Introduction

One of the great unexplored topics of Japan’s medieval past is its population. This book attempts to describe and explain what happened to Japan’s population during the epoch between 1150 and 1600, which I am calling the “medieval” period, and through that lens, to consider related social and economic developments. Demography has always been an invaluable approach to the past because it provides one way—often the only way—to study the overwhelming mass of people who are not members of the political or religious elite. From a demographic perspective, I contend that although this medieval age initially maintained a centuries-old stasis, a far-reaching transformation commenced from about 1280 and eventually gained momentum until it swept throughout the Japanese archipelago. (As defined here, the archipelago excludes Hokkaido and the Ryukyu chain, uncharted lands for which little or no data exist.) Crucial to the demographic breakthrough was the resolution of two central problems facing both the rulers and the ruled: how to supply a burgeoning population with sufficient food and how to keep the peace. The remedies worked out at this time laid the groundwork for further gains after 1600.

Japan’s Demographic Dark Ages

Japan’s medieval population—its size, fluctuations, regional variations, and vital statistics—has always presented historians and social scientists with a particularly perplexing riddle. Not only is it an impossibly complex puzzle, but it is also missing many pieces. To be sure, some gaps
can be inferred from the context, but most of the puzzle remains scattered among thousands of enigmatic and none-too-reliable documents, a small number of laconic chronicles and diaries, and uncounted archaeological excavations. For these reasons, Japan’s medieval era has been dubbed a demographic “Dark Ages.” The difficulty of piecing the puzzle together is matched only by its importance, for it is solely through a resolution to the mystery of medieval population, by giving scholars access to the everyday lives of commoner and servile people, that we can comprehend the whole of premodern Japanese history.

The fragmentary nature of the evidence has resulted in a piecemeal approach to the study of Japan’s medieval population. By considering the earlier works of both historians and demographers, I have been able to identify three theories: one reflects prewar research; a second, the revisions of the early postwar era; and a third has been vaguely articulated in recent decades. The theories might be described, respectively, as “the hypothesis of continuous and sizable growth,” “the theory of practically no growth,” and “the assumption of growth starting in the middle.” The estimates and arguments are sufficiently complex that some detailed historiographical discussion is necessary. Readers disinclined to follow the finer points of the evolution of scholarly opinion may move on to the next section of the introduction.

Yokoyama Yoshikiyo (1826–1879) established the first pillar of the prewar theory in a journal article published in the year of his death. Yokoyama, a legal and literary scholar, produced population estimates for the ninth, tenth, and eleventh centuries, as well as for the Kamakura era (1185–1333). Working from a source named Shûgai shô, Yokoyama derived a figure of 9.75 million for Kamakura times. Since his totals for the ninth through eleventh centuries were much smaller (3.7–4.4 million), his work left an impression of substantial gain during the early medieval epoch.

Another influential figure was geographer and historian Yoshida Tôgo (1864–1918), who inferred a population number for the late sixteenth century. In a series of lectures in 1911 on the epochal Meiji Restoration, Yoshida argued that because the amount necessary to feed one person for a year in the late 1500s averaged about one koku of rice (approximately five U.S. bushels), the population of the islands must have been equal to what he presumed was the total koku in rice, or 18.5 million. Like Yokoyama for the earlier era, Yoshida posited that the late medieval period was a time of substantial increase.
Despite many potential problems, the calculations of these two scholars and the assumptions lying behind them were remarkably long-lived, standing unchallenged for half a century and longer. Eventually, later scholars united Yokoyama and Yoshida’s estimates into what I am calling “the hypothesis of continuous and sizable growth.” Irene Taeuber, in her classic *The Population of Japan* (1958), referred favorably to Yokoyama’s estimates and, using Yoshida’s total for 1600, speculated that Japan’s population had jumped from 4.4 million in 1100 to 18.5 million around 1600. In 1975, William McNeill enhanced Yokoyama’s credibility by basing his thesis about the impact of foreign-borne plagues partially on the Meiji scholar’s numbers for the ancient and medieval epochs.

Following a hiatus of some twenty years after World War II, research into Tokugawa-period population exploded during the 1960s and 1970s. Hayami Akira, under whose leadership the research revived, came to entertain serious doubts about Yoshida Tôgo’s easy equation of one *koku* with one person, arguing instead that there was considerable regional disparity in the relationship in 1600. Moreover, Hayami noted that the *koku* figures for the late 1500s undoubtedly included grains other than rice, as well as other items such as silk that were calculated in terms of their rice value. He also argued that it required much more than one *koku* to sustain an individual at that time. Extrapolating backward from seventeenth- and eighteenth-century demographic data found in Kokura domain and later from data on villages from other parts of Japan, Hayami suggested that a more reasonable figure was about half Yoshida’s estimate—9.8 million, to be exact. In 1975, he proposed 12.3 million.

The implications of Hayami’s views for the pre-1600 era soon became clear, as Susan Hanley and Kozo Yamamura pointed out in their 1977 monograph on Tokugawa population and economy. In addition to his low figure for 1600, Hayami supported Sawada Goichi’s well-known estimate of about 6 or 7 million for the mid-eighth century. Sawada had utilized various methods in 1927 to calculate Nara Japan’s population, and astoundingly enough, in 1980 lacquer-soaked documents uncovered in the Kanto (modern Tokyo and vicinity) seemed to corroborate Sawada’s work. By Hayami’s reasoning, Japan’s population around the year 750 would have been 6 million and only 10–12 million almost a millennium later, an anemic growth rate of .08–.1 percent per annum. Thus was born Hayami’s “theory of practically no growth” for the Middle Ages.
Meanwhile, beginning in the 1980s, Kitô Hiroshi, one of Hayami’s students, began to extend his interest into the “Dark Ages.” Surveying Japan’s premodern history, he asserted that the entire era from the Jômon epoch (10,500–400 BCE) to 1875 could be conveniently divided into three overarching cycles. Each cycle consisted of a beginning, when population increased rapidly as new land was brought into cultivation or other innovations appeared, and an end, when the limits for that agricultural or economic system were reached and population came to a standstill or even began to decline. Kitô’s three cycles were as follows: (1) the Jômon age; (2) the Yayoi age (400 BCE–250 CE) until sometime in the medieval epoch (probably 1300–1500); and (3) the latter medieval era until the end of the early modern age. Although many scholars had long held the position that the fourteenth and fifteenth centuries encompassed

<table>
<thead>
<tr>
<th>PERIOD</th>
<th>ESTIMATE</th>
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<tbody>
<tr>
<td>Initial Jômon</td>
<td>21,900</td>
</tr>
<tr>
<td>Early Jômon</td>
<td>106,000</td>
</tr>
<tr>
<td>Middle Jômon</td>
<td>262,500</td>
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<tr>
<td>Late Jômon</td>
<td>161,000</td>
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<tr>
<td>Yayoi</td>
<td>601,500</td>
</tr>
<tr>
<td>750 CE</td>
<td>5,589,100</td>
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<tr>
<td>900</td>
<td>6,437,600</td>
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<td>1150</td>
<td>6,916,900</td>
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<tr>
<td>1600</td>
<td>12,273,000</td>
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<td>1721</td>
<td>31,277,000</td>
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<td>1786</td>
<td>30,104,000</td>
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<tr>
<td>1792</td>
<td>29,869,700</td>
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<tr>
<td>1846</td>
<td>32,423,800</td>
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<tr>
<td>1875</td>
<td>36,527,600</td>
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a. Kitô utilized Japanese archaeological periodization, which is based on the relative dating of ceramic styles.
b. Kitô’s table simply says “Yayoi,” but he seems to mean early in the era.
a basic change in Japanese history, Kitô was among the first to give voice in demographic terms to the “assumption of growth starting in the middle.” As may be apparent from Table I.1, however, Kitô was deliberately vague about when the transition from the second to the third cycle took place since he derived figures for only 1150 and 1600. The lack of solid analysis presented an enticing challenge and inspired my research.

“GROWTH STARTING IN THE MIDDLE”

In my view, Kitô’s “assumption of growth starting in the middle” most reasonably explains what happened to the archipelago’s population from 1150 to 1600. To state the increase more specifically, I shall argue that the population expanded on the order of 300 percent, from about 5.5–6.3 million in 1150 to 15–17 million in 1600, with almost all the growth coming after 1280. While demographic theory and mathematical computations appear to support the pace and scope of the growth, it is more concretely corroborated by a whole host of social and economic variables. During this time, Japan experienced a decline in mortality from pestilence and famine. Concurrently, there was a slow but sustained rise in farming yields and arable land through better agronomy and irrigation. Trade and industry too showed improvement, becoming more efficient and productive; cohesive social units such as the corporate village and stem family were created; and there was a sizable increase in urbanization. These changes in turn resulted in gradual but noticeable advances in the physical well-being of most of the populace, innovations that in turn resulted in lowered mortality and a heightened birthrate. Population change in medieval Japan, in other words, was synergistic, the action of multiple variables, which in turn led to a major transformation that none of the factors could have accomplished individually.

From a demographic perspective, I divide the 450 years of the medieval era into three subperiods: 1150–1280, 1280–1450, and 1450–1600. I further analyze each of these epochs according to elements that have either direct or indirect bearing on population trends. In general, factors that affect mortality, such as epidemics or war, fall into the first category, while background variables, such as agricultural technology, the labor market, and commerce, occupy the second. I utilize qualitative and quantitative information for each factor, although quantitative data tend to be more available for some than others (for example, agricultural productivity, famine, and cities). There is a dearth of quantifiable
data on birthrates. This is unfortunate because most historical demographers acknowledge that fertility levels (including a limitation on the number of births through abortion, infanticide, or late marriage) have a greater impact on population than do mortality levels. In the absence of quantitative data on fertility, I present descriptive evidence on kinship, women, marriage, and the family, placing them in the category of indirect components in the demographic equation.

The first subperiod (1150–1280), as chapters 1 and 2 will show, represented both something new and something old. On the one hand, the demographic regime was novel in that the most deadly microparasites finally retreated to endemic status. At the same time, the population did not budge much from its former total of around 6 million. However, while the size of Japan’s population may have differed little from 1150, a whole host of new “medieval” variables was at work, starting with rising immunities to especially lethal infections. Two other new factors appeared to keep mortality rates high: famine and war. The first was the more critical of the two. In three periods—1180–1182, 1229–1232, and 1257–1260—killer famines decimated the commoner population and turned Kamakura society upside down. In comparison to crop failure, war and the depredations of the military class were a minor nuisance. On the other hand, indirect factors such as agricultural techniques, industry, or trade suggest little change from bygone eras. The labor market remained tight. There appears to have been no marked improvement in the material circumstances of families and commoners more generally.

The second subperiod (1280–1450) was the beginning of a crucial transition to better times, delineated in chapters 3 and 4. During the “Muromachi Optimum” of 1370–1450, in particular, it seemed as though the former twin demons of famine and war might have been banished for good. According to the best estimates, by 1450 the archipelago had come to contain around 10 million inhabitants, marking the inception of a new wave of demographic growth. Direct, quantitative measures help to demonstrate the reasons behind this expansion: there was a noticeable decrease in both pestilential outbreaks and hunger after the near cessation of hostilities in the Wars between the Northern and Southern Dynasties in 1370. Of the three major mortality factors, only war claimed more victims than it had before, in battles notable for their duration and intensity. Among indirect variables too, almost all sectors showed substantial improvement. In agriculture, farmers spurred advances in three major areas: agronomy, engineering, and social organiza-
tion. Industry witnessed one of its most innovative periods. The Muromachi era is known for the rise of a commercial economy, with Kyoto as its hub; markets sprang up and fee barriers were reduced all over western Japan. Although it is not possible to measure fertility, gradual changes in kinship, the family, and marriage suggest the appearance of a new demographic regime. Commoners also began taking advantage of improvements in all-important areas such as diet, clothing, sanitation, and housing.

The final subperiod (1450–1600) was a time of historical crosscurrents, with continued growth despite famine and war. The old issues of the first subperiod reappeared with a vengeance. Population increased, perhaps even sizably, from 10 to 15–17 million, but even with the expansion posited above, the growth was smaller in percentage terms than in that of the previous subperiod. It could be said that the Warring States and Unification eras comprised a time of unfulfilled potential.

This final subperiod may be further divided if we examine direct factors of mortality more closely. Chapter 5, for instance, reveals that outbreaks of well-known infections were more common until 1540, after which they dropped off precipitously. Moreover, early in the sixteenth century sailors introduced a new microbial threat, syphilis, that spread quickly and may have induced widespread death. Famine stalked the land as of old and was reported more frequently than during the late Kamakura and middle Muromachi epochs. By the late sixteenth century, however, demographic records hint that the medieval pattern of chronic malnutrition—known as the “spring hungers”—was being transformed into a more benign state. While quantitative measures suggest that disease and starvation played a bigger part in the demographic picture until about 1540, war among daimyo and local notables of various descriptions was a crucial factor, reducing growth rates and delaying dramatic progress throughout the subperiod. Deaths among combatants reached a new high, but even more deleterious for the general populace were the effects of scorched-earth tactics, wars of attrition, and military provisioning efforts.

Among indirect measures, examined in chapter 6, there is a mixed and nuanced picture. The Warring States daimyo appears to have been a Janus-faced figure, encouraging expansion within his domain while discouraging it abroad. Even though anecdotal evidence for agrarian improvements is spotty, trade and industry showed advances more readily, especially in formerly economically backward eastern Honshu.
Monetization and markets revealed progress all over Japan. The densely settled, well-organized village continued to form in areas farther from the Kinai (Kyoto-Osaka-Nara region). Many new stem families were created, even though a clear differentiation into main and branch households was slow to occur. In terms of physical well-being, the variety of foods was about the same, but commoners benefited from numerous other changes in clothing, sanitation, and even literacy and numeracy.

Before this story can be told, some description of the theoretical framework, patterned on anthropology, is necessary. Previously I have utilized the word “microparasitism,” first coined by William McNeill, to indicate how seriously infectious diseases were depleting the pre-1150 population. McNeill also uses the related designation “macroparasitism” to refer to the way elites and the general populace interacted over history. The first human macroparasites were large carnivores, but when agriculture was invented, a class of primary producers came into being and along with it a new macroparasitic threat: other humans. The dominant strata of society stole all or part of a cultivator’s meager harvest, often giving nothing in return. During the late twelfth and thirteenth centuries, peasants usually suffered from such an unbalanced relationship. Eventually, just as diseases withdrew into more modulated relationships with their human hosts (endemicity), rapacious elites learned to collect rents and taxes in a more or less regular way and markets appeared to recompense farmers for their surplus, as described in chapters 3 and 4. Despite the setbacks of the Warring States and Unification epochs, by 1600 rulers and the ruled worked out a new and more permanent “macroparasitic balance.” The recurrence of two classic “macroparasitic” phenomena, famine and war, in Japan’s medieval epoch suggests that these centuries were a time when a more reciprocal relationship was gradually and painfully coming into being.13

POPULATION BEFORE 1150

Before we embark on the detailed examination of the medieval period that is the focus of this study, a brief summary of the demographic picture before 1150 is in order. The two-thousand-year-long second cycle depicted by Kitô as commencing with the agricultural and metallurgical advances of the Yayoi age had reached its zenith by the eighth century. I have estimated elsewhere that by 730 the number of inhabitants of the archipelago had reached 5.8–6.4 million and remained at that approxi-
mate level until 1150. Around 950 the population may well have dipped to 4.4–5.6 million, and while it likely recovered to 5.5–6.3 million by 1150, stasis was the general trend from 730 through 1150.\textsuperscript{14}

There were many reasons for this long period of stability. First, in the Yayoi and Tomb (250–650) eras Japan had benefited from substantial in-migration from Korea and China, but by 700 this had dropped to a trickle.\textsuperscript{15} Contact with these areas did not entirely abate, however, and soon the Japanese archipelago entered the microbial orbit of the continent, where such lethal infections as smallpox, measles, mumps, and influenza thrived. The Japanese population may well have been exposed to these killers previously, but beginning around 730 repeated outbreaks of lethal epidemics cut deeply into a population that often had no previous experience with a particular pathogen. The result was massive die-offs—as high as 25–35 percent approximately every generation. This basic pattern—a population with little or no immunity decimated by a deadly virus or bacterium every generation—continued unabated until 1150 and drove up mortality for a populace already struggling to survive. To paraphrase William McNeill, this was Japan’s age of microparasitism.\textsuperscript{16} Effects were apparent in myriad aspects of the culture, even religion and art.

Frequent famines aided pestilence in driving up mortality and reducing fertility. According to figures for the well-documented eighth and ninth centuries, crop failure occurred on a widespread basis about once every three years, induced by drought until 1100 and excessive cold and precipitation between 1100 and 1150. Soil exhaustion, a shortage of adequate irrigation facilities, and a reduction in water-retaining woodland were also causes for food shortages. Malnutrition was common for many, especially during the early spring through early summer, when stored food supplies were exhausted. War and political instability played a much more minor role in the heightened mortality of the age, although the wars against the emishi (“barbarians”) of northern Honshu in the late eighth and early ninth centuries, the revolts of Taira no Masakado and Fujiwara Sumitomo between 935 and 941, and the upheaval surrounding Taira no Tadatsune from 1028 to 1032 took their toll on specific regions.

In agriculture, the effects of heightened mortality were numerous. Land abandonment was common—perhaps as high as 40 percent of the arable in some regions. The desolate fate of the famous “early estates” (shoki shôen), most of which had gone to wasteland by the 900s despite
the best efforts of powerful religious institutions and the government, also bolsters the argument for a depopulated countryside. As a result of the dearth of farmhands and greater wide-open spaces for grazing, wealthy cultivators used draft animals in a new harness-and-plow system of tillage by 950. By the twelfth century, as the population expanded modestly owing to rising immunities, a bit more land came into cultivation, especially dry fields. Yet yields from rice paddies had hardly risen at all from the eighth century. Settlement tended to be dispersed or isolated, and most peasants moved frequently.

The labor market also presented a picture of demographic stasis because insofar as researchers can tell, wages rose while several major ceremonial and religious projects, such as Tōji and even the imperial capital itself at Heian, remained unfinished, both factors implying a shortage of workers. In industry, as with the plow in farming, the development of labor-saving devices became the watchword. For ironworks, operators shifted to a simpler furnace placed on a slope, where updrafts would substitute for a bellows. In salt making, workers changed from a labor-intensive method using a cauldron and seaweed to collecting dried crystals from salt fields cut into the beach. Even in ceramics, stoneware became simpler and less variegated by 1100.

In commerce, it is more difficult to draw conclusions, but there can be little doubt that people no longer generally used copper cash by the late tenth century and returned to barter. Perhaps a decline in trade can be inferred from the general shrinkage of the urban population. Certainly Heian was large, with a population of one hundred thousand, but Nara, Naniwa, and Dazaifu all suffered loss. Beginning in 1050, as the population recovered from the depths of the tenth-century decrease, trade and towns rebounded, as seen in the overseas trade with Sung China internationally and the growth of new ports such as Hakata and Hyōgo domestically.

The only quantifiable figures for fertility originate from the early eighth century and are very high: 45–50 births per thousand population. Infant mortality to age five was 50 or even 60 percent, leading to a life expectancy at birth of twenty-five at most. It is difficult to know how kinship, marriage, and the family fit into this story; scholars generally agree that kinship was bilateral, inheritance partible, and sexual liaisons loose and free. The frequent famines and epidemics undoubtedly acted to drive down the birthrate over long periods. The existence of a sizable slave class, at least until 900, may also have helped to reduce overall fertility.
Life was hard for peasants. The typical house was a pit dwelling with a dirt floor, prone to fire and cold in the winter; clothing was sewn from fibers of hemp or ramie and chilly and scratchy. As witnessed by the frequent famines, diet was just adequate in the best of times. Cities like Nara or Heian had poor sanitation, making them fertile breeding grounds for the microbes that killed so many.

By 1150, however, there were subtle signs of a transformation. In particular, the deadly pathogens that had taken such a heavy toll seemed to be less lethal for an adult population that had come to possess new immunities. Even the weather seemed to change, as the heat and drought of earlier times gave way to a cold, wet climate. The new era would see both continuity and change. It is to this early transitional stage that we next turn.