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Diffusion Indexes

The principal specifications of the diffusion indexes presented below are given in Table I and in the notes that follow. The indexes are classified, first, according to whether they extend through 1958 or end before then; second, according to whether they include primarily types of economic activities that generally lead at business cycle turns, roughly coincide with them, lag behind them, or contain a mixture of these types. The timing classification should not be taken to mean that each of the components of a particular diffusion index has the same characteristic timing that the group as a whole has.

The following indexes were compiled by the Bureau of the Census, under the direction of Julius Shiskin (see Volume I, Chapter 18): D 1.0, 3.2, 4.0, 10.0, 12.0, 12.2, 13.0 (since 1948), 13.1 (since 1947), 15.0 (since 1947), 20.0, 50.1, 50.2, 51.1, 51.2, 53.1, 53.2. All other indexes were constructed by the National Bureau of Economic Research, except where sources of current data are given.

All the diffusion indexes given here are expressed in terms of the percentage of components expanding (rising) during designated intervals, with components showing no change counted one-half expanding and one-half contracting. The percentages are "centered," i.e. recorded at the middle of the interval or span. When the span covers an odd number of months or quarters, the percentage is recorded in the second of the two central months or quarters. For example, if the span is one month, the January to February result is recorded in February. If the span is three months, the November to February result is recorded in January. If the span is four quarters, the result based on the change from first quarter of 1957 to first quarter of 1958 is recorded in the third quarter of 1957.

TABLE 1
Classification and Specifications of Diffusion Indexes

Index ^a	Period Covered	Components (max. no.)	Span ^b	Seasonal Adjustment	Charted or Analyzed in Vol. I, Chapter	
A. INDEXES THAT EXTEND THROUGH 1958						
<i>Based on leading-type series</i>						
D 1.0	Av. workweek, mfg., BLS.	1948-58	21 mfg. indus.	3 mos.	Components adj.	3, 15, 18
D 3.2	Initial claims for unemp. insur., BES (inverted)	1952-58	47 areas	3 mos.	Components adj.	18
D 4.0	New orders for durable goods, value, Census-OBE	1949-58	21 mfg. indus.	3 mos.	Components adj.	3, 14, 18
D 4.3	New orders, NAPA	1948-58	Approx. 225 cos.	1 mo.	Index adj.	9, 14
D 6.3	New capital appropriations, mfg. cos., NICB	1953-58	Approx. 500 cos.	4 qu.	None required	
D 9.0	Profits (after taxes), Hultgren, FRB, First National City Bank	1920-58	Approx. 600 cos.	1 qu.	Index adj.	3, 8, 11, 13
D 9.2	Profits, mfrs., wholesalers, retailers; actual and expected, Dun and Bradstreet	1948-58	Approx. 1450 cos.	4 qu.	None required	
D 9.3	Profits (before taxes) per \$ of sales, mfg. corp., FTC-SEC	1947-58	22 mfg. indus.	4 qu.	None required	12
D 10.0	Common stock prices, Standard & Poor's	1948-58	86 indus.	3 mos.	None required	18
D 12.0	Indus. raw materials spot mkt. prices, BLS	1948-58	13 commod.	3 mos.	Components adj.	18
D 12.2	Basic commod. spot mkt. prices, BLS	1948-58	22 commod.	3 mos.	Components adj.	18
D 50.0	Leading indicators, NBER	1919-58	8 series	3-6 mos.	Components adj.	3, 8
D 50.1	Leading series, 1-month span	1948-58	197 series	1 mo.	Components adj.	18
D 50.2	Leading series, 3-month span	1948-58	197 series	3 mos.	Components adj.	18
<i>Based on coincident-type series</i>						
D 13.0	Employment in nonagr. establishments, BLS	1948-58	32 indus.	1 mo.	Components adj.	3, 18
D 13.1	Manufacturing employment, BLS	1919-23 1923-39 1947-58	11 indus. 22 indus. 21 indus.	1 mo. 1 mo. 1 mo.	Components adj. Components adj. Components adj.	3, 18
D 15.0	Industrial production, FRB	1919-23 1923-39 1947-58	15 indus. 25 indus. 26 indus.	1 mo. 1 mo. 1 mo.	Components adj. Components adj. Components adj.	3, 8, 9, 18

^a Serial numbers correspond, where possible, to numbers identifying indicators listed and described in first section of this volume.

^b Observations on component series' directions of change—taken over identical or different spans—are entered at midmonth of the span, or when the midpoint of the span falls between two months, at the second month. Where the span is a specific cycle phase (S.C.), a component series is counted as rising during each month of a specific cycle expansion, and declining otherwise. For discussion of these methods, see Volume I, Chapters 2 (Appendix), 3, 8, 9, and 20.

TABLE 1 (continued)

Index ^a	Period Covered	Components (max. no.)	Span ^b	Seasonal Adjustment	Charted or Analyzed in Vol. I, Chapter	
D 15.2	Freight carloadings, actual and expected, AAR	1927-39	19 commod.	4 qu.	None required	
D 15.3	Mfrs. sales, actual and expected, Dun and Bradstreet	1946-58 1948-58	groups Approx. 800 cos.	4 qu.	None required	3
D 20.0	Sales by retail stores, Census	1948-58	24 types of store	3 mos.	Components adj.	18
D 21.0	Wholesale prices, mfd. goods, BLS	1947-58	23 commod. groups	1 mo.	Index adj.	3
D 51.0	Roughly coincident indicators, NBER	1946-58	8 series	2-6 mos.	Components adj.	3, 8
D 51.1	Roughly coincident series, 1-month span	1948-58	82 series	1 mo.	Components adj.	18
D 51.2	Roughly coincident series, 3-month span	1948-58	82 series	3 mos.	Components adj.	18
<i>Based on lagging-type series.</i>						
D 22.0	Plant and equip. expenditures, actual and expected, OBE-SEC	1947-58	22 indus.	4 qu.	None required	3
D 52.0	Lagging indicators, NBER	1946-58	5 series	1-4 mos.	Components adj.	3, 8
<i>Other indexes</i>						
D 53.0	Leading and roughly coincident indicators, NBER	1946-58	16 series	2-6 mos.	Components adj.	3
D 53.1	Leading and roughly coincident series, 1-month span	1948-58	279 series	1 mo.	Components adj.	18
D 53.2	Leading and roughly coincident series, 3-month span	1948-58	279 series	3 mos.	Components adj.	3, 18
D 54.0	Leading, roughly coincident, and lagging indicators, NBER	1946-58	21 series	1-6 mos.	Components adj.	3, 9
B. INDEXES THAT END BEFORE 1958						
<i>Based on leading-type series</i>						
D 4.1	New orders, durable goods, physical volume	1919-38	13 series	4-7 mos.	Components adj.	14
D 6.2	New orders for investment goods	1919-40	70-series	S.C.	Components adj.	2, 8
D 9.1	Profits (after taxes), Hultgren	1920-38	244 cos.	S.C.	Components adj.	2, 8, 11
D 50.3	Leading series	1885- 1941	75 series	S.C.	Components adj.	7, 8
<i>Based on coincident-type series</i>						
D 13.2	Employment series	1919-40	41 indus.	S.C.	Components adj.	7, 8
D 15.1	Production series	1919-40	79 commod. or indus.	S.C.	Components adj.	2, 8
D 19.2	Payroll and other income payments series	1919-40	35 indus. or other series	S.C.	Components adj.	2, 8
D 21.1	Wholesale prices	1919-40	82 series	S.C.	Components adj.	8
D 51.3	Roughly coincident series	1885- 1941	29 series	S.C.	Components adj.	7, 8

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TABLE 1 (concluded)

Index ^a	Period Covered	Components (max. no.)	Span ^b	Seasonal Adjustment	Charted or Analyzed in Vol. I, Chapter
<i>Based on lagging-type series</i>					
D 52.1	Lagging series	1885-1941	30 series	S.C.	Components adj. 7, 8
<i>Other indexes</i>					
D 55.0	Well-conforming series	1885-1941	404 series	S.C.	Components adj. 2, 7, 8
D 56.0	Poorly conforming series	1919-40	335 series	S.C.	Components adj. 8
D 57.0	Cross-section sample	1919-41	153 series	1 mo.	Components adj.
D 57.1	Cross-section sample	1919-41	153 series	12 mos.	None required 3, 9
		1947-54	153 series	12 mos.	None required 3, 9
D 58.0	All inclusive sample	1919-40	705 series	S.C.	Components adj. 2, 8, 9

The following notes provide additional information on the content of the diffusion indexes listed in Table 1 and are arranged in the order in which the indexes appear in the table. For further information reference should be made to the chapters in Volume I listed in the right-hand column of Table 1, and to the descriptive notes for correspondingly numbered indicators in the first section of this volume.

- D 1.0 Includes all two-digit manufacturing industries (Standard Industrial Manual, 1957), as listed in *Survey of Current Business*.
- D 3.2 Covers 47 largest (in terms of employment) of 149 labor market areas listed in *Labor Market and Employment Security*. Data are inverted (declines counted as increases, etc.).
- D 4.0 Includes the following three-digit durable manufacturing industries: iron and steel; primary nonferrous metals; other primary metals; electrical generating apparatus; radio, TV, and communication equipment; other electrical machinery and equipment; motor vehicles; motor vehicle parts and accessories; aircraft; other transportation equipment; stone, clay, and glass products; metal working machinery; special industrial machinery; general industrial machinery; engines and turbines; agricultural implements; construction machinery; office and store machines; household appliances; other nonelectrical machinery; fabricated metal products except ordnance and transportation equipment. Based on unpublished compilations of the Office of Business Economics.
- D 4.3 Based on number of purchasing agents reporting increase, decrease, or no change from preceding month in new orders received by their companies. Reports are obtained from 42 industries and all states except New Mexico and Montana. Currently published in *Bulletin of the National Association of Purchasing Agents*.
- D 6.3 Identical firm sample of manufacturing companies with assets over \$15 million. Current data published in *Newsweek* and in *Conference Board Business Record*.
- D 9.0 Computed in five segments as follows: I 1920 to II 1921, from reports (published in *The Commercial and Financial Chronicle* and *Moody's Investors' Service*) of 17 corporations selected by Hultgren; II 1921 to II 1923, data for thirty-one companies collected by Barger and Hultgren from the same sources; I 1923 to II 1949, First National City Bank sample which increased from 119 firms in 1923 to 244 in 1938 and 341 in 1949; 1947-53, the FRB sample of 200 large (assets exceeding \$10 million) manufacturing corporations; 1950-58, First

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National City Bank sample of approximately 600 firms. Reports are based on identical samples of principally large manufacturing and mining corporations, excluding railroad, communication, and utility enterprises. Current data tabulated by First National City Bank are unpublished.

- D 9.2 Based on number of concerns reporting increase, decrease, or no change in profits over the corresponding quarter a year earlier by a sample of concerns varying in number from 594 in II 1949 to 1447 in III 1958. A different sample of concerns visited by Dun and Bradstreet's credit reporters is surveyed each quarter. The expected change over four quarters is reported approximately two quarters before the terminal quarter. See *An Appraisal of Data and Research on Businessmen's Expectations About Outlook and Operating Variables*, Report of Consultant Committee on General Business Expectations (September 1955), Board of Governors of Federal Reserve System, and Millard Hastay, "Role of Business Expectations in the Operating Behavior of the Firm," in *Quality and Economic Significance of Anticipations Data*, Special Conference Series 10 (NBER 1960). For current data, see Dun and Bradstreet release, *Business Men's Expectations*.
- D 9.3 Includes all two-digit manufacturing industries listed in *Quarterly Financial Report for Manufacturing Companies*.
- D 10.0 Includes the 86 industry subgroups listed in *Statistics: Security Price Index Record*.
- D 12.0 Covers the 13 raw industrial materials in indicator 12.0.
- D 12.2 Includes the 22 raw industrial materials and foodstuffs in indicator 12.2.
- D 50.0 Components are the leading series in the 1950 list of twenty-one indicators. See Chapter 3, Table 3.3.
- D 50.1 Simple arithmetic average of one-month span diffusion indexes corresponding to D 1.0, D 3.2, D 4.0, D 10.0, and D 12.2.
- D 50.2 *Ibid.*, using three-month span indexes.
- D 13.0 Includes the twenty-one components of index D 13.1 plus mining; contract construction; service and miscellaneous; finance, insurance and real estate; transportation; communications; other public utilities; wholesale trade; retail trade; federal government; and state and local government. These components comprise total employment in nonagricultural establishments.
- D 13.1 Includes all two-digit manufacturing industries as listed in *Survey of Current Business*. Eleven components available for inclusion during 1919-22; 21, 1923-28; 22, 1929-39; and 21, 1947-58.
- D 15.0 Based on the twenty-six major mining and manufacturing industry components of the index of industrial production, as revised in *Federal Reserve Bulletin*, December 1953. Fifteen components available for inclusion during 1919-23; 25, 1923-39; and 26, 1947-58.
- D 15.2 Based on reports for the principal nonagricultural commodity groups (excluding unprocessed farm and mineral products) (items 2, 5, and 16 through 30A of the list in *National Forecast of the Regional Shippers Advisory Boards*), as derived from individual shippers' reports of actual and expected freight car needs. Sixteen components available for inclusion during 1927-39; 17, I 1946 to III 1946; 19, IV 1946-58. Expected change over four quarters reported approximately one and a half quarters before the terminal quarter. See references cited in notes to indicator 15.2.
- D 15.3 Based on the reports of a sample of firms ranging from 261 in II 1949 to 793 in IV 1958. See note to index D 9.2.
- D 20.0 Includes the 14 store types listed in the *Survey of Current Business* plus the following: eating places, other food stores, other general stores, drug and proprietary stores, liquor stores, gasoline stations, other nondurable goods stores, farm equipment dealers, jewelry stores, other durable goods stores.
- D 21.0 Represents all BLS manufactured commodity group price indexes, namely: lumber and wood products (08); furniture and other household durables (12); nonmetallic minerals—structural (13); iron and steel (10-1); nonferrous metals (10-2); fabricated nonstructural metal products (10-8); fabricated

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- structural metal products (10-7); general purpose machinery and equipment (11-4); miscellaneous machinery (11-5); electrical machinery and equipment (11-7); motor vehicles (11-8); miscellaneous (15); processed foods (02); tobacco manufactures and bottled beverages (14); cotton products (03-1); wool products (03-2); synthetic textiles (03-3); apparel (03-5); pulp, paper, and allied products (09); chemicals and products (06); petroleum and products (05-5); rubber and rubber products (07); hides, skins, and leather products (04). Figures in parentheses are BLS commodity group designations.
- D 51.0 Components are the roughly coincident series in the 1950 list of 21 indicators. See Chapter 3, Table 3.3.
- D 51.1 Simple arithmetic average of one-month span indexes D 13.0, D 15.0, and D 20.0.
- D 51.2 *Ibid.*, using three-month span indexes.
- D 22.0 Based on industry components as listed in "Plant and Equipment Expenditures of Business," OBE Business News Report. Twenty-two components available for inclusion from 1947 to II 1951; 19, III 1951 to II 1954; 20, 1954-58. The expected index, available since 1951, is based on the anticipated change over four quarters reported roughly one and a half quarters before the terminal quarter.
- D 52.0 Components are the lagging series in the 1950 list of 21 indicators. See Chapter 3, Table 3.3.
- D 53.0 Includes the components of D 50.0 shifted forward four months and D 51.0.
- D 53.1 Simple arithmetic average of one-month span indexes corresponding to D 1.0, D 3.2, D 4.0, D 10.0, D 12.2, D 13.0, D 15.0, and D 20.0.
- D 53.2 *Ibid.*, using three-month span indexes.
- D 54.0 Includes the components of D 50.0, D 51.0, and D 52.0, i.e. the 21 indicators in the 1950 list. See Chapter 3, Table 3.3.
- D 4.1 Includes components listed in note b to Table 14.10, Chapter 14, Volume I.
- D 6.2 Includes fourteen series on new orders reported by manufacturers for various types of durable goods, and 56 series on construction contracts and building permits.
- D 9.1 Based on profits (after taxes) for individual companies, mostly manufacturing and mining, the number increasing from 17 in 1920 to 244 in 1933-38.
- D 50.3 See appendix to Chapter 7, Volume I, for components classified by economic processes represented.
- D 13.2 Components include comprehensive as well as industry series, largely in the manufacturing sector.
- D 15.1 Based on broad indexes as well as individual commodities; covers foodstuffs, other perishables, semidurables, and durables.
- D 19.2 Includes 33 series on payrolls by industry, one on total income payments, and one on dividend payments to individuals.
- D 21.1 Includes broad indexes, commodity group indexes, and individual commodities.
- D 51.3 See appendix to Chapter 7, Volume I, for components classified by economic processes represented.
- D 52.1 *Ibid.*
- D 55.0 The number of series included in this index rises from 75 in January 1885 to 233 in January 1919, reaches a maximum of 366 in June 1922, and declines to 330 in December 1939. In all, 404 different series are used (370 since 1919), covering a variety of economic processes, and conforming well to business cycles. For the criteria used to select the series, see Chapter 7, Volume I.
- D 56.0 The total number of series included in this index during some part of the period 1919-48 is 335, and in no month is the number less than 190. Although each of the series included conforms poorly to business cycles according to the criteria described in Chapter 7, Volume I, the diffusion index conforms quite well.
- D 57.0, D 57.1 Sample is an abridged version of components of index D 58.0. Duplications are reduced by the elimination of comprehensive series where components are included.
- D 58.0 Embraces the series included, since 1919, in indexes D 55.0 and D 56.0. See appendix to Chapter 2, Volume I.