

This PDF is a selection from an out-of-print volume from the National Bureau of Economic Research

Volume Title: Mechanization in Industry

Volume Author/Editor: Harry Jerome

Volume Publisher: NBER

Volume ISBN: 0-87014-026-4

Volume URL: <http://www.nber.org/books/jero34-1>

Publication Date: 1934

Chapter Title: Appendix C: Horsepower per Wage Earner in Manufacturing, Census Years 1899-1929

Chapter Author: Harry Jerome

Chapter URL: <http://www.nber.org/chapters/c5252>

Chapter pages in book: (p. 455 - 462)

MECHANIZATION IN INDUSTRY

HORSEPOWER PER WAGE EARNER IN MANUFACTURING, CENSUS YEARS 1899-1929, FOR INDUSTRIAL GROUPS AND INDIVIDUAL INDUSTRIES, ARRANGED IN ORDER OF HORSEPOWER PER WAGE EARNER IN 1925

1925 RANK	1929	1927	1925	1923	1919 ADJUST- UNAD- ED 12 JUSTED 12	1914	1909	1904	1899
14	12.58	11.57	11.17	9.97	6.67	9.24	5.90	7.66	4.51
15	13.74	11.02	9.44	7.66	6.24	8.68	8.28	6.18	5.16
16	12.63	10.23	9.11	8.48	5.57	4.87	3.45	2.39	1.41
17	8.92	11.46	8.92	2.97	3.61	2.90	2.36	1.20	1
18	10.22	8.50	8.48	9.58	6.18	4.96	1	1	1
19	10.12	9.80	8.21	6.84	3.67	4.69	3.79	2.48	2.15
20	7.98	8.40	7.76	8.70*	4.79	5.01	3.54	3.38	3.34
21	12.07	8.65	7.59	5.32	3.59	3.33	2.76	1.76	1
22	6.69	7.68	7.45	5.82	6.04	4.77	3.98	5.46	6.22
23	8.80	7.89	7.40	6.68	4.79	4.90	3.84	3.21	2.34
24	8.41	7.07	6.97	6.04	5.53	6.48	6.28	7.20	6.883
25	1	1	6.78*	5.39	1.38	2.50	2.05	1.39	1.26
26	7.58	7.50	6.76	5.85	5.10	5.22	4.44	3.83	2.94
27	8.79	7.80	6.70	5.52	5.29	4.46	3.62	2.72	2.20
28	9.19	6.59	6.63	5.50	5.61	7.27	4.54	5.12	4.27
29	8.09	7.29	6.56	5.31	5.24	3.78	2.86	2.01	1.993
30	9.80	7.76	6.03	5.86	4.06	5.06	6.50	2.74	2.96

HORSEPOWER PER WAGE EARNER

457

31 Brass, bronze and copper products	6.39	6.30	5.74	4.73	3.54	3.04	2.61	2.09	1.74
32 PAPER AND PRINTING—Group	6.45	6.12	5.70	5.21	4.67	4.53	4.02	3.72	3.06
33 Other rubber goods 6	7.41	7.41	5.63	5.19	3.02	2.96	2.98	2.28	2.00
34 Paint and varnish	6.17	5.81	5.61	5.01	3.94	3.96	4.38	3.56	3.13
35 Lumber and planing-mill products not in planing mills connected with sawmills	7.52	6.53	5.36	4.79	4.83	4.79 ³	4.26 ³	3.17 ³	3.11 ³
36 Cordage and twine	5.04	4.96	5.04*	4.41	3.78	3.51	3.24	2.81	2.57
37 Cotton goods and cotton lace	5.28	5.00	4.97	4.52	4.22	4.07	3.46	3.15	2.65
38 Tires and inner tubes	5.56	5.77	4.94	5.01	1	1	1	1	1
39 Cars, steam and electric railroad	5.96	6.22	4.84	3.10	3.03	3.03	2	2	2
40 RUBBER PRODUCTS—Group	5.52	5.58	4.65	4.39	2.71	2.71	2.70	2.49	1.98
41 FOOD AND KINDRED PRODUCTS—Group	4.94	4.82	4.64	4.41	4.05	4.04	4.32	4.44	4.03
42 Engines, steam, gas and water	4.69	4.45	4.39	3.40	2.45	2.45	2.12	1	1
43 Lumber and timber products, n.e.s.	4.74	4.30	4.39	3.90	5.02	4.90*	4.57	4.23	3.68
44 Structural and ornamental ironwork	4.84	4.80	4.38	3.98	3.76	3.76	2.32	2.00	1.65
45 Aluminum manufactures	5.08	4.86	4.33	3.58	2.65	2.66	2.67	1	1
46 Carriages and wagons 10	5.19	5.35	4.25	3.26	2.29 ¹⁰	2.25 ¹⁰	1.80 ¹⁰	1.50 ¹⁰	1.04 ¹⁰
47 ALL INDUSTRIES—combined	4.86	4.65	4.27	3.77	3.25	3.24	3.19	2.82	2.47
48 Roofing materials, n.e.s.	5.61	5.71	4.12	5.14	4.40	4.42	2.85	3.76	2.61
49 Boxes, wooden packing, except cigar boxes	4.49	4.40	4.12	3.81	3.39	3.40	3.29	3.18	2.84
50 Leather, tanned, curried, and finished	4.60	4.17	4.12	3.86	3.00	3.01	3.09	2.38	2.05
51 Brick, tile, pottery, and other clay products 8	4.66	4.28	4.09	3.78	4.19	4.17	3.70	3.40	3.04
52 Phonographs	2.67	3.42	4.05*	2.01	1.40	1.40	1.24	1.23	0.74
53 Agricultural implements	3.08	3.54	4.02*	3.94	2.36	2.36	2.50	1.99	1.89
54 MISCELLANEOUS INDUSTRIES—Group	3.91	4.22	3.98	3.51	2.25	2.25	2.82	2.10	1.79
55 NON-FERROUS METALS AND THEIR PRODUCTS—Group	4.76	4.22	3.96	3.70	2.90	2.91	2.19	1.86	1.46
56 Glass	5.06	4.84	3.91	3.28	2.67	2.68	2.19	1.79	1.43

MECHANIZATION IN INDUSTRY

HORSEPOWER PER WAGE EARNER IN MANUFACTURING, CENSUS YEARS 1899-1929, FOR INDUSTRIAL GROUPS AND INDIVIDUAL INDUSTRIES, ARRANGED IN ORDER OF HORSEPOWER PER WAGE EARNER IN 1925

1925 RANK	1929	1927	1925	1923	1919		1914	1909	1904	1899
					ADJUST-	UNAD-				
					ED ¹²	JUSTED ¹²				
57 LUMBER AND ITS REMANUFACTURES--										
	Group									
58	4.39	4.02	3.88	3.71	4.11	4.07	3.82	3.56	3.02	3.15
	2.99	3.73	3.86*	3.27	1.89	1	1	1	1	1
59			3.70*	3.62	1.79	1.80	2.87	2.45	1.94	1.45
60	4.59	4.63	3.68	4.40	1.65	1.65	2.51	2.18	1.84	1.84 ³
61	4.29	4.11	3.67	2.88	2.23	2.23	2.56	2.30	1.56	1.24
62	3.97	3.87 ⁷	3.58	2.75	2.16	2.12	2.12	1.70	1.40	1.08
63	3.83	3.89	3.57	3.22	2.86	2.86	2.68	2.45	2.38	2.32
64	3.44	2.78	3.56*	3.08	1.68	1.68	1.90	1.65	1.34	1.00
65	3.86	3.60	3.45	2.77	2.79	2.81	2.40	2.13	1.95	1.86
66	3.26	3.18	3.39*	3.19	2.28	2.28	2.22	1.94	1.60	.88
67	4.01	3.73	3.35	3.02	1.89	1.88	1.58	.80 ³	.67 ³	.72 ³
68		2	3.33	3.58*	2.50	2.40	1.62	1.48	1.12	.91
69	3.57	3.46	3.16	2.62	2.01	2.02	2.07	1	1	1
70	Cutlery, not including silverware and plated cutlery									
	3.33	2.52	3.15	2.59	1.95	1.96	2.10	1.89	2.23	2.21
	3.42	3.41	3.11	2.58	1.91	1.92	2.28	2.26	1.90	1.55
72	2.53	2.77	3.00*	2.24	1.32	1.36	1.31	1.34 ³	1.73	1.13
73	2.36	2.26	2.99*	2.21	1.71	1.71	.99	1.18	.69	.58
74	3.73	3.04	2.90	2.60	1.94	1.94	1.44	1.02	1.39	1
75	3.17	2.92	2.68	2.79	2.34	2.32	2.24	2.18	1.85	1.39

HORSEPOWER PER WAGE EARNER

459

76 Paper goods, n.e.s.	3.32	2.90	2.63	2.57	2.51	2.52	2.03	1.72	1.34	1.30
77 Automobiles	3.16	3.86	2.58	1.80	1.34	1.36	1.32	.99	.74	1.45
78 Plumbers' supplies, n.e.s.	3.61	3.09	2.54	2.20	2.18	2.19	1.53	1.35	1.17	.95
79 Coffins, burial cases, and undertakers' goods	3.04	2.66	2.54	2.35	1.86	1.87	2.00	1.77	1.55	1.31
80 VEHICLES FOR LAND TRANSPORTATION INCLUDING RAILROAD REPAIR SHOPS	3.30	3.14	2.53	1.95	1.50	1.51	1.48	1.29	.94	.79
81 Steam fittings, steam and hot water heating apparatus	3.47	3.09	2.52	2.06	1.84	1.84	1.46	1.41	.91	.70
82 TEXTILES AND THEIR PRODUCTS—										
Group										
83 Electrical machinery, apparatus and supplies	2.43	2.47	2.46	2.21	2.03	2.03	1.82	1.58	1.50	1.36
84 Cast iron pipe	2.72	2.74	2.46	2.04	2.06	2.06	1.93	1.82	1.74	1.04
85 Boots and shoes, rubber	3.53	2.76	2.38	2.19	2.28	2.28	2.06	1.53	1	1
86 Mattresses and bed springs, n.e.s.	2.44	2.55	2.38	1.91	1.50	1.50	1.32	1.47	1.37	1.74
87 Pickles, preserves and sauces	2.94	2.44	2.28	2.15	1.87	1.86	1.78	1.57	1.27	1.05
88 Sewing machines and attachments, including cases	1	1	2.27	2.38*	1.35	1.36	1.49	1.33	1.20	.92
89 Furniture	2.83	3.56	2.26	1.68	1.67	1.67	1.34	1.00	1.00	.75
90 Textile machinery and parts	2.61	2.39	2.22	2.05	1.89	1.90	1.88	1.71	1.49	1.31
91 Steam-railroad repair shops	2.46	2.46	2.21	1.58	1.31	1	1	1	1	1
92 Electric-railroad repair shops	2.92	2.61	2.20	1.51	1.22	1.23	1.28	1.04	.71	.55
93 Stamped and enameled ware, n.e.s.	2.59	2.32	2.17	1.79	1.72	1.72	1.70	1.60	1.12	.91
94 Stoves and hot-air furnaces	2.45	2.33	2.16	1.94	1.50	1.50	1.21	1.09	.74	1.66
95 Canning and preserving fruits and vegetables	1	1	2.16*	1.98	1.50	1.50	1.40	1.25	.96	1
96 Printing and publishing newspapers and periodicals	1	1	2.16	2.43*	2.21	2.17	1.76	1.48	1.11	.72
97 Hardware, n.e.s.	2.56	2.40	2.03	1.76	1.69	1.61	1.59	1.60	.98	.74
	2.15	2.09	1.88	1.58	1.58	1.59	1.30	1.08	1.05	.86

MECHANIZATION IN INDUSTRY

HORSEPOWER PER WAGE EARNER IN MANUFACTURING, CENSUS YEARS 1899-1929, FOR INDUSTRIAL GROUPS AND INDIVIDUAL INDUSTRIES, ARRAYED IN ORDER OF HORSEPOWER PER WAGE EARNER IN 1925

RANK	1925	1927	1925	1923	1919	1914	1909	1904	1899		
					ADJUST- UNAD- ED 12 JUSTED 12						
98	Canning and preserving—fish and oysters	1.59	1.46	1.86	1.93	2.08	2.09*	1.15	.85	.73	.40
99	Boot and shoe cut stock	1.67	1.59	1.86*	1.80	.87	.93	.87	.72	.76	.52
100	Carpets and rugs, wool other than rag	2.00	2.01	1.86	1.53	1.64 ⁴	1.67	1.40	1.16	1.02	.94
101	Stoves, gas and oil	1	1	1.79*	1.33	1.07	1.07	1.02	1.06	.97	.68
102	Druggists' preparations, patent medicines, perfumery and cosmetics	1.99	1.79	1.72	1.51	1.20	1.19	1.27	1.22	.93	.88
103	Lithographing	1.87	1.75	1.68	1.65	1.19	1.19	1.00	.87	.65	.55
104	Tinware, n.e.s.	2.46	2.15	1.63	1.35	.88 ³	.89 ³	.84	.79	.53	1
105	Silk goods, including throwsters	1.69	1.73	1.60	1.64	1.37	1.39	1.08	.99	.90	.88
106	Toys and games	1.54	1.29	1.46	1.11	1.02	1.01	.86	1.00	1.12	.97
107	Instruments, professional and scientific	1.35	1.56	1.45	1.32	.82	.82	.96	1.02	.52	.89
108	Bread and other bakery products	1.77	1.65	1.42	1.19	1.18	1.17	.87	.65	.46	.37
109	Copper, tin, sheet-iron work, including galvanized iron, n.e.s.	1.88	1.46 ³	1.41 ³	1.18	.89	.87	.74	.66	.50	.43 ³
110	Buttons	1.62	1.66	1.37	1.29	1.02	1.04	.99	.78	.66	.48
111	Musical instruments, pianos	2.73	1.79	1.34	1.21	1.25	1.25	1.09	.91	.83	.98 ³
112	Bags other than paper	1.62	1.41	1.34	1.21	.85	.84	1.11	.86	.79	.46
113	Boxes, paper and other, n.e.s.	1.44	1.44	1.33	1.08	.98	.98	.84	.59	.47	.34
114	Cash registers, adding and calculating machines	1.68	1.53	1.32	1.99*	.88	.89	1.18	.92	1.00	.62
115	LEATHER AND ITS FINISHED PRODUCTS—Group	1.37	1.32	1.31	1.20	1.10	1.11	1.04	.91	.77	.64

HORSEPOWER PER WAGE EARNER

461

116	Optical goods	1.61	1.63	1.28	1.10	1.06	1.07	.99	.89	.79	.68
117	Printing and publishing, book and job	1.40	1.37	1.27	1.17	1.08	1.07	1.01	.90	.64	.55
118	Hats, fur felt	1.20	1.29	1.18	1.11	1.10	1.10	.98	.76	.75	.62
119	Tobacco, chewing and smoking, and snuff	1.43	1.27	1.17	1.14	1.03	1.03	.82	.71	.77	.61
120	Saddlery and harness	1.41	1.22	1.09	1.18	.82	.79	.80	1.18	.49	.42
121	Typewriters and supplies	1.38	1.07	1.04	.77	.84	.83	.98	.71	.72	.53
122	Stationery goods, n.e.s.	1.04 ³	.99 ³	.96 ³	.86	.74	.73	.74	1.10	.79	.57
123	Knit goods	.87	.93	.94	.94*	.87	.88	.84	.80	.76	.68
124	Watches and watch movements	.94	.77	.88	.64	.45	.45	.53	.52	.30	.26
125	Signs and advertising novelties	.98	.90	.83	.91	.75	.74	.77	.69	1	1
126	Trunks, suitcases and bags	.90	.87	.77	.64	.68	.67	.77	.62	.55	.47
127	Bookbinding and blank-book making	.88	.87	.77	.75	.55	.54	.52	.51	.32	.29
128	Jewelry	.98	.71	.73	.64	.49	.53	.55	.37	.36	.33
129	Boots and shoes, other than rubber	.68	.68	.67	.57	.55	.57	.52	.46	.37	.35
130	Fancy articles, n.e.s.	.59	.64	.62	.60	.62	.64	.62	.48	.52	.46
131	Collars and cuffs, men's	.43	.94	.62	.48	.47	.47	.39	.26	.22	.13
132	Corsets	.44	.56	.58*	.37	.38	.39	.35	.26	.30	.29
133	TOBACCO MANUFACTURES—Group	.56	.40	.32	.30	.28	.28	.20	.17	.15	.17
134	Fur goods	.85	.34	.30	.30	.39	.39*	.36	.18	.21	.12
135	Furnishing goods, men's	.30	.32	.29	.31	.32	.32	.26	.25	.19	.10
136	Shirts	.28	.26	.28	.27	.38*	.38*	.34	.26	.24	.19
137	Clothing, men's, n.e.s.	.28	.24	.26	.27	.23	.23	.20	.16	.15	.11
138	Millinery and lace goods, n.e.s.	.34	.30	.22	.29	.25	.24	.28	.20	.17	.11
139	Tobacco, cigars and cigarettes	.47	.31	.21	.19	.18	.18	.09	.07	.04	.04
140	Clothing, women's, n.e.s.	.19	.20	.19	.21*	.20	.20	.17	.14	.13	.12
141	Turpentine and rosin	.05	.08	.10	.06	.08	.08	.07	.10*	.04	.02

*=maximum, if prior to 1927.
n.e.s.=not elsewhere specified.

- 1 Not shown separately.
- 2 Not canvassed, or comparable statistics not available.
- 3 Scope of industry in these years not strictly comparable with other years.
- 4 Includes wage earners in establishments with value of product under \$5,000.
- 5 Because the power equipment is sometimes common to blast furnaces and rolling mills under common ownership, in the 1927 and 1929 Censuses of Manufactures, the horsepower in blast furnaces and rolling mills is combined, though at the former censuses it was distributed by means of estimates.
- 6 Data for 'Other Rubber Goods' in 1923, 1925, 1927 and 1929 not comparable with the data for earlier years because tires and inner tubes were included prior to 1921.
- 7 The following industries are included in 'Foundry and machine-shop products' only at the stated censuses, and thereafter treated as separate industries or omitted: 'Machine tools', 'Steel barrels, drums, and tanks', 'Textile machinery and parts', and the tempering and welding of iron and steel—prior to 1919; 'Engines—steam, gas, and water', and 'Pumps, steam and power', prior to 1914; 'Automobile repairing'—in 1909 and 1904; 'Iron and steel—cast iron pipe', prior to 1909; 'Locomotives', and 'Stoves and furnaces', prior to 1904.
- 8 Includes sand-lime brick.
- 9 'Coal-tar products' and 'Ferro-alloys' included.
- 10 Repairing included prior to 1923.
- 11 Includes 'Photographic apparatus' and 'motion pictures'.
- 12 The 1919 'unadjusted' figures cover plants with value of product \$500 or more, and include rented power other than electric; the 1919 'adjusted' figures are based upon wage earners in plants with value of product \$5,000 or more, and exclude rented power other than electric. The 'unadjusted' data are comparable with those for the earlier censuses; the 'adjusted' figures have been made comparable as far as possible with the subsequent censuses, but the horsepower data used still include the small amount of power in establishments with products less than \$5,000.
- 13 Computed from horsepower and wage-earner data originally compiled in the *Censuses of Manufactures*, and re-arranged by Day and Thomas in *The Growth of Manufactures*, Tables 29 and 30 for 1899-1923, and Table 43 for 1925. The data for 1927 and 1929 are taken directly from the *Census of Manufactures for 1927 and 1929*, respectively; and the data for 1925, 1927 and 1929 are adjusted to make the classifications comparable as far as possible with those for 1923 and earlier years.