

Age Pyramids for Indiana's Counties and Larger Cities

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In a discussion of migration and population change in Indiana over the decade 1940-50, it was suggested that there might be some meaningful differences in the age structures of counties having significant gains and losses by migration (1). Considerable investigation of this thesis has produced two preliminary conclusions: first, that there is no clearly discernible areal relationship between migration and age structure at the time of the 1950 Census of Population, although some such relationships might be detected by comparing migration with changes in age structure during the intercensal period; second, that areal variations in the age structure of Indiana's population at the time of the 1950 Census are worthy of study for their own inherent interest.

It is the purpose of this paper, therefore, to consider areal variations in the age structure of Indiana's population in 1950. This purpose is best served by the construction and examination of conventional

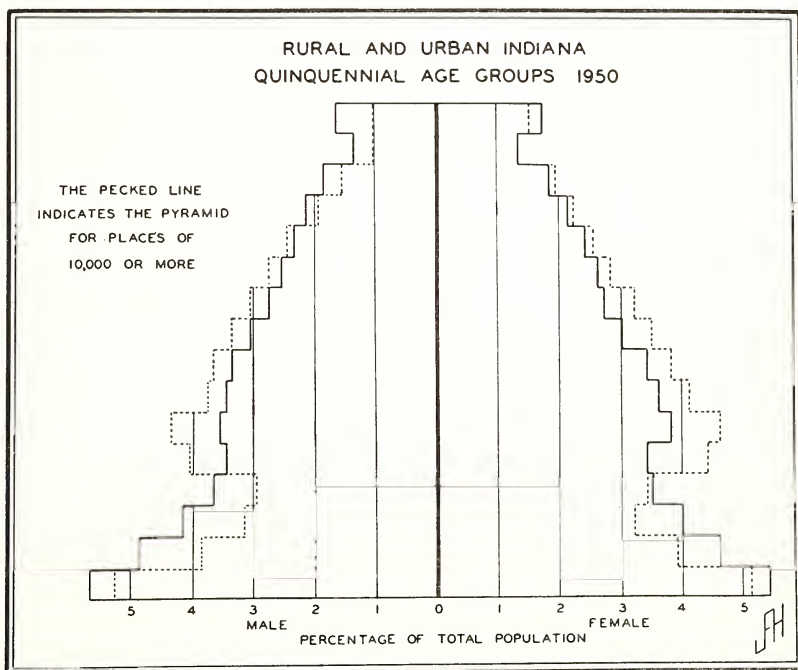


Figure 1.

age-sex pyramids (Fig. 1). Quinquennial age groups are placed on the vertical scale, with the youngest group at the base and the group 75

and over at the apex. The length of each horizontal bar is proportional to the percentage of the total population in the specified age group, with males to the left of the center line and females to the right. The total pyramid equals one hundred percent, or unity.

The age-sex pyramid for Indiana in 1950 is strikingly similar to the pyramid for the entire country, which is indicated by broken lines where it deviates from the state pyramid (Fig. 1). Indiana has slightly greater concentrations in the age groups over 55, but the departure from the national figure is no more than two-tenths of a percentage point except in the case of males over 75. Only 8.9 percent of Indiana's population in 1950 were in the males over 55 group, as compared with 8.1 percent for the nation; comparable figures for females were 9.4 percent for Indiana and 8.7 percent for the nation.

Conversely, Indiana is slightly below the national figure in age groups 15-19 and 30-49, but again the departure is no more than two-tenths of a percentage point for any single age-sex category. In cumulative totals of males in the age groups 30-49 Indiana has 13.2 percent, as compared with 13.8 for the nation, and for females in the same groups Indiana has 13.4 percent as against 14.1 percent for the nation.

If there had been no significant changes in birth and death rates, and no significant migration, the proportion of the population in each age group would decrease gradually from the bottom to the top of the pyramid, whereas deviations from this theoretical gradual decrease indicate changes in vital rates or in migration. The declining birth rate of the 1930's is clearly evident in both state and national pyramids, but it also appears that this "bubble in the population pipeline" is more characteristic of the state's larger cities than it is of smaller towns or the open country. The shaded inner pyramid represents that portion of the state's population in places of less than 10,000 persons at the time of the 1940 Census of Population (Fig. 1).

Comparison of city and "other" population age distributions is facilitated by consideration of a second pair of age-sex pyramids (Fig. 2). The dashed line represents the total 1950 population of places having more than 10,000 persons in 1940, whereas the solid line represents the rest of the state. The pyramid for small town and rural population is relatively regular, whereas the cities burgeon in the working age groups 20-60, but fall short in the older and younger groups. This is apparently due in large measure to migration from small towns and urban areas into the cities.

In cumulative age groups on the male side of the line, the groups under 20 contain 15.4 percent of the city population but 18.5 percent of the rest; the figures for groups 20-60 are 27.8 for the cities and 24.9 for the rest; and for groups over 60 we find 5.8 percent for the cities and 7.2 percent for the rest. Similar figures are found on the female side, with 15.6 percent of the total city population in the females under 20 group, but 17.5 percent of the rest; for groups 20-60 the cities have 28.9 percent and the rest only 24.9 percent; and both cities and the rest have 6.9 percent of their total population in female age groups over 60.

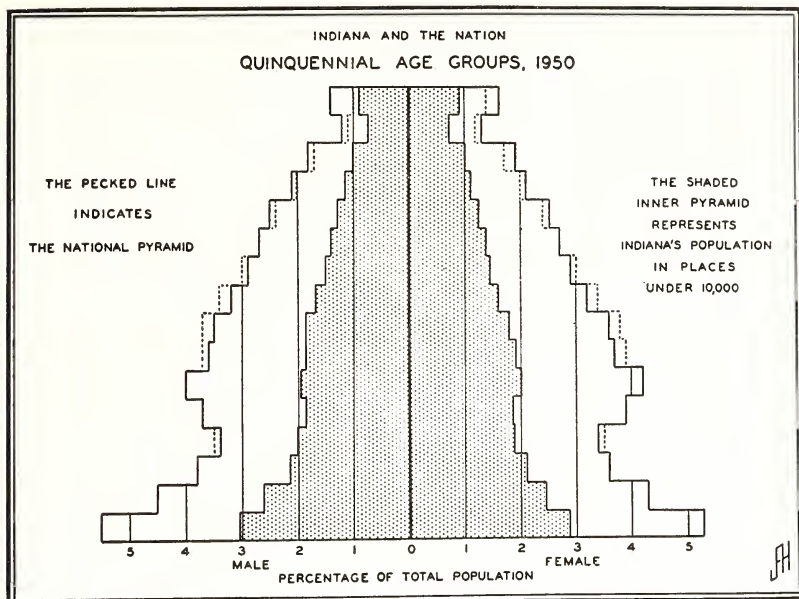


Figure 2.

Age-sex pyramids were constructed for individual Indiana cities in order to examine each city's distinctive pattern (Fig. 3). Each pyramid is centered on the location of the city, and the initial letter or letters in the name of the city appear beneath. It proved impractical to have the volume of each pyramid proportionate to the actual population of the city, but each pyramid does contain a number which indicates the 1950 population to the closest ten thousand. All data are for the year 1950, but I must remind you of the fact that the cities shown here are those which had a population of more than ten thousand in 1940, not in 1950. Whiting dropped below ten thousand persons during the intercensal decade, but this figure was exceeded by five cities not shown here—Hobart, Valparaiso, Wabash, Washington, and West Lafayette.

Colleges and universities produce the most unusual pyramids, with their large concentrations in age groups 15-30, or even 18-28, if our data were more precise. Indiana University gives Bloomington the most distinctive urban pyramid in the state. Wabash College gives Crawfordsville a similar but smaller concentration on the male side only. If Valparaiso's pyramid had been included, it would look more like Bloomington than like Crawfordsville, although the concentration on the female side would not be quite so pronounced as Bloomington's. The rest of the larger colleges and universities in Indiana are located outside the corporate limits of cities over ten thousand; some of them are evident on the next map.

Although there are broad general similarities in the pyramids of the non-college towns, there do appear to be two rather distinctly different types. Hammond and Gary offer good examples of the first

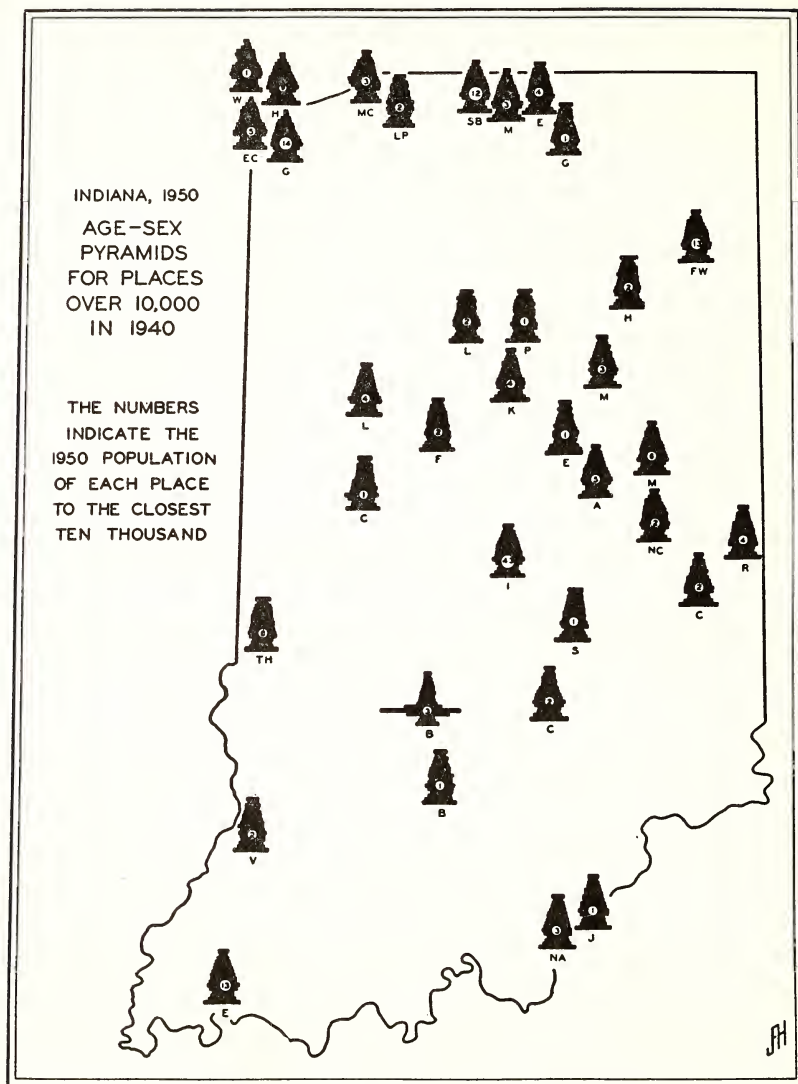


Figure 3.

type, which also characterizes Lafayette, Kokomo, Marion, Anderson, Muncie, Indianapolis, Connersville, Richmond, Columbus, Evansville, New Albany, and Jeffersonville. These pyramids have a wide base, a quite narrow "waist" in age groups 10-20, then reach a second maximum around age thirty and taper gradually to a small group 75 and over. This first type of pyramid appears to characterize vigorously growing towns; the bulge at age thirty consists in large measure of in-migrants, and the larger bulge under five is composed of their children. The large

population influx has reduced the older age groups to a relatively small proportion of the total, and the total number of older persons in these cities is disproportionately low even for the state's urban areas.

The second type of urban pyramid appears to characterize slowly growing or stagnating cities. Vincennes perhaps offers the best example, but one might also examine Bedford, Terre Haute, Shelbyville, Frankfort, Elwood, Logansport, Peru, Huntington, and LaPorte. These pyramids are almost "shapeless"; the straight-sided figures of Peru and Logansport certainly do not compare favorably with the lissome curves of

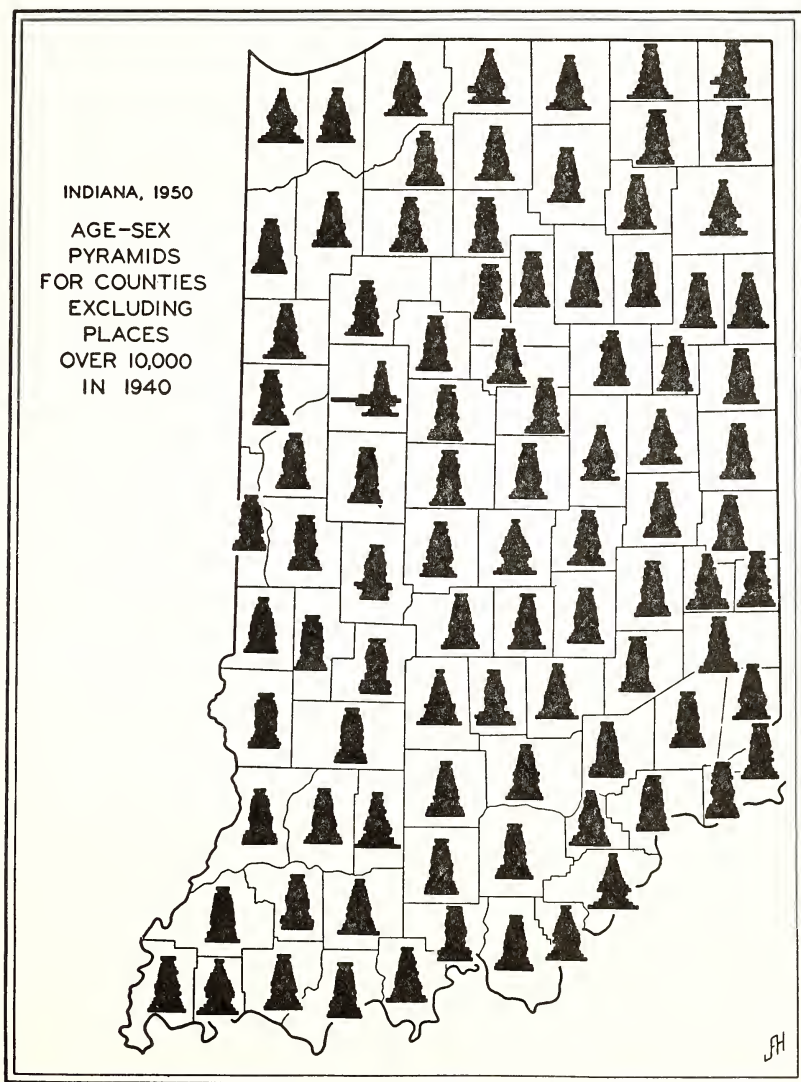


Figure 4.

Kokomo or Hammond. These cities would appear to be losing, rather than attracting, population in the thirty and over age groups, and they also have a larger share, both absolutely and relatively, of the state's older citizens.

The contrast between these two types of pyramids is even more pronounced in small towns and the open country, but first we should pay our respects to the exaggerated forms of Tippecanoe, St. Joseph, and Steuben Counties, or if you prefer, to Purdue, to Notre Dame, and to Tri-State College (Fig. 4). Valparaiso fails to put much of a bulge on Porter County, but DePauw makes itself known in Putnam County, and Indiana makes a small mark on Monroe. This latter bulge is in the age group 25-30, a bit old for college students, but just right for the married graduate students who live in the University's married housing project just outside the city limits. And the number of females in the 20-25 group indicates that some of their wives are a bit younger than the men they married!

On a more serious level, it is interesting to note that virtually all metropolitan counties have "growth" type pyramids: Lake (Chicago), St. Joseph (South Bend), Elkhart, Allen (Fort Wayne), Delaware (Muncie), Marion (Indianapolis), Vanderburgh (Evansville), and Clark (Louisville). Conversely, some of the more rural areas of the state are characterized by pyramids of astonishing shapelessness; look, for instance, at Jefferson, Spencer, Posey, Gibson, or Jay. Others show an obvious erosion of the working age groups, as people leave the county for jobs elsewhere. Crawford presents a good example, as do Brown, Fayette, and Pulaski. Other counties are deceptively regular; Morgan, for instance, or Lawrence, or (if we ignore students) Monroe. But this regularity is produced only by the departure of large numbers of people in the working age groups. And counties all over the state, but particularly those in the southwestern portion, have the high percentage of older persons which might almost be considered an index of rurality, at least in Indiana.

Another important concomitant of rurality in Indiana is the absence of that famous "bubble in the population pipeline." The low birth rates of the late 20's and the 30's show clearly in metropolitan counties, but there is virtually no evidence of them in the rural counties. This means, of course, that people in the working age groups have left rural areas for the cities. The move apparently begins in the 15-20 age group for females and in the 20-25 age group for males; and these are the age groups which have just been entered by the very small baby crop of the 30's.

Although the number of those entering the labor force will be smaller in the immediate future than in the immediate past, I believe that it is safe to assume that urban areas will continue to be able to compete successfully in the labor market. The farmer will manage with more machinery and less labor, but apparently the small towns and villages will be bled even whiter than in the past.

And if the small town and countryside are indeed bled white of their young people in the working (and child-bearing) age groups, another question is posed. These areas have traditionally fed the cities

with people; how can the city grow if it devours the source of its own demographic nourishment? The answer lies, I suspect, in a changing areal pattern of birth rates. I sincerely hope that some geographer will soon examine the thesis that the much-talked-about "baby boom" is primarily an urban phenomenon, compounded of a fantastic increase in urban birth rates and stagnating or declining rural rates. If this thesis is indeed valid, then in future we can expect the city to feed itself, population-wise, and even produce a surplus for export to its suburbs.

I should like to conclude with a statement of some of the general conclusions derived from this examination of age structure in Indiana, with some of their ramifications:

First, there is little or no "bubble in the population pipeline" of rural areas. This fact has considerable significance for future distribution of population, for migration of population, and the areal distribution of birth rates.

Second, Indiana's older persons are somewhat more concentrated in rural areas and in small towns than in larger cities. Realization of this distribution must underly any program for dealing with our aging population.

Third, evidence of migration can be found in age-sex pyramids, but there is no distinctive type of pyramid which characterizes those areas which lost significant numbers of persons by migration in the decade 1940-50. This relationship will have to be sought by an analysis of changes in age structures over the intercensal decade.

Fourth, the paramount factor in explaining the age structure of Indiana is location relative to an urban area. Students of geographic demography will have to focus their attention on the measurement of the influence of urban areas on adjacent population groups. I suggest that two lines of investigation appear to hold significant potentialities: (a) the delimitation of "zones of demographic influence" for individual cities, and (b) the delimitation of demographic regions (similar to our physiographic, climatic, agricultural, and manufacturing regions) which presumably will have metropolitan cores.

Literature Cited

1. JOHN FRASER HART, "Migration and Population Change in Indiana," *Indiana Academy of Science*, Volume 66, 1957, 195-203.