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The Decline of the Khoikhoi Population, 1652-1780:
A Review and a New Estimate

By
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Abstract

Fourie and Green (*this journal*, 2015) construct estimates of the Khoikhoi population over the 1652-1780 period using benchmarks for the initial and terminal populations and punctuated population declines during two smallpox epidemics. I provide a brief survey of the history of Khoi population estimates and conclude that several factors point to a higher rate of population decline between 1652 and 1723 and a smaller rate of decline between 1723 and 1780 than specified by Fourie and Green. I provide a revised series of Khoi population estimates that uses the Fourie-Green methodology while incorporating a new terminal population benchmark and qualitative evidence pointing to a higher rate of population decline in the 1652-1723 period.

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In 1652 the Dutch East India Company (VOC) established an outpost in the Southwestern Cape where its passing East Indies fleet could stop to refresh supplies of food and water, ill sailors could recover, and ship repairs could be made. Over the next 100 years the VOC refreshment station expanded in both scope and geographic scale, transforming into a VOC colony with settlement extending hundreds of miles from the site of the original refreshment station, today's Cape Town. The expanding Cape Colony displaced numerous nomadic herding groups (the Khoikhoi, also known as Khoi, Khoe, or Khoekhoe) as well as hunter-gathers groups (the San) from their traditional grazing and hunting lands. The effects of the displacement were far reaching. Competition among the Khoikhoi, the San, and the Dutch for access to land and livestock led to 150 years of violent conflict that contributed to the decline in the Khoi population and nearly wiped out the San population. Many Khoikhoi lost their livestock and became attached to Dutch farming households, working as farm laborers and herders. Others were pushed beyond the expanding boundaries of the Dutch settlement, where they faced competition with the San, other Khoi groups and Bantu peoples who were already occupying and using these lands. Many perished from diseases introduced into South Africa by Dutch settlers and crews and soldiers from ships visiting Cape Town.

How big was the decline in the Khoi and San populations during the period of Dutch expansion in the Cape? Johan Fourie and Erik Green (2015) estimate a 54 percent decline in the two combined populations between 1652 and 1780. For their 1652 population benchmark, they use Richard Elphick and V.C. Malherbe's (1989, p. 4) estimate of 50,000 Khoikhoi in the vicinity of the Cape Town settlement in 1652. For the

1780 population, they use Leonard Guelke's (1974, p. 248) estimate of 20,000 Khoikhoi and 3,000 San in the entire Cape Colony in 1780.

Fourie and Green construct annual population estimates by assuming that the Khoi population declined at a constant rate between 1652 and 1780, while punctuated by two much larger annual declines in 1713 and 1755 due to smallpox epidemics in the Colony. They use Robert Ross's estimates of a 20 percent decline in Khoi population during the 1713 epidemic and a 5 percent decline during the 1755 epidemic. Under the assumption that the annual rate of population decline was constant in all other years between the population benchmarks, they calculate an annual rate of population decline for the entire period of -0.61 percent and for the non-smallpox years of -0.42 percent.

This note critically examines several assumptions and population benchmarks used by Fourie and Green to estimate a population series for the Khoikhoi over the 1652-1780 period. I provide a brief survey of the history of Khoi population estimates and consider how use of alternative benchmarks and assumptions about population decline affects estimates of the Khoi population decline over the 1652-1780 period. Several factors point to a higher rate of population decline between 1652 and 1723 and a smaller rate of decline between 1723 and 1780 than specified by Fourie and Green. I conclude by providing a revised estimate of Khoi population decline over the full period.

I. Estimates of the Initial Population of the Southwestern Cape

Population estimates for the Khoi population of the southwest Cape in 1652 vary by a factor of 19, ranging from 11,000 to 200,000.¹ Consider these estimates of the 1652 population made by travelers, government officials, social scientists, and historians.

¹ A wide range of estimates is also typically found for populations in the Americas.

- * In 1660 Commander Jan Van Riebeeck wrote in his journal that just two of the many Khoikhoi groups in the vicinity of the Cape amounted to more than 34,000 people (Thomm, 1952-1958, Vol. 2).²

- * Peter Kolb (1731), a visitor to the Cape Colony in 1707, provides descriptions of 16 different Khoi groups. While he does not venture an explicit estimate of overall Khoi population, he notes that the Great and Little Namaqua, two Khoi groups located to the North-Northeast of Cape Town, were “able on Occasion, to take the Field with 20,000 fighting Men” (p. 67). Using a simple extrapolation of 1.5 women and children per fighting man would imply an overall population for this single Khoi group exceeding 50,000 in 1707.

- * Hinrich Lichtenstein (1811), a European visitor to the Cape Colony in the first decade of the nineteenth century, produced one of the lowest estimates of initial population, just 11,000 Khoikhoi.³

- * An 1837 report to the British Parliament [*Report of the Parliamentary Select Committee on Aboriginal Tribes*] concluded that the Khoi population “could not have been less than 200,000” in 1652.

² 26 August 1660. See Moodie (1960), pp. 213-214.

³ “An exact estimate was not possible here. However, if one took the accounts of the oldest authors and if one allowed for what one knew about the simple means of their subsistence, the number of all Hottentots [Khoikhoi] within the boundaries of the colony in my days hardly exceeded 10,000 a hundred and fifty years ago. The census of 1805 revealed 30,000 of them”. See Lichtenstein (1811), p. 37, note 3.

- * George Stow (1905, p. 247), an amateur historian working with knowledgeable ethnologists in the late nineteenth century, estimated a population of 35,000-40,000 Khoikhoi for 1652.
- * George McCall Theal, the leading South African historian during the late nineteenth century, estimated a population in 1652 of 45,000-50,000 Khoikhoi and San people (Theal, 1897, p. 126).
- * In an influential chapter in the *Oxford History of South Africa*, Monica Wilson (1969, p. 68) provided an “informed guess” of 200,000 Khoikhoi living south of the Orange River.
- * In his 1974 dissertation, Leonard Guelke also offered an initial estimate of “as many as 200,000 Khoikhoi in South Africa” (p. 28).
- * In his book, *Kraal and Castle*, Richard Elphick (1977, p. 23) estimated that there were “no more than 100,000 Khoikhoi in the South Western Cape in 1652.” Just a few years later, Elphick and Malherbe (1989, p. 3) offered a much lower estimate, just “50,000 in the whole of the Southwestern Cape”.⁴ Spread over the 130,000 square miles of the Southwest Cape, this is consistent with a population density of .38 per square mile.

⁴ I follow Elphick and Malherbe in defining the southwestern Cape as “lands south and west of a line running from the Oliphants River mouth to modern Tulbaugh and thence to the mouth of the Breede River”. See Elphick and Malherbe (1989), ch. 1, p. 3.

- * In their study of settler displacement of Khoikhoi from their traditional Cape grazing lands, Leonard Guelke and Robert Shell (1992) adopted an initial Khoi population of 50,000.

The lower bound (11,000) estimate of the Khoi population made by Lichtenstein seems implausible. Lichtenstein made the lower bound estimate in the early nineteenth century under the assumption that the Khoi population had thrived in the presence of the Dutch settlers. His comments mirror those of Fourie and Green (2015) and Guelke and Shell (1992) regarding how the Khoi population was absorbed into settler farms but he completely fails to take into account effects of disease, violent conflict,⁵ and deprivation of habitat on the overall Khoi population from 1652 to 1725.

The upper-bound estimate of 200,000 was originally put forth in 1836 in a report commissioned by the British Parliament on the status of first peoples in Britain's colonies. The estimate in the *Report of the Parliamentary Select Committee on Aboriginal Tribes* is extrapolated from van Riebeeck's estimates for particular groups, as cited in his journal. In testimony to Parliament, an author of the *Report* attributes population decline to the Khoi's loss of land and cattle to the Dutch and to the VOC's incitement of violent conflicts between Khoi groups.⁶ Notably, these are the same reasons cited by modern historians for the Khoi's political, economic and demographic

⁵ The indirect effects of conflict may be more important than direct losses. Khoikhoi who lost their livestock or their access to the lands and water needed to support their herds became increasingly attached to settler farmers (Guelke and Shell 1992; Fourie and van Zanden 2013; Fourie and Green 2015). The defeat of the Khoikhoi in the Second Dutch-Khoi War (1673-1676) and the expansion of settlers onto lands and sources of water previously used by Khoi herders were two forces underlying Khoi decisions to work with settlers. Recent estimates of the number of Khoikhoi attached to settler farmers by Fourie and van Zanden (2013) and Fourie and Green (2015) show sharp increases in these numbers after 1682.

⁶ See Marks (1972) for discussion of Khoi-settler interactions.

decline. Wilson (1969) revived the *Report's* estimate of 200,000 and criticized Theal's estimate of 45,000-50,000 Khoikhoi, saying that the 200,000 estimate "was much closer to the reports of eyewitnesses" (p. 68). Guelke's (1974, p. 28) adoption of a 200,000 initial estimate has different roots, as it stems from his conclusion that lands in the Southwestern Cape could support three people per square mile. In later work, he reduced his initial population estimate to 50,000, or less than one person per square mile.

Stow's initial estimate of 35,000-40,000 Khoikhoi is based on extrapolations from reports by VOC officials and European travelers of the number of fighting men mustered by various Khoi groups. Stow qualifies his estimate by noting that it might include some San people due to possible confusion by travelers regarding which groups they were observing.⁷ Richard Elphick used a similar methodology in his 1977 book. He estimated the initial populations of several different Khoi groups and aggregated them into an initial estimate of no more than 100,000 (p. 23). His praise of George McCall Theal's estimate of 45,000-50,000 Khoikhoi foreshadowed his own use of a 50,000 estimate in later articles on the Cape Colony (Elphick and Malherbe, 1989).

Estimates of the 1652 Khoi population have typically focused on Khoi groups who presented at the Castle in Cape Town or were encountered as settlement spread into the Stellenbosch and Swellendam districts. Khoi populations that were further from Cape Town were less likely to be counted, as they were not seen. Archaeological evidence and eyewitness accounts from Portuguese ships in the late 15th and early 16th centuries

⁷ Stow also noted that "these Cape tribes were neither all annihilated, nor reduced to serfdom, but that a considerable number fled from the danger which threatened them and migrated to the north and north-east, and that their descendants are now to be found amongst the present Koranas and Griquas" (p. 248).

confirm a record of pastoral people and “domesticated livestock” along the southwest coast during the seventeenth century (Sadr 2015; Raven-Hart 1967).

None of the initial estimates intentionally include the San population. Guelke (1974, p. 246) concluded that the San population remained relatively constant over the first century of contact at roughly 15,000 people. Other historians have concluded that the San were much less affected than the Khoikhoi by Dutch settler expansion until the 1720s when Dutch settlement began to expand to the Northeast into mountainous areas and into the drier plains to the east in the Graff-Reinert region. Penn (2005, p. 117) concluded that “... after 1740, the great brunt of commando activity [raiding parties conducted by settlers] fell primarily on hunter-gatherer societies.” Attempts by the Dutch to exterminate the San expanded dramatically during the 1760s and 1770s, with thousands of San deaths documented (Penn 2005; Adhikari 2011).⁸

III. Decline in Khoikhoi Population from 1652 to 1713

Researchers differ regarding the extent of the decline in the Khoi population over the Colony’s first 60 years. Fourie and Green’s population estimate assumes a constant -0.4 percent annual decline in the Khoi population during the years without smallpox epidemics: 1652 to 1712, 1714 to 1754, and 1756 to 1780. There is, however, some evidence that population decline may have been larger and more punctuated in the 1652-1712 period than in the other two periods. The archaeologist Andrew Smith (1989, p. 25) noted that the Khoikhoi experienced eight other documented bouts with infectious

⁸ San and Khoi populations were somewhat fluid during the first 100 years of Dutch settlement, with Khoi families who lost their livestock to settler raids, disease, or drought sometimes absorbed into the San population. The San were in a very different situation vis-à-vis the settlers than the Khoi, as they hunted wild game and poached both Khoi and settler livestock. Dutch settlers and Khoi groups reacted by organizing commando raids to kill San males and take San women and children prisoner. See Adhikari (2008) for a summary of the academic literature on the San and the Dutch extermination campaigns.

disease over a 30-year period, 1658-1687.⁹ Consider, for example, this entry from Commander van Riebeeck's journal on Oct. 29, 1658:¹⁰

She [Eva] was told that Doman was daily putting us upon our guard against the Cochoquas, saying that they were much incensed against us, and would burn our houses, kill our people, &c. and that he had therefore asked us to lend 20 soldiers to fight the Cochoquas, and take their cattle, because they were now almost all sick, and at their weakest, &c.

Or this "public warning" from Commander van Riebeeck on November 24, 1661:

Whereas the natives of this country, the Saldanhars and Caepmans, have at present their houses and cattle close by, ... and whereas there is now among them, but particularly among their livestock, a great sickness ...

Or this excerpt from a letter from Commander Wagenaar and the Policy Council, to the Herren XVII on May 16, 1666:¹¹

The Cochoquas ... were formerly, with the kraals under their authority, so strong, that both together might have mustered three thousand men capable of bearing arms ; but they were, some time ago, very much diminished and melted away by a sickness which prevailed among them.

⁹ Thom (1952-1958), 346, 363; and Moodie (1841), pp. 241, 272, 291, 336, 363, 370, 386, 420.

¹⁰ Moodie, p. 146, Oct. 29, 1658.

¹¹ Moodie, p. 291, May 16, 1666.

Or this excerpt from a dispatch from Governor Goske and the Council to the Herren XVII on Sept. 17, 1673:¹²

Captain Class and some of his grandees came to state, that for a few days back, there had been an infectious disease among his people, of whom 9 or 10 males or females had already died very suddenly; this they regard as a bad omen, for no particularly severe sicknesses are known among them; and Death usually contents himself with old worn out people.

Elphick's discussion of the 1713 smallpox epidemic ("The Final Catastrophe") is prefaced by a discussion of a "third Khoi-Dutch war" in 1701-1703, in which the Dutch rebuff attacks from San and Khoikhoi and fortify the frontier. He emphasized reports from an expedition in 1705 through the region to the north of the Cape by Johannes Starrenburgh, a *landrost* (local official). Starrenburgh's tour "revealed a bleak panorama of desolation" among two major Khoi groups, "the Guriqua and the Gonnema Cochoqua". There were few kraals to be found, and even fewer which had much stock."¹³ Elphick paints a picture circa 1705 in which "all strata of colonial society saw easy and attractive pickings in the livestock of a crumbling native society."¹⁴ In this context, the 1713 smallpox epidemic hit Khoi groups that were already reeling from the effects of past diseases outbreaks, war with the Dutch and other Khoi groups, loss of territory, and forced trades with European settlers.

¹² Moodie, p. 336, Sept 17, 1673.

¹³ Elphick (1977), p. 226.

¹⁴ Elphick (1977), p. 229.

IV. The 1713 Smallpox Epidemic

Elphick (1977) and Elphick and Malherbe (1989) have followed Theal and other prominent South African historians in identifying the 1713 smallpox epidemic in the Cape Colony as a signal event in the Cape's population history, and historians have generally quarreled only about the extent of the population decline.¹⁵ Introduced via a fleet of visiting ships in April 1713 that slipped through the Cape's quarantine procedures, the epidemic led to large declines in the Colony's populations.¹⁶ Theal (1909, p. 432) concluded that about 25 percent of the European population of Cape Town lost their lives from the epidemic. Population estimates by Peiter van Duin and Robert Ross compiled from the *Opgaff* (tax) rolls show that the European population of the entire Colony (excluding company employees) declined by 20.2 percent between 1712 and 1713 (van Duin and Ross 1987; Ross 1977). The slave population in Cape Town fell

¹⁵ Guelke and Shell (1992, footnote 1, p. 804) noted that "Theal's [G.M. Theal, *History of South Africa* (London, 1922), III, pp. 475-77] emphasis on the disastrous impact of the smallpox epidemic of 1713 has found support among later historians such as W.M. MacMillan, J.S. Marais, P.J. Van der Merwe and Monica Wilson." For example, In the *Oxford History*, Monica Wilson wrote that "the smallpox epidemics of 1713, 1755 and 1767 so decimated the Khoikhoi that the very names of some hordes were forgotten." Wilson references Schapera (1930) for this quote.

¹⁶ The standard story of the origins of the 1713 epidemic is that the virus was introduced by clothing sent ashore for laundering. Carlos and Lewis (2012) note that "[a]lthough droplets or scabs that fall on bedding or clothing remain infectious in principle, laboratory tests using vaccinia virus indicate that infection is unlikely because of how the material is handled by the respiratory tract. Also, in experiments on the persistence of infectivity, it has been found that the virus is rapidly inactivated, even on heavily contaminated objects. There are instances of laundry workers contracting smallpox, but the documented cases of smallpox transmission via fomites are very rare." See Fenner et al. (1988), p. 194. Other sources surveying historical epidemics, e.g., Hopkins (1995), note contaminated clothing and bedding are documented but rare sources of virus transmission. The U.S. Centers for Disease Control and Prevention in its discussion of smallpox transmission states that smallpox "scabs and the fluid found in the patient's sores also contained the variola virus. The virus can spread through these materials or through the objects contaminated by them, such as bedding or clothing. People who cared for smallpox patients and washed their bedding or clothing had to wear gloves and take care to not get infected." Available at <http://www.cdc.gov/smallpox/transmission/index.html> (Last access on 20 September 2016).

by a similar amount (20.8 percent), while the slave population in rural areas actually rose by 5.8 percent, perhaps in response to slave purchases (Ross 1977).

What do we know about the impact of the epidemic on the Khoi population? Elphick and Malherbe's account of the 1713 epidemic is partly based on a VOC journal entry about surviving Khoikhoi in the Piketberg area—more than 100 kilometres north of Cape Town— who visited the Castle and painted a horrific picture of population losses of 90 percent, including all four of the group's leaders.¹⁷ Elphick and Malherbe (1989, p. 22) and Penn (2005) have argued that the epidemic was not confined to April-November 1713 but rather “continued its destructive course after 1713. From the southwestern Cape, it spread north to the Tswana and then back to the Little Nama (around 1722-24), among whom it caused great disruption of social and economic life.” In 1714, a VOC company soldier wrote that the Khoikhoi were “scattered in an unorganized manner” and had few cattle to barter.¹⁸ Elphick and Malherbe (p. 21) concluded that it may have resulted in an up to 90 percent decline in the Khoi population over the following decade, a period of drought and cattle disease that ravaged both Khoi and settler herds.¹⁹ Their major argument supporting the large decline is that “the Khoikhoi virtually disappeared from the [VOC] records of subsequent years” (p. 21).

Using Elphick and Malherbe's initial population estimate of 50,000 Khoi in the Southwest Cape, the 90 percent loss in Khoi population would have left just 5,000 Khoikhoi. In light of Guelke's population estimate for 1780 of 20,000 Khoikhoi, the 90

¹⁷ Koloniaal Archief 4050, Dagregister, 13 and 15 Feb. 1714, pp. 274v and 277v; and Koloniaal Archief 4052, Dagregister, 3 August 1715, p. 377v.

¹⁸ Cape Archives, Leibbrandt Manuscripts 18, 9 Nov. 1714 as quoted in Penn (2005), pp. 43, 298.

¹⁹ In his classic study of settler interaction with Khoi groups, Elphick (1977, p. 233) concluded that the 1713 smallpox epidemic led to the loss of a majority of the Khoi population.

percent decline in their population seems implausible. The Khoi population would have had to grow at a very robust annual rate of roughly 2.1 percent in order to increase from 5,000 in 1723 to the benchmark estimate of 20,000 in 1780.

In spite of the anecdotal evidence for a Khoi mortality rate in 1713 exceeding 50 percent, Fourie and Green (2015) follow Robert Ross (1977) and Andrew Smith (1989; 1990) in specifying a much lower Khoi mortality rate (20 percent) from the 1713 smallpox epidemic than earlier writers. This is because a 50 percent mortality rate from a specific smallpox epidemic lies far outside the range of documented smallpox epidemics, even in populations that ultimately experienced overall population declines exceeding 80 percent after exposure to western diseases.²⁰

Masimo Livi Bacci (2011) and Ann Carlos and Frank Lewis (2012) in their studies of smallpox epidemics in the Americas have echoed the skepticism of Ross and Smith regarding mortality rates in the two Cape smallpox epidemics. Livi Bacci (p. 164) found that some American populations, such as indigenous populations in the missions of Paraguay, were hit by a series of major epidemics, including smallpox, yet suffered only temporary population declines. Carlos and Lewis re-examined the Hudson Bay smallpox epidemic of 1781-1782 and lowered previous estimates of population decline from 50-90 percent to a maximum of 20 percent. They surveyed case fatality rates in other smallpox epidemics with verifiable population losses and have concluded that the range of case fatality rates is limited to 5-40 percent. This reduces dramatically the potential mortality

²⁰ Hawaii provides a good example of an indigenous population that declined by 85-95 percent after contact with Europeans in 1778. An initial population of 400,000-500,000 people in 1778 declined to just over 44,000 native Hawaiians in the 1884 Census. A smallpox epidemic in 1853 accounted for 5,000-6,000 deaths, but this was less than ten percent of the native Hawaiian population in the 1853 Census (Bushnell, 1993).

of an epidemic, even if 50-60 percent of a population become infected (Fenner et al., 1988).²¹ If incidence were to be limited to 50 percent of households, this would limit population losses from a single epidemic to roughly 20 percent of the population.²²

Carlos and Lewis do not consider the 1713 Cape Colony epidemic in their analysis, but their 20 percent cap for population loss from a single epidemic corresponds to upper-bound estimates by Ross (1977) and Smith (1989, 1990) for the effect of the 1713 smallpox epidemic on the Khoi population.²³

Did case fatality rates among the Khoi in the 1713 epidemic fall into the Carlos-Lewis range of 5 to 40 percent? Theal (1897, p. 477; 1909, p. 433) wrote that Khoi case fatality rates approached 100 percent while European rates were less than 50 percent.²⁴

Among the Hottentots [Khoikhoi] the disease created the greatest havoc. Of the Europeans who were smitten, more recovered than died; but with the Hottentots, to be ill and to die were synonymous.

²¹ For a contrary view, see Riley (2010).

²² In its 1707-09 smallpox epidemic, Iceland's mortality rate was 26.4 percent, well above mortality rates in other post-1700 western epidemics. Steffensen's (1977, p. 49) estimate is based on specific counts of smallpox deaths from 6 of 10 Iceland communes. Steffenson (p. 49) argued that mortality rates were high partly because the number of people who were ill simultaneously reduced the ability of people to care for each other.

²³ Ross (1977, p. 422) concluded that the Khoi population "suffered as badly as the whites and slaves alongside them, perhaps worse," from the 1713 epidemic. Ross (p. 421) estimated white and slave losses at "around 20 percent" and later in the same article notes that Khoi population losses must have been less than 30 percent. This is because white and slave mortality rates were smaller in rural areas where almost all Khoi lived. See Ross (1977, pp. 422-23).

²⁴ E.H. Burrows (1958, p. 64) provides some information on the case fatality rate of European settlers in the 1767 smallpox epidemic. Although confined to Cape Town, roughly 2,000 European settlers contracted smallpox. Only 179 died, a case fatality rate of just 9 percent.

Two entries in the VOC's *Dagregister* provide conflicting evidence on the incidence of smallpox among the Khoikhoi. On 6 May 1713, an entry read:²⁵

Even the poor Hottentots [Khoikhoi] are not free, but disastrously do not know the disease and, have never seen it and, in consequence of this medical ignorance are thus very disastrously smitten.

Another *Dagregister* entry from 19 May 1713 stated that some Khoi with smallpox who fled inland were killed by Khoi groups they encountered who were wary of being infected:²⁶

Today the news was received that some of the surviving Cape Hottentots [Khoikhoi], who wished to escape the sickness by fleeing over the mountains to another tribe have been mostly killed by the latter - with the exception of a few who escaped - for fear that the pox should break out among them: a rigorous policy.

Such harsh prevention measures could have reduced the spread of smallpox among rural Khoi populations and, thus, the overall mortality rate beyond Cape Town.

On its surface, a *Dagregister* entry for 28 November 1713 provides some support for a high case mortality rate for the Khoi population.²⁷

... was heard more to bewail about the smallpox which recently reigned here

²⁵ Koloniaal Archief 4047.

²⁶ Koloniaal Archief 4048, *Dagregister*, 6-7 and 19 May 1713, pp. 177-77v, 181, 256-56v. See also Theal (1909, p. 433).

²⁷ Koloniaal Archief 4050.

(although it has not totally ceased; in Drakenstein Colony people are still afflicted). Corn reaping is at hand and the majority of the Hottentots [Khoikhoi] who used to serve the farmers have been carried off, so that some of them [the farmers] are helping with the scything, something here outside normal usage.

A visitor to the Cape, François Valentyn, stated that the Khoi fled inland to avoid the Cape Town epidemic, “all cursing the Dutch who they said had bewitched them” (Valentyn, 1971, pp. 217, 219). Smith (1989, p. 25) concluded that the shortage of workers for the harvest may not have been just due to Khoi population losses but also to a reluctance of survivors to come back to the area after the epidemic had ended exactly because they believed the Dutch had bewitched them.

After the 1713 epidemic, the Colony suffered from two years of drought (1715-1716) and seven years of cattle disease (1716-1723) that followed. In their discussions of Khoi population decline, Elphick (1977) and Elphick and Malherbe (1985) argued that declines in the size of Khoi herds due to drought, cattle disease, and the loss of grazing lands contributed to a breakdown in the Khoi’s social fabric, governance structure, and population. Elphick (1977) stressed that the Khoi population depended on the stock of cattle available to feed them. While there is no quantitative information regarding changes in Khoi cattle in the decade following 1713, there is mildly reliable information about settler cattle and sheep stocks (Figure 1). These reveal a sharp downturn between 1711 and 1717, with the number of cattle falling from 20,743 to 15,298 and sheep from 116,256 to 62,220. Five years later in 1722 neither stock had recovered, with cattle counts at 15,336 and sheep counts at 66,593. Since the decline in the settlers’ stock of sheep and cattle has been widely attributed to drought and disease, a substantial decline

in Khoi animal stocks is a plausible inference. And that should also have been associated with a smaller Khoi population.

IV. Khoi Population Trends from 1723 to 1780

Between 1723 and 1780, I identify just one signal event, the 1755 smallpox epidemic, that would have substantially reduced Khoi population.²⁸ Compared with the 1652-1722 period, which is marked by two frontier wars, eight identifiable outbreaks of infectious disease, drought, and cattle disease outbreaks, the 1723-1780 period should have had a lower rate of population decline. The post-1723 absorption of more Khoikhoi as workers on settler farms is also notable. Fourie and Green (2015, pp. 201-207, Figure 2) and Fourie and van Zanden (2013) estimate that after 1727, the number of Khoi who were employed on settler farms increased more than eight-fold. The Khoi's shift from independent pastoral activities to working on settler farms surely reflects the shrinking land base available to the Khoi to graze cattle and may also be an indicator of improved social stability that could be consistent with a stabilization of overall Khoi population numbers.

How reliable is the 1780 benchmark for the Khoi population? Guelke's (1974) estimates of 20,000 Khoi and 3,000 San are derived from Khoi population data from the early 1800s (p. 28). Most likely, he is referring to the count of the "Khoi, San, and Bastards" population (20,006) in the 1805 Cape Colony Census. Guelke noted that his estimate for 1780 "assumed that the figure for 1780 would not be very different from that of two decades later" (p. 247, note 61). It is, however, 15 percent greater than the 1805

²⁸ It is generally agreed that the smallpox epidemic of 1767 was mostly confined to Cape Town and had little effect on the Khoikhoi living in rural areas.

Census count. The backcasting from the 1805 figure is consistent with continued campaigns against the San, but not all of the population decline between 1780 and 1805 can be attributed to San decline. Thus, Guelke's estimate is based on the assumption that Khoi population decline continued from 1780 through the 1805 Census. Alternatively, it is also easy to argue that the 1805 Census undercounted the Khoi and San populations, some of whom would not have wanted to be counted by the government, and that Guelke's 1780 estimate is consistent with the 1805 Census count.²⁹

V. Comparing Simulations of Cape Colony Population

Figure 2 plots the Fourie-Green simulation of Khoi population that uses their initial and final population benchmarks, their two smallpox epidemic benchmarks, and assumption of constant rates of population decline between the population benchmarks. For comparison, I also plot three additional simulations that use all of the Fourie-Green assumptions and population benchmarks but for the initial population. Additional simulations are made using initial Khoi population estimates in 1652 of 200,000 (Select Committee of the British Parliament 1837), 100,000 (Elphick 1977), and 40,000 (Stow 1905).

I provide two additional simulations of the Khoi population that are constructed using the methodology set out in Fourie and Green (2015). In both simulations, I maintain Fourie and Green's assumptions regarding Khoi mortality rates in the 1713 smallpox epidemic (20 percent) and the 1755 epidemic (5 percent) as well as their initial population benchmark (50,000 people). In the first simulation, I adjust the 1780 Khoi

²⁹ The 1805 Census did not count Khoi living in Nama lands north of the Orange River and did not count Khoi living in Little Namaqualand and Bushmanland as they were not officially part of the Cape Colony.

population benchmark by removing the 3,000 San from the benchmark to make it consistent with the 1652 population benchmark that uses only the Khoi population. Using the new 1780 Khoi population benchmark of 20,000 people and all of the other assumptions made by Fourie and Green, I obtain a slightly higher rate of population decline over the 1652-1780 period (-0.7 v -0.6 percent) and a slightly higher rate of population decline during the non-smallpox years (-0.5 v. -0.4 percent). The new simulation, Fourie-Green-Adj, is displayed in Figure 3 along with the original Fourie-Green simulation.

The second new simulation builds on the first, as it uses the adjusted Khoi population benchmark of 20,000 people for 1780 as well as the Fourie-Green assumptions regarding the initial population and losses from the two smallpox epidemics. It differs from earlier simulations of Khoi population by setting different population growth rates for four “non-smallpox” periods: 1652-1712, 1714-1723, 1723-1754, and 1756-1780. Particular events (human disease, animal disease, drought, and war) were identified above for the 1652-1712 and 1714-1723 periods that were likely to be associated with Khoi population decline. By contrast, there are no such events for the 1723-1754 and 1756-1780 periods that could have led to punctuated Khoi population declines and Fourie and collaborators identify one force contributing to Khoi population stabilization—increased Khoi attachment to settler farming and grazing ventures (Fourie and van Zanden, 2013; Fourie and Green 2015). In the second simulation, I account for differences in population growth over the four periods by setting Khoi population growth rates equal to zero in the 1723-1754 and 1756-1780 periods. The evidence points to a greater decline in the Khoi population the 1652-1712 and 1714-1723 periods. For these

two periods, the rate of Khoi population decline increases in the second simulation from -0.42 in the original Fourie-Green simulation and -0.53 in the adjusted Fourie-Green simulation to -0.95.

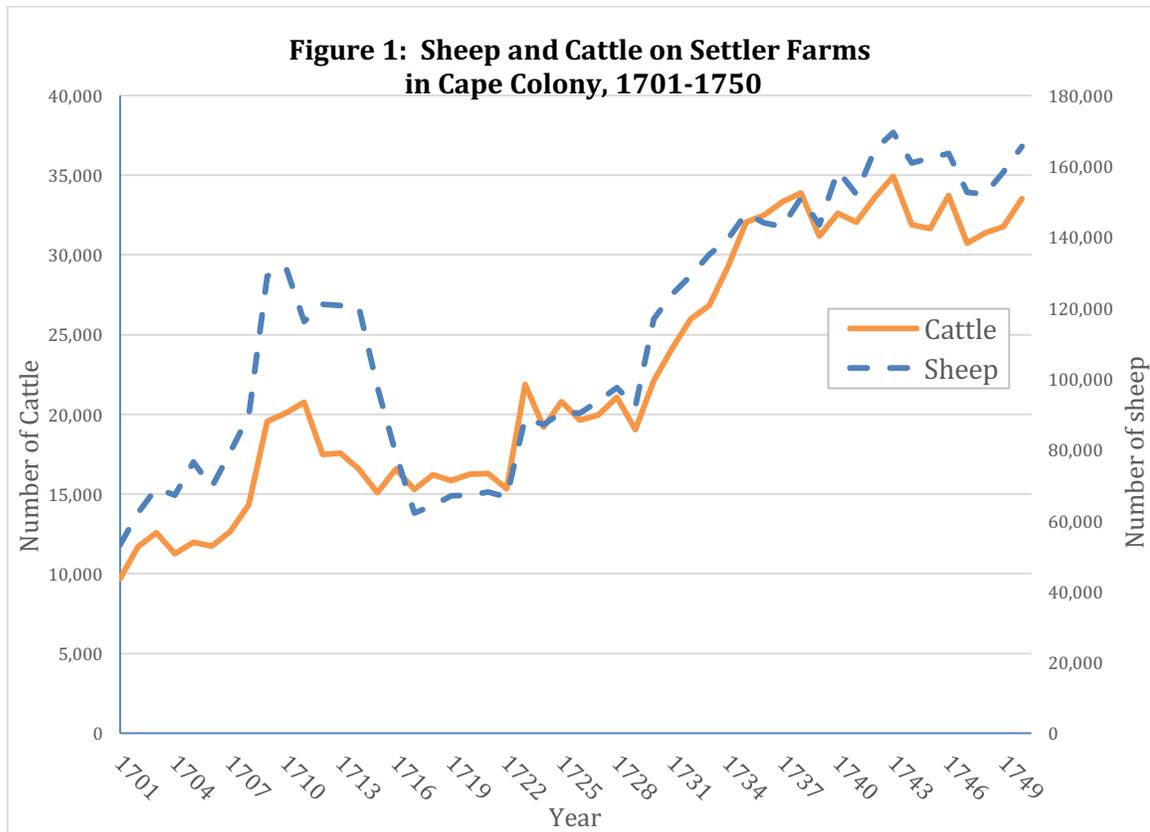
It is useful to remember that these simulations are based on just four data points: Rough estimates of the Khoi population at two benchmark dates and rough estimates of the population declines during two smallpox epidemics. The simulations are useful because they help us understand the implications of adopting benchmarks on Khoi population but obviously do not tell us much about the particular path of population decline between the initial, end, and smallpox epidemic benchmark years. I offer the new simulations because taking qualitative evidence into account in these simulations provides a glimpse into how small changes in assumptions can affect population over long periods. For example, in the Fourie-Green simulation, the Khoi population falls from 50,000 people in 1652 to 31,875 in 1713, a 36.3 percent decline. In this paper's second simulation, the Khoi population falls from 50,000 people in 1652 to 23,151 in 1713, a 53.7 percent decline. Such differences could be important for understanding long-standing debates in Cape history, as settlers spreading out in the southeast and northern parts of the Cape in the 1720s, 1730s, and 1740s could have faced less resistance from a smaller number of Khoikhoi and, perhaps, more willingness by them to work as laborers for the settlers.

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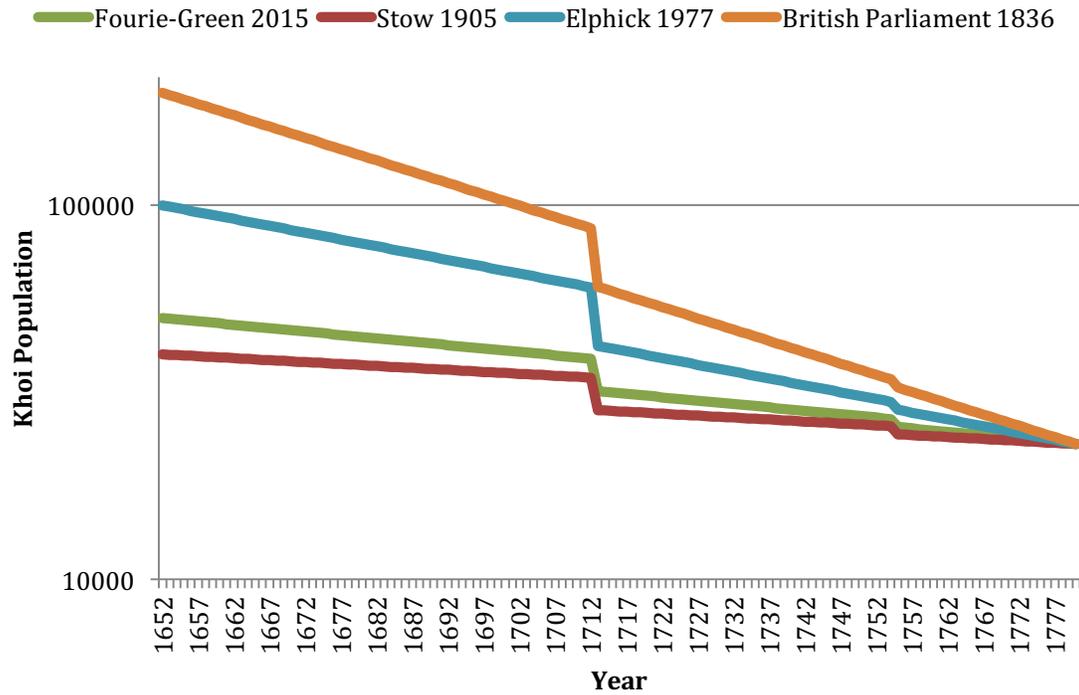
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Source: van Duin and Ross (1987).

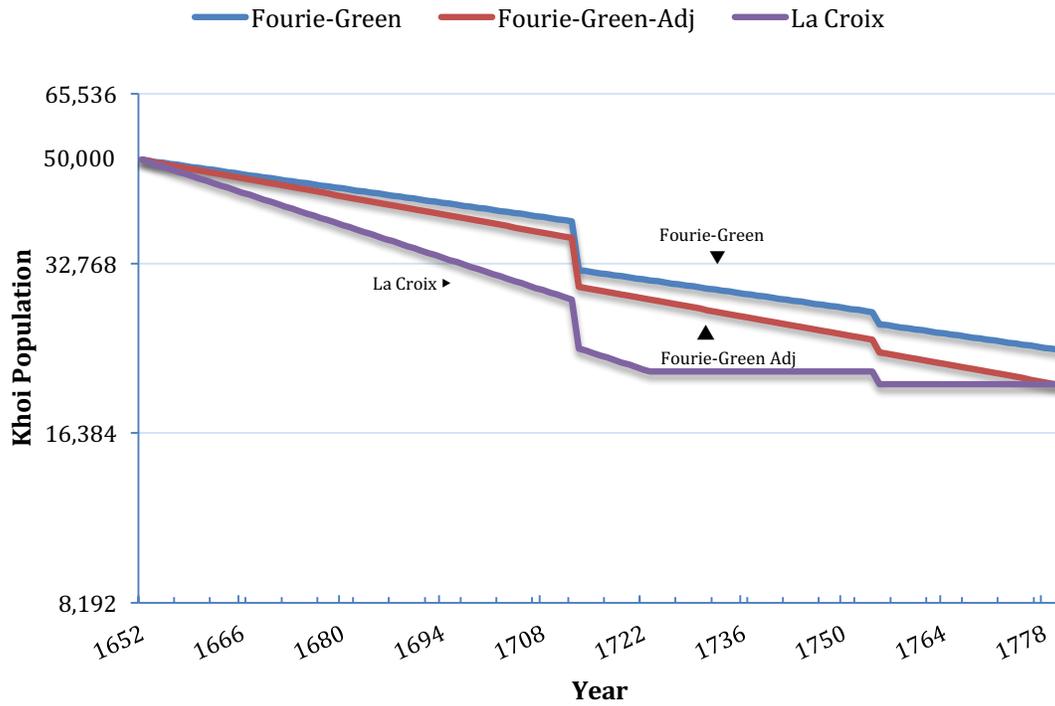
Figure 2: Khoi Population Simulations, 1652-1780



Sources: See text.

Note: The y-axis is in logarithmic scale. This means that a constant rate of population decline appears as a straight line.

Figure 3: New Simulations of the Khoi Population, 1652-1780



Source: Fourie and Green (2015).

Note: The y-axis is in logarithmic scale. This means that a constant rate of population decline appears as a straight line.