

**SMALL-AREA POPULATION ESTIMATES
FOR THE CITY OF ST. LOUIS, 1960-1972,
WITH A MODEL FOR UPDATING THEM**

PREPARED FOR THE NATIONAL SCIENCE FOUNDATION

PETER A. MORRISON

**R-1373-NSF
SEPTEMBER 1973**

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PREFACE

The work reported here was done for the Rand Urban Policy Analysis Program, which is sponsored by the National Science Foundation. The Urban Program has concentrated its efforts on research and analysis in three American metropolitan areas: San Jose, Seattle, and St. Louis. The immediate purpose of this report is to offer St. Louis policymakers the nucleus of a system for monitoring changes in its population on a current basis. The report should interest urban policymakers in general, however. Although the analysis is oriented specifically to demographic trends in St. Louis, the model described is potentially applicable in many cities.

* * * * *

I am grateful to Dr. Melvin Tess, Deputy Health Commissioner, and Ms. Eugenia Pearson of the Division of Health, St. Louis Department of Health and Hospitals, for their cooperation in compiling the vital statistics data for this analysis. Rand colleagues Julie DaVanzo and Daniel Relles offered valuable advice in refining the estimating model.

SUMMARY

This report presents annual small-area estimates of population in the City of St. Louis for the post-1960 years. These estimates have been prepared for the white and nonwhite population in each of the city's 26 health districts. They were intended for use in a study of neighborhood change conducted as part of Rand's broader program of urban analysis in St. Louis. The detailed data are presented here for a wider audience of city policymakers and researchers who need to monitor small-area changes in the population's size and racial composition annually, not on a decennial "snapshot" basis. The report documents our estimating model so that it can be used to update these figures in the future. The model draws primarily on the vital statistics reported annually by the City Department of Health and Hospitals, and is calibrated against the 1960 and 1970 Census benchmarks. It affords St. Louis a ready means of maintaining up-to-date demographic information for small areas of the city—health districts or even census tracts.

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I. INTRODUCTION

St. Louis is a city undergoing rapid demographic change. During the 1960s, some areas of the city registered a gradual increase in population, others a precipitous decline; still others underwent an almost total transition from white to black. Each of these changes—growth, decline, and racial turnover—carries weighty implications for the delivery of municipal services and the planning of public investment. Each has occurred at a tempo to be measured in years rather than decades, yet St. Louis has had no effective way to monitor these significant population changes on a current basis. As late as 1969, for example, local estimates placed the City's population at 711,000, fully 14 percent higher than the actual figure enumerated by the U.S. Census of Population just one year later.

This report has two purposes. First, it presents annual small-area estimates of population for the post-1960 years. These estimates have been prepared separately for the white and nonwhite populations in each of the city's 26 health districts.* They were intended for use in a study of neighborhood change conducted as part of Rand's broader program of urban analysis in St. Louis. The detailed data are presented here for a wider audience of city policymakers and researchers who need to monitor small-area changes in the population's size and racial composition annually, not on a decennial "snapshot" basis.

The second purpose is to document our estimating model so that it can be used to update these figures in the future. The model draws primarily on the vital statistics reported annually by the City Department of Health and Hospitals, and is calibrated against the 1960 and 1970 Census benchmarks. It affords St. Louis a ready means of maintaining up-to-date demographic information for small areas of the city—health districts or even census tracts.

* "Nonwhite" includes blacks, American Indians, Orientals, and other races, but in St. Louis, blacks make up 99 percent of the nonwhite population. Health district definitions are given in the Appendix. The choice of health districts was dictated by two considerations: (1) they are small areal units, comprising between 3 and 7 census tracts each; (2) the requisite input data for estimating populations (vital statistics by place of residence) are reported regularly and currently by health district and are available for prior years.

II. SIGNIFICANCE OF UP-TO-DATE POPULATION ESTIMATES

Up-to-date estimates of the size, composition, and spatial distribution of a city's population are needed for three central purposes: (1) setting the level of municipal services to be provided; (2) determining the effectiveness of these services; and (3) detecting symptoms of future problems that may call for advance action. Broader policy decisions concerned with economic development, race relations, income redistribution, and the quality of urban life, also hinge on patterns of demographic change. But typically, municipal policymakers must work with inexact and often outdated population estimates.

A city can keep track of its population in three ways. One is to conduct a *sample survey* at frequent intervals. A second is to use *standardized estimating models* with fixed input data requirements, and establish procedures for assembling these data as a by-product of metropolitan administrative functions. This is a satisfactory approach if the city can induce its bureaucratic environment to supply data promptly and regularly. A principal drawback, however, is inflexibility: because they are held to a fixed set of data requirements, standardized estimating models do not link readily with other kinds or formats of symptomatic data that may be available.* Such models have generally been developed for applications at or above the county level, for which the desired types of data are almost always available. Focusing on a finer areal scale within a city (e.g., health districts or census tracts) limits the range of available input data. A third approach, therefore, is to rely on *whatever data are readily accessible on a timely basis* and then determine what, if anything, they can reveal about the population's current status. This approach is opportunistic and flexible. It adapts the method to the data available, instead of the reverse.

Many types of data are useful for tracing population trends over time. As a general rule, any data series is potentially useful if: (1) it is coded down to small areal units within a city; (2) it contains compositional distinctions (age, sex, race, income, welfare status, etc.); (3) it is available on a regular and timely basis. In St. Louis, vital statistics fulfill all of these conditions.

* By *symptomatic data*, we mean records of events that occur with predictable regularity in a population (e.g., births and deaths) or of population-related objects and services (e.g., school attendance, occupied dwelling units, residential telephones, electric and water meters, voter registrations, motor vehicle licenses). Although recorded for other purposes, these data are good indicators of current population size.

III. ESTIMATING MODEL AND PROCEDURES

The model used here is a log linear regression formulation relating changes in a population to changes in two symptomatic measures: annual numbers of births and deaths. It is one of several types of estimation models that have been used at the county level,* but is applied here to much smaller areas.

Briefly, the model relates observed changes in each health district's population to changes in the number of vital events the population generates. The basic form of this model is:

$$\Delta \log P_t(i) = \alpha_t + \beta [\Delta \log B_t(i)] + \gamma [\Delta \log D_t(i)] + \epsilon_t \quad , \quad (3.1)$$

where Δ = one-year change (e.g., $\Delta x_t = x_t - x_{t-1}$),

$P_t(i)$ = population at year t of health district i ,

$B_t(i)$ = number of births during year t to residents of health district i ,

$D_t(i)$ = number of deaths during year t of residents of health district i ,

α_t = indicator of citywide change in population during year t ,

ϵ_t = random error at year t .

Thus, the percentage change in a given health district's population is defined as having two components: (1) a citywide component, based on independent estimates of annual population change for the entire city (indexed by α_t); and (2) a district component, based on percentage changes in a district's births and deaths (indexed by $\Delta \log B_t(i)$ and $\Delta \log D_t(i)$). The district component is, in effect, a "fine tuning" adjustment of the citywide component.

CONSTRUCTING THE ESTIMATING EQUATIONS

Since the population of individual health districts, $P_t(i)$, is enumerated only at ten-year census intervals, Eq. (3.1) must be rearranged so that β and γ can be estimated. Observe first that a formal implication of the equation is:

* These models are discussed in greater detail in Peter A. Morrison, *Demographic Information for Cities: A Manual for Estimating and Projecting Local Population Characteristics*, The Rand Corporation, R-618-HUD, June 1971.

$$\Delta^k \log P_t(i) = [\alpha_t + \alpha_{t-1} + \dots + \alpha_{t-k+1}] + \beta [\Delta^k \log B_t(i)] \quad (3.2)$$

$$+ \gamma [\Delta^k \log D_t(i)] + [\epsilon_t + \epsilon_{t-1} + \dots + \epsilon_{t-k+1}] ,$$

where $\Delta^k \equiv k$ -year change. Thus, the parameters in Eq. (3.1) can be estimated from health district data for just the two years 1960 and 1970.

Regression analysis was performed separately for whites and nonwhites, since the two groups exhibit somewhat different crude birth and death rates.* This analysis yielded the following two equations for the 1960-1970 decade (t-ratios are shown in parentheses):

$$\text{Whites: } \Delta^{10} \log P_{1970}(i) = -0.0015 + 0.3567 \Delta^{10} \log B_{1970}(i) \quad (3.3)$$

$$(0.03) \quad (5.81)$$

$$+ 0.6596 \Delta^{10} \log D_{1970}(i)$$

$$(5.82)$$

$$\bar{R}^2 = 0.976$$

Standard error of estimate = 0.077

Degrees of freedom = 19

$$\text{Nonwhites: } \Delta^{10} \log P_{1970}(i) = 0.2360 + 0.7465 \Delta^{10} \log B_{1970}(i) \quad (3.4)$$

$$(2.99) \quad (3.90)$$

$$+ 0.1742 \Delta^{10} \log D_{1970}(i)$$

$$(0.76)^\dagger$$

$$\bar{R}^2 = 0.953$$

Standard error of estimate = 0.142

Degrees of freedom = 10

Health districts that accounted for fewer than 20 births or fewer than 20 deaths in either 1960 or 1970 were excluded from the regression analysis (thus eliminating 4 of the 26 health districts for Eq. (3.3) and 13 for Eq. (3.4)).

PREPARING POPULATION ESTIMATES

In estimating population for intercensal years (1961-1969), we can use the 1960 and 1970 Censuses as benchmark points. To trace intervening population trends for each health district, we could use Eqs. (3.3) and (3.4) to estimate either forward from 1960 or backward from 1970. Our approach entails doing both and weighting each

* These differences arise because both fertility and mortality rates are higher among nonwhites, and because the nonwhite population's age structure is considerably younger.

† The coefficient for $\Delta^{10} \log D_{1970}(i)$ in Eq. (3.4) is not statistically significant, which can admit to one of two possible explanations. The first (which is standard) is that its value is zero. The second is that its value is nonzero but has been estimated imprecisely because of the small sample size. We opt for the latter conclusion on the grounds that the number of deaths is known to be related to the population's size. For this reason, the variable has been retained in Eq. (3.4).

estimate according to its relative variance as derived from Eq. (3.2). For example, 1967 estimates were prepared by: (1) calculating the seven-year-forward $\Delta^7 \log P_{1967}(i)$ based on $\Delta^7 \log B_{1967}(i)$ and $\Delta^7 \log D_{1967}(i)$; (2) calculating the three-year-backward $\Delta^3 \log P_{1967}(i)$ based on 1970–1967 $\Delta^3 \log B_{1967}(i)$ and $\Delta^3 \log D_{1967}(i)$; (3) in each case forcing the sum of the 26 district estimates to equal the Census Bureau's estimate for the entire city;* and (4) combining the forward and backward estimates, weighted according to their variances. (In view of Eq. (3.2), the variance of k-year change estimates is easily shown to be proportional to k.) Forcing is accomplished by multiplying each health district's estimate by the following ratio, separately by race:

$$\text{Forcing ratio} = \frac{\text{Total city population, estimated by Census Bureau}}{\text{Sum of 26 health district estimates}}$$

This final step gives forced estimates that add up to the Census Bureau control totals.

For postcensal years (1971, 1972, . . .), since no terminal enumeration is available, we can use forward estimation only. Annual estimates have been prepared through 1972, the last year for which vital statistics are currently available. As data are released each year, these estimates can be updated with little difficulty on a desk calculator; or the procedure can easily be computerized.

As an example, health district estimates for 1973 should be prepared as follows:

1. Calculate $\Delta^3 \log B_{1973}(i)$ and $\Delta^3 \log D_{1973}(i)$ for each health district, separately for whites and nonwhites.**
2. Substitute $\Delta^3 \log B_{1973}(i)$ and $\Delta^3 \log D_{1973}(i)$ in Eqs. (3.3) and (3.4) to derive $\Delta^3 \log P_{1973}(i)$ for the 1970–1973 period.
3. Transform $\Delta^3 \log P_{1973}(i)$ to a rate of change $\Delta^3 P_{1973}(i)$ using a table of logarithms.
4. Multiply $\Delta^3 P_{1973}(i)$ by the *i*th health district's enumerated 1970 population to obtain the estimated 1973 population (unforced).
5. Force the sum of the 26 health district estimates to equal a reliable independent estimate of the city's total population, separately by race. (The Census Bureau's estimate is recommended).†

* Estimates of population for the City of St. Louis were prepared by the Bureau of the Census for every year but 1969 during the 1960s. (For that year, I have used an arithmetically interpolated value.) See U.S. Bureau of the Census, *Current Population Reports*, Series P-25, various issues.

The Census estimates do not distinguish the population by race. To make a racial split, the percentage of the population nonwhite was calculated from annual Department of Health estimates of the City's population, by race. These percentages were then used to split the Census Bureau's estimates. (Census estimates were used since they prove to be more accurate than Department of Health estimates.)

Since estimates for 1971 and 1972 have not yet been prepared, I have used extrapolated values as follows:

Year	White	Nonwhite	Total
1971	345,000	250,000	595,000
1972	336,400	248,600	585,000

**Vital statistics are available from the Department of Health and Hospitals, City of St. Louis.

† County Population estimates are published periodically in U.S. Bureau of the Census, *Current Population Reports*, Series P-25.

IV. INTERPRETING THE ESTIMATES

Tables 1 through 3 list population estimates produced by the model for 1961–1969 and 1971–1972, along with the 1960 and 1970 Census figures. Table 4 shows the percentage of nonwhite population in each health district for each year from 1960 through 1972.

Interpretation of these figures calls for circumspection and familiarity with their limitations. The method used here cannot take account of certain factors that modify the relationship between changes in numbers of births and deaths and changes in the number of people. For example, health districts may differ in ethnic or religious composition (and hence in their number of births per capita). The estimated regression equations combine this interdistrict variability into expressions of an average relationship between vital events and population. Estimates for individual districts may be expected to deviate from their actual (but unknown) values. As a rule of thumb, the reader should allow for a *minimum* margin of ± 500 around any estimate.

Despite their limitations, these annual estimates are effective for charting *trends over time* and *directions and approximate rates of change*. For example, examination of Health District 19 reveals that: (1) severe white depopulation began only after 1966, (2) the white population declined nearly 45 percent between 1966 and 1972, (3) the nonwhite population rose in the middle of the decade, but then began to decline after 1967. Clearly, 1966 and 1967 can be pinpointed as the years when demographic disequilibrium began.

Table 1
ESTIMATED WHITE POPULATION FOR ST. LOUIS CITY HEALTH DISTRICTS

Health District	(Census) 1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	(Census)		
		1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
1	30,063	29,147	29,122	30,162	29,648	30,544	29,021	27,945	28,338	28,944	28,500	30,193	29,232
2	21,404	21,754	21,715	22,457	22,688	22,879	19,535	20,766	22,296	19,896	20,184	21,054	19,322
3	22,457	21,430	21,671	21,711	23,205	22,705	22,160	21,303	20,882	20,966	20,288	19,734	21,798
4	14,685	13,660	14,432	14,001	13,030	12,633	13,254	13,517	12,271	11,951	13,410	11,574	12,598
5	21,084	15,879	14,160	12,111	12,488	10,098	8,852	9,217	7,816	6,737	5,782	4,788	4,249
6	12,935	8,533	6,404	5,428	4,456	3,914	3,343	2,612	2,849	2,273	1,582	1,519	1,395
7	29,274	27,279	26,988	25,478	24,234	25,354	23,799	23,068	20,807	19,645	16,862	14,243	12,141
8	13,077	13,176	12,740	11,428	13,257	12,405	12,091	12,687	11,406	11,919	11,793	11,983	11,294
9	18,095	15,967	16,507	15,576	12,713	12,854	12,502	10,485	11,100	9,874	8,490	7,264	5,867
10	17,991	16,339	13,216	13,442	10,435	8,815	8,351	7,621	5,606	4,316	3,325	2,424	1,893
11	1,437	1,195	959	757	598	558	558	409	267	252	282	112	148
12	16,254	13,841	14,051	13,062	12,582	12,813	12,054	13,128	9,387	7,553	8,056	7,389	5,926
13	15,216	13,780	13,224	13,831	13,423	14,605	14,361	12,961	11,977	11,287	11,295	12,474	10,419
14	27,115	27,398	29,183	27,542	29,767	29,203	27,058	29,368	27,833	27,216	25,034	23,873	26,345
15	40,555	41,687	41,972	38,979	38,868	40,075	39,389	39,190	40,198	38,813	38,229	37,053	37,976
16	35,962	35,030	34,782	37,078	34,590	35,745	34,615	33,611	33,044	29,788	32,218	30,034	31,272
17	34,862	32,834	31,852	31,938	31,437	32,184	30,485	30,610	27,226	27,783	25,859	24,433	23,218
18	14,610	12,491	11,336	12,240	10,763	12,522	10,790	10,455	10,651	9,223	9,971	8,844	8,124
19	16,664	14,990	15,826	14,081	14,140	13,059	15,466	13,824	13,804	10,928	10,367	9,419	8,728
20	16,257	13,961	13,861	13,828	11,487	10,404	11,040	8,887	8,526	6,417	5,584	4,085	3,855
21	1,317	1,046	928	852	743	1,540	1,769	1,647	1,877	2,530	1,996	1,484	1,788
22	8,529	8,402	8,476	7,842	7,190	5,912	5,777	3,522	3,732	3,001	2,521	2,038	1,824
23	44,377	39,347	33,932	33,561	33,611	30,322	29,811	27,630	24,326	22,867	21,835	20,041	20,418
24	31,273	31,138	29,271	28,033	27,964	26,063	25,066	24,083	24,674	22,498	23,854	21,182	22,758
25	4,948	4,731	4,383	4,580	3,925	3,227	2,987	3,848	3,934	4,760	4,100	4,378	3,111
26	23,613	25,608	20,854	23,440	21,259	19,691	19,633	18,257	17,030	16,475	13,575	13,386	10,705
Total	534,004	500,638	481,345	473,438	458,501	450,124	433,767	420,651	401,857	377,912	364,992	345,001	336,404

Table 2
ESTIMATED NONWHITE POPULATION FOR ST. LOUIS CITY HEALTH DISTRICTS

Health District	(Census) 1960	ESTIMATED NONWHITE POPULATION FOR ST. LOUIS CITY HEALTH DISTRICTS														(Census) 1970	1971	1972
		1961	1962	1963	1964	1965	1966	1967	1968	1969	1970							
1	407	488	573	496	296	690	565	549	576	918	414	526	485					
2	27	31	36	43	50	58	66	81	96	105	113	119	374					
3	33	36	40	45	50	55	60	69	148	82	101	78	83					
4	130	215	191	236	219	381	381	513	277	115	242	166	299					
5	15,872	19,400	22,619	25,345	28,088	30,080	30,122	29,616	28,649	28,155	25,425	24,724	25,903					
6	42,955	46,238	48,451	53,649	53,052	54,421	55,946	55,577	54,212	55,277	52,416	47,663	44,389					
7	2,629	3,233	4,168	4,802	6,462	5,602	6,679	8,389	9,793	12,072	15,982	19,292	23,631					
8	100	244	252	248	173	188	190	321	258	489	705	1,697	2,333					
9	73	86	195	682	1,350	1,724	2,353	3,636	4,754	7,167	8,425	11,700	13,365					
10	16,922	16,084	18,305	20,372	23,013	25,233	27,842	29,673	30,002	32,676	31,680	30,535	30,206					
11	47,436	47,956	45,600	44,763	45,527	45,921	43,436	42,565	45,794	39,143	36,650	34,200	29,950					
12	15,057	15,588	15,766	14,266	15,495	15,087	16,246	16,246	17,645	17,929	16,584	15,991	15,356					
13	830	675	1,228	677	1,231	1,333	2,319	2,319	756	672	638	1,264	981					
14	38	43	50	68	78	90	108	108	127	214	148	231	166					
15	306	264	474	699	366	602	243	243	324	318	199	518	295					
16	89	91	158	103	273	308	118	118	141	122	222	372	371					
17	116	36	107	215	178	123	315	315	858	1,174	2,907	3,232	3,543					
18	4,402	4,578	4,363	4,462	5,233	5,359	5,062	5,062	4,208	5,009	4,518	4,245	4,622					
19	7,586	7,850	7,168	7,034	7,713	9,003	10,089	9,638	9,638	9,801	9,267	8,320	8,097					
20	5,958	6,748	6,466	7,348	8,574	8,718	8,530	8,530	9,724	9,704	10,409	10,076	10,343					
21	38,078	33,675	31,967	29,541	29,758	29,297	30,095	30,095	31,101	26,192	21,099	16,454	15,536					
22	6,987	5,825	7,240	8,707	8,870	9,155	9,483	9,483	8,205	8,918	7,529	6,971	6,661					
23	1,225	705	671	939	1,119	1,072	1,593	1,593	1,752	1,951	2,607	2,471	2,576					
24	82	78	75	70	173	64	108	108	106	96	143	180	193					
25	8,180	7,570	7,443	8,189	7,620	8,565	8,378	8,378	7,897	7,955	6,314	6,351	5,946					
26	504	624	550	719	1,008	1,491	1,776	1,776	2,204	2,503	2,507	2,624	2,897					
Total	216,022	218,361	224,156	234,559	241,501	251,880	257,937	265,452	269,245	268,757	257,244	250,000	248,601					

Table 3
ESTIMATED TOTAL POPULATION FOR ST. LOUIS CITY HEALTH DISTRICTS

Health District	(Census) 1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	(Census) 1970	1971	1972
1	30,470	29,635	29,695	30,658	29,944	31,234	29,586	28,494	28,914	29,862	28,914	30,719	29,717
2	21,431	21,785	21,751	22,500	22,738	22,937	19,601	20,847	22,392	20,001	20,297	21,173	19,696
3	22,490	21,466	21,711	21,756	23,255	22,760	22,220	21,372	21,030	21,048	20,389	19,812	21,881
4	14,815	13,875	14,623	14,237	13,249	12,852	13,635	14,080	12,548	12,066	13,652	11,740	12,897
5	36,906	35,279	36,779	37,456	40,576	40,178	38,974	38,833	36,465	34,892	31,207	29,512	30,152
6	55,890	54,771	54,855	59,077	57,508	58,335	59,289	58,189	57,061	57,550	53,998	49,182	45,784
7	31,903	30,512	31,156	30,280	30,696	30,956	30,478	31,457	30,600	31,717	32,844	33,535	35,772
8	13,177	13,420	12,992	11,676	13,430	12,593	12,281	13,008	11,664	12,408	12,498	13,680	13,627
9	18,168	16,083	16,702	16,258	14,063	14,578	14,885	14,121	15,854	17,041	16,915	18,964	19,232
10	34,913	32,423	31,521	33,814	33,448	34,048	36,193	37,294	35,608	36,992	35,005	32,959	32,099
11	48,873	49,151	46,559	45,520	46,125	46,479	43,994	42,974	46,061	39,395	36,932	34,312	30,098
12	31,311	29,429	29,817	28,491	26,848	28,308	27,141	29,374	27,032	25,482	24,640	23,380	21,282
13	16,046	14,455	14,452	14,612	14,100	15,836	15,694	15,280	12,733	11,959	11,933	13,738	11,400
14	27,153	27,436	29,233	27,601	29,835	29,281	27,148	29,476	27,960	27,430	25,182	24,104	26,511
15	40,861	41,951	42,446	39,944	39,567	40,441	39,991	39,433	40,522	39,131	38,423	37,571	38,271
16	36,051	35,121	34,940	37,304	34,693	36,018	34,923	33,729	33,185	29,910	32,440	30,406	31,643
17	34,978	32,870	31,959	31,977	31,652	32,362	30,608	30,925	28,084	28,957	28,766	27,665	26,761
18	19,012	17,069	15,699	16,702	15,409	17,755	16,149	15,517	14,859	14,232	14,489	13,089	12,746
19	24,250	22,840	22,994	21,273	21,174	20,772	24,469	23,913	23,442	20,729	19,634	17,739	16,825
20	22,215	20,709	20,327	20,791	18,835	18,978	19,758	17,417	18,250	16,121	15,993	14,161	14,198
21	39,395	34,721	32,895	31,070	30,284	31,298	31,066	31,742	32,978	28,722	23,095	17,988	17,324
22	15,516	14,227	15,716	15,646	15,897	14,782	14,932	13,005	11,937	11,919	10,050	9,009	8,485
23	45,602	40,052	34,603	34,518	34,550	31,441	30,883	29,223	26,078	24,818	24,442	22,512	22,994
24	31,355	31,216	29,346	28,221	28,034	26,236	25,130	24,191	24,780	22,594	23,997	21,362	22,951
25	13,128	12,301	11,826	12,325	12,114	10,847	11,552	12,226	11,831	12,715	10,414	10,729	9,057
26	24,117	26,232	21,404	24,290	21,978	20,699	21,124	20,033	19,234	18,978	16,082	16,010	13,602
Total	750,026	718,999	706,001	707,997	700,002	702,004	691,704	686,103	671,102	646,669	622,236	595,001	585,005

Table 4
 PERCENTAGE OF ESTIMATED NONWHITE POPULATION FOR ST. LOUIS CITY HEALTH DISTRICTS

Health District	(Census)												(Census)
	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
1	1.3	1.6	1.9	1.6	1.0	2.2	1.9	1.9	2.0	3.1	1.4	1.7	1.6
2	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.6	0.6	1.9
3	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.7	0.4	0.5	0.4	0.4
4	0.9	1.5	1.3	1.7	1.7	1.7	2.8	3.7	2.2	1.0	1.8	1.4	2.3
5	43.0	55.0	61.5	67.7	69.2	74.9	77.3	76.3	78.6	80.7	81.5	83.8	85.9
6	76.9	84.4	88.3	90.8	92.3	93.3	94.4	95.5	95.0	96.1	97.1	96.9	97.0
7	8.2	10.6	13.4	15.9	21.1	18.1	21.9	26.7	32.0	38.1	48.7	57.5	66.1
8	0.8	1.8	1.9	2.1	1.3	1.5	1.5	2.5	2.2	3.9	5.6	12.4	17.1
9	0.4	0.5	1.2	4.2	9.6	11.8	16.0	25.7	30.0	42.1	49.8	61.7	69.5
10	48.5	49.8	58.1	60.2	68.8	74.1	76.9	79.6	84.3	88.3	90.5	92.6	94.1
11	97.1	97.6	97.9	98.3	98.7	98.8	98.7	99.0	99.4	99.4	99.2	99.7	99.5
12	48.1	53.0	52.9	54.2	53.1	54.7	55.6	55.3	65.3	70.4	67.3	68.4	72.2
13	5.2	4.7	8.5	5.3	4.8	7.8	8.5	15.2	5.9	5.6	5.3	9.2	8.6
14	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.5	0.8	0.6	1.0	0.6
15	0.7	0.6	1.1	2.4	1.8	0.9	1.5	0.6	0.8	0.8	0.5	1.4	0.8
16	0.2	0.3	0.5	0.6	0.3	0.8	0.9	0.3	0.4	0.4	0.7	1.2	1.2
17	0.3	0.1	0.3	0.1	0.7	0.6	0.4	1.0	3.1	4.1	10.1	11.7	13.2
18	23.2	26.8	27.8	26.7	30.2	29.5	33.2	32.6	28.3	35.2	31.2	32.4	36.3
19	31.3	34.4	31.2	33.8	33.2	37.1	36.8	48.2	41.1	47.3	47.2	46.9	48.1
20	26.8	32.6	31.8	33.5	39.0	45.2	44.1	49.0	53.3	60.2	65.1	71.2	72.8
21	96.7	96.9	97.2	97.3	97.5	95.1	94.3	94.8	94.3	91.2	91.4	91.7	89.7
22	45.0	40.9	46.1	49.9	54.8	60.0	61.3	72.9	68.7	74.8	74.9	77.4	78.5
23	2.7	1.8	1.9	2.8	2.7	3.6	3.5	5.5	6.7	7.9	10.7	11.0	11.2
24	0.3	0.2	0.3	0.7	0.2	0.7	0.3	0.4	0.4	0.4	0.6	0.8	0.8
25	62.3	61.5	62.9	62.8	67.6	70.2	74.1	68.5	66.7	62.6	60.6	59.2	65.7
26	2.1	2.4	2.6	3.5	3.3	4.9	7.1	8.9	11.5	13.2	15.6	16.4	21.3
Total	28.8	30.4	31.8	33.1	34.5	35.9	37.3	38.7	40.1	41.6	41.3	42.0	42.5

Appendix

DEFINITION OF 26 HEALTH DISTRICTS

Health districts in the City of St. Louis are composed of whole census tracts, as follows (see also Fig. 1):

<u>Health District Number</u>	<u>Health District Name</u>	<u>Constituent Census Tracts (1960 numbering)</u>
1	Carondelet	1-A,B,C,D,E,F,G,CVR
2	Gardenville	2-A,B,C,D,E
3	Southwest	3-A,B,C,D,E,F,G
4	Oakland	4-A,B,C,D
5	West End	5-A,B,C,D,E
6	Sherman Park	6-A,B,C,D,E,F,G
7	Northwest	7-A,B,C,D,E,F,G
8	Baden	8-A,B,C,D,E
9	O'Fallon	9-A,B,C,D,E
10	Fairgrounds	10-A,B,C,D,E
11	Garfield	11-A,B,C,D,E
12	Forest Park	12-A,B,C,D
13	Fairmont	13-A,B,C,D
14	South Hampton	14-A,B,C
15	Cleveland	15-A,B,C,D,E,F,G
16	Tower Grove	16-A,B,C,D,E
17	Compton	17-A,B,C,D
18	Rankin	18-A,B,C,D,E,
19	Lindell	19-A,B,C
20	Yeatman	20-A,B,C
21	Beaumont	21-A,B,C,D
22	Mill Creek	22-A,B,C,D
23	Soulard	23-A,B,C,D,E
24	Cherokee	24-A,B,C,D,E
25	Downtown	25-A,B,C,D
26	Hyde Park	26-A,B,C,D,E

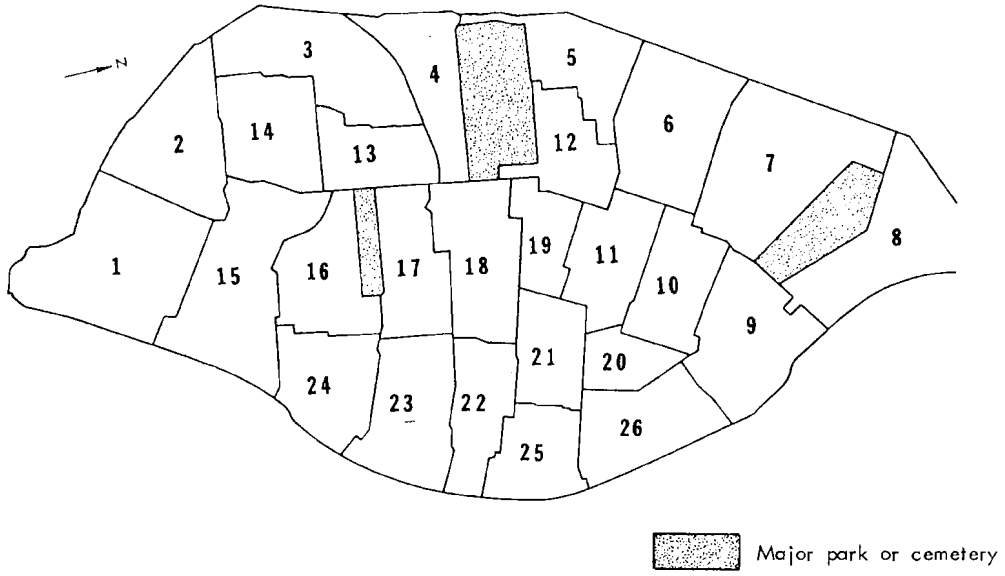


Fig. 1—St. Louis City Health Districts