



LOUISIANA CITIES AND THE RANK-SIZE RULE

In the early 1900s, as numerical data became more abundant and quantitative methods were developed to analyze them, social scientists discovered a curious empirical regularity among urban areas. In most countries and regions, the largest (“primate”) city tended to have roughly double the population of the second-largest city, three times that of the third-largest, four times the fourth, five times the fifth, and so on. “If all the settlements of a country are ranked according to population size,” contended George Zipf, who first detected the trend, “the sizes of the settlements will be inversely proportional to their rank.” The pattern came to be known as the rank-size rule, and it recurred in rankings of river lengths, wealth distributions, business sizes, and word-use frequencies, which is how Zipf, a statistical linguist, first got interested in the phenomenon.

But when later research applied to modern cities demonstrated ample deviations to rank-size, geographers modified Zipf’s rule to what they call “the law of the primate city,” which emphasizes the ubiquity of dominant metropolises but expects variability in the size ratios of lesser ones.

The top ten cities of the United States in 2010 conform well to either version of the trend. New York’s 8.2 million people are roughly double Los Angeles’ 3.8 million, and third-ranking Chicago’s population is around one-third of New York’s. But the

regularity gets irregular when we look at metropolitan populations rather than those within city limits. Other countries demonstrate why geographers have backed away from the rank-size rule in favor of the primate city law: London and Paris are not twice the size of their second-ranked cities (Birmingham and Marseilles) but seven times larger; Bangkok, meanwhile, has 22 times the population of Nonthaburi.

The real value of these geographical principles derives from their use a tool to compare cities’ ranking curves and to examine if and why they differ. Why do some places, for example, have “spiked” curves, with extreme primate dominance, like Thailand, and others straighter trends, like China? Sometimes history provides a clear answer: Vietnam at first glance violates the law of the primate city, but of course Ho Chi Minh and Ha Noi used to be the leading cities of two separate countries. Measurement strategies add additional complexity: empirically speaking, Utah has a rather straight curve, until it is realized that most of its largest cities are in fact contiguous communities along the Wasatch Front. When regrouped by metropolitan areas, Utah’s straight line becomes spiked, and the greater Salt Lake City region becomes perfectly primate.

Louisiana offers an interesting case study. If we rank the state’s ten largest cities by corporate limits (rather than metropolitan areas), we see that their standings have remained quite stable for the better part of a century. Since the 1990s, their order has been, in descending order, New Orleans, Baton Rouge, Shreveport, Lafayette, Lake Charles, Kenner, Bossier City, Monroe, Alexandria, and Houma. What has changed has been their conformity to the rank-size rule. New Orleans once reigned supreme over all other Louisiana cities; its 1940 population, for example, measured five times more than Shreveport’s and 14

Shreveport, with a population of 199,331 as of the 2010 U.S. Census, ranks as Louisiana’s third largest city.



IMAGE COURTESY OF WIKIMEDIA COMMONS: SHREVEPORT-BOSSIER CONVENTION AND TOURIST BUREAU

times more than Baton Rouge's. Even with the explosive growth of the capital's population during World War II, New Orleans still outsized both it and Shreveport by five, more than the rank-size rule would have predicted. Louisiana's curve in this era was steep if not spiked, more like that of England or France or Thailand. No wonder there was political and cultural tension between New Orleans and the rest of the state: it was a major American city in an otherwise rural state sprinkled with a handful of small cities and hundreds of small towns.

Things changed later in the 20th century. For one, white and middle-class populations fled inner-cities for the suburbs—but they tended to flee the larger cities more so than smaller ones. Around the same time, the national interstate system was completed, which not only enabled flight from the largest cities but brought commerce and growth to hitherto isolated and smaller cities like Monroe and Lake Charles, enabling their growth. The oil and gas industry in this era brought new wealth to areas such as Houma and Lafayette, which had previously been on the fringes of the state's legacy industries of agriculture and shipping. Some small cities, such as Kenner, benefited from all of these factors. What resulted, from the 1970s to the 2000s, was a "straightening" of the curve: the biggest cities were either shrinking or slowing their growth, while smaller cities were either gaining or holding their own. It was during this era that Louisiana cities came the closest to fitting the rank-size rule, although it has always exhibited the law of the primate cities.

After Katrina struck in 2005, Baton Rouge for the first time briefly ranked as the state's largest city. New Orleans regained that status within a couple of years, but because it had failed to recover roughly one-quarter of its pre-Katrina (2005) population of 454,863, Louisiana's largest city by the time of the 2010 Census fell for the first time below the rank-size prediction of being double the size of the second-largest city. Robust growth in New Orleans since then has steepened the curve slightly, but current trends would have to continue for many years before the state's cities trace a typical rank-size relationship.

No single comprehensive explanation for either the law of the primate city or the rank-size rule has emerged. But nor are they complete mysteries. Primate cities are oftentimes, especially in

the New World, a future nation's (or state's) original and most strategically situated settlement, usually along coasts or on key riverine or valley sites, and thus have the most time and the best opportunities to amass political, economic, and demographic power compared to younger interior cities. Sometimes this primacy is maintained (Boston, New York, Philadelphia) or diminished (New Orleans); in other cases it moves inland (Charleston to Columbia; Mobile to Birmingham; Galveston to Houston).

There is also a structural factor at play. In the case of the distribution of wealth, where the rank-size rule has also been observed, "the rich get richer" because it takes wealth to produce wealth. The rich have more wealth-producing resources at their disposal, thus their affluence grows logarithmically rather than linearly and they pull away faster from the middle class than the middle-class does from the lower class. Likewise, bigger cities have the ability to grow faster than smaller ones because their sheer size and momentum produce more capital—not just fiscal capital, but social (networking opportunities), cultural (enlightenment opportunities), and human (education) capital, all of which attract more people.

For example, New York City came to be the nation's primate city originally because of its early establishment on a fine geographical site amid deep-draft harbors and abundant natural resources, which attracted initial settlers and immigrants. But in time, the opportunities they and their successors produced came to replace the harbors and natural resources as the city's main draw, and today people move to New York City to tap into the lasting and ever-growing legacy of human resources.

So it should not surprise us that equity among the sizes of cities, or the sizes of bank accounts, tends to be the exception rather than the norm.

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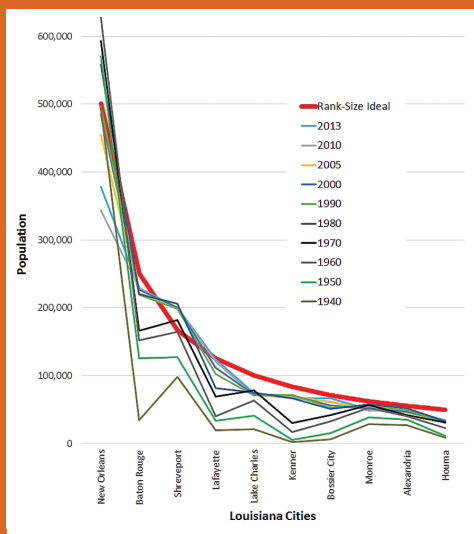


Figure 1. How Louisiana's city populations ranked, 1940–2013. Analysis and graph by Richard Campanella

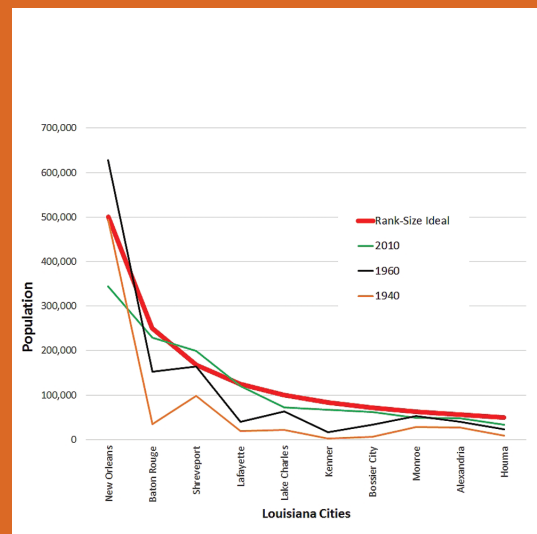


Figure 2. How Louisiana city populations ranked in three key years. Analysis and graph by Richard Campanella