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APPENDIX E

DESCRIPTION OF PROCEDURE FOR OBTAINING ESTIMATES OF URBAN RESIDENTIAL CONSTRUCTION BASED ON POPULATION-CHANGE RELATIONSHIPS

THE FOLLOWING description of the derivation of the estimates for the Middle Atlantic division is presented as an illustration of the technique used in obtaining regional building totals based on decade changes in population (excluding annexations). For all size classes in all years except size class III, 1896-98, and size class IV, 1890-98 and 1921-29, the estimates of residential construction volume for each size class were obtained by applying to the sample data the ratio of the decade change in population (excluding annexations) of the size class to the decade change in population (excluding annexations) of the reporting cities.[1]

Estimates for city size class IV, 1890-98, were based on ratios between five-year aggregate building rates of size class IV, 1900-1904, and five-year rates for size class III, 1900-1904.[2] These ratios were applied to the building rates in city size class III in each year, 1890-98, to obtain estimated building rates for size class IV for the same years. The ratios were:

Dwelling units	1.28
Permit valuation of dwelling units	1.92
Permit valuation of nonhousekeeping facilities	0.68

For size class III, 1896-98, estimates were derived from ratios between five-year aggregate building rates of size class III, 1900-04, and five-year rates for size class II in the same period. The ratios were applied to building rates for size class II for each of the three years, 1896-98, to yield estimated building rates for size class III in 1896-98. The ratios were:

Dwelling units	0.73
Permit valuation of dwelling units	0.61
Permit valuation of nonhousekeeping facilities	1.59

The estimates for size class IV, 1921-29, were based on average ratios between five-year aggregate building rates for size class IV in 1910-14 and 1915-19 and five-year rates for size class III in the same periods. The ratios were applied to building rates for size class III in each year, 1921-29, to

[1] The adjustment for lapses of permits in New York City, described in Appendix F, was made in the sample data prior to expansion.

[2] The aggregate building rates were calculated as the ratio of the number of dwelling units started or the permit value of dwelling units started or the permit value of nonhousekeeping facilities started per person change in population over the decade (excluding annexed population).

obtain estimated building rates for size class IV in the same years. The average ratios were:

Dwelling units	0.93
Permit valuation of dwelling units	1.11
Permit valuation of nonhousekeeping facilities	0.23

Estimates for the Pacific division, 1890-99, and the South Atlantic division, 1920-29, were computed in a different manner. In the Pacific division, no data were available for any size class prior to 1895. To obtain a rough estimate of the volume of residential construction during the five years, 1890-94, recourse was had to unpublished Federal Housing Administration data on deeds recorded in three California counties – Alameda, Los Angeles, and San Francisco. The principal cities in these counties – Oakland, Los Angeles, and San Francisco – accounted for two thirds of the increase in urban population of the Pacific division during the decade 1890-99. The three series listing the annual number of deeds recorded in each county, 1890-99, were combined into a weighted index (1895-99 = 100), with the weights consisting of the decade increase in population of the principal cities of the counties. The 1895-99 annual average volume of urban residential construction, previously estimated on the basis of population change data, was extrapolated back to 1890 by this weighted index.

The decade total of urban dwelling units started in the Pacific division, derived in this manner, was then compared with an estimate of the increase in urban private families (now called households) in this division between 1890 and 1900, derived from Census data. The increase in urban families, or occupied units, over a given period is not synonymous with the number of new dwelling units constructed because of demolitions, conversions, annexations, etc. Nevertheless, the family data provided a means of obtaining a rough check on the accuracy of the order of magnitude of the synthetic construction series. The comparison indicated that the dwelling unit series for this decade, and probably, therefore, the permit valuation series for housekeeping and nonhousekeeping structures for the same period, was considerably understated.

Since the estimates for the last half of the decade were based on a very small sample, it was unreasonable to assume that the error was confined to the synthetic series for the first half of the decade. Accordingly, the series for the entire decade were adjusted upward to reduce the apparent underestimate in the decade totals. It is likely that the revised estimates for this decade are still too low.

The adjustment was derived in the following manner: The ratio of the number of dwelling units started in the Pacific division during the years 1900-1909, as estimated on the population change basis, to the increase in urban population of this region, based on the 1900 urban classification, was calculated. This ratio was then applied to the increase in urban population,

1890-99, based on the 1890 city classification, to yield the estimated total of dwelling units started during that decade. The ratio of this decade total to the decade total based partially on the deeds' recorded index was 1.66. Accordingly, the previous estimates of dwelling units started, of permit valuation of dwelling units, and of permit valuation of nonhousekeeping facilities were multiplied by the factor 1.66. The resulting series was accepted as the final urban series for the Pacific division for this decade.

Although the final estimates for the Pacific division for the decade 1890-99 were extremely crude, it should be remembered that the magnitudes involved were very small and that errors in the final series would affect the national totals only slightly. The final estimates of residential construction for the Pacific division ran about 1 or 2 per cent of the final national urban totals and a considerably smaller percentage of the final nonfarm totals for the bulk of the decade. Even a 25 per cent error in the Pacific estimates would result in an error of much less than 1 per cent in the national totals. The estimates for the Pacific division were made primarily to enable consistent national urban and nonfarm estimates to be derived for the 1890 decade, rather than as an accurate representation of residential building in this division.

For the South Atlantic division, separate estimates were made for Florida and for the remainder of the division for the 1920-29 decade.[3] This procedure was followed to prevent the Florida real estate boom from having any effect on the estimates for the remainder of the division, as well as on the correction factors for the East South Central division which were derived from the South Atlantic data.

[3] An adjustment was made for lapses in permits in Florida for 1925 and 1926. This adjustment is discussed in Appendix F.