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## THE USE OF CITY DIRECTORIES IN THE STUDY OF URBAN POPULATIONS: A METHODOLOGICAL NOTE

Bureau of Research in the Social Sciences

With the Assistance of the Work Projects Administration  
Official Project No. 665-66-3-183

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**The benefits of education and of useful knowledge, generally diffused through a community, are essential to the preservation of a free government.**

**Sam Houston**

**Cultivated mind is the guardian genius of Democracy, and while guided and controlled by virtue, the noblest attribute of man. It is the only dictator that freemen acknowledge, and the only security which freemen desire.**

**Mirabeau B. Lamar**

## FOREWORD

A recent publication of the Bureau of Research in the Social Sciences of The University of Texas, entitled "Population Mobility in Austin, Texas, 1929-1931," was the report of a study in which there was employed a new method of research in the field of population movements in urban communities. This bulletin on "The Use of City Directories in the Study of Urban Populations: A Methodological Note," outlines the method. The method herein explained and somewhat modified and refined as a result of experimentation with it in the Austin study was subsequently used in studies made under the Bureau's direction and with the assistance of the Work Projects Administration in Dallas and Houston. Published reports of these studies are forthcoming. It is hoped that the validity of this method may be further tested in future researches. This bulletin was prepared by Mr. W. Gordon Browder, Technical Supervisor for the Bureau, and Mr. Richard D. McCrum, Project Supervisor for W.P.A.

W. E. GETTYS, *Director.*

# THE USE OF CITY DIRECTORIES IN THE STUDY OF URBAN POPULATIONS: A METHODOLOGICAL NOTE

## INTRODUCTION

Recently observed increases in the mobility of the population, occurring along with maladjustments in employment, education, housing, and in social relations generally, have suggested a connection, possibly causal, between changes of residence and problems of social maladjustment. Unfortunately, our knowledge of when and where people move has been too small to permit definite conclusions. Before we can study the effect of mobility upon society, we must know a good deal more about mobility.

With the object of providing such knowledge and a readily applicable method of handling it, an experimental study<sup>1</sup> was conducted in Austin, Texas, by the Bureau of Research in the Social Sciences of The University of Texas. The study revealed conclusively the practical possibility of using city directories as a source of data on mobility. It yielded useful information as well as the beginning of a systematic procedure for transcription and tabulation. The procedures developed were thereupon applied to a study of larger populations over an extended period of time. In the course of this study the techniques were further improved and refined. They are given in this report in the form of a description of the various steps or phases through which the study was carried on to its completion. It is believed that the presentation will serve as a guide and possibly as a stimulus for future studies of the same kind.

## THE STUDY

The study was set up as a research project in the Work Projects Administration, sponsored by The University of Texas and directed by the Bureau of Research in the Social Sciences. The two largest cities in the State, Dallas and Houston, were chosen as the field of operation, not because of their size, but because they were the only cities in Texas having census tracts and long, unbroken series of city directories. In order to include high, low, and normal phases of the economic cycle, a relatively long period, 1923 to 1938, was selected for investigation. A research organization, under the general supervision of the Work Projects Administration, was established in each of the two cities. Technical direction was supplied by the Bureau of Research in the Social Sciences.

The theory underlying the study herein outlined is that a number of significant social characteristics of an urban population can be discovered and measured by following the shifting addresses of persons through a series of directories. Three general types of mobility appear at once as a background upon which various other features may be projected. These are (1)

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<sup>1</sup>*Population Mobility in Austin, Texas, 1929-1931*. Austin: The University of Texas Press. 1941.

movement into the city (from names appearing for the first time in directories later than the first of the series); (2) movement out of the city (from names disappearing from the directory); and (3) intra-city movement (from changes of residence within the city). The numbers obtained will clearly show the rate of population growth and replacement, not only for the city as a whole, but for the separate census tracts. The information on mobility has been related to other characteristics, such as employment, home ownership, occupation, housing, marital status, and, in some cases, may be related to race and sex, thereby giving a detailed picture of the processes of social and economic change in a wide spatial and temporal setting.

It is believed that the report growing out of this study will not only satisfy our desire to know more about the nature of urban social life, but will also provide a substantial body of fact for use as the basis of city planning. Ultimately it may be of considerable value in the promotion of better socio-economic relationships in the city.

#### THE CITY DIRECTORY

It is estimated by the publishers of the Dallas City Directory that the listing includes 98 per cent of the population above the age of 17 found in Greater Dallas.<sup>2</sup> No accurate check could be made of the coverage, but it is doubtful that so large a proportion of the population is listed. Since city directories are published primarily for the benefit of business establishments interested in addresses and occupations of individuals, it may be assumed that the enumerators have confined their activities mostly to those persons able and willing to supply the required information. Unemployed persons, unless appearing in a previous directory, may readily be omitted from directory listing and persons without permanent addresses are easily missed by enumerators. It must be kept in mind that all data used in the survey are subject to the same limitations as the directories from which they come.

No matter how carefully and completely done, the listings of a directory have already begun to show inaccuracies at the time of publication. Roughly, the accuracy of the directory may be said to vary inversely with the age of the volume. The rapidity of the change is indicated by the publishers' estimate that from 59 to 66 per cent of the entries in the name section of any directory will be changed in the next issue. Comparatively few listings would be accurate after 15 years. It is, of course, precisely these changes, recorded in the directory, which are of significance to a survey of mobility.

Aside from the advertising matter and commercial listings, the directory has two divisions. One of these presents in alphabetical order by surname, all persons and firms included, with their addresses. For individuals, place of employment is given and, usually, occupation, marital status and tenure.

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<sup>2</sup>Although the text makes frequent references to Dallas, the same procedures were followed in Houston and are equally applicable to both cities.

The second division lists the names of all the streets in alphabetical order, giving for each street the names of intersecting streets and the address numbers, together with the name of the head of the family for each address. The arrangement followed presents the address numbers in ascending order, showing first the "north" or "east" numbers, and second, the "south" or "west."

#### PROJECT ORGANIZATION<sup>3</sup>—PRELIMINARY

The operation began with the securing of copies of the Dallas City Directory from 1923 to 1938. In the fifteen years covered by the survey, fourteen directories were published, bearing dates as follows: 1923, 1924, 1925-26, 1927, 1928, 1929, 1930, 1931, 1932, 1933-34, 1934-35, 1936, 1937, and 1938. Several copies of each issue were necessary for the study—one to be unbound and divided among the transcription clerks, others to be used for research and verification.

The name list of the directory was divided as evenly as possible among five transcribing sections, each with about fifteen clerks under the supervision of a section chief. The division of the directory in this way resulted in the assigning of all names beginning with the letters A, B, and C to the first section. The other assignments were, respectively, D through H, I through K, L through R, and S through Z. The entire address list was assigned to a single section. A small control section was established to maintain and control flow of work and to prepare the required project reports. A separate section was established to verify each entry transcribed. This section was discontinued after the 1935 directory was reached. Independent verification became unnecessary at this point, because the cards had accumulated sufficient information to be, to a high degree, self-verifying, and because the clerks had become sufficiently trained to verify their own work. Moreover, all cards after 1935 were kept in the active file.<sup>4</sup>

Since most of the persons assigned were unfamiliar with research and statistical work, a good deal of time had to be devoted to training. Individual production records showed the ability of the worker and the effect of training and helped to develop clerical skill and to maintain production schedules.

The address file transcribing section was chosen as a training unit, because the transcriptions were more easily made and verified than those of the name file. After the project was well under way, all new workers were placed in the address section and, after a period of training, were either advanced to more difficult operations or released.

A simple system was set up to show production. Every clerk was required to submit a daily record of the time spent at each separate task assigned to him. The verification clerks prepared daily a list showing the number of errors chargeable to each clerk for each operation. The section chiefs kept a production record to which the reports on time, operation, and errors

<sup>3</sup>See Appendix, p. 25, for organization chart.

<sup>4</sup>See procedure in transcription, p. 26.

were posted. At the end of the month, total hours, average hourly production and percentage of errors were calculated for individual workers. Clerks were rated according to their ability in performing assigned duties. Each rating was expressed by a figure indicating deviation from the office average, which was arbitrarily placed at 100. The records thus obtained were used as the basis of recommendation made to the division of employment as to promotion or release of clerks assigned to the project.

The results of training and of subsequent work were clearly evident in the increased efficiency observed. Over a four-month period the average transcribing speed for the address file was raised from 138.79 cards per hour, with 3.06 per cent errors, to 140.34 cards per hour with 1.73 per cent errors.

#### FLOW OF WORK

Before the actual beginning of the transcription process, all the pages of the directory assigned to a particular section were turned over to the section chief, who thereupon entered the number of each page in a control register. For the base (1923) transcriptions, two pages (one sheet) were issued to each transcribing clerk, and the name of the clerk and the time of issuance was noted on the register. When the transcription was completed, the cards and directory pages were sent to the verification section with a transmittal slip.<sup>5</sup> This slip carried the directory page number, the number of cards transmitted, and the name of the transcribing clerk, and spaces for the verification clerk's notations and initials. Used in connection with the control register, this provided a system for keeping track of all cards and directory pages. Section chiefs were thereby enabled to locate cards quickly and to judge the progress of the work, while the control section was aided in equalizing the work throughout.

A test check on cards bearing no entry for the year following that of the original entry showed that approximately 20 per cent of the names returned to the directory after one year's absence. Of those absent two years only 8 per cent returned, while of those absent three years less than 5 per cent returned. Cards having no entry for three successive years were therefore removed from the files. This made no difference in the tabulations, since a subsequent entry, whether made on the same or on a different card, would be in any event tabulated as an inter-city move. Since all cards had to be moved from one section to another, this procedure eliminated the repeated handling of enormous numbers of dead cards. The cards were filed alphabetically by name under year of first entry.

Approximately 1,000,000 cards were transcribed. After elimination of duplications, about 655,000 remained for coding and tabulation.

#### TRANSCRIPTION—NAME FILE

Data were collected on four by six-inch<sup>6</sup> cards, ruled and headed for the items desired. The headings were as follows:

<sup>5</sup>See Appendix, p. 19, Form 3.

<sup>6</sup>See Appendix, p. 17, Form 1.

*Name.*—The individual's name was written in full exactly as listed in the directory. The name of the wife, if any, was entered in parentheses, and any subsequent change was entered in the same way. If no wife was listed, the words, "no wife," were written after the address for the year being transcribed. If "widow" was indicated, this information was repeated in the heading. Changes in marital status were indicated on the name cards on the same line as the address for the year in which the change occurred. A separate card was filled out for each individual listed, including all doubtful cases.

*Tenure.*—Since symbols used to indicate tenure status in the several directories varied from time to time, it was necessary to change some of them to secure uniformity. In transcription "H" was used to designate "Householder," "R" for "Resides," "Rms" for "Rooms," and "O" for "Owner." Ownership was shown in the Dallas directories only after 1926.

*Address.*—Street addresses were entered for the individual as listed, that is, with the number preceding the name of the street. Changes in street name were shown by drawing a line through the first address and writing in the new address.

*Tract.*—No entry was made in the tract column during the transcription process.

*Occupation and Industry.*—All available information regarding the individual's occupation and industry was included. Where the name of the employer was given, an attempt was made to determine the industry. If no occupation was listed, the word "none" was written in the space provided for the occupation.

*Code.*—No entry was made in the last three columns of the card during transcription, this space being reserved for coding operations.

*Names Lost.*—When a name disappeared from the directory, small blue<sup>7</sup> circles were drawn to represent all the missing items. Any part of the listing remaining the same as the previous year was duplicated by small red check marks. When a name re-entered the directory, the information was transcribed exactly as if it appeared for the first time.

*Verification of Transcription.*—An attempt was made to verify transcription within each section. The method proved unsatisfactory, and an independent verification section was therefore established to which all completed cards were referred. This section verified the transcription by comparing the cards with the directory pages from which the cards were transcribed. Obvious duplicates were eliminated or combined, and all research work possible was done by this section. The verifying clerks filled out cards for all names missed by the transcribers.

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<sup>7</sup>The use of colors in transcription may not be justified. Considerable time is lost in changing pencils. The practice makes for smudged or soiled cards, because the colored marks are difficult to erase clearly. Colored pencils cost more than others. Moreover, it is extremely doubtful that colors aid in coding or tabulating.

## TRANSCRIPTION—ADDRESS FILE

Address File data were collected on three by five-inch cards,<sup>8</sup> ruled for directory years of the survey and headed for the items desired. The headings were as follows:

*Address.*—The number of the address and the name of the street were written at the top of the card. No other items were written on the card. Space was provided for unit designation, to take care of addresses having more than one unit. Separate cards were made for each unit, but these were later combined and the information collected on one card.<sup>9</sup>

*Occupancy.*—The type of occupancy was indicated by a check mark on the card under the proper category as residential, industrial, or commercial, and whether vacant or occupied.

It was intended that data as to number of families should be secured from the name file cards when the coding was completed. Discrepancies were frequently encountered, but since the latter method permits the comparison of both sources of data, it is believed to be more nearly accurate.

To indicate occupancy an "X" was placed in the appropriate cell. Separate cards were transcribed for each unit. Descriptive terms such as "rear," "front," "basement" were entered to show type of unit. If occupancy was mixed, two check marks were utilized. A single address might be shown both as "residential, vacant," and as "commercial, occupied." If the occupancy was doubtful a lightly penciled question mark indicated the most probable occupancy and the final determination was left to the verifying clerk who checked the transcription. If no listing of a previously transcribed address was found, a blue line was drawn across the card for the year in which data were missing.

No independent unit was established for verifying the transcription of the address file. Otherwise the procedure for the control of work and for continuing transcriptions subsequent to 1923 was the same as for the name file.

*Checking Through Subsequent Directories* referred to transcriptions, of both name and address files, of years subsequent to 1923. The same procedure was followed except that specific instructions had to be issued as to changes in type of listings, tenure symbols, etc.

*Coding—The Address File.*—When the process of transcription was completed the address file remained in its original order; coding could therefore proceed without rearrangement, but the name file was arranged alphabetically by name for entries for 1938 and by name for year of first entry for other years.

Coding the address cards for the census tract in which each address is located required access to a complete, accurate, and reliable street index. The preparation of such an index was undertaken, utilizing as a basis the tract index compiled by Professor Walter T. Watson of the Department of

<sup>8</sup>See Appendix, p. 18, Form 2.

<sup>9</sup>See section for coding, p. 28.

Sociology of Southern Methodist University. A list of new streets and changes in street names was obtained from the office of the Dallas City Engineer. Additional information came from a street-marking project conducted by the Work Projects Administration.

Each street name was written on a five by eight-inch card, which was ruled to provide spaces for inserting block address numbers and census tract numbers. In the case of streets which form tract boundaries, the numbers on the two sides of the street were assigned to different tracts. The cards were thereupon compared with recent city maps and with recent commercial street indexes. Finally they were taken to the fire stations and checked by the firemen.<sup>10</sup>

*Editing Address Cards.*—The editing of the address file cards after the completion of transcription was undertaken for the following reasons:

1. To eliminate duplicate cards. In some instances cards were in the file for residential units which, because of errors in transcription or in directories merely repeated information already found on other cards. For example, in some cases separate cards were transcribed for a man and his wife, thus indicating two separate units where only one existed.

2. To check doubtful cases. Errors in transcription resulted in the inclusion of a few cards for addresses which did not exist. Most of them were discovered by noting inconsistencies in the listing from year to year. All doubtful cases were checked against the directories.

3. To indicate mixed commercial and industrial units. No provision for this operation was made in the original procedure. Since the directories did not contain adequate information on mixed occupancy, a list of commercial and industrial firms was secured from the Chamber of Commerce and checked in all cases which were obscure and doubtful.

4. To indicate the number of units at each address. The original procedure required the preparation of a separate card for each separate unit. Upon the completion of the transcription, all cards for addresses showing multiple units were assembled and the data transferred to single address cards. Since further operations would require close inspection of name file cards, it was decided to make editing of these cards a part of the coding operation.

*The Name File.*—All cards in the name file were sorted first by year of first entry. This produced 14 groups, one for each directory year in the survey. Each group was then sorted by first street address, the sort being by first letter of the street name in groups A-E, F-J, K-O, P-T, and U-Z. These groups were then sorted alphabetically. Street divisions were arranged

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<sup>10</sup>A complete card index of street addresses resulted as a by-product of the tabulation. By making a duplicate card index and adding information regarding equipment and personnel available for each block, the Dallas Fire Department prepared a special index for use in its central control system and for the instruction of new firemen. Another by-product was an up-to-date index of the city streets located with reference to certain base streets and main highways. This index was given to the city and is being used by all city departments.

with "north" first, then "south," "east," and "west" by house numbers in ascending order.

This operation resulted in arranging the name file for each year of first entry in exactly the same order as the address file. Name cards for each separate address were then filed behind the appropriate address card. The preparation of file guide cards was contemplated, but the address cards were used as file guides and provided a cross check as coding of the name file progressed. All cards for each address were thus brought together. Inspection readily eliminated duplicate name cards, or combined cards transcribed for different years. Experience showed that coding the name file for census tract could be done as the cards were edited.

*Editing Name File.*—An attempt was made to secure a reliable entry for tenure. Wherever possible each address was stated as a definite street and number. If an individual was shown as residing with another person, the address of the latter was ascertained and inserted in the proper space on the card. Proprietors of soft drink stands, corner grocery stores and similar establishments, whose addresses were omitted from the directory, were presumed to live on the premises of their business. Domestic workers having no address other than that of their employers were presumed to live on the premises of the employers. Resident employees of hospitals, universities, and similar institutions were presumed to live where they work. In the case of individuals listed as residing in hotels or apartments the correct street address was entered. Care was exercised to see that the address was full and complete. Where old and new street designations were given both were entered. If no street address was available, the name of the subdivision or the R.F.D. number was recorded. Such cases were referred to special clerks who were supplied with all obtainable information, so that even from purely descriptive addresses, census tract location could be entered.

When a card bore no directory listing for any single year, but had identical entries for the years immediately preceding and following the year of omission, the missing address was filled in to conform with the years before and after the omission. Interpolation was permitted only when the entries were identical.

Tract coding was done by copying the tract number on each set of cards from the address cards filed ahead of them. Only one year was coded at each operation regardless of the number of entries on the name cards. The tract number was inserted in the column headed "Tr."

*Coding for Family Data.*—The next step, when all cards had been coded for tract number, was to select from the name file cards at each address a "Head Card." This was the card representing the family head, who was considered to be the married male designated as householder, or the persons so designated if no married male was listed at that address. If several married couples occupied the same dwelling, each was considered a separate family regardless of tenure designation, and each married male was regarded as a family head.

At this point it was necessary to give consideration to the position of single-person families, *i.e.*, persons evidently unattached to family groups. Such a person was recognized from the fact that he occupied a separate apartment, or resided as a lodger with a family of another name, or moved from year to year leaving no indication of family connections. It was intended that such a person would be assigned to a family group at the address where he resided; but such coding obviously would not show his mobility and would distort the size of the family to which he had been assigned. Since the survey was interested primarily in population mobility, and not in ascertaining the size of families with the strictest accuracy, it was decided to code such individuals as separate families, treating each as a family head.

After the selection of the head card, the number of persons in the family represented by the head card was counted and entered in the column headed "Per." Two persons were, of course, counted as man and wife even where no separate card was found for the wife. The number of separate persons in each family group reporting employment was entered in the column headed "Emp."

This procedure allowed the release of all cards not designated and coded as head cards. If no further entry appeared, the released cards were sent to the dead file. If entries appeared for any succeeding year or years, the cards were filed in order by next street address and re-entered for coding for the year of reappearance. Cards with first entry for years other than 1923 were placed in the files as coding was begun for the year under consideration. The cards awaiting coding were carefully verified for proper year of entry, but no separate verification was attempted after cards were in the file. Close inspection was maintained to prevent errors in filing.

#### TABULATION

*Separation of Files.*—When coding was complete, the name and address files were again separated. The address file was retained in its original order, but the name file was sorted by year of first entry and by census tract for that entry. Thus there were fourteen groups, each sorted into tract order. In this operation no attempt was made to keep cards together by street address since any change was reflected by changed address for the succeeding year and designated in the tabulation as inter-tract or intra-tract moves.

*Tabulation of Name File Data.*—The tally method of tabulation was tried but discarded as too clumsy and inaccurate. The sort and count method was subsequently adopted and used in all tabulations.

Two count slips<sup>11</sup> were used for data recorded in Basic Table I,<sup>12</sup> Data for Basic Table II<sup>13</sup> were entered directly on the tabulation sheet. Both basic tables were compiled at the same time and were checked against each other.

<sup>11</sup>See Appendix, pp. 19, 20, Forms 4 and 5.

<sup>12</sup>See Appendix, p. 21, Form 6.

<sup>13</sup>See Appendix, p. 22, Form 7.

Detailed steps in preparation of Basic Table II, for which count was first made, were as follows:

1. Head cards were, as noted, segregated by year of first entry and by census tract.

2. Beginning with the year 1923, head cards were sorted by number of persons in the family. These groups were then sorted by the number of persons employed in each family. The form for Basic Table II was arranged so that, as far as possible, entries could not be placed in the wrong cell. Totals for each tract for each year provided a convenient method of checking the accuracy of counts, since totals for Basic Table I had to agree with totals for Basic Table II, by tract and year.

3. These operations were repeated for each year covered by the transcriptions.

Detailed steps in the preparation of Basic Table I were as follows:

1. Cards with no entry for the succeeding year were sorted out, counted, and the number entered on line 2 of count slip No. 1. Cards which reappeared in subsequent years were sent to the control section for filing in the year and tract in which re-entry occurred. Cards without entry after first year were placed in a dead file.

2. From cards remaining after the first sort, all cards showing change of tract for the second year were sorted and counted. The total was entered on line 3 of the count slip. These cards were then laid aside, but kept together.

3. Of the cards originally in the tract being worked, the sorting completed to this point left those showing same address the second year and those moving to a different address within the tract. These were separated and counted and the totals entered on lines 5 and 6 of the count slip. These cards were then returned to the file in the same tract to be used in tabulation for the next year.

4. The cards showing change of tract were sorted into groups by number of tract to which the move was made. The number of cards in each group was entered on a separate count slip designated No. 2. The entries were totaled and the result compared with the entry on line 3 of count slip No. 1. If the figures differed, all groups were recounted until the error was found and removed.

5. As cards were sent from the control section to the proper tract, the number of cards in the group was entered on line 8.

6. Count Slip No. 1 was checked. Entries were so arranged that line 2 + line 3 = line 4, and line 5 + line 6 = line 7, and line 1 - line 4 = line 7. It was thus fairly easy to locate errors by the group of cards in which the error occurred. Line 8 was used by the control section to note the number of new cards added from the preceding year. Line 9 was used occasionally as a check.

*The Ledger.*—As the count slips were checked for accuracy and completeness they were sent to posting clerks who entered data from them on the ledger sheets as follows:

*Population First Year* was entered from line 1 of count slip No. 1.

*Population Second Year* was entered from line 8 of count slip No. 1.

*In City Both Years* was total of "not moved" and "intra-tract moves." All these items were obtained from count slip No. 1.

*Total Moves In and Out of Tract.*—Figures showing inter-city moves were posted from the line "cards disappearing second year" and "inter-tract moves." Inter-tract moves were distributed from count slip No. 2.

It must be observed that all postings, to this point, were recorded in the "out" column and that the column heading referred to a period of time; that is, the heading "1923-1924" was a single period and not two separate years with "moves in" occurring at the beginning of the first year and "moves out" occurring at end of the second.

The "in" moves, referring to tract changes, were posted in the "in" column on the ledger sheets for the various tracts to which moves were made. As these postings accumulated they gradually accounted for all "in" moves as well as "out," so that when each year's tabulation was complete it was possible to calculate the figure for "Population Second Year." This was done by taking the total of all "inter-tract moves in" and adding it to figures for "inter-city moves in" and that for "in city both years." Figures in each time period for "population second year" were, of course, the same as the succeeding time period "population first year." It was thus possible to know in advance (after the first period) what this figure should be. An error in counting was consequently easily recognized and corrected.<sup>14</sup>

*Errors.*—Since extreme care was exercised throughout transcription and coding, discoverable errors in the tabulations were rare. The most common error, perhaps, was the assigning of a card to the wrong tract. In most instances the error was caused by misreading numbers which resemble each other, such as 1 and 7, 3 and 8, 2 and 5. Since cards were kept in files in numerical order by census tracts, cards for one tract were sometimes found in the file for an adjacent tract. Such errors were easily discovered. If on final posting the total for one tract was found to be too large, another, almost invariably adjacent or similar in number, would be too small by the same amount. If no further error occurred in the second count, an arbitrary correction was made to bring the two tracts into balance.

Practically all recounting was done before count slips were released.

Clerks worked in pairs, one sorting and the other counting. The operation was repeated with the clerks in exchanged position.

Owing to the large number of cards handled, errors in filing were frequent during the tabulation of the first years of the survey. If tabulation had already been made, the error was corrected by adding a card to the

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<sup>14</sup>Tabulating clerks who discovered this feature of the ledger sheet began to secure figures for the second year from the posting clerks instead of making a physical count of the cards. This practice was stopped by assigning different tracts for the several years and by pointing out to the clerks that correction in a figure previously recorded would require a corresponding correction in the figure for the following year. Clerks using an erroneous figure copied from the ledger were charged with the error. A summary was kept for Basic Table I and for the yearly figures of all tracts. Accuracy in posting was proved by the equality of totals for inter-tract moves "in" and "out."

proper tract. Otherwise, the card was simply inserted in the proper place and tabulated in regular procedure.

It will be noted that no error could be maintained in the ledger. A single card entered in the wrong cell would throw the entire ledger out of balance.

In completing Basic Tables I and II, 1,988 separate tabulations were made. It was necessary to recount completely only five of these. The error in each instance was due to the misfiling of a considerable number of cards.

*Address File.*—Two basic tables<sup>15</sup> were compiled from the address file. All address cards for each tract were first sorted by occupancy. The categories were: Residential, Commercial, Industrial, Commercial and Industrial, and Residential and Other. Each group was then sorted for vacancy or occupancy, the number of units in each group was counted, and figures entered in the proper space on Basic Table IV.

The cards showing only residential occupancy were then sorted into five groups showing one, two, three, four, or five or more units at each address. Structures could be classified with a fair degree of accuracy for making these divisions. In Dallas residential or apartment house construction is such that structures showing occupancy by five or more families are usually rooming houses, in which the number of units varies with the size and number of families. The more expensive apartment houses are definitely identifiable, because each unit is separate and designated.

The second sort and count determined the number of families occupying the units counted, by groups showing one, two, three, four, or five families.

Basic Tables III and IV (one such for each tract) covered all years of survey. The data contained in these tables refer to *units* of occupancy, but do not attempt otherwise to classify the individual structures. Also it must be noted that the number of families given in Table IV does not indicate the size of the families concerned. However, the approximate size of the families may be calculated from the basic tables dealing with employment.

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<sup>15</sup>See Appendix, pp. 23, 24, Forms 8 and 9.

## APPENDIX

Yr	Ten	Address	Tr	Occupation & Industry	Number		
					Per	Emp	Fam
23							
24							
25-26							
27							
28							
29							
30							
31							
32							
33-34							
34-35							
36							
37							
38							

**Form 1—Family Mobility Name File Card.**

Tract	St. No.	Street Name					
Unit No:							
Use "x" in Check Position:							
Yr.	Residential			Commer.		Indust.	
	Vac	Occ	#F	Vac	Occ	Vac	Occ
23							
24							
25-26							
27							
28							
29							
30							
31							
32							
33-34							
34-35							
36							
37							
38							

Form 2—Family Mobility Address File Card.

PAGE NOS.	YEAR	SECTION	
TRANSCRIBED BY		NUMBER	NUMBER
C T S D			
NEW CARDS			
TOTAL			
INACTIVE CARDS			
NET TOTAL			
VERIFIED BY			

Form 3—Transmittal Slip.

POPULATION MOBILITY SURVEYS	
WPA Projects 10997—12428	Dallas, Texas—Houston, Texas
COUNT SLIP NO. 1	
Years.....	Tract No.....
1. Total Cards First Year	.....
2. Cards Disappearing Second Year	.....
3. Cards Changing Tract Second Year	.....
4. Total Cards in Tract 1st Year NOT in Tract 2nd Year	.....
5. Cards at Same Address Second Year	.....
6. Cards Moved Within Tract Second Year	.....
7. Total Cards in Tract Both Years	.....
8. New Cards in Tract Second Year	.....
9. Cards from Other Tracts	.....
10. Total Cards Second Year	.....

Form 4—Family Mobility Transcription Count Slip.

POPULATION MOBILITY SURVEYS	
WPA Projects 10997 12428	Dallas, Texas Houston, Texas
COUNT SLIP NO. 2	
Years.....	
----- No. of Cards	
From.....	To.....
Counted by.....	Verified by.....

Form 5—Family Mobility Transcription Count Slip.

Movement In and Out of Census Tract from One Directory to the Next

INTER-TRACT MOVEMENT OF FAMILIES

Basic Table I

Population Mobility Survey  
Dallas, Texas—W. P. No. 10997  
Houston, Texas—W. P. No. 12428

Tract Number.....

Occupational Class.....

	1923-24		1924-26		1925-27		1927-28		1937-38	
	In 1	Out 2	In 3	Out 4	In 5	Out 6	In 7	Out 8	In 25	Out 26
Population 1st yr.		X		X		X		X		X
Population 2nd yr.		X		X		X		X		X
In city both yrs.		X		X		X		X		X
In tract both yrs.		X		X		X		X		X
Not moved		X		X		X		X		X
Intra-tract moves		X		X		X		X		X
Total tract moves										
Inter-city moves										
Inter-tract moves										
Tract number	1									
" "	2									
" "	3									
" "	4									
" "	5									
" "	6									
" "	7									
" "	8									
" "	9									
" "	10									
" "	11									
" "	12									
" "	13									
" "	14									
" "	15									
" "	16									
" "	17									
" "	70									
" "	71									

FAMILIES AND POPULATION BY FAMILY SIZE  
AND NUMBER OF PERSONS EMPLOYED

Basic Table II

Population Mobility Survey  
Dallas, Texas—W. P. No. 10997  
Houston, Texas—W. P. No. 12428

Year of Origin..... Tract No.....

Persons Employed	Total Employed	Family Size (Number of Persons in Family)								Twelve or More
		One	Two	Three	Four	Five	Six	Seven		
None										
One										
Two		/////								
Three		/////	/////							
Four		/////	/////	/////						
Five		/////	/////	/////	/////					
Six		/////	/////	/////	/////	/////				
Seven		/////	/////	/////	/////	/////	/////			
Eight		/////	/////	/////	/////	/////	/////	/////		
Nine		/////	/////	/////	/////	/////	/////	/////	///	
Ten		/////	/////	/////	/////	/////	/////	/////	///	
Eleven		/////	/////	/////	/////	/////	/////	/////	///	
Twelve or More		/////	/////	/////	/////	/////	/////	/////	///	///

Form 7.

DISTRIBUTION OF OCCUPANCY UNITS BY  
VACANCIES AND TYPE OF OCCUPANCY

Basic Table III

Population Mobility Survey  
Dallas, Texas—W. P. No. 10997  
Houston, Texas—W. P. No. 12428

Tract No.....

Years of Survey	Types* of Units	Total Units	Vacant Units	Occupied Units
1923	R			
	C			
	I			
	R & O			
	C & I			
	All			
1924	R			
	C			
	I			
	R & O			
	C & I			
	All			
1925 & 1926	R			
	C			
	I			
	R & O			
	C & I			
	All			
1938	R			
	C			
	I			
	R & O			
	C & I			
	All			

\*R—Residence      C—Commercial      I—Industrial  
R & O—Residence & Other      C & I—Commercial & Industrial  
All—All Units

DWELLING UNITS BY MULTIPLE AND OWNER OCCUPANCY  
Basic Table IV

Population Mobility Survey  
Dallas, Texas—W. P. No. 10997  
Houston, Texas—W. P. No. 12428

Tract No.....

Years of Survey	Type of Structure (No. of Units)	All Units					Occupied by One Family			Occupied by Five or More Families		
		Total	Vacancies	Occupied			Total	By Owner	Not by Owner	Total	By Owner	Not by Owner
				Total	By Owner	Not by Owner						
1923	1											
	2											
	3											
	4											
	5+											
	Totals	XXX										
1924	1											
	2											
	3											
	4											
	5+											
	Totals	XXX										
1938	1											
	2											
	3											
	4											
	5+											
	Totals	XXX										

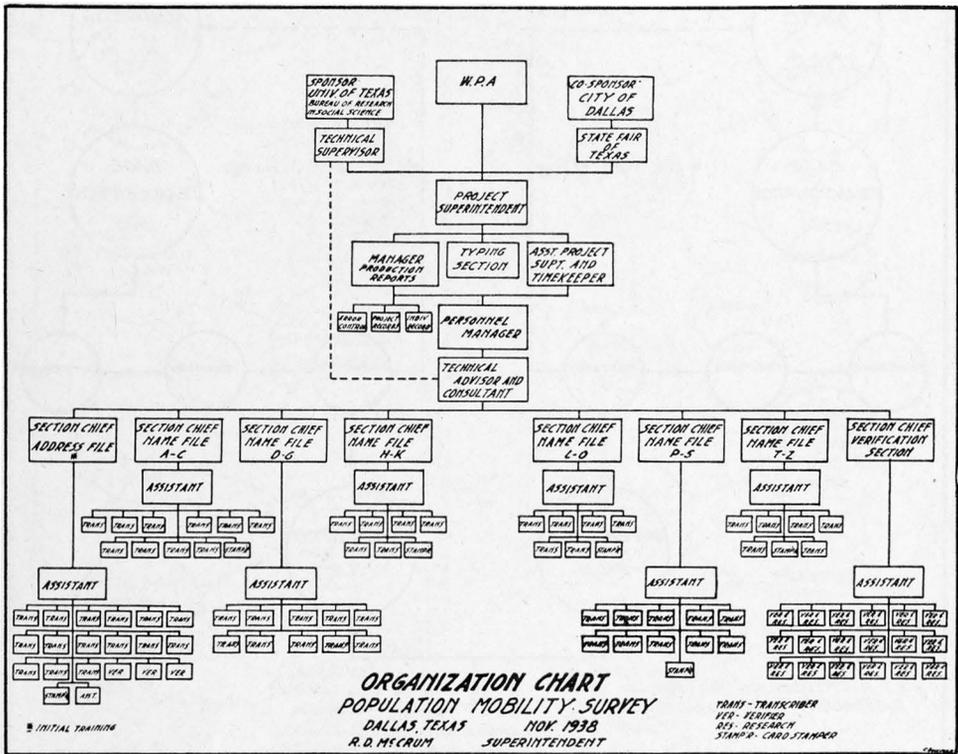


Figure 1.

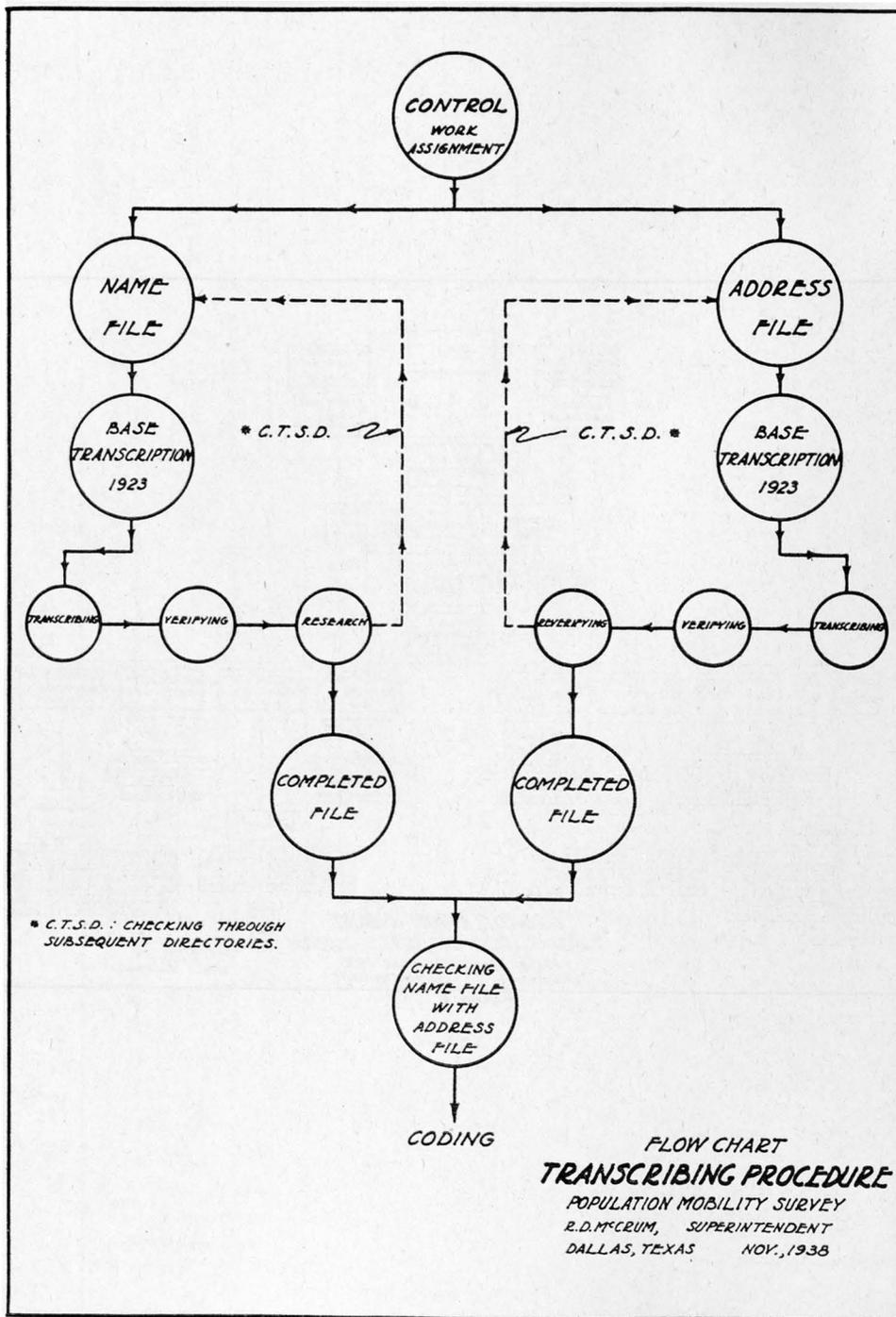


Figure 2

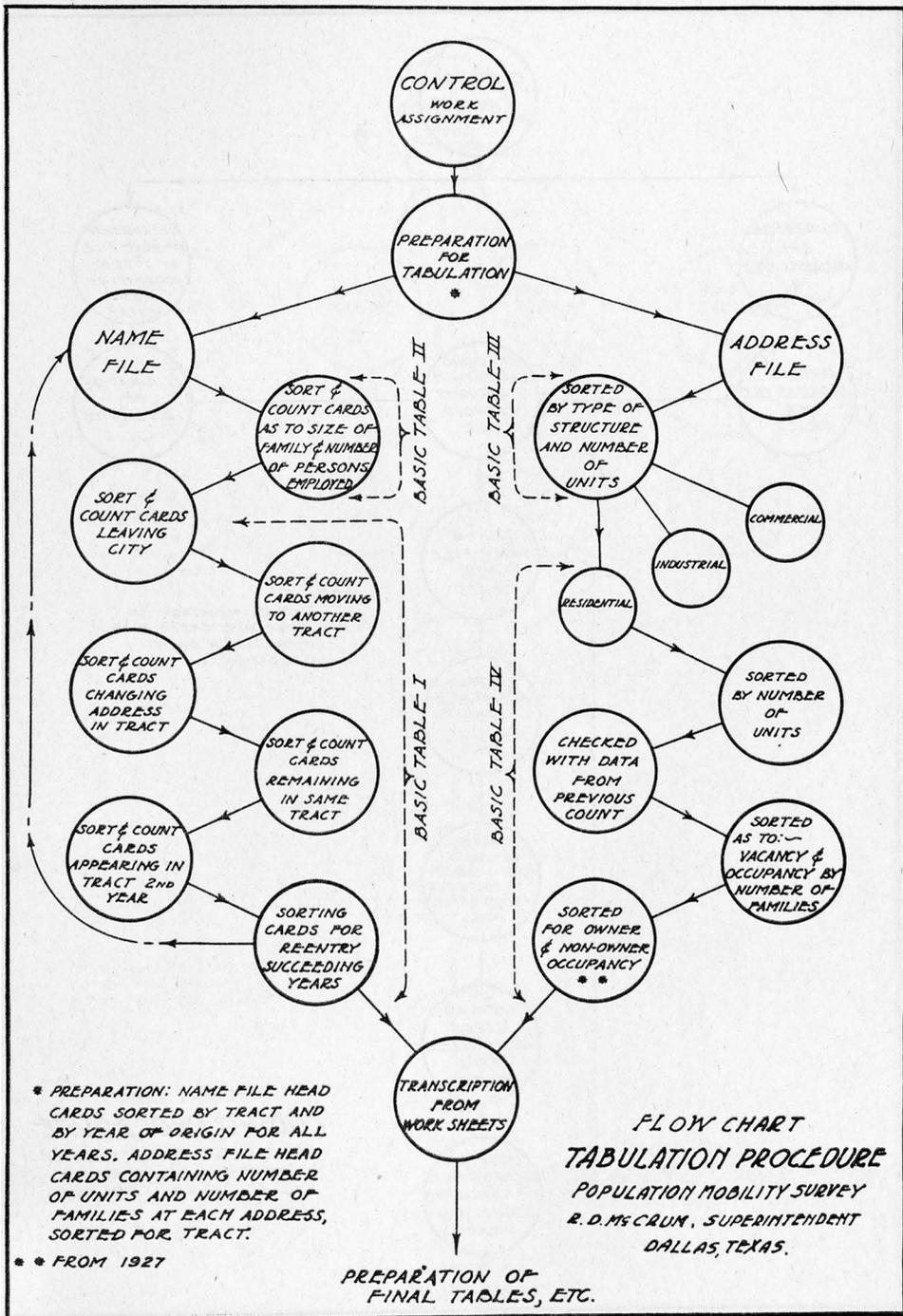


Figure 3.

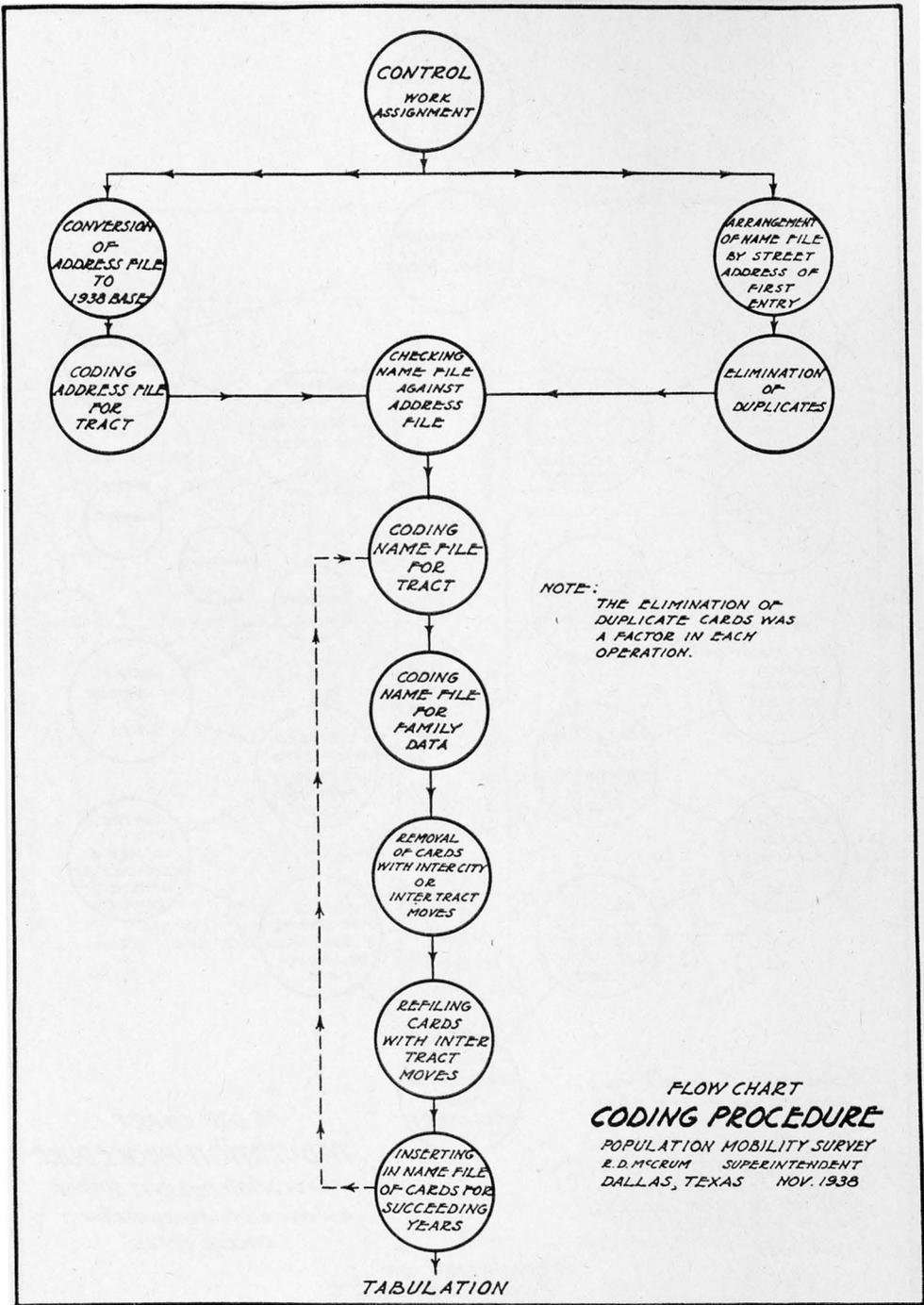


Figure 4.

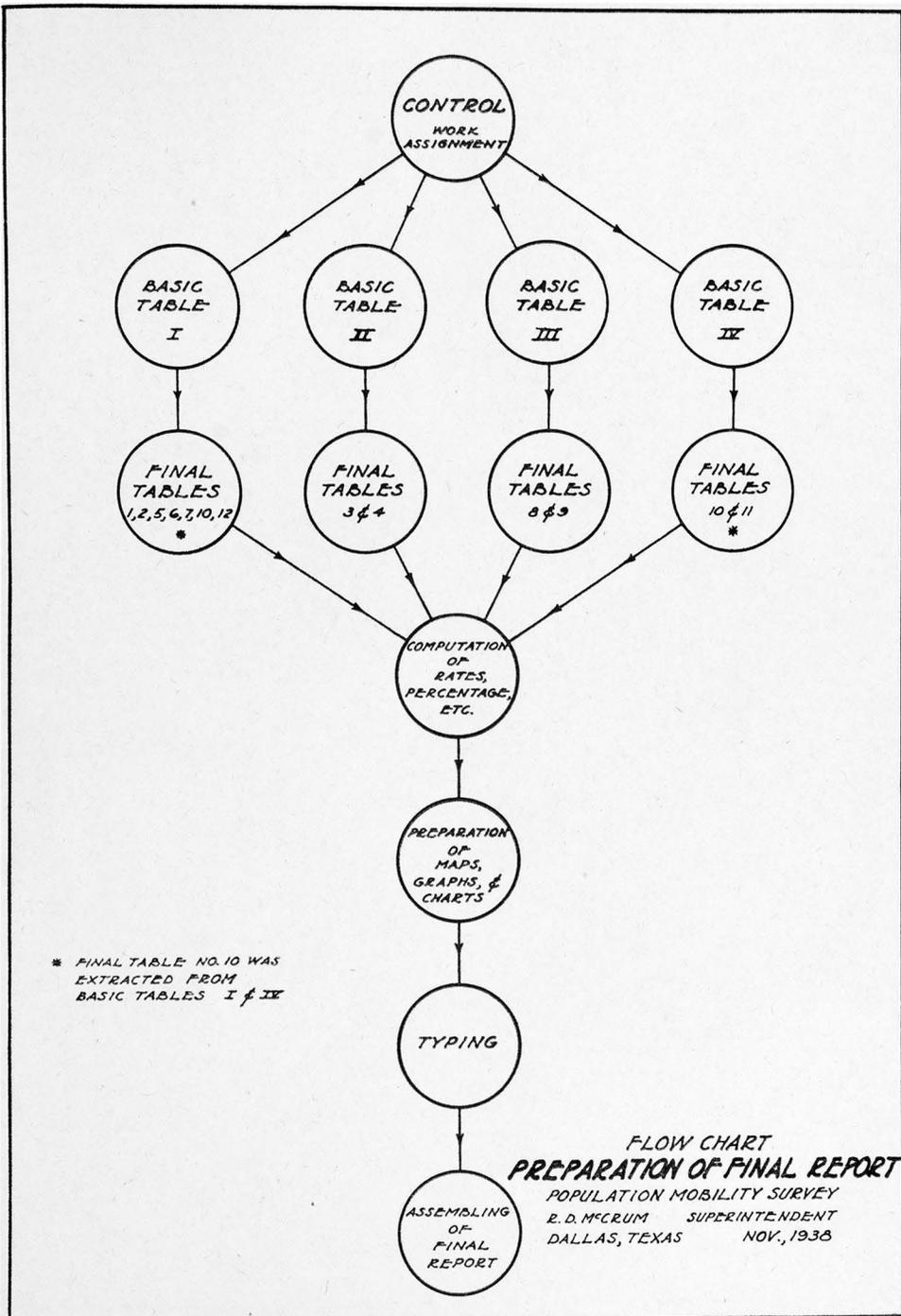


Figure 5.

