
Private	292.3	285.2	282.7	287.5	291.7	293.8	296.0	295.1	287.6	285.0	289.9	294.1	296.3	298.6
New cars	198.6	201.3	201.2	201.1	201.6	201.6	201.4	198.5	201.0	200.9	200.7	201.3	201.2	201.0
Used cars	302.4	309.1	309.3	312.7	317.1	322.7	329.6	302.4	309.1	309.3	312.7	317.1	322.7	329.6
Gasoline	400.3	359.4	348.6	367.6	380.9	386.1	389.3	401.6	361.2	350.3	369.3	382.4	387.4	390.6
Automobile maintenance and repair	318.0	325.9	326.6	327.4	328.7	329.5	329.8	318.7	326.6	327.4	328.1	329.4	330.2	330.4
Body work (12/77 = 100)	157.5	162.7	163.6	164.7	165.5	166.4	166.6	. . . .	161.5	162.5	163.4	164.3	165.3	165.6
Automobile drive train, brake, and miscellaneous mechanical repair (12/77 = 100)	151.9	156.1	156.3	157.3	157.7	157.7	158.3	156.0	160.1	160.3	161.2	161.6	161.7	162.2
Maintenance and servicing (12/77 = 100)	147.9	151.1	150.9	151.0	151.7	152.2	152.0	147.3	150.5	150.3	150.4	151.0	151.5	151.3
Power plant repair (12/77 = 100)	151.7	155.4	156.2	156.2	156.8	157.0	157.3	151.2	154.8	155.6	155.7	156.3	156.4	156.6
Other private transportation	260.8	259.7	259.2	258.4	258.7	258.1	258.6	264.0	261.1	260.5	259.3	259.6	258.9	259.4
Other private transportation commodities	216.3	215.0	213.3	212.2	210.9	210.4	209.6	218.8	217.4	215.8	214.7	213.3	212.9	212.1
Motor oil, coolant, and other products (12/77 = 100)	151.5	154.8	154.8	156.1	155.1	156.0	155.3	150.3	153.8	153.8	155.0	153.9	154.8	154.1
Automobile parts and equipment (12/77 = 100) . . .	138.2	136.7	135.5	134.5	133.6	133.2	132.7	140.1	138.5	137.4	136.4	135.4	135.0	134.5
Tires	191.8	190.6	188.1	186.4	185.1	184.3	183.5	195.5	194.1	191.7	190.1	188.8	187.9	187.2
Other parts and equipment (12/77 = 100)	136.6	133.7	133.9	133.4	132.7	132.7	132.3	136.8	133.6	133.8	133.4	132.4	132.5	132.1
Other private transportation services	275.1	274.1	273.9	273.1	273.9	273.3	274.1	278.5	275.2	274.8	273.7	274.4	273.6	274.5
Automobile insurance	275.4	295.6	297.0	299.0	301.2	301.1	302.4	274.9	294.9	296.3	298.2	300.5	300.5	302.0
Automobile finance charges (12/77 = 100)	193.6	165.0	161.9	157.3	154.5	152.2	151.7	192.6	164.0	161.0	156.6	153.8	151.4	151.1
Automobile rental, registration, and other fees (12/77 = 100) . .	137.4	140.1	141.1	141.4	143.8	144.7	145.6	138.4	140.8	141.9	142.2	144.9	146.0	146.9
State registration	183.6	184.9	186.6	186.6	192.3	192.3	194.8	183.2	184.3	186.3	186.3	192.1	192.1	194.7
Drivers' licenses (12/77 = 100)	132.8	133.5	133.9	133.9	133.9	150.3	152.9	133.1	133.7	134.1	134.1	134.1	150.6	153.4
Vehicle inspection (12/77 = 100)	128.5	128.6	129.2	131.1	131.2	131.2	139.0	129.9	129.9	130.5	132.4	132.5	132.5	139.8
Other vehicle-related fees (12/77 = 100)	151.0	156.2	157.0	157.6	158.5	159.0	157.9	158.7	164.1	165.1	165.4	166.5	167.0	165.5
Public	347.2	355.2	354.5	361.1	359.1	361.2	363.2	339.8	347.7	347.3	353.3	351.2	352.7	354.4
Airline fare	397.4	405.5	402.9	417.2	411.2	415.4	418.8	393.2	401.5	398.9	415.9	407.4	410.9	415.9
Intercity bus fare	368.3	383.8	389.4	394.6	401.7	403.9	404.2	370.6	385.4	392.0	396.9	403.0	405.2	404.1
Intracity mass transit	311.0	319.4	320.1	320.2	321.7	321.7	322.6	310.3	318.3	319.0	319.1	320.1	320.6	320.7
Taxi fare	299.3	301.2	300.8	302.0	302.1	301.0	301.0	308.7	310.8	310.4	311.4	311.6	311.0	311.0
Intercity train fare	338.4	351.8	351.9	352.0	352.3	353.2	361.3	338.4	352.2	352.3	352.5	352.7	353.6	362.3
MEDICAL CARE	330.0	351.3	352.3	353.5	354.3	355.4	357.7	328.1	348.9	350.0	351.2	352.1	353.3	355.6
Medical care commodities	206.5	216.7	218.6	221.2	222.5	223.2	224.2	207.1	217.2	219.0	221.6	222.8	223.6	224.5
Prescription drugs	193.4	205.9	208.7	211.6	212.9	213.7	214.5	194.4	207.1	209.9	212.8	214.1	214.8	215.6
Anti-infective drugs (12/77 = 100)	144.2	153.3	153.8	155.2	155.8	156.6	157.2	146.0	155.5	155.8	157.2	157.8	158.8	159.2
Tranquilizers and sedatives (12/77 = 100)	156.1	168.2	171.4	174.7	176.3	177.0	177.6	155.8	167.9	171.2	174.5	176.1	176.7	177.2
Circulatories and diuretics (12/77 = 100)	139.3	147.2	151.2	153.4	153.5	153.3	154.0	139.1	147.2	151.0	153.2	153.4	153.2	153.9
Hormones, diabetic drugs, biologicals, and prescription medical supplies (12/77 = 100)	179.6	189.0	192.4	196.1	197.8	198.1	198.1	181.1	190.8	194.2	198.1	199.7	199.9	199.8
Pain and symptom control drugs (12/77 = 100)	155.4	168.6	170.0	171.7	172.3	173.3	175.1	157.1	170.3	171.7	173.4	174.1	175.1	176.8
Supplements, cough and cold preparations, and respiratory agents (12/77 = 100)	147.9	156.4	157.8	159.4	160.7	161.8	162.3	148.1	156.7	158.1	159.7	161.0	162.0	162.5
Nonprescription drugs and medical supplies (12/77 = 100)	146.4	151.6	152.3	153.8	154.7	155.2	155.9	147.1	152.4	153.1	154.6	155.4	156.0	156.7
Eyeglasses (12/77 = 100)	131.6	134.6	134.9	135.1	134.8	135.0	135.8	130.4	133.4	133.7	133.9	133.8	133.9	134.6
Internal and respiratory over-the-counter drugs	234.9	245.1	245.5	248.7	250.9	251.9	253.5	236.2	246.4	246.8	250.2	252.1	253.3	254.9
Nonprescription medical equipment and supplies (12/77 = 100) . . .	142.2	146.1	148.0	149.4	150.0	150.4	150.3	143.2	147.4	149.4	150.6	151.3	151.4	151.3
Medical care services	357.3	381.5	382.2	382.8	383.5	384.6	387.2	354.7	378.2	379.0	379.7	380.5	381.7	384.4
Professional services	302.8	315.4	316.7	318.0	319.7	322.0	324.2	302.9	315.7	316.9	318.4	320.0	322.2	324.6
Physicians' services	328.7	344.8	346.4	348.2	349.4	351.7	353.9	331.6	348.2	349.8	351.8	353.9	355.3	357.6

20. Continued—Consumer Price Index—U.S. city average

[1967 = 100 unless otherwise specified]

General summary	All Urban Consumers							Urban Wage Earners and Clerical Workers						
	1982	1983						1982	1983					
	July	Feb.	Mar.	Apr.	May	June	July	July	Feb.	Mar.	Apr.	May	June	July
MEDICAL CARE—Continued														
Medical care service—Continued														
Professional services—Continued														
Dental services	284.8	294.0	294.6	295.7	298.6	301.2	303.8	282.9	291.8	292.3	293.4	296.1	298.9	301.6
Other professional services (12/77 = 100)	144.8	150.5	151.6	151.9	151.8	152.3	153.0	141.5	147.2	148.3	148.5	148.5	148.7	149.6
Other medical care services	423.2	461.3	461.4	461.1	460.5	460.4	463.3	419.4	457.0	457.1	456.9	456.4	456.4	459.4
Hospital and other medical services (12/77 = 100)	174.7	188.6	189.5	190.2	190.8	191.5	193.8	172.9	187.0	187.8	188.4	189.0	189.6	191.9
Hospital room	557.8	604.1	606.2	608.0	609.6	609.6	619.1	549.7	596.7	598.8	600.7	601.8	602.2	611.2
Other hospital and medical care services (12/77 = 100)	171.2	184.5	185.6	186.3	187.0	188.3	189.9	170.0	183.3	184.3	184.9	185.6	186.8	188.4
ENTERTAINMENT	236.6	243.1	244.6	244.6	244.8	245.4	246.0	233.5	239.5	240.8	241.1	241.3	241.9	242.5
Entertainment commodities	241.1	244.5	246.8	246.0	246.3	246.3	246.7	235.5	238.8	240.8	240.5	240.7	240.7	241.4
Reading materials (12/77 = 100)	150.4	156.1	159.3	158.4	159.7	158.5	158.5	149.7	155.5	158.7	157.8	159.1	158.0	158.0
Newspapers	285.9	296.5	299.6	300.2	301.6	302.0	302.7	285.6	296.4	299.8	300.4	301.7	302.0	302.7
Magazines, periodicals, and books (12/77 = 100)	156.1	162.2	167.1	164.8	166.8	164.2	163.6	156.0	162.1	167.3	164.8	167.0	164.2	163.6
Sporting goods and equipment (12/77 = 100)	132.8	133.4	134.2	133.6	133.2	134.0	134.2	125.7	127.0	127.2	127.5	127.3	127.7	128.3
Sport vehicles (12/77 = 100)	135.4	136.1	137.3	136.3	135.7	136.7	137.1	124.1	126.0	126.4	126.7	126.5	126.8	127.8
Indoor and warm weather sport equipment (12/77 = 100)	120.3	120.5	120.8	121.3	120.5	119.9	118.6	118.0	117.9	118.4	118.9	118.0	117.6	116.4
Bicycles	198.3	196.7	197.8	196.1	196.6	199.2	199.8	199.4	197.7	198.0	197.4	197.9	200.2	200.7
Other sporting goods and equipment (12/77 = 100)	129.4	132.1	131.6	132.0	132.2	132.2	132.8	129.8	131.9	131.5	132.0	132.3	132.2	132.7
Toys, hobbies, and other entertainment (12/77 = 100)	137.3	138.0	138.6	138.5	138.4	138.6	139.0	136.1	136.7	137.3	137.2	137.1	137.3	137.7
Toys, hobbies, and music equipment (12/77 = 100)	137.2	136.9	137.6	137.3	137.4	137.4	137.7	133.7	133.0	133.7	133.4	133.5	133.6	134.0
Photographic supplies and equipment (12/77 = 100)	130.8	131.2	131.6	131.6	131.7	131.4	131.6	131.9	132.3	132.8	132.6	132.6	132.4	132.7
Pet supplies and expenses (12/77 = 100)	142.0	144.9	145.6	145.8	145.1	145.9	146.6	143.0	145.9	146.5	146.9	146.1	146.9	147.6
Entertainment services	230.8	241.6	241.9	243.1	243.2	244.7	245.4	231.3	241.8	242.1	243.3	243.5	245.1	245.8
Fees for participant sports (12/77 = 100)	141.8	150.6	150.9	151.3	150.8	151.3	151.8	143.0	151.7	152.2	152.4	152.1	152.5	152.8
Admissions (12/77 = 100)	135.5	140.9	140.1	141.7	142.4	144.7	146.4	134.6	139.8	139.1	140.7	143.7	143.7	145.4
Other entertainment services (12/77 = 100)	127.8	130.3	131.0	131.6	131.9	131.8	130.6	128.8	131.2	131.8	132.4	132.6	132.6	131.4
OTHER GOODS AND SERVICES	257.2	281.6	281.9	283.2	283.6	284.5	287.5	254.5	279.6	280.0	281.4	281.8	282.8	286.4
Tobacco products	239.2	282.8	283.3	284.9	285.3	285.9	294.6	238.3	282.2	282.7	284.3	284.8	285.4	294.3
Cigarettes	242.2	290.0	290.4	292.0	292.4	293.1	302.8	241.3	288.8	289.3	290.9	291.5	292.0	301.7
Other tobacco products and smoking accessories (12/77 = 100)	142.1	147.8	148.6	149.6	149.6	149.9	150.5	142.2	147.7	148.5	149.5	149.6	149.8	150.5
Personal care	249.4	257.8	257.8	259.1	259.4	260.9	261.3	247.5	255.5	255.8	257.1	257.3	259.0	259.4
Toilet goods and personal care appliances	247.7	256.0	257.1	258.5	258.6	261.4	262.3	248.6	256.8	257.8	259.3	259.3	262.1	263.0
Products for the hair, hairpieces, and wigs (12/77 = 100)	145.0	148.1	148.5	150.9	150.8	151.7	152.5	144.2	147.4	147.8	150.3	150.0	150.9	151.7
Dental and shaving products (12/77 = 100)	150.9	159.3	160.4	160.5	161.2	162.5	162.6	149.5	157.8	158.9	158.9	159.6	160.8	160.8
Cosmetics, bath and nail preparations, manicure and eye makeup implements (12/77 = 100)	139.9	145.6	146.0	145.6	145.1	148.5	148.8	140.5	146.4	146.7	146.3	145.7	149.2	149.5
Other toilet goods and small personal care appliances (12/77 = 100) . . .	141.8	144.1	144.9	146.0	146.7	147.1	147.9	145.4	147.7	148.5	149.8	150.3	150.7	151.6
Personal care services	251.8	260.4	259.5	260.7	261.1	261.6	261.5	246.9	254.7	254.3	255.4	255.7	256.3	256.4
Beauty parlor services for women	254.4	264.4	262.4	264.2	264.5	265.0	264.3	247.9	256.8	255.5	257.2	257.4	258.0	257.5
Haircuts and other barber shop services for men (12/77 = 100) . . .	139.8	143.1	143.7	143.8	144.1	144.4	145.1	138.5	141.9	142.6	142.7	143.0	143.2	143.9
Personal and educational expenses	294.5	323.3	323.9	324.9	325.6	326.0	327.2	296.4	325.0	325.7	326.8	327.7	328.1	329.4
Schoolbooks and supplies	264.8	292.0	292.3	292.5	292.9	293.6	294.2	269.0	296.0	296.3	296.5	296.8	297.6	298.3
Personal and educational services	301.7	331.0	331.5	332.7	333.5	333.8	335.1	303.4	332.5	333.2	334.5	335.5	335.8	337.3
Tuition and other school fees	152.0	167.4	167.4	167.6	167.7	167.6	168.0	152.5	167.9	167.9	168.2	168.2	168.2	168.5
College tuition (12/77 = 100)	151.8	167.0	167.0	167.4	167.4	167.3	167.8	152.0	167.1	167.1	167.5	167.5	167.4	167.9
Elementary and high school tuition (12/77 = 100)	152.2	168.8	168.8	168.8	168.9	168.9	168.9	152.9	169.8	169.8	169.8	169.9	169.9	169.9
Personal expenses (12/77 = 100)	166.0	179.6	181.2	183.1	185.1	186.1	187.9	166.1	179.5	181.1	183.1	185.3	186.2	188.3
Special indexes:														
Gasoline, motor oil, coolant, and other products	395.0	355.8	345.2	363.4	376.2	381.2	384.3	396.2	357.3	346.7	365.0	377.6	c382.4	385.4
Insurance and finance	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	438.8	411.6	411.8	411.6	410.0	c410.2	411.4
Utilities and public transportation	318.7	329.4	331.1	333.4	337.2	341.5	343.6	317.8	328.5	330.4	332.6	336.5	c341.1	343.1
Housekeeping and home maintenance services	350.3	355.1	356.0	357.3	358.2	358.6	358.9	351.0	356.5	357.9	359.5	360.3	c360.8	361.7

[1] Excludes motor oil, coolant, and other products as of January 1983.
[2] See box with "Price Data."

c = corrected.

21. Consumer Price Index for All Urban Consumers: Cross classification of region and population size class by expenditure category and commodity and service group

[December 1977 = 100]

Category and group	Size class A (1.25 million or more) 1983			Size class B (385,000–1,250 million) 1983			Size class C (75,000–385,000) 1983			Size class D (75,000 or less) 1983		
	Feb.	Apr.	June	Feb.	Apr.	June	Feb.	Apr.	June	Feb.	Apr.	June
Northeast												
EXPENDITURE CATEGORY												
All items	151.8	153.1	153.9	158.2	159.0	160.8	162.9	163.5	164.2	156.1	158.2	158.5
Food and beverages	146.0	147.0	147.4	144.2	146.2	146.8	149.8	151.1	150.6	144.0	145.8	146.3
Housing	156.7	158.0	158.9	168.8	169.1	170.7	176.2	176.4	176.7	163.1	165.1	163.9
Apparel and upkeep	120.3	122.6	122.6	121.9	122.4	124.4	126.6	128.5	128.9	124.3	130.2	129.5
Transportation	159.1	160.1	161.7	164.8	165.4	169.2	164.2	164.3	166.6	162.5	164.3	166.7
Medical care	158.1	159.6	160.9	161.6	163.0	163.5	165.5	166.0	166.7	164.1	165.8	168.5
Entertainment	141.6	143.1	144.1	139.1	139.1	138.8	140.0	139.8	142.1	147.2	146.5	148.1
Other goods and services	154.4	156.2	156.7	157.3	158.6	159.8	160.4	162.3	163.1	159.4	162.1	162.2
COMMODITY AND SERVICE GROUP												
Commodities	147.6	148.4	149.1	153.1	153.0	154.8	153.3	153.6	154.3	150.2	151.3	152.3
Commodities less food and beverages	148.4	149.0	150.0	157.1	155.7	158.3	154.5	154.3	155.8	152.7	153.4	154.8
Services	157.1	159.0	160.0	166.1	168.2	169.8	178.3	179.4	180.1	165.1	168.5	167.9
North Central Region												
EXPENDITURE CATEGORY												
All items	162.4	163.6	165.2	159.6	161.1	162.0	155.8	157.3	158.3	156.6	158.1	159.3
Food and beverages	144.7	145.4	145.0	143.4	144.1	143.8	143.8	145.6	145.0	149.1	150.9	151.7
Housing	180.2	181.9	185.3	170.2	171.7	172.2	163.2	164.1	165.2	162.2	163.8	163.9
Apparel and upkeep	115.4	117.9	116.8	124.4	128.8	129.2	124.1	128.4	127.0	122.0	123.5	122.2
Transportation	160.7	161.7	164.2	162.1	164.0	167.1	162.0	163.9	167.1	160.6	161.2	165.7
Medical care	164.2	165.3	166.1	167.7	168.3	168.5	164.7	165.8	166.3	171.0	172.2	173.1
Entertainment	141.3	141.9	141.9	135.9	136.7	136.9	144.3	145.9	147.3	135.2	136.5	137.1
Other goods and services	155.4	156.2	156.7	167.5	167.4	168.5	152.9	152.6	153.8	163.3	165.2	166.3
COMMODITY AND SERVICE GROUP												
Commodities	151.2	152.7	153.5	149.7	151.7	152.8	147.2	149.1	150.0	147.2	148.5	149.9
Commodities less food and beverages	153.9	155.9	157.5	152.0	154.6	156.8	148.4	150.3	152.2	146.2	147.3	149.0
Services	178.8	179.9	182.4	175.3	176.1	176.8	169.6	170.7	171.7	171.5	173.0	174.1
South												
EXPENDITURE CATEGORY												
All items	158.0	159.1	161.2	159.5	160.9	161.7	159.0	160.2	161.2	159.5	160.8	162.0
Food and beverages	148.7	150.5	150.9	147.3	149.2	148.9	146.1	147.4	147.3	147.7	149.9	150.7
Housing	164.9	163.5	168.5	166.1	166.9	167.9	167.3	167.8	168.7	169.9	169.9	170.3
Apparel and upkeep	127.6	128.7	129.8	124.0	126.2	124.6	120.1	123.1	123.0	108.3	112.5	113.9
Transportation	162.1	163.8	166.8	165.0	167.1	170.3	163.8	165.9	168.5	161.3	162.9	166.0
Medical care	167.1	168.7	169.0	167.2	167.9	167.5	176.8	177.5	178.5	182.5	183.0	184.4
Entertainment	137.5	138.6	139.4	151.0	169.0	153.0	145.9	146.5	146.1	145.4	145.6	145.5
Other goods and services	157.5	158.4	159.3	163.2	154.5	162.9	157.8	153.5	160.0	160.3	160.4	161.0
COMMODITY AND SERVICE GROUP												
Commodities	150.9	152.3	153.7	151.7	153.8	154.5	149.2	151.0	152.0	149.2	151.1	153.0
Commodities less food and beverages	151.5	152.7	154.8	153.2	155.5	156.8	150.2	152.4	154.1	149.6	151.4	153.8
Services	167.9	168.6	171.5	171.1	171.6	172.6	173.9	174.4	175.3	174.9	175.3	175.7
West												
EXPENDITURE CATEGORY												
All items	157.8	159.2	161.4	158.3	159.5	161.8	151.0	152.2	153.5	157.9	157.0	160.0
Food and beverages	149.3	151.8	151.2	150.6	152.8	153.7	146.0	148.6	148.6	150.6	153.1	154.4
Housing	163.2	164.0	166.2	162.2	163.5	165.1	150.1	151.8	151.2	159.3	154.4	159.1
Apparel and upkeep	120.1	121.0	121.8	125.1	121.7	128.4	122.4	122.7	123.3	139.7	139.8	142.9
Transportation	162.8	165.1	171.3	165.3	165.8	171.6	161.0	162.4	167.7	162.0	161.1	165.6
Medical care	174.4	175.3	176.7	170.5	171.5	172.6	174.2	174.8	176.4	173.3	175.0	177.5
Entertainment	139.2	139.7	139.6	144.7	145.6	145.9	143.3	139.6	144.8	155.2	157.0	157.3
Other goods and services	162.9	163.5	155.5	161.7	162.8	163.4	155.9	158.1	158.0	168.8	169.3	169.2
COMMODITY AND SERVICE GROUP												
Commodities	148.0	149.9	152.4	150.5	151.7	154.6	148.5	149.8	152.1	148.0	149.0	151.2
Commodities less food and beverages	147.0	148.6	153.1	150.1	150.7	154.9	148.6	149.6	153.3	146.8	147.0	149.6
Services	170.7	171.6	173.5	169.0	170.2	171.8	154.0	155.3	155.3	172.5	168.8	173.0

22. Consumer Price Index—U.S. city average, and selected areas

[1967 = 100 unless otherwise specified]

Area[1]	All Urban Consumers							Urban Wage Earners and Clerical Workers (revised)						
	1982	1983						1982	1983					
	July	Feb.	Mar.	Apr.	May	June	July	July	Feb.	Mar.	Apr.	May	June	July
U.S. city average[2]	292.2	293.2	293.4	295.5	c297.1	298.1	299.3	291.8	292.3	293.0	294.9	c296.3	c297.2	298.2
Anchorage, Alaska (10/67 = 100)	263.6	...	261.0	...	262.5	...	265.8	259.1	...	253.9	...	254.7	...	257.5
Atlanta, Ga.	...	295.1	...	297.6	...	302.3	...	...	297.0	...	300.1	...	302.0	...
Baltimore, Md.	286.1	...	292.4	...	296.5	...	300.4	287.0	...	295.0	...	296.7	...	297.4
Boston, Mass.	279.2	...	285.9	...	287.3	...	289.1	278.7	...	284.3	...	285.1	...	288.0
Buffalo, N.Y.	...	280.3	...	282.5	...	284.3	...	...	276.5	...	278.4	...	283.3	...
Chicago, Ill.-Northwestern Ind.	293.1	293.7	293.7	295.3	296.3	c298.6	299.6	292.7	291.4	291.4	293.6	294.8	c295.8	296.4
Cincinnati, Ohio-Ky.-Ind.	293.3	...	307.6	...	311.3	...	312.4	...	...	307.6	...	309.5	...	308.0
Cleveland, Ohio	...	319.9	...	320.6	...	325.5	...	...	313.7	...	315.4	...	316.8	...
Dallas-Ft. Worth, Tex.	...	304.5	...	308.6	...	314.1	...	...	298.1	...	301.7	...	306.3	...
Denver-Boulder, Colo.	319.9	...	329.6	...	334.7	...	335.8	326.3	...	326.8	...	331.9	...	331.7
Detroit, Mich.	292.4	292.3	292.4	294.9	294.9	c296.6	298.4	289.3	287.1	289.8	295.0	298.9	c300.7	303.8
Honolulu, Hawaii	...	270.4	...	272.8	...	271.4	...	...	274.8	...	276.9	...	273.4	...
Houston, Tex.	...	317.3	...	316.7	...	321.3	...	...	317.4	...	317.6	...	319.7	...
Kansas City, Mo.-Kansas	...	292.3	...	295.9	...	297.5	...	...	289.0	...	293.5	...	298.3	...
Los Angeles-Long Beach, Anaheim, Calif.	289.3	286.8	287.1	289.5	292.0	c293.6	294.5	293.0	290.1	289.6	c290.2	292.1	c292.1	293.2
Miami, Fla. (11/77 = 100)	155.1	...	159.0	...	159.4	...	160.8	156.9	...	159.7	...	161.4	...	162.8
Milwaukee, Wis.	296.5	...	305.0	...	308.8	...	310.1	299.6	...	311.0	...	315.4	...	325.0
Minneapolis-St. Paul, Minn.-Wis.	...	305.8	...	309.4	...	312.6	...	...	309.0	...	312.4	...	311.8	...
New York, N.Y.-Northeastern N.J.	277.3	283.2	283.5	286.5	287.4	c288.1	289.1	276.1	279.6	280.3	282.2	283.8	c285.9	286.1
Northeast, Pa. (Scranton)	275.1	...	278.9	...	281.7	...	283.4	277.3	...	280.6	...	282.9	...	286.5
Philadelphia, Pa.-N.J.	281.1	282.9	283.0	283.5	c284.3	c286.1	288.3	280.9	283.3	285.5	286.8	286.5	c288.7	291.1
Pittsburgh, Pa.	...	304.8	...	305.2	...	305.4	...	...	296.6	...	300.7	...	299.5	...
Portland, Oreg.-Wash.	292.5	...	284.7	...	288.5	...	291.5	290.6	...	283.0	...	283.8	...	286.4
St. Louis, Mo.-Ill.	290.2	...	293.2	...	295.4	...	299.3	289.2	...	293.2	...	294.0	...	296.7
San Diego, Calif.	334.8	...	327.5	...	332.0	...	335.2	329.4	...	315.4	...	314.8	...	320.0
San Francisco-Oakland, Calif.	...	297.3	...	299.3	...	303.0	...	...	293.9	...	294.7	...	298.6	...
Seattle-Everett, Wash.	296.6	...	297.8	...	300.9	...	306.3	292.9	...	290.8	...	290.4	...	294.2
Washington, D.C.-Md.-Va.	281.3	...	289.0	...	292.6	...	296.8	286.3	...	294.3	...	297.5	...	300.0

[1] The areas listed include not only the central city but the entire portion of the Standard Metropolitan Statistical Area, as defined for the 1970 Census of Population, except that the Standard Consolidated Area is used for New York and Chicago.

[2] Average of 85 cities.
c = corrected.

23. Producer Price Indexes, by stage of processing

[1967 = 100]

Commodity grouping	Annual average 1982	1982					1983							
		Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.[1]	May	June	July	Aug.
FINISHED GOODS														
Finished goods	280.6	282.3	281.2	284.1	284.9	285.5	283.9	284.1	283.4	ʳ283.1	284.3	285.0	285.7	286.2
Finished consumer goods	281.0	282.8	281.9	284.3	285.3	285.6	283.5	283.7	282.7	ʳ282.3	283.5	284.4	285.2	285.6
Finished consumer foods	259.3	259.7	259.9	257.7	257.4	258.3	258.4	261.0	261.1	ʳ262.9	262.6	261.0	260.8	261.0
Crude	252.7	239.2	228.2	232.4	236.1	247.6	232.9	240.8	247.9	ʳ265.8	266.8	250.9	249.7	262.4
Processed	257.7	259.4	260.6	257.9	257.2	257.1	258.5	260.7	260.1	ʳ260.5	260.1	259.8	259.6	258.7
Nondurable goods less foods	333.6	337.2	338.3	340.0	342.5	342.2	336.6	333.7	332.0	ʳ328.7	332.0	335.6	337.8	338.4
Durable goods	226.7	227.5	223.0	231.0	231.2	232.0	231.7	232.9	231.9	ʳ232.2	232.6	232.8	233.1	233.5
Consumer nondurable goods less food and energy	223.8	224.3	225.5	227.8	228.4	229.2	228.3	228.9	229.4	ʳ230.1	230.2	230.4	232.2	232.3
Capital equipment	279.4	280.7	278.8	283.2	283.8	284.9	285.2	285.6	285.6	ʳ286.2	286.8	286.9	287.4	288.0
INTERMEDIATE MATERIALS														
Intermediate materials, supplies, and components	310.4	310.8	310.5	309.9	309.9	310.1	309.2	309.9	309.5	ʳ308.7	310.1	311.7	313.0	314.4
Materials and components for manufacturing	289.8	288.7	289.9	289.4	288.7	288.3	288.6	291.1	290.2	ʳ291.0	292.0	292.4	293.4	294.8
Materials for food manufacturing	255.1	258.0	257.3	254.2	251.0	249.8	250.9	254.1	252.8	ʳ255.1	256.8	257.1	257.3	260.8
Materials for nondurable manufacturing	284.4	282.6	281.7	280.4	279.2	278.0	277.0	277.0	276.6	ʳ277.3	277.7	278.0	278.3	281.4
Materials for durable manufacturing	310.1	306.5	310.5	309.8	309.3	309.4	312.0	319.2	315.7	ʳ316.6	318.4	318.4	320.1	320.6
Components for manufacturing	273.9	274.3	275.8	276.7	276.9	277.3	276.8	277.6	278.3	ʳ278.9	279.6	280.6	281.8	281.7
Materials and components for construction	293.7	293.5	294.2	293.7	293.6	294.7	296.5	298.8	299.6	ʳ300.9	300.5	301.5	302.9	303.6
Processed fuels and lubricants	591.7	603.8	592.3	590.0	593.0	595.0	577.9	565.4	564.2	ʳ543.3	552.8	567.4	572.7	576.4
Manufacturing industries	497.8	510.7	496.4	496.6	500.4	502.2	485.2	475.5	480.6	ʳ460.4	470.1	483.6	487.7	491.1
Nonmanufacturing industries	674.3	685.5	676.9	672.1	674.2	676.4	659.4	644.6	637.2	ʳ615.9	624.9	640.5	647.0	650.9
Containers	285.6	285.4	285.3	285.1	284.9	285.0	285.0	285.3	285.2	ʳ284.8	286.1	285.9	286.5	286.8
Supplies	272.1	272.6	272.2	272.0	272.8	273.0	273.1	273.5	273.9	ʳ275.5	275.9	275.9	276.4	278.0
Manufacturing industries	265.8	266.5	266.7	266.9	266.9	267.2	267.4	267.8	268.1	ʳ268.6	269.2	270.2	270.4	270.6
Nonmanufacturing industries	275.7	276.0	275.3	274.9	276.1	276.3	276.4	276.8	277.1	ʳ279.3	279.6	279.1	279.8	282.0
Feeds	207.0	203.1	198.1	192.9	199.8	204.7	206.5	207.4	207.7	ʳ219.8	218.0	213.6	216.1	230.2
Other supplies	289.8	291.1	291.3	291.9	291.9	291.1	290.9	291.2	291.6	ʳ291.9	292.5	292.8	293.1	293.1
CRUDE MATERIALS														
Crude materials for further processing	319.5	319..8	316.1	312.0	313.2	312.7	313.9	320.2	321.6	ʳ325.8	325.7	323.2	320.6	326.9
Foodstuffs and feedstuffs	247.8	249.6	242.9	236.3	236.3	237.1	239.6	249.3	249.1	ʳ256.8	256.5	252.1	248.6	256.6
Nonfood materials	473.9	471.0	473.7	474.8	478.6	475.3	473.6	473.0	477.7	ʳ474.6	475.1	476.4	475.5	478.4
Nonfood materials except fuel	376.8	369.5	369.5	371.9	369.2	365.8	368.0	366.0	366.8	ʳ367.0	368.5	369.9	370.5	374.2
Manufacturing industries	387.2	378.9	379.1	382.2	379.2	375.0	377.6	375.1	375.9	ʳ376.1	378.1	379.6	379.6	383.9
Construction	270.3	270.3	268.8	266.3	265.6	268.1	267.5	269.1	269.3	ʳ270.0	267.6	268.1	272.9	272.5
Crude fuel	886.1	906.9	923.5	917.2	954.7	952.2	930.7	937.7	961.8	ʳ941.6	936.8	937.7	929.1	926.8
Manufacturing industries	1,034.8	1,061.1	1,083.6	1,075.3	1,125.5	1,121.4	1,093.8	1,103.9	1,134.3	ʳ1,107.6	1,102.2	1,103.6	1,091.9	1,089.5
Nonmanufacturing industries	782.2	798.9	810.7	805.9	834.2	832.2	815.5	820.0	839.2	ʳ824.0	819.7	820.1	814.1	811.7
SPECIAL GROUPINGS														
Finished goods excluding foods	285.8	287.9	286.3	290.8	292.0	292.5	290.3	289.6	288.7	ʳ287.7	289.3	290.8	291.9	292.4
Finished consumer goods excluding foods	287.8	290.2	288.9	293.3	294.8	295.0	291.4	290.3	288.9	ʳ287.3	289.3	291.4	292.7	293.2
Finished consumer goods less energy	244.1	244.7	243.9	246.5	246.7	247.6	247.1	248.7	248.6	ʳ249.5	249.6	249.2	249.8	250.1
Intermediate materials less foods and feeds	315.7	316.0	315.9	315.5	315.5	315.7	314.6	315.2	314.8	ʳ313.6	315.0	316.8	318.1	319.2
Intermediate materials less energy	290.4	289.7	290.5	290.1	289.8	290.0	290.5	292.4	292.1	ʳ293.2	293.9	294.3	295.3	296.6
Intermediate foods and feeds	239.4	240.2	238.1	234.4	234.4	235.1	236.4	238.8	238.0	ʳ243.6	244.2	242.9	243.8	250.9
Crude materials less agricultural products	536.3	532.0	535.5	537.2	541.9	537.4	536.0	535.1	539.7	ʳ536.1	536.2	537.5	536.3	539.0
Crude materials less energy	240.4	240.7	235.6	230.0	229.2	229.9	232.5	241.4	242.7	ʳ248.6	248.8	246.0	243.7	250.9

[1] Data for April 1983 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision 4 months after original publication.　　　r = revised.

24. Producer Price Indexes, by commodity groupings

[1967 = 100 unless otherwise specified]

Code	Commodity group and subgroup	Annual average 1982	1982					1983							
			Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.[1]	May	June	July	Aug.
	All commodities	299.3	300.2	299.3	299.8	300.3	300.7	299.9	300.9	300.6	r300.6	301.7	302.5	303.2	304.9
	All commodities (1957-59 = 100)	317.6	318.5	317.6	318.1	318.6	319.0	318.2	319.3	318.9	r318.9	320.1	321.0	321.7r	323.5
	Farm products and processed foods and feeds	248.9	249.6	247.4	243.8	243.9	244.8	245.8	250.4	250.6	254.7	254.7	352.4	251.6	255.7
	Industrial commodities	312.3	313.2	312.7	314.3	315.0	315.2	313.9	313.9	313.5	r312.4	313.8	315.4	316.6	317.5
	FARM PRODUCTS AND PROCESSED FOODS AND FEEDS														
01	Farm products	242.4	240.8	234.5	299.2	230.7	232.6	233.2	240.7	241.5	250.5	250.3	247.3	244.3	253.5
01–1	Fresh and dried fruits and vegetables	253.7	238.6	221.0	223.0	233.4	248.8	227.6	227.8	234.9	r266.6	259.5	263.9	258.0	269.9
01–2	Grains	210.9	197.2	187.3	183.2	198.6	262.3	206.3	222.4	227.4	243.8	242.2	241.5	236.7	251.8
01–3	Livestock	257.8	268.4	259.0	248.5	239.1	237.2	242.3	251.1	251.4	260.6	258.0	251.7	240.7	242.2
01–4	Live poultry	191.9	189.3	196.5	177.1	181.6	177.8	177.1	200.1	177.8	170.8	186.9	199.3	214.5	221.4
01–5	Plant and animal fibers	202.9	207.5	196.8	198.1	195.3	200.6	201.7	206.4	217.0	213.6	223.9	229.7	230.4	240.7
01–6	Fluid milk	282.5	278.8	281.9	285.0	285.9	285.5	284.5	284.3	282.9	280.8	279.8	278.6	278.7	281.7
01–7	Eggs	178.7	171.7	173.3	177.9	172.5	170.0	170.0	170.0	170.0	170.0	185.1	169.3	177.2	189.5
01–8	Hay, hayseeds, and oilseeds	212.8	204.5	201.8	194.3	204.8	209.0	212.4	217.9	217.8	226.3	227.3	213.3	227.3	262.8
01–9	Other farm products	274.5	274.4	276.8	274.0	276.3	280.1	279.9	281.2	280.3	279.2	281.0	284.4	282.5	285.7
02	Processed foods and feeds	251.5	253.5	253.5	250.8	250.2	250.5	251.7	254.7	254.5	256.0	256.1	254.2	254.6	255.8
02–1	Cereal and bakery products	253.8	252.7	254.0	253.0	254.2	256.2	257.3	256.8	256.9	r258.8	259.8	260.0	261.9	262.6
02–2	Meats, poultry, and fish	257.6	262.2	265.7	256.9	251.6	249.9	252.3	261.0	260.7	r259.1	257.7	250.3	248.2	245.1
02–3	Dairy products	248.9	248.8	249.1	249.8	250.2	250.8	250.7	250.9	250.7	251.0	250.9	250.4	250.3	250.4
02–4	Processed fruits and vegetables	274.5	274.1	272.8	273.4	272.8	275.7	274.8	274.3	274.9	r273.7	275.0	276.8	277.0	278.2
02–5	Sugar and confectionery	269.7	285.5	278.5	276.3	280.4	280.1	282.1	286.4	283.7	r287.4	289.5	296.0	296.4	298.9
02–6	Beverages and beverage materials	256.9	258.0	257.1	257.9	258.4	258.8	260.1	261.3	262.0	263.0	263.3	262.8	263.0	263.4
02–7	Fats and oils	215.1	215.6	211.4	213.8	207.2	203.0	201.7	205.3	206.0	r214.6	219.4	219.4	222.7	245.7
02–8	Miscellaneous processed foods	248.6	245.9	247.0	247.9	247.8	248.6	248.8	249.3	248.5	249.9	249.9	250.4	253.9	251.8
02–9	Prepared animal feeds	211.3	207.5	204.3	199.8	206.0	210.1	211.6	212.3	212.4	r222.8	221.2	217.3	219.9	232.6
	INDUSTRIAL COMMODITIES														
03	Textile products and apparel	204.6	204.2	204.3	204.1	203.9	202.6	202.7	202.6	203.4	r203.5	203.9	204.5	205.1	205.7
03–1	Synthetic fibers (12/75 = 100)	162.1	162.2	162.5	161.1	161.2	159.7	156.7	153.1	153.9	r153.8	157.2	156.6	159.1	158.4
03–2	Processed yarns and threads (12/75 = 100)	138.3	135.9	136.6	136.5	136.7	136.7	134.7	135.0	135.8	136.0	137.6	137.6	138.5	140.2
03–3	Gray fabrics (12/75 = 100)	145.3	144.6	143.6	143.7	143.1	143.3	144.4	144.3	145.1	r145.8	146.0	145.8	146.0	146.6
03–4	Finished fabrics (12/75 = 100)	124.6	124.3	123.7	123.2	123.0	122.8	122.2	122.3	122.4	r123.1	122.2	122.5	122.4	123.5
03–81	Apparel	194.4	195.1	195.4	195.7	195.4	193.0	194.4	195.0	196.1	r195.8	195.1	196.6	197.1	197.3
03–82	Textile housefurnishings	238.5	236.4	238.2	236.2	236.2	236.2	236.5	234.3	234.2	r234.2	241.9	239.5	238.9	238.5
04	Hides, skins, leather, and related products	262.6	262.0	263.5	263.2	263.2	264.1	266.7	264.3	264.9	r267.4	270.1	270.6	272.7	275.5
04–2	Leather	311.4	304.9	309.2	309.5	312.8	314.4	314.4	312.8	316.2	r320.5	324.5	334.0	333.3	345.7
04–3	Footwear	245.0	247.7	248.3	248.0	249.1	247.7	251.5	247.7	248.1	r250.0	248.7	249.0	249.9	250.1
04–4	Other leather and related products	247.4	244.9	247.7	247.2	247.1	249.1	250.8	251.0	250.9	r251.0	255.2	252.1	257.4	257.6
05	Fuels and related products and power	693.2	705.6	700.4	698.8	706.1	703.4	683.6	668.6	658.0	r644.8	654.8	668.7	671.6	674.3
05–1	Coal	534.7	539.0	538.5	538.1	539.6	538.7	535.6	533.4	538.6	r538.0	535.0	534.0	535.5	534.0
05–2	Coke	461.7	459.1	460.0	452.3	562.3	452.3	450.9	450.9	447.3	447.3	438.4	438.4	438.4	434.6
05–3	Gas fuels[2]	1,060.8	1,074.6	1,112.2	1,130.1	1,190.0	1,181.2	1,147.3	1,154.7	1,180.0	r1,156.1	1,159.0	1,157.4	1,151.2	1,148.2
05–4	Electirc power	406.5	414.9	415.0	408.7	404.9	409.9	410.8	410.8	411.4	r409.2	412.5	419.7	425.1	425.9
05–61	Crude petroleum[3]	733.4	718.4	718.3	735.3	733.6	720.0	719.7	692.9	678.0	r678.0	678.4	678.4	676.1	675.5
05–7	Petroleum products, refined[4]	761.2	781.7	761.6	754.6	758.0	754.2	720.6	692.8	666.6	r645.9	664.5	690.1	694.9	701.1
06	Chemicals and allied products	292.3	291.6	290.7	289.9	290.5	289.6	289.3	290.5	289.8	291.3	291.3	291.3	291.3	294.9
06–1	Industrial chemicals[5]	352.6	349.1	346.5	345.8	345.2	342.4	339.3	340.1	338.8	r338.7	339.8	339.7	338.8	348.5
06–21	Prepared paint	262.8	264.7	264.7	264.7	264.7	264.7	264.7	264.7	264.7	r264.7	265.1	265.1	265.6	265.7
06–22	Paint materials	304.6	302.5	303.0	303.0	302.4	301.7	301.5	299.5	298.4	r299.8	300.0	299.3	300.4	305.5
06–3	Drugs and pharmaceuticals	210.1	211.2	212.4	214.9	215.5	216.0	218.6	222.2	222.9	225.1	225.3	225.7	227.5	227.8
06–4	Fats and oils, inedible	267.1	254.2	254.1	242.3	239.6	240.8	242.0	253.4	262.2	r278.3	286.2	277.9	263.6	277.8
06–5	Agricultural chemicals and chemical products	292.4	290.8	289.9	288.8	286.5	285.2	283.2	283.3	284.2	r282.8	282.9	281.7	278.6	277.6
06–6	Plastic resins and materials	283.4	282.2	281.6	281.3	282.2	282.5	283.8	283.1	282.1	r285.4	285.4	289.1	290.6	294.1
06–7	Other chemicals and allied products	270.1	272.3	271.2	268.6	272.3	272.0	272.8	274.4	272.0	r274.7	272.3	272.0	273.6	274.4
07	Rubber plastic products	241.4	242.6	242.5	242.2	241.7	242.2	242.9	242.3	241.8	r243.0	242.9	242.7	244.4	244.6
07–1	Rubber and rubber products	267.8	270.1	269.5	268.9	267.9	268.2	269.6	268.3	267.1	r267.0	269.2	267.8	267.6	267.2
07–11	Crude rubber	278.9	278.7	276.6	272.5	2709	271.1	271.1	274.3	281.2	r281.3	280.5	280.1	283.1	284.4
07–12	Tires and tubes	255.2	257.8	255.6	255.7	254.5	256.0	259.1	250.5	246.6	r246.5	246.5	244.0	242.7	242.4
07–13	Miscellaneous rubber products	276.9	279.7	281.6	281.4	280.7	279.7	284.5	286.6	285.8	r285.7	291.8	291.5	291.5	290.6
07–2	Plastic products (6/78 = 100)	132.3	132.5	132.7	132.7	132.7	133.0	133.0	133.1	133.2	r134.6	133.4	133.4	133.9	136.3
08	Lumber and wood products	284.7	284.2	283.0	279.4	279.9	285.6	293.3	303.1	305.8	r307.2	306.2	312.5	314.5	313.9
08–1	Lumber	310.8	311.6	310.3	305.6	305.1	312.6	326.8	344.7	349.3	r354.2	357.3	371.3	372.5	366.6
08–2	Millwork	279.4	280.2	279.5	278.6	280.3	286.5	293.7	300.5	304.0	r302.8	298.8	294.7	296.1	307.7
08–3	Plywood	232.1	229.0	228.5	224.0	227.8	231.2	235.3	239.5	238.9	r239.4	240.9	253.4	252.5	244.8
08–4	Other wood products	236.2	235.8	235.6	235.8	233.0	231.2	232.0	233.2	231.6	230.8	231.1	229.6	229.7	229.3

See footnotes at end of table.

24. Continued—Producer Price Indexes, by commodity groupings

[1967 = 100 unless otherwise specified]

Code	Commodity group and subgroup	Annual average 1982	1982 Aug.	Sept.	Oct.	Nov.	Dec.	1983 Jan.	Feb.	Mar.	Apr.[1]	May	June	July	Aug.
	INDUSTRIAL COMMODITIES—Continued														
09	Pulp, paper, and allied products	288.7	289.3	289.4	289.8	289.8	290.5	293.6	294.2	294.8	r295.4	295.7	296.7	297.7	298.0
09–1	Pulp, paper,and products,excluding building paper and board	273.2	272.2	271.5	270.3	269.4	268.8	269.8	268.7	268.7	r268.5	269.1	269.4	269.9	270.1
09–11	Woodpulp	379.0	367.0	365.0	350.4	347.3	347.2	346.6	345.7	343.0	r342.5	345.8	346.5	347.5	348.2
09–12	Wastepaper	121.1	116.0	116.0	116.0	116.0	116.0	116.0	116.0	116.0	116.0	116.0	116.0	116.0	116.0
09–13	Paper	286.3	285.3	285.3	285.4	280.6	279.2	279.3	278.8	278.4	r278.5	279.1	179.6	281.7	281.0
09–14	Paperboard	254.9	255.4	250.7	248.0	247.6	244.1	243.3	244.1	246.3	r248.1	248.9	249.6	249.5	250.4
09–15	Converted paper and paperboard products	264.4	264.3	264.2	264.0	264.7	264.8	265.0	265.1	265.1	r264.2	264.5	264.7	264.5	265.0
09–2	Building paper and board	239.5	244.4	243.4	242.1	241.0	242.0	241.1	241.4	244.2	r247.0	249.3	255.7	256.2	252.1
10	Metals and metal products	301.6	299.2	301.8	301.6	300.5	299.9	300.3	304.7	304.4	r304.6	306.7	306.4	307.4	308.5
10–1	Iron and steel	339.0	337.1	336.5	337.6	335.9	332.8	333.3	339.9	341.6	r341.5	341.1	340.4	341.3	342.8
10–17	Steel mill products	349.5	348.6	348.2	349.8	348.6	344.7	343.7	351.1	349.8	r349.7	350.0	349.0	349.9	351.4
10–2	Nonferrous metals	263.6	255.7	265.1	262.9	261.7	263.2	267.0	275.8	270.6	r271.8	277.9	275.5	277.6	279.6
10–3	Metal containers	328.5	328.8	328.8	329.7	329.0	328.3	327.9	331.1	331.4	r331.9	337.4	336.8	337.4	338.0
10–4	Hardware	280.3	382.6	282.7	283.0	283.1	285.8	287.2	287.9	288.2	r288.6	286.2	289.2	289.7	289.8
10–5	Plumbing fixtures and brass fittings	278.7	274.6	277.1	277.8	278.3	279.2	280.6	283.5	285.6	r287.7	288.8	290.6	292.1	291.9
10–6	Heating equipment	237.2	238.4	239.1	238.4	238.8	239.3	240.7	240.7	241.1	242.3	242.4	142.6	249.0	244.8
10–7	Fabricated structural metal products	304.8	304.3	304.6	305.9	305.3	304.7	303.6	302.8	303.7	r302.5	302.1	301.9	302.2	302.8
10–8	Miscellaneous metal products	282.3	283.3	283.8	284.1	283.4	283.2	279.1	279.0	280.4	r280.7	284.9	287.4	287.4	287.6
11	Machinery and equipment	278.8	279.9	280.2	281.1	281.8	282.4	283.3	284.3	284.7	r285.4	285.6	285.8	286.9	287.1
11–1	Agricultural machinery and equipment	311.1	312.2	314.1	317.5	318.7	320.7	322.4	323.3	323.5	r323.9	326.0	325.5	326.2	327.1
11–2	Construction machinery and equipment	343.9	346.5	347.5	347.6	347.9	348.1	348.3	349.3	349.6	r350.9	352.2	352.5	352.7	352.8
11–3	Metalworking machinery and equipment	320.9	322.8	323.1	323.1	323.5	323.6	324.1	325.2	325.5	r326.2	326.1	326.6	326.5	326.1
11 4	General purpose machinery and equipment	304.0	304.9	305.0	305.9	306.4	307.0	307.4	307.9	307.5	r308.2	308.4	308.5	308.4	308.2
11–6	Special industry machinery and equipment	325.1	326.7	326.8	327.8	329.1	329.9	331.8	332.6	333.6	r334.5	335.6	336.3	337.8	338.9
11–7	Electrical machinery and equipment	231.6	231.8	231.7	232.6	233.7	234.2	235.2	237.2	237.5	r238.4	237.7	238.2	240.8	241.2
11–9	Miscellaneous machinery	268.4	270.9	271.5	271.6	272.0	272.3	272.9	272.7	273.7	r274.2	275.2	274.8	274.9	275.0
12	Furniture and household durables	206.9	208.1	208.3	208.9	208.9	209.2	210.7	212.5	212.3	r212.8	213.3	213.6	214.4	214.5
12–1	Household furniture	229.8	230.4	230.7	231.2	231.4	232.0	231.9	232.6	231.1	r231.8	234.3	234.8	235.3	235.4
12–2	Commercial furniture	275.5	278.1	278.2	278.3	278.6	278.5	281.1	282.2	285.1	r286.2	286.6	287.0	287.9	287.2
12–3	Floor coverings	181.2	181.0	181.5	181.6	181.3	181.5	182.2	182.1	182.0	r182.2	181.3	180.6	185.1	188.1
12–4	Household appliances	199.1	201.0	201.2	201.3	201.2	201.8	203.9	204.9	205.0	r206.3	205.7	207.0	207.4	207.3
12–5	Home electronic equipment	88.1	88.0	87.4	87.8	87.0	87.1	87.3	87.0	87.0	r86.6	86.7	86.4	86.1	86.0
12–6	Other household durable goods	289.3	291.8	293.4	296.5	297.2	298.1	302.8	314.8	312.9	r312.0	313.7	312.9	313.5	312.3
13	Nonmetallic mineral products	320.2	320.5	321.2	321.1	321.2	320.5	321.5	322.3	322.0	r324.1	324.2	324.6	325.4	326.2
13–11	Flat glass	221.5	221.1	221.1	221.1	225.3	225.3	229.7	229.7	229.7	229.7	229.7	229.7	229.8	229.8
13–2	Concrete ingredients	310.0	311.2	310.8	309.9	310.0	306.7	307.2	310.0	308.5	r312.8	314.8	315.4	315.4	317.2
13–3	Concrete products	297.8	299.0	298.7	298.6	298.2	298.5	299.4	300.1	300.4	r301.0	301.0	301.4	302.2	302.3
13–4	Structural clay products, excluding refractories	260.8	263.9	264.0	264.0	264.8	264.8	264.9	264.3	270.7	r275.7	277.0	280.8	281.7	281.7
13–5	Refractories	337.1	340.7	340.8	340.8	337.2	337.2	337.7	337.7	337.7	r338.2	338.7	337.3	338.7	339.9
13–6	Asphalt roofing	298.4	400.1	413.4	406.7	399.0	397.0	393.7	380.4	374.7	r384.0	378.6	378.1	383.9	381.9
13–7	Gypsum products	256.1	253.9	253.9	255.1	255.0	253.9	263.1	267.4	265.9	r271.9	275.3	273.5	276.0	289.2
13–8	Glass containers	355.5	358.0	358.6	358.5	357.8	357.6	356.6	355.8	354.1	r353.5	351.8	351.7	351.7	351.3
13–9	Other nonmetallic minerals	471.8	466.0	467.7	470.4	471.3	471.0	471.5	476.1	476.4	r478.7	478.1	479.4	480.8	481.5
14	Transportation equipment (12/68 = 100)	249.7	250.6	244.5	256.0	256.3	257.5	256.3	255.8	255.2	255.6	256.0	256.3	256.4	257.0
14–1	Motor vehicles and equipment	251.3	252.8	244.6	257.8	257.8	258.1	257.0	256.3	255.4	255.9	256.2	256.6	256.7	256.9
14–4	Railroad equipment	346.5	347.7	348.0	350.8	350.8	350.8	350.8	350.5	350.3	r350.0	357.1	356.8	358.1	357.8
15	Miscellaneous products	276.4	272.0	279.5	285.4	285.2	290.4	285.7	288.8	287.4	r287.4	287.1	288.0	291.7	291.5
15–1	Toys, sporting goods, small arms, ammunition	221.5	223.5	221.8	221.2	221.3	223.7	222.7	225.3	225.7	r226.3	226.5	226.4	224.8	225.0
15–2	Tobacco products	323.1	311.5	329.1	365.4	364.5	382.9	356.2	356.4	353.8	r354.1	353.9	352.2	373.5	373.3
15–3	Notions	277.0	280.1	280.1	280.1	279.8	279.8	280.5	280.6	280.6	r280.3	280.3	280.3	280.3	279.7
15–4	Photograhic equipment and supplies	210.4	208.9	209.9	209.7	209.7	210.0	210.0	211.8	216.6	r216.6	216.9	216.8	216.8	216.9
15–5	Mobile homes (12/74 = 100)	161.9	162.8	162.9	162.6	161.6	161.7	161.8	161.7	162.9	r162.3	162.3	163.0	163.4	163.5
15–9	Other miscellaneous products	338.3	327.0	345.2	345.2	345.1	351.6	350.8	359.8	350.5	r350.3	348.6	352.7	353.5	352.3

[1] Data for April 1983 have been revised to reflect the availability of late reports and corrections by respondents.
All data are subject to revision 4 months after original publication.
[2] Prices for natural gas are lagged 1 month.
[3] Includes only domestic production.

[4] Most prices for refined petroleum products are lagged 1 month.
[5] Some prices for industrial chemicals are lagged 1 month.
r = revised.

25. Producer Price Indexes, for special commodity groupings

[1967 = 100 unless otherwise specified]

Commodity grouping	Annual average 1982	1982					1983							
		Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.[1]	May	June	July	Aug.
All commodities—less farm products	303.0	304.1	303.7	304.7	305.1	305.4	304.4	304.9	304.5	r303.8	305.0	306.1	307.1	308.2
All foods	254.4	255.8	255.3	252.8	251.9	252.7	252.4	255.7	255.8	r258.2	258.2	256.5	256.4	257.5
Processed foods	256.0	258.7	259.2	256.2	254.7	254.7	255.8	259.3	258.9	r259.5	259.6	257.8	258.0	258.1
Industrial commodities less fuels	272.8	272.6	272.5	274.4	274.4	274.9	275.4	277.0	276.9	r277.6	278.1	278.6	279.5	280.4
Selected textile mill products (Dec. 1975 = 100)	138.2	137.8	137.8	137.4	137.1	136.8	136.7	136.8	137.2	r137.4	137.2	137.2	137.7	138.8
Hosiery	138.3	138.5	138.7	138.7	139.7	139.7	141.7	144.5	144.5	144.5	144.5	144.5	144.5	145.6
Underwear and nightwear	217.6	218.6	219.6	220.1	219.7	219.7	223.3	222.6	223.8	r223.4	224.0	223.1	223.2	223.5
Chemicals and allied products, including synthetic rubber and fibers and yarns	283.8	283.3	282.5	281.8	282.3	281.4	280.8	281.4	280.7	r281.8	281.9	282.0	282.5	285.5
Pharmaceutical preparations	206.0	207.4	209.0	211.7	212.3	212.8	215.8	219.4	220.3	r223.3	223.2	223.9	226.0	226.6
Lumber and wood products, excluding millwork	288.8	288.3	287.2	282.5	283.4	289.6	300.7	314.3	317.2	r320.8	323.3	337.0	337.6	331.0
Steel mill products, including fabricated wire products	349.4	348.1	347.8	349.1	348.5	344.8	343.1	349.9	348.4	r348.4	348.7	347.7	348.4	349.8
Finished steel mill products, excluding fabricated wire products	348.4	347.3	346.9	348.6	348.0	344.0	342.1	349.8	348.3	r348.4	348.7	347.7	348.5	350.1
Finished steel mill products, including fabricated wire products	348.1	346.7	346.3	347.8	347.2	343.3	341.6	348.5	347.0	r347.0	347.3	346.4	347.0	348.4
Special metals and metal products	286.6	286.8	284.0	289.5	288.9	288.7	288.6	290.9	290.3	r290.7	292.1	292.1	292.7	293.5
Fabricated metal products	291.6	291.9	292.9	293.0	292.5	292.5	291.1	291.3	292.3	r292.2	293.9	295.2	295.5	295.9
Copper and copper products	185.5	179.8	181.0	178.8	181.2	181.8	190.7	201.5	198.9	r200.9	206.7	201.5	202.2	201.2
Machinery and motive products	272.1	273.3	270.7	276.4	277.0	277.9	277.8	278.2	278.1	r278.7	279.0	279.3	279.9	280.3
Machinery and equipment, except electrical	306.4	308.1	308.6	309.4	310.0	310.6	311.3	311.9	312.2	r312.9	313.6	313.7	313.9	314.1
Agricultural machinery, including tractors	323.1	322.8	325.5	330.6	332.2	335.1	337.0	337.7	337.8	r338.2	341.1	340.4	341.4	342.4
Metalworking machinery	350.4	353.1	353.5	354.1	354.2	354.1	354.6	355.7	355.6	356.3	358.0	357.7	357.7	357.6
Total tractors	355.0	355.5	359.6	361.4	361.4	364.2	365.6	365.6	365.7	r366.1	370.5	370.6	370.7	369.9
Agricultural machinery and equipment less parts	313.8	313.8	315.8	320.1	321.5	324.3	325.9	326.6	326.8	r327.1	329.6	329.0	329.8	330.9
Farm and garden tractors less parts	327.8	326.0	333.0	336.1	336.1	340.3	342.2	342.2	342.2	r342.2	348.8	348.8	348.8	347.6
Agricultural machinery, excluding tractors less parts	319.6	320.4	319.6	326.4	329.3	331.1	333.1	334.4	334.5	r335.2	335.1	333.8	335.6	338.4
Construction materials	288.0	288.3	288.4	288.0	287.8	287.9	290.3	294.6	295.0	r296.1	296.3	297.7	299.1	299.8

[1] Data for April 1983 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision 4 months after original publication.   r = revised.

26. Producer Price Indexes, by durability of product

[1967 = 100]

Commodity grouping	Annual average 1982	1982					1983							
		Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.[1]	May	June	July	Aug.
Total durable goods	279.0	278.8	278.6	281.2	281.2	282.0	282.6	284.8	284.6	r285.3	285.9	286.4	287.3	287.8
Total nondurable goods	315.3	317.1	315.7	314.3	315.3	315.3	313.3	313.4	313.0	r312.4	313.9	315.0	315.5	318.2
Total manufactures	292.7	293.8	292.9	293.8	293.9	294.3	293.5	293.9	293.2	r292.7	293.9	295.1	296.1	297.1
Durable	279.8	279.8	279.5	282.3	282.4	283.2	283.7	285.7	285.3	r286.0	286.6	287.0	287.9	288.3
Nondurable	306.4	308.6	307.1	306.0	306.1	305.9	303.8	302.5	301.4	r299.7	301.4	303.6	304.7	306.4
Total raw or slightly processed goods	331.2	331.1	329.9	327.9	330.9	331.6	330.4	335.2	337.3	r340.4	341.2	339.3	338.3	343.7
Durable	233.8	225.0	226.2	224.2	219.2	217.4	224.2	235.4	243.3	r244.1	246.9	250.2	250.7	257.6
Nondurable	337.3	337.9	336.5	334.5	338.1	339.0	337.2	341.5	343.2	r346.5	347.0	344.8	343.7	348.9

[1] Data for April 1983 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision 4 months after original publication.   r = revised.

27. Producer Price Indexes for the output of selected SIC industries

[1967 = 100 unless otherwise specified]

1972 SIC code	Industry description	Annual average 1982	1982 Aug.	Sept.	Oct.	Nov.	Dec.	1983 Jan.	Feb.	Mar.	Apr.[1]	May	June	July	Aug.
	MINING														
1011	Iron ores (12/75 = 100)	175.2	177.1	177.1	177.1	177.1	177.1	177.1	177.1	177.1	177.1	177.1	177.1	177.1	177.1
1092	Mercury ores (12/75 = 100)	312.2	287.5	289.5	312.5	308.3	312.5	306.2	289.5	285.4	272.9	268.7	254.1	237.5	231.2
1311	Crude petroleum and natural gas	925.8	926.7	937.6	945.9	969.0	958.4	945.2	931.2	934.4	r922.1	922.7	925.0	917.4	916.6
1455	Kaolin and ball clay (6/76 = 100)	151.2	151.7	151.7	151.7	151.7	151.7	153.6	156.3	158.4	164.3	164.3	164.3	164.3	164.3
	MANUFACTURING														
2021	Creamery butter	276.0	276.3	276.8	276.8	276.5	277.8	275.5	275.6	275.6	275.6	275.6	275.6	275.6	276.1
2044	Rice milling	185.1	183.0	183.0	183.0	175.2	196.1	191.3	183.0	183.0	188.9	191.3	194.5	193.7	198.1
2067	Chewing gum	304.1	304.7	304.7	304.8	306.0	306.1	326.0	326.0	326.1	326.1	326.1	327.2	327.2	327.3
2074	Cottonseed oil mills	168.3	173.1	164.4	157.6	r164.1	169.4	157.5	173.4	167.1	r186.8	172.2	179.2	192.4	220.6
2083	Malt	256.9	259.8	251.2	251.2	240.6	240.6	232.6	232.6	232.6	232.6	232.6	232.6	232.6	232.6
2091	Canned and cured seafoods (12/73 = 100)	187.0	184.3	186.2	186.3	186.4	186.6	182.8	179.2	177.9	r177.7	175.7	173.4	173.7	169.4
2098	Macaroni and spaghetti	258.5	259.5	259.5	255.5	255.5	255.5	255.5	255.5	255.5	255.5	255.5	255.5	255.5	255.5
2251	Women's hosiery, except socks (12/75 = 100)	116.8	116.9	116.9	116.9	118.5	118.3	118.5	122.6	122.7	r122.7	122.8	122.8	122.9	123.0
2261	Finishing plants, cotton (6/76 = 100)	139.5	139.8	138.5	136.8	136.2	136.1	135.3	136.0	136.1	r139.8	132.8	132.9	132.6	133.8
2262	Finishing plants, synthetics, silk (6/76 = 100)	128.2	129.0	128.2	127.5	127.8	127.3	125.7	126.7	126.2	r127.2	125.3	125.8	125.1	127.2
2284	Thread mills (6/76 = 100)	157.2	158.0	158.0	157.9	157.9	157.8	157.9	161.9	165.6	165.7	165.7	165.7	165.7	165.7
2298	Cordage and twine (12/77 = 100)	141.5	141.0	142.6	142.6	142.6	142.6	142.6	142.7	142.8	137.6	137.6	137.6	137.6	137.6
2323	Men's and boys' neckwear (12/75 = 100)	119.5	121.3	121.3	121.3	121.3	121.3	121.3	121.3	121.3	121.3	121.3	121.3	121.3	121.3
2361	Children's dresses and blouses (12/77 = 100)	120.6	120.3	118.6	118.6	117.0	117.0	117.0	117.0	115.5	115.5	115.5	117.0	117.0	117.0
2381	Fabric dress and work gloves	292.1	288.2	288.2	287.4	287.4	287.4	288.8	288.8	288.8	291.0	291.7	291.7	296.3	296.3
2394	Canvas and related products (12/77 = 100)	145.4	143.1	144.8	147.3	147.3	147.3	148.7	148.7	146.2	r146.2	146.8	146.8	146.8	146.8
2396	Automotive and apparel trimmings (12/77 = 100)	131.0	131.0	131.0	131.0	131.0	131.0	131.0	131.0	131.0	131.0	131.0	131.0	131.0	131.0
2448	Wood pallets and skids (12/75 = 100)	145.6	143.9	143.8	144.3	144.2	144.6	144.6	145.2	145.7	146.9	148.3	149.3	150.8	151.2
2521	Wood office furniture	270.3	271.3	271.3	271.4	271.4	271.4	271.4	273.4	279.6	r282.5	281.5	283.6	284.7	284.7
2654	Sanitary food containers	259.7	259.9	260.8	261.7	261.7	261.7	261.7	261.7	265.1	r265.2	266.7	266.7	268.6	268.7
2655	Fiber cans, drums, and similar products (12/75 = 100)	177.8	177.5	177.5	177.9	180.7	183.8	183.8	183.8	183.8	r185.6	185.6	185.9	187.7	187.7
2911	Petroleum refining (6/76 = 100)	278.3	283.7	279.6	278.3	280.1	278.3	267.2	257.4	250.4	r240.6	246.7	254.9	256.3	258.1
2952	Asphalt felts and coating (12/75 = 100)	173.5	174.4	180.4	177.2	173.7	172.9	171.4	165.8	163.2	r166.9	164.4	164.2	166.8	165.8
3251	Brick and structural clay tile	307.4	313.8	314.0	314.0	315.5	315.5	315.7	315.6	328.3	r332.2	334.9	335.7	337.5	337.5
3253	Ceramic wall and floor tile (12/75 = 100)	140.6	140.7	140.7	140.7	140.7	140.7	140.7	140.7	140.7	r140.7	139.7	146.8	146.8	146.8
3255	Clay refractories	352.8	358.8	356.9	357.0	350.3	350.3	351.1	351.1	351.2	r352.2	353.1	350.4	353.0	355.3
3259	Structural clay products, n.e.c.	219.7	219.0	219.0	219.0	218.9	219.0	219.0	215.7	215.7	r232.7	234.8	234.8	235.4	235.4
3261	Vitreous plumbing fixtures	265.0	263.9	267.2	269.1	270.3	269.7	272.1	273.3	275.1	r275.3	276.0	276.9	277.2	277.2
3262	Vitreous china food utensils	357.8	360.2	360.2	360.8	370.2	377.7	380.1	380.1	380.1	r380.1	369.2	369.2	369.2	369.2
3263	Fine earthenware food utensils	318.2	316.9	316.9	323.5	324.8	326.0	365.7	365.7	365.7	r365.7	364.3	364.3	364.3	364.3
3269	Pottery products, n.e.c. (12/75 = 100)	167.3	167.4	167.4	169.6	171.9	173.7	186.5	186.6	186.6	r186.6	183.8	183.8	183.8	183.8
3274	Lime (12/75 = 100)	186.3	188.0	187.8	187.7	187.5	185.7	187.3	185.5	185.1	r187.8	185.5	186.5	187.3	187.9
3297	Nonclay refractories (12/74 = 100)	201.8	203.8	203.8	203.8	203.7	203.6	203.7	203.6	203.6	203.8	203.7	203.7	203.8	203.8
3482	Small arms ammunition (12/75 = 100)	164.2	170.3	149.0	150.1	150.6	174.1	175.1	175.1	181.6	r181.6	187.6	187.6	187.6	187.6
3623	Welding apparatus, electric (12/72 = 100)	239.6	242.4	242.8	243.0	243.3	243.3	243.6	244.0	243.4	r243.3	237.9	237.3	238.4	238.4
3636	Sewing machines (12/75 = 100)	154.6	153.6	153.6	154.2	154.2	154.2	154.2	154.4	155.0	r156.8	156.1	156.1	156.1	156.1
3641	Electric lamps	294.0	293.7	296.3	302.9	303.0	303.4	306.0	311.5	311.4	r316.2	313.8	316.7	319.4	319.8
3648	Lighting equipment, n.e.c. (12/75 = 100)	170.0	171.2	171.2	171.3	171.3	171.4	171.4	171.5	171.6	172.6	172.6	173.1	173.4	173.4
3671	Electron tubes, receiving type	382.1	375.4	380.2	380.3	414.0	414.1	431.6	432.0	431.9	r432.1	431.9	432.2	432.4	432.4
3942	Dolls (12/75 = 100)	136.7	136.8	136.8	136.8	136.8	136.5	137.1	136.8	136.8	r137.7	137.4	137.4	137.3	137.3
3944	Games, toys, and children's vehicles	234.0	234.4	234.8	235.3	235.3	235.5	235.3	243.4	241.8	r242.2	237.9	237.9	231.9	231.9
3955	Carbon paper and inked ribbons (12/75 = 100)	140.0	140.5	139.3	139.3	139.2	139.4	139.2	139.2	139.2	139.2	139.2	139.2	139.2	139.2
3995	Burial caskets (6/76 = 100)	148.4	150.8	150.8	150.8	150.8	150.8	147.0	152.1	152.1	152.1	152.1	152.1	155.4	155.4
3996	Hard surface floor coverings (12/75 = 100)	155.9	155.7	156.9	158.9	158.9	156.8	159.2	159.2	159.2	r159.7	159.4	159.4	162.0	163.4

[1]Data for April 1983 have been revised to reflect the availability of late reports and corrections by respondents. All data are subject to revision 4 months after original publication.

NOTE: Indexes which were deleted in the September issue may now be found in Table 4 of the BLS monthly report, *Producer Prices and Price Indexes*.
r = revised.

PRODUCTIVITY DATA

PRODUCTIVITY DATA are compiled by the Bureau of Labor Statistics from establishment data and from estimates of compensation and output supplied by the U.S. Department of Commerce and the Federal Reserve Board.

Definitions

Output is the constant dollar gross domestic product produced in a given period. Indexes of **output per hour of labor input**, or labor productivity, measure the value of goods and services produced per hour of labor. **Compensation per hour** includes wages and salaries of employees plus employers' contributions for social insurance and private benefit plants. The data also include an estimate of wages, salaries, and supplementary payments for the self-employed, except for nonfinancial corporations, in which there are no self-employed. **Real compensation per hour** is compensation per hour adjusted by the Consumer Price Index for All Urban Consumers.

Unit labor cost measures the labor compensation cost required to produce one unit of output and is derived by dividing compensation by output. **Unit nonlabor payments** include profits, depreciation, interest, and indirect taxes per unit of output. They are computed by subtracting compensation of all persons from the current dollar gross domestic product and dividing by output. In these tables, **unit nonlabor costs** contain all the components of unit nonlabor payments except unit profits. **Unit profits** include corporate profits and inventory valuation adjustments per unit of output.

The **implicit price deflator** is derived by dividing the current dollar estimate of gross product by the constant dollar estimate, making the deflator, in effect, a price index for gross product of the sector reported.

Hours of all persons describes the labor input of payroll workers, self-employed persons, and unpaid family workers. **Output per all employee hour** describes labor productivity in nonfinancial corporations where there are no self-employed.

Notes on the data

In the business sector and the nonfarm business sector, the basis for the output measure employed in the computation of output per hour is Gross Domestic Product rather than Gross National Product. Computation of hours includes estimates of nonfarm and farm proprietor hours.

Output data are supplied by the Bureau of Economic Analysis, U.S. Department of Commerce, and the Federal Reserve Board. Quarterly manufacturing output indexes are adjusted by the Bureau of Labor Statistics to annual estimates of output (gross product originating) from the Bureau of Economic Analysis. Compensation and hours data are from the Bureau of Economic Analysis and the Bureau of Labor Statistics.

28. Annual indexes of productivity, hourly compensation, unit costs, and prices, selected years, 1950–82
[1977 = 100]

Item	1950	1955	1960	1965	1970	1975	1976	1977	1978	1979	1980	1981	1982
Business sector:													
Output per hour of all persons	50.4	58.3	65.2	78.3	86.2	94.5	97.6	100.0	100.6	99.4	98.9	101.3	101.2
Compensation per hour	20.0	26.4	33.9	41.7	58.2	85.5	92.9	100.0	108.6	118.7	131.2	143.9	155.1
Real compensation per hour	50.5	59.6	69.5	80.1	90.8	96.3	98.9	100.0	100.9	99.1	96.5	95.9	97.4
Unit labor costs	39.8	45.2	52.1	53.3	67.5	90.5	95.1	100.0	108.0	119.5	132.7	142.1	153.3
Unit nonlabor payments	43.4	47.6	50.6	57.6	63.2	90.4	94.0	100.0	106.7	112.8	119.0	136.2	136.9
Implicit price deflator	41.0	46.0	51.6	54.7	66.0	90.4	94.7	100.0	107.5	117.2	128.1	140.1	147.7
Nonfarm business sector:													
Output per hour of all persons	56.3	62.7	68.3	80.5	86.8	94.7	97.8	100.0	100.6	99.1	98.4	100.3	100.2
Compensation per hour	21.8	28.3	35.7	42.8	58.7	86.0	93.0	100.0	108.6	118.4	130.7	143.5	154.7
Real compensation per hour	55.0	64.0	73.0	82.2	91.5	96.8	99.0	100.0	100.9	98.9	96.1	95.6	97.1
Unit labor costs	38.8	45.1	52.3	53.2	67.6	90.8	95.1	100.0	108.0	119.5	132.8	143.0	c154.4
Unit nonlabor payments	42.7	47.8	50.4	58.0	63.8	88.5	93.5	100.0	105.3	110.4	118.5	135.0	137.0
Implicit price deflator	40.1	46.0	51.6	54.8	66.3	90.0	94.6	100.0	107.1	116.5	128.1	140.4	148.6
Nonfinance corporations:													
Output per hour of all persons	(1)	(1)	68.0	81.9	87.4	95.5	98.2	100.0	100.9	100.7	99.8	102.3	102.8
Compensation per hour	(1)	(1)	37.0	43.9	59.4	86.1	92.9	100.0	108.5	118.7	130.9	143.6	154.8
Real compensation per hour	(1)	(1)	75.8	84.3	92.7	96.9	98.9	100.0	100.7	99.1	96.3	95.7	97.2
Unit labor costs	(1)	(1)	54.4	53.5	68.0	90.2	94.6	100.0	107.5	117.8	131.2	140.3	150.6
Unit nonlabor payments	(1)	(1)	54.6	60.8	63.1	90.8	95.0	100.0	104.2	106.9	117.4	134.4	137.6
Implicit price deflator	(1)	(1)	54.5	56.1	66.3	90.4	94.7	100.0	106.4	114.1	126.4	138.3	146.1
Manufacturing:													
Output per hour of all persons	49.4	56.4	60.0	74.5	79.1	93.4	97.5	100.0	100.8	101.5	101.7	105.3	106.5
Compensation per hour	21.5	28.8	36.7	42.8	57.6	85.4	92.3	100.0	108.3	118.8	132.7	145.8	158.2
Real compensation per hour	54.0	65.1	75.1	82.3	89.8	96.2	98.3	100.0	100.6	99.2	97.6	97.2	99.3
Unit labor costs	43.4	51.0	61.1	57.5	72.7	91.5	94.6	100.0	107.4	117.0	130.5	138.5	148.5
Unit nonlabor payments	54.3	58.5	61.1	69.3	65.0	87.3	93.7	100.0	102.5	99.9	97.7	110.2	109.2
Implicit price deflator	46.6	53.2	61.1	61.0	70.5	90.3	94.4	100.0	106.0	112.0	120.9	130.2	137.0

[1] Not available.   c = corrected.

29. Annual changes in productivity, hourly compensation, unit costs, and prices, 1972–82

Item	Year											Annual rate of change	
	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1950-82	1972-82
Business sector:													
Output per hour of all persons	3.5	2.6	-2.4	2.2	3.3	2.4	0.6	-1.2	-0.5	2.4	-0.1	2.2	0.9
Compensation per hour	6.5	8.0	9.4	9.6	8.6	7.7	8.6	9.4	10.5	9.7	7.7	6.6	8.9
Real compensation per hour	3.1	1.6	-1.4	0.5	2.6	1.2	0.9	-1.7	-2.6	-0.6	1.5	2.1	0.2
Unit labor costs	2.9	5.3	12.1	7.3	5.1	5.1	8.0	10.7	11.1	7.1	7.9	4.3	7.9
Unit nonlabor payments	4.5	5.9	4.4	15.1	4.0	6.4	6.7	5.8	5.5	14.4	0.5	3.7	6.8
Implicit price deflator	3.4	5.5	9.5	9.8	4.7	5.6	7.5	9.0	9.2	9.4	5.4	4.1	7.6
Nonfarm business sector:													
Output per hour of all persons	3.7	2.4	-2.5	2.0	3.2	2.2	0.6	-1.5	-0.7	1.9	-0.1	1.8	0.8
Compensation per hour	6.7	7.6	9.4	9.6	8.1	7.5	8.6	9.0	10.4	9.8	7.8	6.3	8.8
Real compensation per hour	3.3	1.3	-1.4	0.4	2.2	1.0	0.9	-2.0	-2.8	-0.6	1.6	1.8	0.1
Unit labor costs	2.8	5.0	12.2	7.5	4.8	5.2	8.0	10.7	11.1	7.7	7.9	4.4	8.0
Unit nonlabor payments	3.2	1.3	5.9	16.7	5.7	6.9	5.3	4.8	7.4	13.9	1.4	3.7	6.8
Implicit price deflator	3.0	3.8	10.2	10.3	5.1	5.7	7.1	8.8	10.0	9.6	5.8	4.2	7.6
Nonfinancial corporations:													
Output per hour of all employees	2.9	2.4	-3.7	2 9	2.9	1.8	0.9	-0.2	-0.9	2.5	0.5	(1)	0.9
Compensation per hour	5.7	7.5	9.4	9.6	7.9	7.6	8.5	9.4	10.3	9.7	7.8	(1)	8.8
Real compensation per hour	2.4	1.2	-1.5	0.4	2.0	1.1	0.7	-1.7	-2.8	-0.6	1.6	(1)	0.0
Unit labor costs	2.8	4.9	13.6	6.5	4.9	5.7	7.5	9.6	11.3	7.0	7.3	(1)	7.8
Unit nonlabor payments	2.7	1.5	7.1	20.1	4.6	5.3	4.2	2.6	9.8	14.5	2.4	(1)	7.1
Implicit price deflator	2.8	3.8	11.4	10.9	4.8	5.6	6.4	7.2	10.8	9.4	5.7	(1)	7.6
Manufacturing:													
Output per hour of all persons	5.0	5.4	-2.4	2.9	4.4	2.5	0.8	0.7	0.2	3.5	1.2	2.4	1.9
Compensation per hour	5.4	7.2	10.6	11.9	8.0	8.3	8.3	9.7	11.7	9.9	8.5	6.4	9.4
Real compensation per hour	2.0	0.9	-0.3	2.5	2.1	1.8	0.6	-1.4	-1.6	-4	2.2	1.9	0.6
Unit labor costs	0.3	1.7	13.3	8.8	3.4	5.7	7.4	9.0	11.5	6.1	7.2	3.9	7.4
Unit nonlabor payments	0.8	-3.3	-1.8	25.9	7.4	6.7	2.5	-2.6	-2.2	12.8	-0.9	2.2	4.1
Implicit price deflator	0.5	0.3	9.0	13.1	4.6	6.0	6.0	5.7	7.9	7.7	5.2	3.4	6.5

[1] Not available.

30. Quarterly indexes of productivity, hourly compensation, unit costs, and prices, seasonally adjusted
[1977 = 100]

Item	Annual average		Quarterly indexes										
			1980	1981				1982				1983	
	1981	1982	IV	I	II	III	IV	I	II	III	IV	I	II
Business sector:													
Output per hour of all persons	101.3	101.2	99.1	100.5	101.1	102.3	101.2	101.1	100.7	101.1	101.9	102.5	103.9
Compensation per hour	143.9	155.1	136.0	139.7	142.2	145.5	148.2	151.6	153.9	156.5	158.7	160.7	162.1
Real compensation per hour	95.9	97.4	96.1	96.3	96.1	95.6	95.6	97.1	97.4	97.1	98.0	99.4	99.2
Unit labor costs	142.1	153.3	137.2	139.0	140.7	142.3	146.4	149.9	152.9	154.7	155.6	156.9	156.1
Unit nonlabor payments	136.2	136.9	124.2	131.2	133.4	139.9	140.2	137.0	137.0	136.3	137.4	140.8	145.8
Implicit price deflator	140.1	147.7	132.8	136.3	138.2	141.5	144.3	145.5	147.5	148.5	149.4	151.5	152.6
Nonfarm business sector:													
Output per hour of all persons	100.3	100.2	98.8	100.1	100.1	101.1	99.9	100.0	99.9	100.4	100.8	101.7	103.2
Compensation per hour	143.5	154.7	135.5	139.3	141.8	145.1	147.7	151.3	153.5	156.1	158.3	161.0	162.7
Real compensation per hour	95.6	97.1	95.8	96.0	95.8	95.3	95.4	96.9	97.1	96.9	97.8	99.5	99.6
Unit labor costs	143.0	154.4	137.2	139.2	141.6	143.5	147.8	151.3	153.6	155.4	157.1	158.3	157.6
Unit nonlabor payments	135.0	137.0	123.2	130.3	132.2	138.3	139.5	136.4	137.7	136.5	137.2	140.7	145.7
Implicit price deflator	140.4	148.6	132.5	136.2	138.4	141.8	145.0	146.4	148.3	149.1	150.5	152.4	153.6
Nonfinancial corporations:													
Output per hour of all employees	102.3	102.8	100.4	101.8	102.1	103.0	102.2	102.4	102.3	103.2	103.4	104.3	105.7
Compensation per hour	143.6	154.8	135.8	139.5	142.0	145.0	147.8	151.7	153.7	156.1	158.1	160.4	161.6
Real compensation per hour	95.7	97.2	96.0	96.2	95.9	95.2	95.4	97.2	97.2	96.9	97.7	99.2	98.9
Total unit costs	142.7	153.5	135.9	138.4	141.1	143.6	147.7	150.9	153.1	153.8	156.3	156.7	155.7
Unit labor costs	140.3	150.6	135.3	137.0	139.0	140.7	144.6	148.1	150.2	151.1	152.9	153.9	152.9
Unit nonlabor costs	149.4	161.8	137.9	142.3	147.0	151.9	156.6	158.9	161.2	161.3	165.9	164.7	163.5
Unit profits	104.1	88.9	90.9	103.0	100.3	108.6	104.2	90.8	90.3	91.2	83.0	96.1	114.1
Implicit price deflator	138.3	146.1	130.8	134.3	136.4	139.6	142.7	144.0	145.9	146.6	147.9	149.7	150.9
Manufacturing:													
Output per hour of all persons	105.3	106.5	103.6	105.1	105.4	106.1	104.4	105.1	105.3	107.8	108.1	110.2	112.4
Compensation per hour	145.8	158.2	138.3	141.6	144.3	147.0	150.5	155.1	157.1	159.6	161.4	165.5	166.4
Real compensation per hour	97.2	99.3	97.8	ʳ97.6	97.5	96.5	97.1	99.4	99.4	99.1	99.7	102.3	101.8
Unit labor costs	138.5	148.5	133.5	ʳ134.8	136.9	138.5	144.1	147.6	149.1	148.1	149.3	150.2	148.0

r = revised.

31. Percent change from preceding quarter and year in productivity, hourly compensation, unit costs, and prices, seasonally adjusted at annual rate

Item	Quarterly percent change at annual rate						Percent change from same quarter a year ago					
	IV 1981 to I 1982	I 1982 to II 1982	II 1982 to III 1982	III 1982 to IV 1982	IV 1982 to I 1983	I 1983 to II 1983	I 1981 to I 1982	II 1981 to II 1982	III 1981 to III 1982	IV 1981 to IV 1982	I 1982 to I 1983	II 1982 to II 1983
Business sector:												
Output per hour of all persons	-0.4	1.6	1.7	3.3	2.0	5.7	0.6	-0.4	1.1	0.7	1.3	3.2
Compensation per hour	9.4	6.4	6.7	5.7	5.4	3.5	8.5	8.2	7.5	7.1	6.1	5.3
Real compensation per hour	6.3	1.1	-1.0	3.7	5.8	-0.7	0.8	1.3	1.6	2.5	2.4	1.9
Unit labor costs	9.8	8.1	5.0	2.3	3.3	-2.1	7.9	8.7	8.7	6.3	4.7	2.1
Unit nonlabor payments	-8.8	-0.1	2.0	3.2	10.5	15.0	4.4	2.7	2.6	2.0	2.8	6.5
Implicit price deflator	3.4	5.5	2.7	2.6	5.5	3.1	6.7	6.7	4.9	3.5	4.1	3.5
Nonfarm business sector:												
Output per hour of all persons	0.1	c -0.4	2.3	1.3	3.7	6.1	-0.1	-0.3	c -0.6	0.8	1.7	3.3
Compensation per hour	10.0	5.8	7.2	5.8	6.8	4.3	8.6	8.2	7.6	7.2	6.4	6.0
Real compensation per hour	6.8	0.5	-0.6	3.7	7.2	0.1	0.9	1.3	1.7	2.6	2.7	2.6
Unit labor costs	9.9	6.2	4.7	4.4	3.0	c -1.6	8.7	8.5	8.3	6.3	4.6	2.6
Unit nonlabor payments	c -8.5	3.7	-3.4	2.0	10.6	15.0	4.7	4.2	-1.3	-1.6	3.1	5.8
Implicit price deflator	3.7	5.4	2.2	3.7	5.3	3.3	7.4	7.1	5.2	3.7	4.1	3.6
Nonfinancial corporations:												
Output per hour of all employees	0.9	0.5	3.8	0.6	3.4	5.5	0.6	0.1	0.2	1.2	1.8	3.3
Compensation per hour	10.9	5.4	6.4	5.4	6.0	2.9	8.7	8.2	7.6	7.0	5.8	5.2
Real compensation per hour	7.7	0.1	-1.3	3.4	6.4	-1.3	1.0	1.3	1.7	2.4	2.1	1.7
Total units costs	8.8	6.0	1.8	6.7	1.0	-2.5	9.0	8.5	7.1	5.8	3.8	1.7
Unit labor costs	9.9	6.0	2.4	4.8	2.5	-2.4	8.1	8.1	7.4	5.7	3.9	1.8
Unit nonlabor costs	6.1	6.0	0.1	11.9	-2.8	-2.8	11.7	9.7	6.2	6.0	3.7	1.4
Unit profits	-42.2	-2.1	3.8	-31.4	79.9	98.5	c -11.8	-9.9	-16.1	20.3	5.8	26.3
Implicit price deflator	3.6	5.4	1.9	3.6	5.1	3.2	7.2	7.0	5.0	3.6	4.0	3.4
Manufacturing:												
Output per hour of all persons	c 2.8	0.8	9.6	1.2	8.0	8.4	r 0.0	-0.1	1.6	3.5	4.8	6.7
Compensation per hour	13.1	5.1	6.5	4.5	10.7	2.1	9.6	8.8	8.6	7.3	6.7	5.9
Real compensation per hour	9.8	-0.2	-1.2	2.5	11.1	-21	1.8	1.9	2.6	2.7	3.0	2.5
Unit labor costs	9.9	4.3	-2.8	3.3	2.5	-5.9	9.5	8.9	6.9	3.6	1.8	-0.8

[1] Not available.
c = corrected.

r = revised.

WAGE AND COMPENSATION DATA

DATA FOR THE EMPLOYMENT COST INDEX are reported to the Bureau of Labor Statistics by a sample of 2,000 private nonfarm establishments and 750 State and local government units selected to represent total employment in those sectors. On average, each reporting unit provides wage and compensation information on five well-specified occupations.

Data on negotiated wage and benefit changes are obtained from contracts on file at the Bureau, direct contact with the parties, and secondary sources.

Definitions

The **Employment Cost Index** (ECI) is a quarterly measure of the average change in the cost of employing labor. The rate of total compensation, which comprises wages, salaries, and employer costs for employee benefits, is collected for workers performing specified tasks. Employment in each occupation is held constant over time for all series produced in the ECI, except those by region, bargaining status, and area. As a consequence, only changes in compensation are measured. Industry and occupational employment data from the 1970 Census of Population are used in deriving constant weights for the ECI. While holding total industry and occupational employment fixed, in the estimation of indexes by region, bargaining status, and area, the employment in those measures is allowed to vary over time in accord with changes in the sample. The rate of change (in percent) is available for wages and salaries, as well as for total compensation. Data are collected for the pay period including the 12th day of the survey months of March, June, September, and December. The statistics are neither annualized nor adjusted for seasonal influence.

Wages and salaries consist of earnings before payroll deductions, excluding premium pay for overtime, work on weekends and holidays, and shift differentials. Production bonuses, incentive earnings, commissions, and cost-of-living adjustments are included; nonproduction bonuses are included with other supplemental pay items in the benefits category; and payments-in-kind, free room and board, and tips are excluded. *Benefits* include supplemental pay, insurance, retirement and savings plans, and hours-related and legally required benefits.

Data on negotiated wage changes apply to private nonfarm industry collective bargaining agreements covering 1,000 workers or more. Data on compensation changes apply only to those agreements covering 5,000 workers or more. *First-year* wage or compensation changes refer to average negotiated changes for workers covered by settlements reached in the period and implemented within the first 12 months after the effective date of the agreement. *Changes over the life of the agreement* refer to all adjustments specified in the contract, expressed as an average annual rate. These measures exclude wage changes that may occur under cost-of-living adjustment clauses, that are triggered by movements in the Consumer Price Index. *Wage-rate changes* are expressed as a percent of straight-time hourly earnings; *compensation changes* are expressed as a percent of total wages and benefits.

Effective wage adjustments reflect all negotiated changes implemented in the reference period, regardless of the settlement date. They include changes from settlements reached during the period, changes deferred from contracts negotiated in an earlier period, and cost-of-living adjustments. The data also reflect contracts providing for no wage adjustment in the period. Effective adjustments and each of their components are prorated over all workers in bargaining units with at least 1,000 workers.

Notes on the data

The Employment Cost Index data series began in the fourth quarter of 1975, with the quarterly percent change in wages and salaries in the private nonfarm sector. Data on employer costs for employee benefits were included in 1980, to produce a measure of the percent change in employers' cost for employees' total compensation. State and local government units were added to the ECI coverage in 1981, providing a measure of total compensation change in the civilian nonfarm economy.

Data for the broad white-collar, blue-collar, and service worker groups, and the manufacturing, nonmanufacturing, and service industry groups are presented in the ECI. Additional occupation and industry detail are provided for the wages and salaries component of total compensation in the private nonfarm sector. For State and local government units, additional industry detail is shown for both total compensation and its wages and salaries component.

Historical indexes (June 1981 = 100) of the quarterly rates of changes presented in the ECI are also available.

For a more detailed discussion of the ECI, see chapter 11, "The Employment Cost Index," of the BLS *Handbook of Methods* (Bulletin 2134–1), and the *Monthly Labor Review* articles: "Employment Cost Index: a measure of change in the 'price of labor,'" July 1975; "How benefits will be incorporated into the Employment Cost Index," January 1978; and "The Employment Cost Index: recent trends and expansion," May 1982.

Additional data for the ECI and other measures of wage and compensation changes appear in *Current Wage Developments*, a monthly publication of the Bureau.

32. Employment Cost Index, by occupation and industry group

[June 1981 = 100]

Series	1981 June	1981 Sept.	1981 Dec.	1982 March	1982 June	1982 Sept.	1982 Dec.	1983 March	1983 June	Percent change 3 months ended June 1983	Percent change 12 months ended June 1983
Civilian workers[1]	100.0	102.6	104.5	106.3	107.5	110.1	111.4	113.2	114.5	1.1	6.5
Workers, by occupational group											
White-collar workers	100.0	102.7	104.9	106.5	107.7	110.7	111.9	113.7	114.9	1.1	6.7
Blue-collar workers	100.0	102.3	104.1	105.7	107.1	109.2	110.5	112.3	113.6	1.2	6.1
Service workers	100.0	102.8	104.2	107.2	108.3	110.8	112.4	114.3	115.1	.7	6.3
Workers, by industry division											
Manufacturing	100.0	102.1	104.0	106.0	107.2	109.3	110.4	112.5	113.5	.9	5.9
Nonmanufacturing	100.0	102.8	104.8	106.4	107.7	110.5	111.8	113.5	114.9	1.2	6.7
Services	100.0	104.4	107.1	108.2	109.2	113.5	115.0	116.6	117.1	.4	7.2
Public administration[2]	100.0	104.3	106.0	108.1	109.1	112.8	113.6	116.2	117.0	.7	7.2
Private industry workers	100.0	102.0	104.0	105.8	107.2	109.3	110.7	112.6	113.9	1.2	6.3.
Workers, by occupational group											
White-collar workers	100.0	101.8	104.0	105.8	107.2	109.5	110.8	112.8	114.2	1.2	6.5
Blue-collar workers	100.0	102.2	104.0	105.6	107.0	109.0	110.3	112.1	113.5	1.2	6.1
Service workers	100.0	101.9	103.1	106.7	107.9	109.6	111.8	113.8	114.6	.7	6.2
Workers, by industry division											
Manufacturing	100.0	102.1	104.0	106.0	107.2	109.3	110.4	112.5	113.5	.9	5.9
Nonmanufacturing	100.0	102.0	103.9	105.7	107.1	109.3	110.8	112.6	114.2	1.4	6.6
State and local government workers	100.0	106.3	107.4	108.8	109.3	114.3	115.1	116.5	117.1	.5	7.1
Workers, by occupational group											
White-collar workers	100.0	106.7	107.8	109.1	109.5	114.9	115.8	117.0	117.5	.4	7.3
Blue-collar workers	100.0	104.2	105.9	108.2	108.9	112.7	113.0	114.9	115.8	.8	6.3
Workers, by industry division											
Services	100.0	105.8	107.9	109.0	109.4	114.9	115.9	116.8	117.4	.5	7.3
Schools	100.0	106.0	107.9	108.9	109.1	114.8	115.8	116.6	116.9	.3	7.1
Elementary and secondary	100.0	106.3	108.3	109.3	109.5	115.6	116.6	117.2	117.4	.2	7.2
Hospitals and other services[3]	100.0	105.0	107.8	109.5	110.3	115.3	116.0	117.5	118.8	1.1	7.7
Public administration[2]	100.0	104.3	106.0	108.1	109.1	112.5	113.6	116.2	117.0	.7	7.2

[1] Excludes farm, household, and Federal workers.
[2] Consists of legislative, judicial, administrative, and regulatory activities.
[3] Includes, for example, library, social, and health services.

33. Employment Cost Index, wages and salaries, by occupation and industry group

[June 1981 = 100]

| Series | 1981 | | | 1982 | | | | 1983 | | Percent change | |
	June	Sept.	Dec.	March	June	Sept.	Dec.	March	June	3 months ended	12 months ended
										June 1983	
Civilian workers[1]	100.0	102.5	104.4	106.3	107.3	109.7	110.9	112.2	113.4	1.1	5.7
Workers, by occupational group											
White-collar workers	100.0	102.6	104.7	106.7	107.6	110.4	111.4	113.0	114.2	1.1	6.1
Blue-collar workers	100.0	102.4	104.0	106.5	106.7	108.6	109.8	110.8	112.0	1.1	5.0
Service workers	100.0	102.5	103.6	106.8	107.9	110.1	111.8	113.2	113.9	.6	5.6
Workers, by industry division											
Manufacturing	100.0	102.1	104.0	105.9	107.0	108.8	109.8	111.0	112.0	.9	4.7
Nonmanufacturing	100.0	102.7	104.5	106.5	107.5	110.1	111.3	112.7	114.0	1.2	6.0
Services	100.0	104.4	106.6	108.6	109.5	113.2	114.4	115.8	116.3	.4	6.2
Public administration[2]	100.0	103.8	106.5	107.5	108.4	111.9	112.6	114.6	115.4	.7	6.5
Private industry workers	100.0	102.0	103.8	105.9	107.1	109.0	110.3	111.6	112.9	1.2	5.4
Workers, by occupational group											
White-collar workers	100.0	101.8	103.9	106.2	107.3	109.4	110.6	112.2	113.6	1.2	5.9
Professional and technical workers	100.0	103.3	105.5	108.0	109.4	111.8	112.9	114.8	115.9	1.0	5.9
Managers and administrators	100.0	101.6	102.8	105.8	107.2	108.5	109.3	112.0	114.0	1.8	6.3
Salesworkers	100.0	98.0	101.9	102.2	101.8	104.5	106.2	105.7	107.1	1.3	5.2
Clerical workers	100.0	102.7	104.2	107.0	108.3	110.3	111.6	113.4	114.6	1.1	5.8
Blue-collar workers	100.0	102.3	103.9	105.4	106.6	108.5	109.7	110.7	111.9	1.1	5.0
Craft and kindred workers	100.0	102.9	104.3	106.2	107.6	109.6	111.2	112.2	113.4	1.1	5.4
Operatives, except transport	100.0	102.1	104.1	105.4	106.6	108.3	109.3	110.0	111.1	1.0	4.2
Transport equipment operatives	100.0	101.0	102.7	103.2	104.1	106.0	106.9	108.0	110.3	2.1	6.0
Nonfarm laborers	100.0	101.5	103.3	104.1	105.1	106.5	107.8	109.0	109.8	.7	4.5
Service workers	100.0	101.8	102.7	106.7	107.9	109.3	111.4	112.9	113.5	.5	5.2
Workers, by industry division											
Manufacturing	100.0	102.1	104.0	105.9	107.0	108.8	109.8	111.0	112.0	.9	4.7
Durables	100.0	102.1	104.5	106.3	107.4	109.0	110.3	111.1	111.8	.6	4.1
Nondurables	100.0	102.0	103.1	105.3	106.3	108.5	109.1	110.9	112.3	1.3	5.6
Nonmanufacturing	100.0	102.0	103.8	105.9	107.1	109.1	110.5	112.0	113.4	1.3	5.9
Construction	100.0	103.0	104.3	105.9	107.3	109.1	109.7	110.4	112.1	1.5	4.5
Transportation and public utilities	100.0	102.0	103.6	105.7	106.9	109.5	111.1	112.9	114.7	1.6	7.3
Wholesale and retail trade	100.0	101.3	102.3	103.9	105.8	106.5	107.2	108.5	110.8	2.1	4.7
Wholesale trade	100.0	102.0	103.4	106.3	108.9	109.0	109.8	111.8	114.1	2.1	4.8
Retail trade	100.0	101.0	101.9	103.0	104.5	106.5	106.1	107.2	109.4	2.1	4.7
Finance, insurance, and real estate	100.0	98.3	102.3	103.7	102.4	106.1	109.0	110.6	111.1	.5	8.5
Services	100.0	103.6	105.8	108.8	110.0	112.5	114.3	116.0	116.6	.5	6.0
State and local government workers	100.0	105.0	107.0	108.2	108.7	113.5	114.0	115.1	115.7	.5	6.4
Workers, by occupational group											
White-collar workers	100.0	105.4	107.5	108.5	108.9	114.2	114.6	115.6	116.1	.4	6.6
Blue-collar workers	100.0	103.9	105.5	107.5	107.9	111.5	112.0	113.3	114.3	.9	5.9
Workers, by industry division											
Services	100.0	105.5	107.6	108.4	108.8	114.2	114.6	115.5	115.9	.3	6.5
Schools	100.0	105.7	107.7	108.3	108.5	114.2	114.5	115.2	115.4	.2	6.4
Elementary and secondary	100.0	106.0	107.9	108.7	108.8	114.9	115.1	115.6	115.8	.2	6.4
Hospitals and other services[3]	100.0	104.6	107.3	108.8	109.5	114.3	114.9	116.5	117.7	1.0	7.5
Public administration[2]	100.0	103.8	105.5	107.5	108.4	111.9	112.6	114.6	115.4	.7	6.5

[1]Excludes farm, household, and Federal workers.
[2]Consists of legislative, judicial, administrative, and regulatory activities.
[3]Includes, for example, library, social and health services.

34. Employment Cost Index, private industry workers, by bargaining status, region, and area size

[June 1981 = 100]

| Series | 1981 | | | 1982 | | | | 1983 | | Percent change | |
| | | | | | | | | | | 3 months ended | 12 months ended |
	June	Sept.	Dec.	March	June	Sept.	Dec.	March	June	June 1983	
COMPENSATION											
Workers, by bargaining status[1]											
Union	100.0	102.5	104.8	106.5	108.4	110.6	112.3	114.5	116.0	1.3	7.0
Manufacturing	100.0	102.3	104.6	106.3	108.0	110.3	111.8	114.0	114.8	.7	6.3
Nonmanufacturing	100.0	102.7	105.0	106.8	108.7	111.0	112.8	114.9	117.1	1.9	7.7
Nonunion	100.0	101.7	103.5	105.3	106.5	108.5	109.7	111.5	112.8	1.2	5.9
Manufacturing	100.0	101.8	103.5	105.7	106.6	106.4	109.2	111.2	112.3	1.0	5.3
Nonmanufacturing	100.0	101.7	103.5	106.2	106.4	108.6	109.9	111.6	113.0	1.3	6.2
Workers, by area size[1]											
Metropolitan areas	100.0	102.1	104.1	105.7	107.2	109.4	110.9	112.9	114.2	1.2	6.5
Other areas	100.0	101.8	103.2	106.2	107.0	108.6	109.1	110.8	112.3	1.4	5.0
WAGES AND SALARIES											
Workers, by bargaining status[1]											
Union	100.0	102.7	105.0	106.5	108.1	110.3	111.8	112.9	114.2	1.2	5.6
Manufacturing	100.0	102.6	104.7	105.9	107.3	109.5	110.8	111.4	112.3	.8	4.7
Nonmanufacturing	100.0	102.8	105.2	107.0	108.8	111.1	112.7	114.3	116.0	1.5	6.6
Nonunion	100.0	101.6	103.2	105.6	106.5	108.3	109.5	110.9	112.2	1.2	5.4
Manufacturing	100.0	101.7	103.3	105.9	106.7	108.2	109.1	110.7	111.8	1.0	4.8
Nonmanufacturing	100.0	101.6	103.2	105.5	106.4	108.3	109.6	111.0	112.4	1.3	5.6
Workers, by region[1]											
Northeast	100.0	101.7	104.4	106.1	106.7	109.7	111.5	112.0	113.6	1.4	6.5
South	100.0	101.9	102.8	105.7	107.4	108.8	109.8	111.4	112.5	1.0	4.7
North Central	100.0	101.6	103.3	104.7	106.1	107.6	108.6	110.1	111.5	1.3	5.1
West	100.0	103.2	105.1	107.9	108.6	110.7	112.0	114.1	114.9	.7	5.8
Workers by area size[1]											
Metropolitan areas	100.0	102.1	104.0	105.9	107.1	109.1	110.5	111.9	113.2	1.2	5.7
Other areas	100.0	101.8	103.1	106.0	106.8	108.3	108.8	110.1	111.4	1.2	4.3

[1]The indexes are calculated differently from those for the occupation and industry groups. For a detailed description of the index calculation, see BLS *Handbook of Methods*, Bulletin 1910.

35. Wage and compensation change, major collective bargaining settlements, 1978 to date

[In percent]

Measure	Annual average					Quarterly average							
						1981		1982				1983ᵖ	
	1978	1979	1980	1981	1982	III	IV	I	II	III	IV	I	II
Total compensation changes, covering 5,000 workers or more, all industries:													
First year of contract	8.3	9.0	10.4	10.2	3.2	10.5	11.0	1.9	2.6	6.2	3.3	−1.7	4.7
Annual rate over life of contract.	6.3	6.6	7.1	8.3	2.8	8.1	5.8	1.2	ᶜ2.1	4.7	4.8	1.5	3.9
Wage rate changes covering at least 1,000 workers, all industries:													
First year of contract	7.6	7.4	9.5	9.8	3.8	10.8	9.0	3.0	3.4	5.4	3.8	−1.2	2.9
Annual rate over life of contract.	6.4	6.0	7.1	7.9	3.6	8.7	5.7	2.8	3.2	4.5	4.8	2.3	3.1
Manufacturing:													
First year of contract	8.3	6.9	7.4	7.2	2.8	9.0	6.6	2.5	1.8	5.1	4.1	−3.4	1.3
Annual rate over life of contract.	6.6	5.4	5.4	6.1	2.6	7.5	5.4	2.7	1.7	3.9	4.5	.9	1.6
Nonmanufacturing (excluding construction):													
First year of contract	8.0	7.6	9.5	9.8	4.3	8.6	9.6	2.7	6.6	5.5	3.6	3.9	6.8
Annual rate over life of contract.	6.5	6.2	6.6	7.3	4.1	7.2	5.6	2.1	6.1	4.8	5.2	5.9	6.1
Construction:													
First year of contract	6.5	8.8	13.6	13.5	6.5	16.4	11.4	8.6	6.2	6.3	3.4	ᶜ.3	1.9
Annual rate over life of contract.	6.2	8.3	11.5	11.3	6.3	12.4	11.7	8.2	6.3	5.9	2.9	2.6	2.5

p = preliminary.   c = corrected.

36. Effective wage adjustments in collective bargaining units covering 1,000 workers or more, 1978 to date

Measure	Year					Year and quarter							
						1981		1982				1983ᵖ	
	1978	1979	1980	1981	1982	III	IV	I	II	III	IV	I	II
Average percent adjustment (including no change):													
All industries	8.2	9.1	9.9	9.5	6.8	3.3	1.5	1.0	2.0	2.4	1.3	0.4	1.3
Manufacturing	8.6	9.6	10.2	9.4	5.2	3.1	1.9	.9	1.0	1.7	1.5	−.4	1.0
Nonmanufacturing	7.9	8.8	9.7	9.5	7.9	3.4	1.1	1.1	2.7	2.9	1.2	.9	1.4
From settlements reached in period	2.0	3.0	3.6	2.5	1.7	.5	.4	.2	.4	.5	.6	−.2	.2
Deferred from settlements reached in earlier period	3.7	3.0	3.5	3.8	3.6	1.5	.4	.6	1.4	1.3	.4	.4	1.0
From cost-of-living clauses	2.4	3.1	2.8	3.2	1.4	1.2	.6	.3	.2	.6	.3	.1	.1
Total number of workers receiving wage change (in thousands)[1]	—	—	—	8,648	7,852	4,364	3,225	2,878	3,423	3,760	3,441	3,030	3,108
From settlements reached in period	—	—	—	2,270	1,907	540	604	204	511	620	825	434	454
Deferred from settlements reached in earlier period	—	—	—	6,267	4,846	3,023	882	1,001	1,594	2,400	860	ᶜ840	1,446
From cost-of-living clauses	—	—	—	4,593	3,830	2,934	2,179	1,920	1,568	2,251	1,970	2,075	1,395
Number of workers receiving no adjustments (in thousands)	—	—	—	145	483	4,428	5,568	5,457	4,912	4,575	4,895	5,085	5,007

[1] The total number of workers who received adjustments does not equal the sum of workers that received each type of adjustment, because some workers received more than one type of adjustment during the period.

p = preliminary.
c = corrected.

WORK STOPPAGE DATA

WORK STOPPAGES include all known strikes or lockouts involving 1,000 workers or more and lasting a full shift or longer. Data are based largely on newspaper accounts and cover all workers idle one shift or more in establishments directly involved in a stoppage. They do not measure the indirect or secondary effect on other establishments whose employees are idle owing to material or service shortages.

Estimates of days idle as a percent of estimated working time measures only the impact of larger strikes (1,000 workers or more). Formerly, these estimates measured the impact of strikes involving 6 workers or more; that is, the impact of virtually *all* strikes. Due to budget stringencies, collection of data on strikes involving fewer than 1,000 workers was discontinued with the December 1981 data.

37. Work stoppages involving 1,000 workers or more, 1947 to date

Month and year	Number of stoppages		Workers involved		Days idle	
	Beginning in month or year	In effect during month	Beginning in month or year (in thousands)	In effect during month (in thousands)	Number (in thousands)	Percent of estimated working time
1947	270	. . . .	1,629	. . . .	25,720	
1948	245	. . . .	1,435	. . . .	26,127	.22
1949	262	. . . .	2,537	. . . .	43,420	.38
1950	424	. . . .	1,698	. . . .	30,390	.26
1951	415	. . . .	1,462	. . . .	15,070	.12
1952	470	. . . .	2,746	. . . .	48,820	.38
1953	437	. . . .	1,623	. . . .	18,130	.14
1954	265	. . . .	1,075	. . . .	16,630	.13
1955	363	. . . .	2,055	. . . .	21,180	.16
1956	287	. . . .	1,370	. . . .	26,840	.20
1957	279	. . . .	887	. . . .	10,340	.07
1958	332	. . . .	1,587	. . . .	17,900	.13
1959	245	. . . .	1,381	. . . .	60,850	.43
1960	222	. . . .	896	. . . .	13,260	.09
1961	195	. . . .	1,031	. . . .	10,140	.07
1962	211	. . . .	793	. . . .	11,760	.08
1963	181	. . . .	512	. . . .	10,020	.07
1964	246	. . . .	1,183	. . . .	16,220	.11
1965	268	. . . .	999	. . . .	15,140	.10
1966	321	. . . .	1,300	. . . .	16,000	.10
1967	381	. . . .	2,192	. . . .	31,320	.18
1968	392	. . . .	1,855	. . . .	35,567	.20
1969	412	. . . .	1,576	. . . .	29,397	.16
1970	381	. . . .	2,468	. . . .	52,761	.29
1971	298	. . . .	2,516	. . . .	35,538	.19
1972	250	. . . .	975	. . . .	16,764	.09
1973	317	. . . .	1,400	. . . .	16,260	.08
1974	424	. . . .	1,796	. . . .	31,809	.16
1975	235	. . . .	965	. . . .	17,563	.09
1976	231	. . . .	1,519	. . . .	23,962	.12
1977	298	. . . .	1,212	. . . .	21,258	.10
1978	219	. . . .	1,006	. . . .	23,774	.11
1979	235	. . . .	1,021	. . . .	20,409	.09
1980	187	. . . .	795	. . . .	20,844	.09
1981	145	. . . .	729	. . . .	16,908	.07
1982	96	. . . .	656	. . . .	9,061	.04
1982 January	2	4	6.1	11.4	202.8	.01
February	3	7	3.9	15.3	241.1	.01
March	4	9	13.3	26.1	357.0	.02
April	14	21	59.5	79.1	533.1	.03
May	15	23	42.7	66.1	657.6	.04
June	18	27	42.8	66.9	907.2	.05
July	13	25	38.4	65.9	844.7	.04
August	9	23	18.8	58.0	754.3	.04
1983p January	1	3	1.6	38.0	794.8	.04
February	5	7	14.0	50.4	844.4	.05
March	5	10	10.5	54.9	1,131.5	.05
April	2	9	2.8	52.4	789.5	.04
May	11	16	23.6	32.9	493.9	.03
June	r15	r24	r59.8	r79.7	r689.0	.03
July	r9	r22	r46.1	r81.3	r1,190.5	.06
August	8	20	677.6	732.2	10,878.7	.52

p = preliminary.   r = revised.

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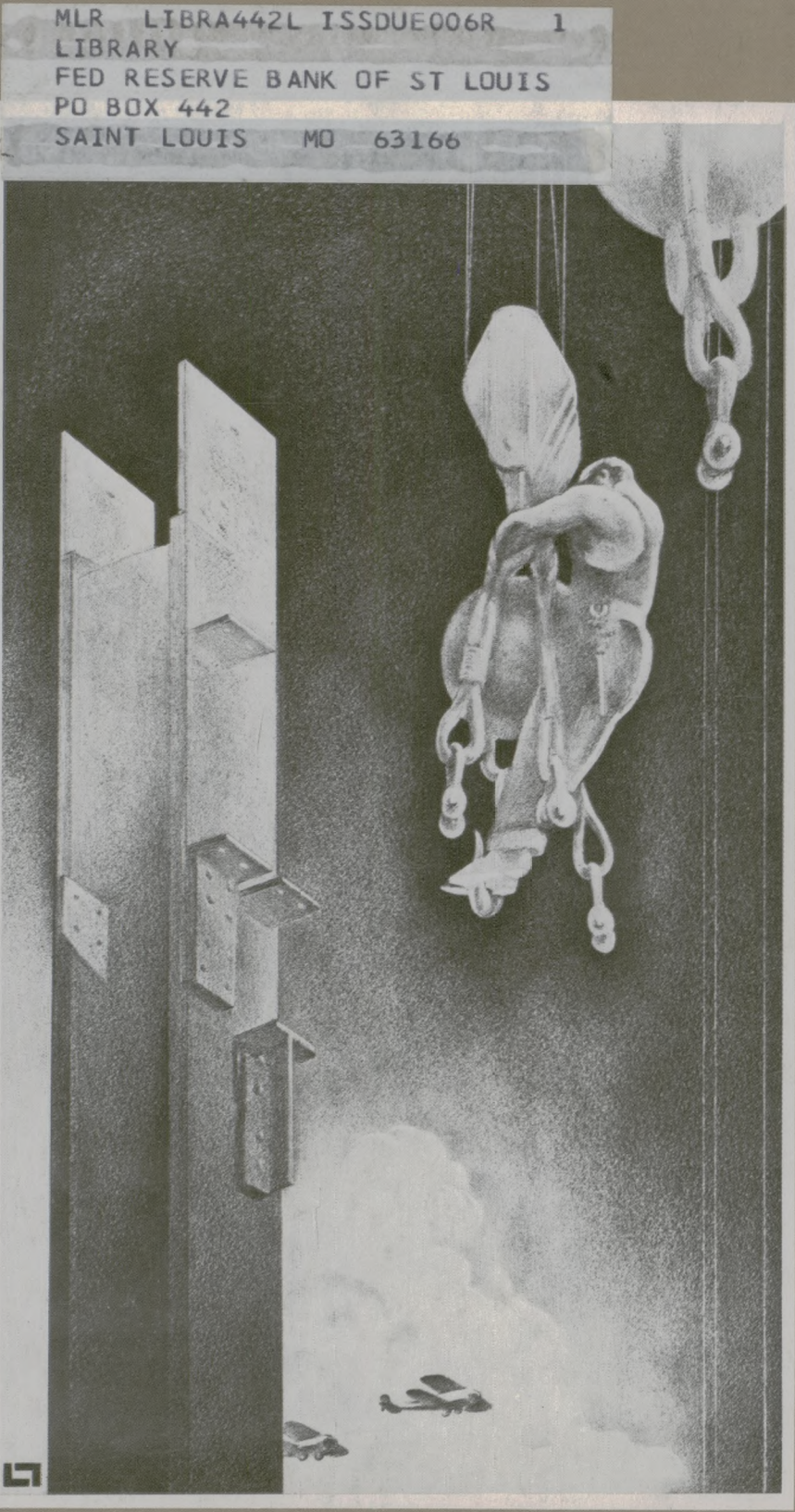For additional information, contact the Regional Economic Information System, Regional Economic Measurement Division, BE-55, Bureau of Economic Analysis, Washington, D.C. 20230.