

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

Volume Title: Capital Consumption and Adjustment

Volume Author/Editor: Solomon Fabricant

Volume Publisher: NBER

Volume ISBN: 0-87014-034-5

Volume URL: <http://www.nber.org/books/fabr38-1>

Publication Date: 1938

Chapter Title: Consumption of Governmental Capital

Chapter Author: Solomon Fabricant

Chapter URL: <http://www.nber.org/chapters/c4717>

Chapter pages in book: (p. 120 - 138)

Chapter 7

Consumption of Governmental Capital

THE property of governmental units must be included in measures of national wealth. The accumulation of these income-yielding instruments adds to the real savings of the nation and their consumption therefore demands a place in our measures of capital consumption. Indeed, from the viewpoint of our problem, public service enterprises (such as municipal electric power plants) are hardly distinguishable from business enterprises. In 1929 this type of governmental property represented 30 per cent of the reported value of public property of city governments; for states the percentage was 11 (see Table 22).

AVAILABLE RECORDS

The estimates of consumption of governmental capital presented in this chapter are very rough approximations on an accounting basis, intended to convey some notion of the order of magnitude of the estimated items. To make clear the nature of the estimates details of the computations are included in the text. There is a dearth of accurate data on the gross formation, the aggregate values, and the consumption of governmental capital. Little adequate basis exists on which depreciation rates can be selected and applied to public properties. And, owing to the nature of the valuation processes underlying them, any figures we are able to derive are ambiguous. In the following discussion emphasis is placed on the difficulties met,

and on the need for more adequate accounting by governments if information is to be available for the guidance of public policy. Because of the minor importance of the consumption of governmental capital in our aggregate for the entire economy it was not felt advisable to devote to the governmental records the time and energy that would be required to assemble all the figures that might be available. This chapter suggests what might be done in one section of a thorough-going study of governmental savings, income, and expenditure.

Most governmental accounting for durable goods, if we may dignify the usual computations by this term, consists of maintenance accounting. The few records that are published are those relating to maintenance. Depreciation estimates, however, are conspicuous by their absence and we must therefore make our own estimates of depreciation from such records as those on the value of property, gross or net additions to it, and depreciation rates. It is convenient to treat separately the records of: (1) the federal government, (2) state governments, (3) city and other local governments, all excluding roads and sewers; (4) roads and sewer systems.

ESTIMATE OF MAINTENANCE AND REPAIRS

Repairs and alterations (or maintenance charges) are available, in summary, for certain departments of the federal government,¹ for 5 state governments (out of 27 whose reports were sampled), and for 5 cities (out of 25 whose reports were examined). Totals of repairs and alterations for many states and cities can be obtained from the detailed expenditure figures reported for individual departments, but this is an enormous task, not possible in the present study. It was not deemed worth while to present the figures for the few federal departments, states, and individual cities for which they are available.

¹ For 1923-33 and 1936, U. S. Budget Bureau, annual volumes on *The Budget*. Not included are maintenance and operation of naval shore stations and the naval fleet, and repairs and alterations in the District of Columbia and in the post office system. The 1934 and 1935 figures are not available: 'emergency' expenditures, which must be large, were not reported.

The Bureau of the Census compiles figures on the total cost of operation and maintenance reported by cities and states, by departments.² It is impossible to separate what is clearly maintenance from the other current costs of operation. For certain departments, however, non-maintenance items are small. This is especially true of streets and sewer systems, for which we may assume that the cost of operation, after excluding certain doubtful items, is entirely for maintenance. Data for maintenance of roads are based on compilations of the Bureau of Public Roads of the Department of Agriculture.

The figures on maintenance of roads and streets and sewer systems (Table 19) are of interest chiefly in indicating the

Table 19
Maintenance and Repairs, Governmental Capital, 1923-1935
(Unit: \$1,000,000)

	HIGHWAYS AND STREETS ¹	SEWER SYSTEMS ²
1923	343.4	23.8
1924	394.1	27.2
1925	415.8	29.1
1926	449.4	31.1
1927	496.2	37.0
1928	540.9	38.0
1929	557.1	40.1
1930	606.3	39.3
1931	554.5	37.9
1932	558.4	36.3
1933	462.8	31.1
1934	544.5	26.9
1935	558.5	29.9

¹ Estimated by Simon Kuznets. The 1934-35 figures are based on maintenance expenditures of states, and of cities of 100,000 or more population.

² Based on *Financial Statistics of Cities*, stepped up to include all cities with population of 2,500 and over.

² *Financial Statistics of Cities* and *Financial Statistics of States*, both annual publications (that for states has not appeared since 1932); see also *Financial Statistics of States and Local Governments, 1932*.

fluctuations and trend that may be expected in this item of capital consumption. They do not furnish a reliable basis for estimating the total amount spent on repairs and alterations by all governmental bodies.

ESTIMATE OF DEPRECIATION

For federal property as a whole depreciation is not reported; only for certain federal projects, such as the Panama Canal, are figures available. Of the reports of 27 states canvassed for data one alone showed depreciation charges, and, even for it, 1926 is the most recent year for which data may be obtained. Of 25 cities, just 3 reported depreciation charges. However, the property of individual public service enterprises (water works, electric power systems, etc.) is usually accounted for on a depreciation or retirement reserve basis.³ While the most reliable estimates of depreciation would include a compilation of all the available reports of individual governmental units, the magnitude of the task prevents recourse to this method in this study. It was therefore decided to compute figures for the post-War period by applying depreciation rates to the available compilations of the value of governmental property, excluding (to the extent possible) land values and value of highways and sewer systems. All that can be indicated by this procedure, and all that is intended, is to suggest the magnitude of depreciation and its probable recent changes.

No depreciation charges were estimated for roads, streets, and sewer systems. It was assumed that the consumption of this type of capital is accounted for entirely on a maintenance basis. While this assumption is hardly more satisfactory here than it is in accounting for business capital goods, it is forced upon us by the nature of the available statistics. No recent figures on the aggregate value of roads, streets, and sewer systems have been published.

We turn to the available summaries of property values. For the federal government no estimate of the value of property

³ See the Census of Electrical Industries.

Table 20

Value of Governmental Properties, 1919-1935

(Unit: \$1,000,000)

	1918	1919	1920	1921	1922	1923	1924	1925	1926
<i>Federal government</i>									
1 Value of real estate, excl. land ¹						2,211.4			
2 Value of equipment ²						221.1			
3 Total value						2,432.5			
4 Expenditures equivalent to outlays, excl. land and interests in land ^{3 4}						137.8	142.4	131.2	128.4
5 Value of property, excl. land, 1923 value plus cumulated outlays					2,294.7	2,432.5	2,574.9	2,706.1	2,834.5
<i>State governments</i>									
6 Value of public properties, incl. land, excl. public improvements ^{5 4}		1,034.8				1,476.9	1,592.1	1,698.8	1,836.2
7 Outlays, incl. land, excl. highways ^{6 4} Value of public properties, incl. land, excl. highways		33.9	61.5	68.4	77.1	84.2	86.9	87.8	103.0
8 1919 value plus cumulated outlays		1,034.8	1,096.3	1,164.7	1,241.8	1,326.0	1,412.9	1,500.7	1,603.7
9 Final series, (6) interpolated by (8)		1,034.8	1,127.5	1,230.9	1,347.8	1,476.9	1,592.1	1,698.8	1,836.2
<i>Cities and other local governments (excl. independent counties)</i>									
10 Value of public properties, incl. land ⁷		6,312.6				8,186.8	8,950.0	9,826.5	10,826.4
11 Assets in investment funds, real property ⁸		331.6	373.4		286.3	403.4	425.8	440.5	483.0

12 Value of all public properties (10)									
+ (11)	6,644.1								
13 Outlays, incl. land, excl. highways and sewers ⁹		218.0	247.9	352.7	457.4	496.2	641.7	717.0	669.1
Value of public properties, incl. land, excl. highways and sewers									
14 1918 value plus cumulated outlays	6,312.6	6,530.6	6,778.5	7,131.2	7,588.6	8,084.7	8,726.4	9,443.4	10,112.4
15 Final series, (12) interpolated by (14) ¹⁰	6,644.1	6,886.5	7,161.5	7,548.3	8,047.7	8,590.2	9,375.7	10,267.0	11,309.9
<i>Grand total: federal, state, and city governments</i>									
16 Value of public properties ¹¹	9,856.0	10,313.5	10,923.4	11,690.2	12,499.6	13,542.7	14,671.9	15,980.6	

¹ SOURCE: Federal Trade Commission, *National Wealth and Income* (1926), pp. 38-9. The chief basis is cost. The figure for buildings in the District of Columbia is derived from the total value of land and buildings by applying the ratio of building value to total value of land and buildings outside the District of Columbia. The figure for river and harbor works is a rough estimate.

² Taken to be equal to 10 per cent of the value of improvements to real estate.

³ U. S. Budget Bureau, *Budget 1934*, Statement No. 10, and other Budgets. Does not include District of Columbia and post office; cf. *Financial Statistics of States, 1931*, p. 11. The 1934 figures are forecasts of the Bureau of the Budget; accurate figures are not available for 1934 and 1935. The 1935 figure is

assumed to be equal to that of 1934, as suggested by estimates of federal construction (cf. *Monthly Labor Review*).

⁴ Fiscal year figures adjusted to a calendar year basis by a 2-year moving average centered on the first year. The 1919 fiscal year states figure was assumed to be equal to the 1919 calendar year figure; the 1920 calendar year states figure was assumed to be equal to the 1921 fiscal year figure (see Table 1, *Financial Statistics of States, 1921*).

⁵ *Financial Statistics of States*. Does not include 'public improvements' such as highways, for which no value is reported.

⁶ *Financial Statistics of States*. Adjustment made for shortage in 1921 reports. The 1932 (fiscal year) outlay figure was estimated on the basis of the 1932 report for total outlays, including highways.

	1927	1928	1929	1930	1931	1932	1933	1934	1935
<i>Federal government</i>									
1 Value of real estate, excl. land 1									
2 Value of equipment 2									
3 Total value									
4 Expenditures equivalent to outlays, excl. land and interests in land 3 4	151.0	180.1	219.1	284.6	338.4	357.2	529.6	700.0	712.5
5 Value of property, excl. land, 1923 value plus cumulated outlays	2,985.5	3,165.6	3,384.7	3,669.3	4,007.7	4,364.9	4,894.5	5,594.5	6,307.0
<i>State governments</i>									
6 Value of public properties, incl. land, excl. public improvements 5 4	1,988.2	2,167.5	2,323.6	2,419.3					
7 Outlays, incl. land, excl. highways 6 4	120.3	126.0	139.8	168.8	178.5				
Value of public properties, incl. land, excl. highways									
8 1919 value plus cumulated outlays	1,724.1	1,850.0	1,989.9	2,158.7	2,337.2				
9 Final series, (6) interpolated by (8)	1,988.2	2,167.5	2,323.6	2,419.3	2,619.3				
<i>Cities and other local governments (excl. independent counties)</i>									
10 Value of public properties, incl. land 7	11,899.4	12,707.8	13,165.4	13,758.5	14,538.6				
11 Assets in investment funds, real property 8	524.3	663.7	705.6	872.2	937.8				

12 Value of all public properties (10)							
+ (11)	12,423.7	13,371.5	13,871.0	14,690.7	15,476.4		
13 Outlays, incl. land, excl. highways and sewers ⁹	724.5	652.1	629.3	706.1	670.6	468.7	224.9
Value of public properties, incl. land, excl. highways and sewers							262.7
14 1918 value plus cumulated outlays	10,836.9	11,489.0	12,118.3	12,824.4	13,495.0		
15 Final series, (12) interpolated by (14) ¹⁰	12,423.7	13,371.5	13,871.0	14,690.7	15,476.4	15,945.1	16,170.0
16 Value of public properties ¹¹	17,397.4	18,704.6	19,579.3	20,719.3	22,103.4	23,039.7	23,895.6
<i>Grand total: federal, state, and city governments</i>							24,987.7
							26,146.7

⁷ *Financial Statistics of Cities.*

⁸ *Financial Statistics of Cities.* Includes, chiefly, subways and other properties owned but not operated by the respective municipalities; covers only cities with a population of 30,000 and over; it was not considered necessary to step this figure up to include the smaller cities. The figures for 1919 and 1921 are based on straight line interpolations.

⁹ *Financial Statistics of Cities*, adjusted for fiscal year basis, for

cities under 30,000 (under 100,000 since 1931), and for shortage in 1921; does not include 'public improvements' such as highways and sewer systems, for which no value is reported; does not include subways (see text).

¹⁰ The 1932-35 figures are based on the 1931 figure plus cumulated outlays.

¹¹ 1919-21 estimated on the basis of states and cities; 1932-35 on the basis of federal government and cities.

can be obtained except for 1923.⁴ The Bureau of the Census has compiled the values of state- and city-owned property for most years of the period 1919-35. Data for missing years may be estimated on the basis of 'capital outlay' figures available for the federal, state, and city governments. No information is available for county governments for the period in which we are interested.

The value of public properties is presented in Table 20. Since the details of the computation must be examined to appreciate the degree of accuracy of the figures, they appear in the table.

In addition, we may stress a few of the more important characteristics of the figures. First, the values are sometimes net and sometimes gross book values. That is, depreciation reserves have not always been subtracted. The Bureau of the Census defines value of properties as "the book value . . . equal to their original cost, less depreciation and plus improvement and appreciation . . ." and regrets that for some cities the valuations are merely estimates. But for Rochester, N. Y., in 1930, it was found that the values published in the Census annual *Financial Statistics of Cities* were gross, not net, although the reports of the Comptroller of Rochester give net as well as gross values. Similar discrepancies, though not as clearly established, appear for Philadelphia. But aside from these (presumably few) errors, the values in *Financial Statistics of Cities* are often gross figures simply because no other data are available. With only a few exceptions (5 or 6), the 25 cities whose reports were examined revealed no reserves for depreciation. Only one state (out of 27) reported depreciation. Sometimes assessed values are reported, which implies only rough adjustment for depreciation.⁵ The depreciation reserves that are computed often refer to public service enterprises alone.⁶

⁴ An inventory as of June 30, 1936 is in progress, however.

⁵ "Valuations furnished by the Board of Assessors", *Annual Report of the City of Manchester*, N. H., 1933, p. 20.

⁶ E.g., Huntington Park, California: a depreciation reserve is given for the water department alone (*Annual Report*, 1933-34); Flint, Michigan: the only

Of 25 cities, only 3 (Rochester, Philadelphia, and Birmingham, Alabama) reported reserves for depreciation (or deductions for depreciation) on all depreciable properties owned by the city. The federal government's property is on a cost basis chiefly, which means gross book value.⁷ On the whole, then, it may be said that most of the value figures published in the Census reports are gross. In the few exceptions depreciation reserves were about one-fourth of gross book value. The fact that the values at our disposal are chiefly gross is advantageous, since depreciation rates may be applied directly to gross values without any further manipulation.

Second, land is included, except in the case of the federal government. Since land is not a depreciable asset, in the ordinary sense, it is necessary to determine at least approximately the proportion of land values included before we can apply depreciation rates to the values at our disposal. Here again we must go to the reports of individual states and cities. The relevant figures (Table 21) are available for 6 states (out of 27) and 9 cities (out of 25). (The reports examined were chosen at random.) There is considerable scatter in the ratios, but about 20 or 25 per cent seems to be a reasonable average figure.⁸

Third, any appreciation in values is included, as explicitly stated by the Bureau of the Census. For example, in 1924 the value of park land in Rochester was increased \$2,191,000, a considerable rise even in relation to the total value of land

reserves for depreciation reported are those on engineers' equipment and the asphalt plan (*Report of the Division of Finance*); San Francisco, California (*Auditors' Annual Report*).

⁷ Cf. the remarks made by the Federal Trade Commission in its report, *National Wealth and Income* (1926), p. 39.

⁸ The simple arithmetic mean of the ratios is 24 per cent. The ratios apply to different dates, of course, but it is not worth while to take into account the slight movement in the proportion of land value to total value.

The percentage may be compared with that of the federal government (1923):

	PERCENTAGE
Total value of real estate owned by the federal government	100.0
Land	16.7
Buildings and improvements	83.3

Table 21

Property Values, by Types of Assets,¹ Certain State and City Governments

STATE OR CITY AND DATE	SOURCE	EQUIP-			TOTAL
		LAND	MENT	OTHER	
New Hampshire, 1933	Comptroller	6.4	4.0	89.6	100.0
Massachusetts, 1932	Commission on Ad- min. and Finance	25.6		74.4 ³	100.0
Connecticut, 1929	Comptroller	10.5	13.5	76.0	100.0
Delaware, 1933	State Auditor		11.2	88.8 ²	100.0
Illinois, 1930	Auditor	16.7	18.0	65.3	100.0
Iowa, 1932	Director of the Budget	13.1	22.8	64.1	100.0
Maryland, 1933	Comptroller of the Treasury	7.0	19.0	74.0	100.0
Colorado, 1928	Auditor		5.6	94.4 ²	100.0
Newark, N. J., 1929	Auditor of Accounts		7.3	92.7 ²	100.0
Philadelphia, Penn., 1931	Controller	22.0	7.5	70.5	100.0
San Francisco, Cal., 1929	Auditor	22.7	7.9	69.3	100.0
Providence, R. I., 1929	Auditor	30.3	5.8	63.9	100.0
Birmingham, Ala., 1934	Financial Report	51.0	5.3	43.7	100.0
Dearborn, Mich., 1934	Statement of Financial Conditions		4.6	95.4 ²	100.0
Buffalo, N. Y., 1934	Division of Accounting	41.8	⁴	58.2	100.0
Manchester, N. H., 1933	Annual Report	51.4	7.9	40.7	100.0
Huntington Park, Cal., 1934	Annual Report		19.8	80.2 ²	100.0
Flint, Mich., 1934	Division of Finance	6.9	7.7	85.4	100.0
Portland, Ore., 1933	Auditor		5.1	94.9 ²	100.0
Oakland, Cal., 1934	Auditor	32.3	8.0	59.7	100.0
Rochester, N. Y., 1930	Comptroller	13.3	7.3	79.4	100.0

¹ Excluding roads where possible.³ Including equipment.² Including land.⁴ Not reported.

owned by the city (\$9,614,000 in 1930). The appreciation was removed in 1930, to restore the value "to the basis of cost, con-

sistent with other property schedules".⁹ The records of the city of Philadelphia provide us with examples of downward revaluations. In 1920, following an inventory, the reserve for depreciation was increased by an adjustment of about 25 million dollars, equal to almost one-third of the reserve, and to about 8 per cent of the net property account.¹⁰ In 1928 a similar adjustment, also arising out of an inventory, was made. This amounted to about 10 million dollars—roughly 2 per cent of the net property value.¹¹ The total amount of revaluations made by all governmental bodies is in doubt, and their effect on book values can only be guessed. Some information is provided by the data in Table 20. If we accept the outlay figures as representing "the amounts paid . . . for the acquisition and construction of more or less permanent properties" (*Financial Statistics of Cities, 1930*, p. 56) excluding the value of properties replaced,¹² then the increases in the value of public properties should equal, substantially, the annual amount of outlays. Reference to Table 20 indicates that values increased more rapidly than can be accounted for by outlays. For state governments, the increase in value reported, between 1919 and 1930, was 1,384 million dollars. Total outlays for 1920–30, inclusive, were 1,124 million. The difference is 260 million, or 19 per cent of the increase in value. The increase in value reported by cities for 1918–31 (excluding real property assets in investment funds for which outlays are not reported)¹³ was 8,226 million dollars. The cumulated outlays for the same period were 7,182 million, a difference of over one billion, or 12.5 per cent of the increase. These two differences—19 and 12.5 per cent—represent, besides revaluations, any errors in the estimate of the values for governmental units not

⁹ *Annual Report of the Comptroller of the City of Rochester*, for the year ending December 31, 1930, p. 27.

¹⁰ *Annual Report of the City Controller, Philadelphia, 1920*, p. 12.

¹¹ *1928 Report*, pp. 26–7.

¹² See Leo Wolman, *Planning and Control of Public Works* (National Bureau of Economic Research, 1930), p. 118, footnote 56.

¹³ *Op. cit.*, pp. 117–8.

reported, errors involved in shifting from a fiscal to a calendar year basis, etc. But even if we ignore these possible errors (they may not necessarily cancel out) it is obvious that the amount of revaluations could not affect the total values in Table 20 to any very great extent.¹⁴

Fourth, figures for counties are not included, except where reported by municipalities combined with counties. It is difficult to make any reasonably accurate estimate for them. Some indication of their importance may be derived from the fact that the value of property owned by counties, in 1913, was 14 per cent of that of cities. Total outlays by counties were higher: in 1913, about 24 per cent of outlays by cities over 2,500 in population, and in 1932, 27 per cent.¹⁵ But these outlays include a large proportion of expenditures on roads and highways, which are not covered in the value figures.¹⁶ The ratio of county property to city property has probably declined since 1913, because of the relative growth of cities. If we assume the present ratio to be 0.10, the ratio of county properties to total governmental properties is even less, about 0.07.

¹⁴ An interesting attempt at reconciling the difference in values of city properties between 1906 and 1907, and outlays in 1907, has been made by the Bureau of the Census itself (see *Statistics of Cities Having a Population of Over 30,000: 1907* [Washington, 1910], p. 82). Several discrepancies could not be explained. See also a similar comparison for 1909 (*Financial Statistics of Cities, 1909*, pp. 51-2).

¹⁵ Bureau of the Census, *Wealth, Debt and Taxation, 1913; Financial Statistics of State and Local Governments, 1932*.

¹⁶ Expenditures on highways as a percentage of total expenditures, for certain groups of counties, are as follows:

Ohio counties, 1932	30
Tompkins County, N. Y., 1932	35
Indiana counties, 1928	35
Maryland counties, 1924-32	42

The expenditures of these county governments are reported in the following publications: H. R. Moore, *Receipts and Expenditures of County and Township Governments, 1932*, *Mimeograph Bulletin No. 71*, Ohio State University, May 1934; T. N. Hurd, *Local Government in Tompkins County*, New York, *Bulletin 657*, Cornell University Agricultural Experiment Station, August 1936; *Statistical Report for the State of Indiana*, Legislative Bureau of the Indiana Library and Historical Department, 1929, pp. 130 ff.; and *Ten Years' Expenditures for Public Works, State of Maryland*, State Planning Commission (1936).

Finally, it was necessary to allow for equipment in the possession of the federal government in 1923. The figure used and incorporated in Table 20, 10 per cent of real estate excluding land, does not seem out of line with the ratios in Table 21.

We may summarize the above discussion as follows. The values in Table 20 are overstated to the extent that: (1) they are gross, before deduction of accrued depreciation; (2) land is included (about 20–25 per cent of the total value); (3) the values include appreciation (say 15 per cent). They are understated because of the omission of county government property (to the extent of about 7 per cent). Since the land value figure may account also for most of the appreciation, it is not advisable to add the two figures together. On the whole, the degree of overstatement seems to be about 25 or 30 per cent, if we ignore the absence of depreciation reserves. Since we must take another step, namely apply depreciation rates, the overstatement may be adjusted at that time. We therefore turn to the choice of suitable depreciation rates.

The character of the equipment, buildings, structures, and improvements determines the depreciation rate. While we know that the bulk of governmental property is long-lived, our knowledge may be clarified by reference to Table 22. Obviously buildings constitute the most important single type of goods in the possession of governmental units. Administrative buildings, schools, libraries, hospitals, and prisons are in the forefront.¹⁷ Next, perhaps, come public service enterprises—

¹⁷ It must be remembered that the values of the so-called 'public improvements'—streets, roads, sewer systems—are not included in the present set of values. They are covered, in respect of capital consumption, in the measures of repairs, alterations, and maintenance. The Bureau of the Census does not collect values of public improvements for recent years. For values reported in earlier years see, for example, the 1907 value in *Statistics of Cities Having a Population of Over 30,000: 1907*, p. 342; and the 1909 replacement value in *Financial Statistics of Cities Having a Population of Over 30,000: 1909*, pp. 176–8. See also the Federal Trade Commission estimates for 1922 in *National Wealth and Income*. According to these sources, and the outlay figures by departments, highways and sewers represent the largest governmental investment.

Table 22

Value of Public Properties, by Departments, Cities and States, 1930

(Unit: \$1,000,000)

DEPARTMENT	CITIES	STATES	TOTAL
General government	598	286	884
Protection to person and property	473	66	539
Conservation of health and sanitation	483	40	523
Charities, hospitals, and corrections	428	786	1,214
Schools	3,667	685	4,352
Libraries	267	25	292
Recreation	3,238	84	3,322
Development and conservation of natural resources	...	89	89
Subways, etc.	872	...	872
Miscellaneous	210	41	251
Public service enterprises	4,394	261	4,655
Total	14,630	2,363	16,993

SOURCE: *Financial Statistics of Cities and of States*, adjusted for cities with population under 30,000; excluding highways and sewer systems.

water works, electric railways, electric light and power, etc. Equipment constitutes about 10 per cent of the total value of public properties (Table 21).

What length of life shall we ascribe to these various groups of properties? Depreciation rates are published by the Bureau of Internal Revenue¹⁸ and other authorities. They are summarized in the *Accountants' Handbook* (previously cited), pp. 662-723. Some of the relevant rates are:

	PER CENT PER ANNUM		PER CENT PER ANNUM
Buildings, brick and steel	2	Pipes	1-2
Hotels	2	Pumps	5-6
Monuments	0.2	Reservoirs	1.3
Canals and ditches	2	Street light equipment	2
Dams	1-3	Tunnels	2
Fences	4-8	Turbines	2.5-4.5
		Wells	2-2.5

¹⁸ *Depreciation Studies—Preliminary Report of the Bureau of Internal Revenue, 1931.*

These rates may be compared with some actually in use. The rates used by the city of Rochester (1935) are:¹⁹

	PER CENT PER ANNUM
Water works	2
Public market	4
School property (other than equipment)	2.3 (composite rate)
Park buildings	5
Police department buildings	2.5
Fire department buildings	2.5
Health department buildings	2.5
Bridges	2
Sewage disposal plant	4
Subway	2.5
Public library buildings	4
Miscellaneous property, buildings	3

The rates reported by Connecticut on bridges are:

	PER CENT PER ANNUM
For four bridges	none
For four bridges	5
For two bridges	10

Philadelphia reported an average rate of 1.85 per cent of the cost of structures, improvements, and equipment in 1931, and 2.06 per cent in 1928 (rates were revised upward in 1920). For Birmingham, Alabama, the rates are:

	PER CENT PER ANNUM
Fire department properties	3-4
Park properties	3, 10
Equipment	23 (on net value)
School properties and libraries	3-4, 10
Miscellaneous properties	3-5, 10

The Bureau of the Census used in 1907 a rate of 2 per cent in estimating depreciation on municipal water works; in 1905, 3 per cent. The ratio of annual retirement expenses to total

¹⁹ Sometimes the rates are changed. In the 1930 Rochester report, depreciation on buildings of the health department was at 2 per cent, and on bridges at 3½ per cent. Certain properties were fully depreciated and carried at constant sums.

value of fixed capital, municipal electric light and power stations, 1932, was 2.4 per cent.²⁰

Taking into account all the available data, a composite rate (for 1929) of 2.5 per cent seems reasonable. This is derived by

Table 23

Estimated Depreciation Charges, Governmental Property,
1929

PROPERTY	VALUE (\$1,000,000)	DEPRECIATION RATE (per cent)	DEPRECIATION CHARGE (\$1,000,000)
<i>City, state, and county</i> ¹			
Land	2,497
Equipment	1,249	10	125
Public service enterprises	5,094	2.5	127
Other	8,742	2	175
<i>Federal</i> ²			
Buildings	1,933	2	38
Locks and dams	325	2	6
River and harbor works	819	1.5	12
Equipment	308	10	31
Grand total	20,967	2.5 ³	514

¹ County property estimated at 10 per cent of the property of city governments, land at 20 per cent of total property, equipment at 10 per cent. No adjustment was made for possible appreciation or for deduction of depreciation reserves.

² The proportions in 1923 were applied to the 1929 value.

³ Derived by expressing the total of the last column (514) as a percentage of the total of the first column (20,967).

assuming a 2 per cent rate for all city and state property other than equipment, public service enterprises, and land; 10 per cent for equipment; 2.5 per cent for public service enterprises; and similar rates for corresponding federal property. The details appear in Table 23. We assume a similar composite rate applicable to the values for earlier years. Applying this average

²⁰ *Census of Electrical Industries, 1932, Central Electric Light and Power Stations*, pp. 71-2.

rate to the estimated value of public properties yields the depreciation estimates in Table 24.²¹

Table 24

Estimated Depreciation Charges, Governmental Property,
1919-1935

(Unit: \$1,000,000)

	VALUE OF PUBLIC PROPERTIES			ESTIMATED DEPRECIATION, 2.5% OF TOTAL VALUE. (4)
	Total (not incl. counties) ¹ (1)	Counties ² (2)	Total (1) + (2) (3)	
1919	9,856.0	688.6	10,544.6	263.6
1920	10,313.5	716.2	11,029.7	275.7
1921	10,923.4	754.8	11,678.2	292.0
1922	11,690.2	804.8	12,495.0	312.4
1923	12,499.6	859.0	13,358.6	334.0
1924	13,542.7	937.6	14,480.3	362.0
1925	14,671.9	1,026.7	15,698.6	392.5
1926	15,980.6	1,131.0	17,111.6	427.8
1927	17,397.4	1,242.4	18,639.8	466.0
1928	18,704.6	1,337.2	20,041.8	501.0
1929	19,579.3	1,387.1	20,966.4	524.2
1930	20,719.3	1,463.1	22,182.4	554.6
1931	22,103.4	1,547.6	23,651.0	591.3
1932	23,039.7	1,594.5	24,634.2	615.9
1933	23,895.6	1,617.0	25,512.6	637.8
1934	24,987.7	1,643.3	26,631.0	665.8
1935	26,146.7	1,674.2	27,820.9	695.5

¹ Table 20.

² 10 per cent of city properties.

The figures presented are accounting estimates. They are based on original cost (assuming revaluations were counter-

²¹ Depreciation on roads and sewers is not included in the estimate for governmental property. Since the value of this type of property is huge, and since depreciation rates on highways and sewer systems are large (4 to 10 per cent on roads and pavements, 2 per cent on sewers) the absolute magnitude of the estimate for governmental depreciation would be swelled considerably by their inclusion.

balanced by depreciation reserves) and on a straight line time allocation. They also, therefore, must be modified if they are to represent the current value of durable goods used up in current production.