The Population of Cisalpine Gaul in the time of Augustus[1]

In order to put the arguments of this article into a realistic perspective, I want to start by making it clear that we do not know and will never know for certain how many people lived in Cisalpine Gaul during the late Republic and early Empire.[2] In theory, then, this could be the shortest article on ancient demography ever written. The reason why I have nevertheless decided to devote a short piece to this seemingly unpromising topic is quite simply that there are, in my view, many interesting things to say about the population of Cisalpine Gaul that have never been said before. It is also my contention that even though the new considerations that will be put forward in this paper do not in any way prove a low-count interpretation of Italy's demographic history to be correct, they at least highlight some difficulties in the high count that have not received the attention they clearly deserve.

My attempt to shed new light on these issues will centre on the shape of the urban network and on the size of the aggregate urban population. I shall begin by looking at the physical size of the towns of Cisalpina and by examining some of the variables that are likely to have influenced the number of town-dwellers per hectare. My next step will be to discuss briefly the problem of urbanization rates. In theory, if it were possible for us to recover both the approximate number of town-dwellers (POP_{urb}) and the overall urbanization rate (URB.RATE) for Cisalpina, the overall population of the North could be extrapolated from the urban population, using the following formula:

$POP_{tot} = (100 : URB.\ RATE) \times POP_{urb}$

If we could put an approximate figure or even a range of approximate figures on average urban population densities in the North ($DENS_{urb}$), the size of the urban population could

[1] I am grateful to John Bintliff and Michael Crawford for stimulating comments made during and after the conference, and also to Giovanella Cresci Marrone (Università Ca'Foscari, Venezia) for providing me with detailed information on the important results achieved by archaeological research at Altinum during the past twenty years.

[2] For an interesting discussion of the demographic make-up of early-imperial Cisalpina from a high-count perspective see Kron (2005). For developments between 225 BC and 28 BC see Bandelli (1999).

be calculated by multiplying the total number of urban hectares ($HECT_{urb}$) by the average number of town-dwellers per hectare. The next step would be to look at the overall urbanization rate in Cisalpine Gaul. If it were possible for us to put an approximate figure on this third variable as well, the population of the North could be extrapolated from the urban population using the following formula:

$POP_{tot} = (100 : URB.RATE) \times HECT_{urb} \times DENS_{urb}$

Finally, if we also had a rough idea of the number of slaves in the North, the size of the free population could be calculated using the following formula:

$POP_{free} = PERC_{free} \times (100 : URB.\ RATE) \times HECT_{urb} \times DENS_{urb}$

In what follows I shall demonstrate that of the four variables contained in this formula the number of urban hectares can be reconstructed with a fairly high degree of confidence. Unfortunately, we have very little information on urban population densities, and even less on urbanization rates and slave numbers. It is precisely for this reason that the size of the population of the North cannot be accurately determined. However, it is my contention that a systematic discussion of the four variables just mentioned helps us to see more clearly the startling contrast between the two reconstructions of Cisalpine Gaul implied by the low-count and high-count scenarios.

1. The physical size of the northern towns

Let me start with what I have come regard as the least problematic variable, the number of urban hectares in *regiones* IX to XII. My first step in approaching this seemingly unrewarding topic was to create three different categories, one comprising the most important urban centres, another comprising centres of secondary importance, and a third comprising all remaining agglomerations of urban status. My next step was to assign each

of the 78 towns of Cisalpina to one of these three groups. In doing so, I took into account various indications contained in the literary sources. Three examples of this are Strabo's use of the phrase *polis axiologos* in regard to Mediolanum and Dertona, and his well-known characterization of Patavium as a wealthy and populous city.[3] He also calls Verona 'a large city' (*polis megalê*), lists Placentia, Cremona, Parma, Mutina, and Bononia among the 'famous towns' (*poleis epiphaneis*) of the North, but uses the term *polismata* (small towns) for Opitergium, Concordia, Atria, Vicetia, Regium Lepidum, Claterna, Forum Cornelii, Faventia, and Caesena.[4] Unfortunately, we cannot always be sure that Strabo's classifications and descriptions are valid for the late Republic and early Empire. At least in some cases he can be shown to have missed or neglected recent developments, such as the expansion of Forum Cornelii and the establishment of veterans at Ateste after 30 BC.[5] However, even if some of the information provided by Strabo is demonstrably out of date, it remains the case that many of his classifications are accurate for the time of Augustus. I have also used some later sources, such as Pliny the Elder's list of the notable towns (*nobilia oppida*) of northern Liguria, and Tacitus' statement that Mediolanum, Novaria, Eporedia, and Vercellae were 'the strongest of the Transpadane towns' (*firmissima transpadanae regionis municipia*).[6]

Although these impressionistic clues shed some light on the relative importance of many northern towns, they do not of course allow us to put any figures on their physical extent. Fortunately, this problem can easily be resolved with the help of the many topographical studies on the cities of Cisalpine Gaul that have been published during the past fifty years. Many of these studies give a precise figure for extent of the inhabited area or contain maps from which an approximate figure can be derived. In other cases we are given information only on the number of hectares enclosed by the town walls. In these cases I have assumed that the entire walled area was inhabited. One reason for this is simply that the scattered evidence we have does not support the view that a large proportion of the areas enclosed by the town walls of the North was not built-up.

[3] Str. 5.1.6, 5.1.11, 5.1.7.
[4] Str. 5.1.6, 5.1.8, 5.1.11.
[5] Chilver (1941, 54) infers that "Strabo is drawing on information about conditions in the region before the principate of Augustus, indeed before the colonizations of the triumviral period." Cf. the data assembled in Appendix I.
[6] Plin. *Nat*. 3.49: Libarna, Dertona, Iria, Vardacate, Industria, Pollentia, Potentia, Forum Fulvii, Augusta Bagiennorum, Alba Pompeia, Hasta, Aquae Statiellae; Tac. *Hist*. 1.70.

My personal impression is that in this respect the towns of Cisalpine Gaul were more compact than many of the cities of Etruria and Magna Graecia during the archaic and classical periods.[7] It seems significant that several towns in the North acquired suburbs in the early-imperial period.[8] If there were large empty spaces within the town walls, one would expect most of these to have been built up before sizeable extramural quarters started to develop. In any case, in assessing the merits of the high count for North Italy we should try to avoid minimizing the urban population by assuming – without good evidence – that a significant proportion of the areas enclosed by town walls did not have buildings. In other words, even in the absence of conclusive evidence, it seems advisable to assume that the entire walled area was built up.

If we apply these ideas to the extensive body of literature on the towns of the North, it is possible to put an exact or at least a rough figure on the size of 60 northern towns, making up some three-quarters of the total. In many cases the impressionistic indications supplied by the literary sources are confirmed. One example of this is Patavium. In his well-known article on the size and population of Greek and Roman cities Beloch gave Patavium 85 ha, on the assumption that only the area enclosed by the two branches of the river Meduacus was built up during the early Empire. Later research has revealed this assumption to be incorrect. In reality, there was a substantial built-up area to the east of the central 'island', which may have comprised a further 40 or 45 ha. On this view, early-imperial Patavium would have covered some 130 ha, confirming Strabo's statement that it was 'the best of all cities' in the North.[9] Another important centre was Mediolanum, whose town wall enclosed some 80 ha in the late Republic and early Empire. This confirms Strabo's description of Mediolanum as an *axiologos polis*. It may be noted in passing that the figure of 133 ha given by Beloch refers to the area enclosed by the longer town wall of the late third century AD.[10] A third example is Bononia, which covered some 50 ha in the age of Augustus.[11] This time Beloch's estimate, 83 ha, turns out to be too high. However, even with 50 ha Bononia remains one

[7] Chevallier (1983, 149): "Même si les plans d'urbanisme, conçues largement, prévoyaient des extensions futures à l'intérieur des murs, la totalité de l'espace urbain à été en general garnie."
[8] Chevallier (1983, 149).
[9] Str. 5.1.7.
[10] Beloch (1886, 487).
[11] References in Appendix I.

of the largest centres in the North, confirming Strabo's statement that is was among the 'famous' cities of the North.

If we define the most important towns of Cisalpine Gaul as those covering 40 or more ha, we end up with 15 very important towns. It is striking to find that the existing archaeological literature permits us to put an exact or approximate figure on the size of all of these towns. The reason for this must be that archaeological research in the North has been biased towards the larger centres. The average number of hectares per town is 58.6, the total number of hectares is 878.4.[12]

My second category comprises those cities which are known to have covered or are likely to have covered between 20 and 40 ha. Interestingly, three of the four *firmissima municipia* mentioned by Tacitus fall into this category, suggesting that even towns half the size of Mediolanum were regarded as substantial. All in all, 29 towns can be assigned to this category on the basis of their physical extent. To these 29 towns I have added Ateste and Atria. Ateste is poorly documented but is known to have received a substantial body of colonists after the battle of Actium. Atria possessed a theatre and a substantial amphitheatre, suggesting that it was far from negligible. In estimating the physical extent of the towns making up my second category I have given each of these towns 27.4 ha, the average for the 29 towns for which we have secure evidence. The total number of hectares for my second category is 849.4.[13]

Finally, we get to the lowest tier in the urban hierarchy, for which I have used 19.9 ha as an upper limit. The sizes of 15 of these smaller centres can be determined with a reasonable degree of confidence. They range from 2 ha in the case of Forum Novum to *c.*15 ha in the case of Feltria and Potentia. The average for the towns whose physical extent can be determined is 9.5 ha. If we apply this figure to those centres for which no data are available (sometimes because their locations are unknown), we end up with a total of 304.2 ha for the smallest towns.[14]

Before proceeding with my argument, I want to draw attention to the fact that the foregoing analysis refers solely to those settlements which were 'towns' in a juridical and administrative sense. It does not take into account the numerous *vici* which must have

[12] Appendix I.1.
[13] Appendix I.2.
[14] Appendix I.3.

existed. In this context a comparison with the settlement system of North Italy at the beginning of the seventeenth century is instructive. In this period the region appears to have had *c.*60 cities and towns having 5,000 inhabitants or over, but alongside these larger centres there were between 150 and 200 'small towns' having populations of between 2,000 and 5,000.[15] Similarly, there must have been several large *vici* and numerous smaller lower-order settlements in the territories of each of the 78 'towns' of Roman Cisalpina. In fact, a considerable number of large *vici* covering between 5 and 15 hectares have been located.[16] If these centres had 150 persons per hectare (cf. below), their populations would have ranged between 750 and 2,250. One lesson to be drawn from this is that at least some *vici* were bigger than some of the 'unimportant towns' making up the third tier of my 'urban' hierarchy. Another is that a functional understanding of the settlement system of Roman North can only be achieved if we take these lower-order centres into account.[17]

At the same time my list of 78 'towns' is too long in the sense that it includes many settlements which would never be classified as 'urban' in a late-medieval or early-modern context. In his study of the urban network of early-modern Europe Jan de Vries applies the label 'town' only to those centres having 10,000 inhabitants or over.[18] In my view, only a few towns in early-imperial Cisalpina fulfilled this criterion. In other studies focusing on late-medieval or early-modern towns, the critical threshold is 5,000 or

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[15] For the large towns of Northern Italy in the early-modern period see Appendix II; for the number of small towns see Musgrave (1995) 254-255.

[16] See e.g. Zaccaria (1979), Strazzulla Rusconi and Zaccaria (1984), Gregori (1993), Maggi and Zaccaria (1994 and 1999), Sena Chiesa (1995 and 2003), Arnaud (2004).

[17] I am grateful to John Bintliff for helpful comments on this point. For a useful discussion of what a fully functional settlement system may have looked like see Bintliff (2002). Unfortunately, the archaeological data presently available offer no sound basis for estimating the proportion of the 'rural' population living in the many lower-order central places that must have existed. It may, however, be noted that in the early-modern period the vast majority of the rural population of North Italy lived within walking distance of the 60 large and ca. 200 small towns providing 'urban' goods and services, including administration (Musgrave 1995, 255). If the total number of settlements performing central-place functions was roughly identical in the early empire, there would have been some 214 (260 minus 46) small towns and large *vici*. Of these smaller settlements the 32 'unimportant towns' of Cisalpina appear to have covered *c.*9.5 ha on average. If the remaining 182 centres also covered 9.5 ha on average, and if they had 150 inhabitants per hectare, the total population of the hypothetical 214 lower-level centres would have been 304,950. This is only one sixth of the 'rural' population implied by the low-count model for Cisalpine Gaul (cf. below). In other words, even in a low-count model for Cisalpina there is room for a very large number of non-urban central places.

[18] De Vries (1984).

3,000.[19] In the case of late-medieval and early-modern Italy we cannot go below the latter threshold, for the simple reason that there are no reliable lists of settlements having fewer than 3,000 inhabitants. If those towns meeting this threshold had urban population densities of approximately 150 persons per hectare, they would have covered *c.*20 hectares.[20] It follows that if we want to make a rough comparison between the sizes of the 'urban' populations in Roman and early-modern times, all Roman settlements which were 'towns' in a juridical sense but covered less than 20 hectares must be classified as 'non-urban'. If we apply this criterion, we are left with 46 'towns' in early-imperial Cisalpina which can be compared to the *c.*63 northern 'towns' which had populations of 3,000 or over at the start of the seventeenth century AD.[21]

If we add up my estimates for these 46 towns, we obtain a rough estimate of 1727.8 urban hectares in Cisalpine Gaul. Since some of the underlying data are rough approximations, there can be no doubt that there is a considerable margin of error. It must, however, be emphasized that my estimate of the number of urban hectares in the North is almost certainly too high rather than too low. As I have already pointed out, I have consistently assumed that the areas enclosed by the town walls of the North were entirely built up. Secondly, although my analysis focuses on the size of the North-Italian population in 28 BC, my list of northern towns includes some urban centres, such as Augusta Praetoria, which either did not exist or did not have the citizenship in that year.[22] Thirdly, my estimates refer to the physical extent of the towns of Cisalpine Gaul in the early Empire. Since most of the archaeological data cannot be dated very precisely, this means that all increases in the size of towns during the Julio-Claudian period are included in my estimates. For all these reasons it seems highly unlikely that the 46 towns which make up the first two tiers of my 'urban' hierarchy covered more than 1700 hectares in 28 BC.

Regardless of the margins of error to which I have alluded, this crude figure is of considerable interest. As is well known, the high count for late-republican Italy assigns a

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[19] E.g. Bairoch (1988).
[20] Of course, it is precisely for this reason that I have chosen 20 hectares as the lower limit of my second category of towns.
[21] Appendix II. Since not all 'towns' having populations of 3,000 or over appear in Bairoch (1988), the figure of 63 is to be regarded as a minimum figure.
[22] Another possible example is Augusta Taurinorum, which may have been founded in 27 BC (e.g. Chilver 1941, 201).

population of c. 6 million to the North. This is higher than the figure for AD 1600, when the regions corresponding to Roman Cisalpina were inhabited by some 5.4 million people.[23] Of these 5.4 million inhabitants 1.17 million, or 21.7%, lived in cities and towns having a population of 3,000 or over. For the limited purposes of this section I want to draw attention to some data concerning the size of the northern cities in the early-modern period. From the mid sixteenth century onwards, Milan, Venice, and Bologna appear to have been the largest centres in terms of physical size, with *c*.794, 600, and 419.5 ha respectively.[24] Alongside these giant cities there were many other substantial towns, such as Brescia, Cremona, Ferrara, Genova, Mantova, Padova, Piacenza, Verona, and Vicenza. Of this second group of cities Ferrara, Genova, Padova, Piacenza, and Verona covered areas of 340, 155, 450, 290, and 380 ha respectively.[25] The total for these five cities plus Milan, Venice, and Bologna is *c*.3,428.5 ha. In other words, eight large cities in the North, accounting for roughly 45% of the urban population in the sixteenth century,[26] were twice as large as the combined 46 large and medium-sized towns of Cisalpine Gaul in the early Empire. These figures suggest that the total number of urban hectares in North Italy in the early-modern period must have been at least 7,000, which would be roughly four times higher than the estimated figure for 28 BC.[27] Unless we assume that urban population densities were three or four times higher in Roman times than they were during the Renaissance, it follows that the high count for the North can be maintained only by positing a Roman urbanization rate far below the early-modern level.

2. Urban population densities

[23] Beloch (1937-1961) 3.352, followed by Jongman (1988, 72) and by Lo Cascio and Malanima (2005, 14). Del Panta et al. (1996, 275) assume a total population of 12.5 million (instead of Beloch's 13.3 million) for Italy as a whole (including the islands) around 1600.

[24] Milan: 794 ha in 1565 according to Beloch (1937-1961, 3.1565); Venice: 600 ha according to Benevolo (1980, 600); Bologna: 419.5 ha in the early fourteenth century according to Beloch (1937-1961, 2.91)

[25] Chandler and Fox (1974, 85): Ferrara 340 ha in 1500; Heers (1961, 45): Genova 155 ha in 1450; Benevolo (1980, 326): Verona 380 ha in the fourteenth century, Piacenza 290 ha in the fourteenth century, Padova 450 ha within the Venetian walls of the fifteenth century.

[26] Appendix II.

[27] It follows that Kron (2005, 474-5), is quite wrong in suggesting that the urban population of North Italy in Roman times may have equalled that of the later Middle Ages.

The second variable in my formula is the number of people per urban hectare. At first sight, any attempt to put a figure on this variable seems doomed to failure. The main difficulties can be summarized as follows. There can be no doubt that in many Italian towns urban population densities varied over time. This problem is especially acute if we base our calculations on the amount of space enclosed by town walls. As many scholars have observed, Greek, Etruscan, Oscan and no doubt Roman towns often contained empty spaces which were built up during a later stage of development. Moreover, even if we assume that the entire area enclosed by the walls of an ancient town was indeed built up, it was of course entirely possible for urban population densities to increase over time, for example because new buildings were fitted in among existing ones, or because it became more common to build houses with two or three storeys.[28] A combination of these developments is known to have taken place in republican Pompeii, where we observe an increase in the number of buildings within the town walls and in the number of buildings having an upper floor.[29]

Several factors which favoured such a development can be identified. To begin with, it does not seem far-fetched to suppose that many inhabitants of urban agglomerations preferred to live within the town walls, if only because they appreciated the protection provided by these walls. We should therefore expect urban population densities to have increased before large suburbs started to develop. This phenomenon is well attested in medieval Europe. In the specific case of Graeco-Roman towns we must also reckon with the fact that older towns were gradually boxed in by the cemeteries surrounding them, making it difficult for suburbs to develop.

Of course it was also possible for urban population densities to decline. It has pointed out that decreases in the urban population, even drastic ones such as the population collapse caused by the Black Death, were usually not reflected in any change in the physical make-up of towns.

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[28] This development is known to have taken place in many cities all over the world. See e.g. Chandler and Fox (1974, 5) for densities up to 200/ha just before the building of a new town wall.

[29] For the gradual filling up of empty spaces within the town walls of Pompeii see Pesando (1997, 13-15) and Schoonhoven (2003, 236-8). For similar developments in second-century BC Cosa see Brown (1980, 66). More two-storey buildings in late-republican and early-imperial Pompeii: Pesando (1997, 77, 207-8) and esp. Pirson (1999, 161, 171-3).

Although the ancient evidence relating to the issue of urban population densities is not exactly overwhelming, there are good reasons for thinking that the number of inhabitants per urban hectare varied enormously. A well-documented example is the Latin colony of Cosa, where 24 larger and 224 smaller houses were discovered.[30] The ratio between the two types is approximately one to ten, suggesting that the bigger houses belonged to *equites* and the smaller ones to foot soldiers. In any case, it seems reasonable to assign a family of five or six to each of the smaller houses and between 10 or 12 people to the remaining 24, which were approximately twice as big. This would give the colony between 1,360 and 1,632 free and unfree inhabitants, or between 101 and 121 persons/ha.[31] It may be noted that this is the density for the entire area enclosed by the town wall. The density per hectare for domestic space only would be approximately 25% higher.

On the other hand, between 20,000 and 58,000 people are thought to have lived within the walled area of Ostia, which comprised 69 ha. The urban densities implied by these figures range from 290 to 840 persons/ha.[32] The latest estimates are close to the lower end of this band.[33] However, even a population density of 300/ha would be at least two and a half times higher than the corresponding figure for Cosa.

The densities implied by the most common population estimates for Rome are also high. Although some scholars have assigned Rome fewer than 500,000 inhabitants, most ancient historians continue to support the old figure of between 800,000 and one million. If the entire population lived within the area later enclosed by the Aurelian wall, the average number of people per hectare would be between 580 and 730. If we include the suburbs beyond the Aurelian wall, it becomes between 440 and 560.[34]

It appears therefore that the highest urban population densities in Roman Italy are likely to have been at least four of five times higher than the low density reconstructed for Cosa. How then can we put even a very approximate figure on population densities in the towns of Cisalpine Gaul?

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[30] Fentress et al. (2003, 24).
[31] In Roman Egypt the average size of households in the *metropoleis* was 5.31. The population structure of Egypt is thought to be similar to that of Italy. See Bagnall and Frier (1994, 68). Brown (1980, 18) gives mid-republican Cosa 1,100 inhabitants.
[32] Duncan-Jones (1982, 276).
[33] Storey (1997, 973-5): 319 persons/ha.
[34] Hopkins (1978, 97); Lo Cascio (1999, 165).

In my view, some headway in this difficult field can be made by looking at urban population densities in Italian cities and towns of the late medieval and early modern periods. During the first half of the fourteenth century, when Italy's urban population reached a temporary high, most Italian cities appear to have had population densities ranging between 100 and 140 persons/ha. Cities falling into this category include Pistoia, Verona, Bologna, and Padova, with 103, 105, 119, and 133 persons/ha respectively. Later on, in the sixteenth century, Milan had 126 inhabitants/ha.[35] In some cities we find somewhat higher densities. Thus early-fourteenth-century Arezzo is thought to have had some 168 inhabitants/ha, while a density of 175 persons/ha can be calculated for Florence in 1333.[36] Finally, it is possible to detect a small group of cities with much higher densities. The most striking case is late-medieval Genova, with some 65,000 inhabitants on 155 ha, or 419 persons/ha. Another is early fourteenth-century Siena, with 50,000 people on 165 ha.[37] In this case the implied density is 303 inhabitants/ha. It should, however, be noted that the area enclosed by the town walls of Siena was not entirely built up. In other words, in the built-up area the number of people per hectare must have been considerably higher than 300.[38]

How can these differences in urban population densities be explained? In the case of medieval and early-modern Italy, the answer clearly lies in the architectural make-up of the cities and towns in question. Most medieval towns were agglomerations of one-

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[35] Pistoia: 117 ha in the late thirteenth century according to Herlihy (1967, 74); Verona: above, note 25; Bologna: 419.5 ha in the early fourteenth century according to Beloch (1937-1961, vol. 2, 91); Padova: 300 ha in 1320 judging from the map in Hyde (1966, 36); Milan: above, note 24. For all these cities I have used the population estimates of Malanima (1998): Pistoia 12,000 in 1300, Verona 40,000 in 1300; Bologna 50,000 in 1300, Padova 40,000 in 1300, Milan 100,000 between 1500 and 1600.

[36] Arezzo: 107 ha according to Cherubini (2003, 140); Florence: 630 ha in 1333 according to Herlihy (1958, 35 n.1) (the figure of 512 ha given by Beloch 1937-1961, vol. 2, 128, is too low). Again the population estimates are those of Malanima (1998): Arezzo 18,000 in 1300, Florence 110,000 in 1300. If Pisa, whose third circuit of walls enclosed *c*.185 ha according to Herlihy (1967, 74) had *c*.38,000 inhabitants around 1300 (thus Herlihy 1958, 36), it would have had 205 persons/ha. But the estimates for early fourteenth-century Pisa are controversial (Ginatempo and Sandri 1990, 259), with Malanima (1998) assigning the city only 30,000 inhabitants in 1300, implying an urban population density of 162 persons/ha.

[37] For Genova see above, note 25. According to Benevolo (1980, 326) the fourteenth-century walls of Siena enclosed *c*.180 ha, but I have used the lower figure of 165 ha given by Bortolotti (1983, 30). Cf. Piccini (2003). The figure of 101 ha given by Beloch (1937-1961, 2.150) and by Chandler and Fox (1974, 92) is far too low. For the estimated populations of Genova and Siena see Malanima (1998). For Genova's population cf. also Ginatempo and Sandri (1990, 69-70, 248-9).

[38] The Italian pattern is very similar to the pattern found in the northern Netherlands in the mid sixteenth century. In 1560 the average urban population density for all towns in the northern Netherlands was *c*.130 persons/ha. But Nijmegen and Dordrecht had 200 people/ha, while the fast-growing city of Amsterdam had 300 inhabitants/ha. See the valuable collection of data in Visser (1985, 15-17).

and two-storey buildings.[39] The corresponding population densities hardly ever exceeded 150 persons/ha. There were, however, some notable exceptions. One instance of this was medieval Genova, which was boxed in not only by its city walls but also by the surrounding mountains. Precisely for this reason, Genova had a disproportional number of very high buildings, many of which had six or more storeys.[40] As we have seen, this is reflected in an unusually high urban population density. It cannot be a coincidence that Siena also had numerous high buildings, with four or five-storey buildings being the norm in the central urban area.[41] As a result of this, the streets of Siena feel like alleys, although they are not particularly narrow. A third example is medieval and early-modern Naples, where we again find a combination of high buildings and high urban population densities.[42]

In my view, this is the key to the enormous variations in urban population density that can be observed in Roman Italy. Even though we know disappointingly little about the domestic architecture of late-republican and early-imperial Rome, the existence of high buildings in this city is documented as early as the third century BC.[43] It is also possible to point to the Augustan regulation which established 70 feet as the maximum height of new buildings in Rome. If we assume that each floor had between 12 and 15 feet, it follows that Augustus was thinking of buildings having between five and six storeys.[44] High buildings are also characteristic of Ostia, where the average building-height for residential buildings was between 2.5 and 4 storeys.[45] In the light of these data, it is quite reasonable to assign Ostia and Rome population densities between 300 and 600/ha.

The other end of the spectrum is represented by Cosa, with no more than 100 or 120 persons/ha. From recent analyses of the domestic architecture of this town it appears that the houses of the ordinary colonists who made up the majority of the population had

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[39] Pounds (1974/1988, 24, 275); cf. Pounds (1969).
[40] Heers (1962, 402); Chandler and Fox (1974, 5); Ginatempo and Sandri (1990, 69)
[41] E.g. Balestracci and Piccini (1977).
[42] In the 1530s Naples had *c*.150,000 inhabitants on 350 ha (Benevolo 1980, 326, and I.Quaresima, 'Napoli, città contesa' at http://www.napoliontheroad.it/quaresimadomspagnola.htm). The implied urban population density is *c*.430 persons/ha. Cf. Beloch (1886, 409) on the very high densities in nineteenth-century Naples.
[43] Yavetz (1958, 506) and Patterson (2006, 353), both referring to Liv. 21.62.3.
[44] Yavetz (1958, 507), referring to Str. 5.3.7 and Suet. *Aug*. 89. For a good discussion of the archaeological evidence for multi-storeyed *insulae* in Rome see Wallace-Hadrill (2000, 204-208).
[45] Duncan-Jones (1982, 277).

no upper storeys.[46] So far, the only domestic building in which traces of an upper floor have been detected is the so-called House of the Skeleton, from the early first century BC. It is perhaps no coincidence that this was a somewhat larger house which occupied the space of five former gardens.[47] Cosa is therefore a clear example of an Italian town having low buildings and a correspondingly low urban population density.

For the purposes of this paper the central question is whether the towns of Cisalpine Gaul were more like Rome or more like Cosa. In my view, there are good grounds for thinking that the latter alternative is more likely to be correct. One of the reasons why Rome had many high buildings is that the oldest part of the city had been boxed in by the Servian wall for a very long time. At the same time the existence of cemeteries made it difficult for suburbs to develop to the West and South. A closely related factor was that the fast expansion of Rome's population had the inevitable effect of pushing up the price of land within and near the city walls. This means that for purely financial reasons the owners of rented apartments must have aimed at a high rental income per square metre. The main options were to build expensive apartments that could be rented to wealthy people or to build high *insulae* containing many cheaper domestic units. As several studies of the living conditions of the Roman *plebs* have demonstrated, many builders opted for the latter alternative.[48]

If we apply these ideas to the North, it is surely not without significance that many northern towns were recent foundations. Interestingly, many towns in Cisalpine Gaul appear to have acquired walls only in the final decades of the republican period or in the Augustan period.[49] Many other towns remained unwalled under the Empire.[50] Moreover, because most northern towns were young, they had not yet become locked in

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[46] Brown (1980, 64-7, and figs 81, 83, 85-7); Bruno and Scott (1993,,esp. figs 6-9, 11-12, 20-1, 25-6).

[47] Brown (1980, 67-8); Bruno and Scott (1993, 142-3). Judging from Fentress et al. (2003, 34-42), another large house, the so-called House of Diana, had no upper floor.

[48] Yavetz (1958). As Wallace-Hadrill (2000, 205) points out, many *insulae* are likely to have had a heterogeneous population comprising tenants of different social categories.

[49] For examples see Conventi 2004: Mutina (42 BC), Alba Pompeia (Augustan), Brixia (Augustan), Comum (59 BC), Mediolanum (40-35 BC), Ticinum (Augustan), Verona (mid first century BC), Vicetia (second half of the first century BC), Concordia (Augustan), Tergeste (33-32 BC), Tridentum (second half of the first century BC), Augusta Taurinorum (Augustan), Augusta Praetoria (Augustan), Augusta Bagiennorum (*vallum* under Augustus). For a general discussion of the towns walls of Cisalpina see Chevallier (1983, 104-6) and Mansuelli (1971, 120-1).

[50] e.g. Libarna (Conventi 2004, 89), Ateste, Caesena, Forum Livii, and most of the smaller towns listed in the appendix.

by their suburban cemeteries. So if these towns expanded during the late Republic and early Empire, one would expect them to have grown laterally rather than vertically.

As far as the archaeological evidence goes, it seems to support this inference. In a general survey of the domestic architecture of Cisalpina the Italian archaeologist Scagliarini notes that the ground plans of northern houses tend to be large, and that there is very little evidence for the existence of upper storeys in the North. His main finding is that the domestic architecture of North Italy was 'extensive' compared to that of Pompeii.[51] In other words, urban population densities in the North were low. In a more recent study Michele George notes that the houses of North Italy are in many ways more similar to those in North Africa and Southern Gaul than to those in Central Italy.[52] Since urban population densities in Roman Gaul are thought to have been lower than 150/ha, this observation points in the same direction as Scagliarini's earlier findings.[53]

Of course it may be objected that our knowledge of the make-up of the towns of Cisalpine Gaul is based on a limited corpus of houses excavated in a large number of towns. Part of my response to this would be that even if the material presently available does not *prove* that northern towns had low populations densities, it is at least fully compatible with the drift of my argument. It seems also significant that during the extensive excavations carried out at Aquileia, a free-lying site, no traces of Ostia-type *insulae* were discovered.[54] This suggests to me that even in the larger towns of Cisalpine the average height of buildings was low.

Although any attempt to put a figure on population densities in the North must remain to some extent speculative, I am inclined to opt for an average density of between 120 and 150 persons/ha for the areas covered by the towns of Cisalpine Gaul (including

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[51] Scagliarini (1983, 304): "Non vi è nulla che indichi concretamente una parcellazione delle insulae in piccole unità di abitazione con sfruttamento intensive dello spazio … Le planimetrie sono estensive, è scarsamente documentata la presenza di un secondo piano …" Cf. Chevallier (1983, 147): "Elles [les maisons] ont en général un seul etage, même à basse époque, mais de grandes pièces (50 à 70 m2, très tôt)." This impressionistic conclusion was based on a corpus of 501 private houses (ibid. 148), of which only a small proportion had been properly published.

[52] George (1997, 32-3). Cf. also Tosi (1992b, 382-3); Maioli (2000, 183); Ortalli (2003, 96-7); Cavalieri Manasse and Bruno (2003, 47).

[53] For Transalpine Gaul see Goudineau (1980, 310): "une densité de 150 à l'hectare constitue un seuil qui ne fut sans doute franchi par aucune ville de province", followed by Woolf (1998, 137 and n.103).

[54] Mian (2003, 84-6).

those areas occupied by public buildings).[55] If we adopt this range, average urban population density in early-imperial Cisalpina was somewhat higher than the density which can be reconstructed for mid-republican Cosa, but roughly comparable to those which are found in most Italian cities and towns of the late-medieval and early-modern period.

3. Urbanization rates

In AD 1600 21.6 percent of the North-Italian population lived in cities and towns having 3,000 or more inhabitants, and 18.4 percent in urban centres with a population of 5,000 or over.[56] This made North Italy one of the most urbanized areas of early-modern Europe.

Did Roman Cisalpina have a similarly high urbanization rate? Before trying to provide a tentative answer to this question, I begin by noting Lo Cascio's view that, if we ignore Rome, the overall urbanization rate in early-imperial Italy is likely to be have been between 15% and 20%.[57] On this view, Roman Italy as a whole was almost as urbanized as Italy in the early-modern period.

Most of those who subscribe to a low-count interpretation of Italian demographic history operate with somewhat higher urbanization rates, although few attempts have been undertaken to explain them. One notable exception is Jongman, who constructed a model which explains high urbanization rates as a result of high elite income and expenditure. In his view, the combined annual incomes of the Italian elite, comprising senators, *equites*, and decurions, must have been enough to feed some 2.4 million people

[55] Hansen (2006, 61-3) operates with a density of 150 persons/ha of inhabited space in the Greek *poleis* of classical times. If we assume an average urban population density of 120 persons/ha for the towns of Roman Cisalpina and assume that 20% of the area of towns in this region was occupied by public spaces and buildings, we also end up with a density of 150 people/ha for domestic space. For the Greek town of Halieis, Jameson, Runnels, and Van Andel (1994, 549-52) reckon with 250 persons/ha for domestic space. If 20% of the town's built-up area was occupied by streets and public buildings, the implied density is 200 persons/ha. In the case of Hermion the same authors assume that domestic space accounted for 75% of the built-up area.

[56] See Appendix II. The percentages are based on a northern population of 5.4 million. During the early-modern period North Italy also had between 100 and 150 small towns with populations over 2,000. Although some of these had more than 3,000 inhabitants, they do not appear in the lists of Bairoch (1988). This means that the proportion of the north-Italian population living in towns with 3,000 inhabitants or over was actually somewhat higher than 21.7%.

[57] Lo Cascio (1999, 165); Lo Cascio and Malanima (2005, 17).

or 32% of a hypothetical population of 7.5 million.[58] In this calculation the population of Rome is included. If we remove Rome, the urbanization rate drops to somewhat below 20%. Of course, the level of urbanization would rise again if there were 6 million rather than 7.5 million free and unfree Italians in the time of Augustus.

For our purposes the most interesting aspect of Jongman's approach is that it establishes a causal link between a high urbanization rate and a consistent pattern of elite residence in towns. This is in line with the findings of many specialists in medieval Italian history, who have identified the habit of Italian landowners to live in cities as a major force behind the high level of urbanization found in late-medieval Italy.[59] The existence of this causal connection provides us with at least one reason for thinking that urbanization rates in Cisalpine Gaul cannot have been very low. As Garnsey has noted, the modest size of the Latin colonies of the North and the extent of the centuriated areas surrounding them suggest that most *pedites* were expected to reside in the countryside. The other side of the coin is that the Roman government acted on the assumption that the larger landowners would be town-based.[60] In other words, in setting up the Latin colonies of Cisalpina the Roman government extended to the North the central-Italian tradition of elite-residence in towns. As far as we can tell, the indigenous elites of Transpadana were also town-based by the end of the Republic. From the early Principate onwards they also took up the central-Italian model of urban euergetism.[61] The establishment of veterans from Central Italy in various northern towns between 44 BC and 25 BC can only have strengthened this pattern.

On the other hand, there are some grounds for thinking that Cisalpine Gaul was less urbanized than the Centre and South. Some twenty years ago Bekker-Nielsen calculated average inter-city distances for various parts of Italy. One of his findings was that the average distance between cities in the North was between 24.9 and 35.6 km (except in the Via Aemilia corridor). The corresponding figure for Latium and Campania is only 11 km.[62] In principle we cannot rule out the possibility that urbanization rates in the North were similar to those in Central Italy, and that the towns of the North were

[58] Jongman (1988, 192-8).
[59] e.g. Jones (1974, 1679-81); Britnell (1991, esp. 26-30).
[60] Garnsey (1998, 123-6); cf. Gabba (1979, 34).
[61] Frézouls (1990).
[62] Bekker-Nielsen (1989, 25).

simply bigger than those in Latium and Campania. One clue that points in this direction is Strabo's statement that Cisalpine Gaul had a large free population and many large and wealthy cities. According to him North Italy had surpassed the Centre and South in these respects.[63] On the other hand, the simple fact that northern towns were spaced more widely than those in other parts of Italy still suggests that urbanization rates in the North were somewhat below the average rate for Italy as a whole. One reason for this is that the town populations of Roman Italy almost certainly included some farmers.[64] In areas where the rural population was scattered over wide territories, such town-based farmers must have made up a relatively small proportion of the total farming population. For this reason alone higher inter-city distances are likely to have meant a somewhat lower urbanization rate.[65]

In the case of four republican and early-imperial colonies it seems possible to estimate the proportion of the total population that could be accommodated within the city walls. The two cities of Placentia and Cremona, both founded in 218 BC, had town walls enclosing 38.4 and 30 ha respectively. If we assume 120 inhabitants/ha, 4,600 and 3,600 people can be fitted into these towns. We also know that Placentia and Cremona received 6,000 male colonists each, a figure which increases to *c*.21,000 if women and children are included. The urbanization rates implied by these figures are 22% and 17.1%. If we assume 150 people/urban ha, these figures become 27.4% and 21.4%.[66] Of course, it may be objected that at least initially most of the colonists sent out to Placentia and Cremona must have lived within the town walls, if only because these two towns were situated near the territories of hostile Gaulish tribes. Although this alternative scenario makes some sense, there are strong indications that the Roman government did in fact expect most inhabitants of newly founded colonies throughout Italy to take up

[63] Str. 5.1.12.
[64] In the Latin colonies of the North there was room for a substantial group of *pedites*. As Garnsey (1998, 126) admits, plots of land in the vicinity of town could be worked by commuting peasants.
[65] Another factor influencing urbanization rates in Italy was the amount of land owned or controlled by the urban elites of the various regions concerned. Unfortunately, we know next to nothing about patterns of land ownership in the North. The only important clue is the land register from Veleia, which shows that large estates were common in this part of Cispadana. In the Latin colony of Aquileia *equites* received 140 *iugera* of land apiece (Brunt 1971/1987, 193).
[66] Although the colonists must have held most of the land belonging to Placentia and Cremona, there are reasons for thinking that some Celtic communities survived in pockets. See Garnsey (1998, 128). The actual rates of urbanization are therefore likely to have been somewhat below the levels indicated in the main text. My calculations in the final part of this section are based on an overall urbanization rate of 15%.

rural residence, even in potentially hostile areas.[67] Moreover, in the specific cases of Placentia and Cremona we must remember that Placentia was situated in the territory of the Anares, and Cremona in that of the Cenomani, two Gaulish tribes that maintained friendly relations with Rome before the Second Punic War.[68] The Roman government therefore had some reasons for thinking that the colonists sent out to these towns would not be exposed to frequent hostile attacks. In any case, even if initially most of the colonists of Placentia and Cremona lived within the town walls, the historical legacy of this can only have been an urbanization rate considerably *higher* than 20%.

Another example is the town of Comum, where Caesar established some 4,500 colonists. If these included the descendants of an earlier group of 3,000 colonists, as seems to have been the case,[69] the total free population of Comum and its territory would have been roughly 16,000. With 120–150 people/urban ha, between 3,000 and 3,750 of these could have been accommodated within the town walls, which enclosed 25 ha. The implied urbanization rate is between 18.8% and 23.4%. Of course this rate would have been significantly lower if the descendants of the original colonists were not included among the Caesarian colonists.

Finally, of the *c*.10,500 free people who were settled in the Augustan colony of Augusta Praetoria in 25 BC between 5,000 and 6,300 can be accommodated within the 42 ha enclosed by the town walls. In this case the implied urbanization rate is as high as 50% or even 63%. We must, however, remember that the population of Augusta Praetoria's territory included an unknown number of indigenous *incolae*, so that the real urbanization rate must have been considerably lower.[70]

These scattered data suggest to me that in many parts of Cisalpine Gaul urbanization rates were in the order of 15% or higher.[71] There is, however, a

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[67] Garnsey (1998, 126). As he points out, "the practice of disposing of land in viritane allotments in newly conquered and therefore potentially hostile areas … is distinctly problematic, unless we accept that dispersed settlement could be viewed as a way of controlling an area on which the hold of the ruling power was insecure."

[68] Peyre (1979, 47-8).

[69] Brunt (1971/1987, 201). But cf. Duncan-Jones (1982, 267).

[70] Brunt (1971/1987, 171 n.4).

[71] In estimating the proportion of the colonial population that could be accommodated within the walls of Placentia, Cremona, Comum, and Augusta Praetoria I have ignored the fact that a certain percentage of the urban population is likely to have consisted of slaves owned by the elite. This means that the urbanization

complicating factor. In my discussion of the physical extent of the northern towns I have distinguished between very important, important, and unimportant urban centres. The last of these three categories was defined as comprising all 'towns' covering fewer than 20 ha. Although many of these smaller centres are poorly documented, it would appear that at least some of them were service centres for the surrounding countryside rather than centres of habitation for local landowners. One illustration of this is Velleia, which had a small amphitheatre and a basilica but few substantial houses.[72] Another is Forum Novum, which covered a mere 2 ha.[73] Judging from its small size, this town cannot have been inhabited by a substantial land-owning elite. At this point I refer back to my earlier argument that urbanization rates in many parts of Cisalpine Gaul cannot have been very low, because we are dealing with a society in which a large proportion of the land-owning elite was town-based. As I have just explained, this argument is invalid for many of the smallest towns of the North. For this reason it seems appropriate to use a lower nucleation rate for these 'towns'. In my calculation I have used a nucleation rate of 10% for all centres covering fewer than 20 ha. In principle this figure could be lowered to 5%. At first sight this may seem to introduce an uncontrollable margin of error. It must, however, be remembered that small 'towns' account for only one-seventh of all 'urban' hectares in the North. For this reason alone even a radical downward adjustment of the nucleation rate for these centres would have little effect on the outcome of my calculations. At the same time many of these small centres are found in districts which are likely to have been thinly populated.[74] Some other small 'towns' seem to have been small simply because they had small territories. For all these reasons I do not think that the existence of such centres makes it impossible to reach any meaningful conclusions.

We have now reached a point where we can begin to feed figures into the formula discussed at the beginning of this paper. In doing so I have distinguished between two

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rates for the free populations of these four towns must have been somewhat lower than the rates given in the main text.

[72] Mansuelli (1971, 78-9, 90-1, 145).

[73] Appendix I.3.

[74] One thinks especially of Liguria, where urban territories were considerably smaller than in other parts of Cisalpine Gaul (Chilver 1941, 48-9). According to Bekker-Nielsen (1989, 25), the average distance between towns in *regio* IX was 26 km; but this region comprises Cispadana, where intercity distance were larger than in Liguria. The mountainous parts of Liguria seem to have been characterized by low urbanization rates and by low population densities. A large proportion of the rural population seems to have lived in villages. See Giorcelli Bersani (1994, 187-90); Arnaud (2004, 484).

scenarios, one in which the average urban population density in Cisalpina is put at 120 persons/ha, and another which is based on 150 persons/ha. The results are as follows:

1. 2,000 urban ha, 120 people/urban ha, urbanization rate 15% for towns covering 20+ ha and 10% for smaller 'towns' >>> 1.74 million people in Cisalpine Gaul

2. 2,000 urban ha, 150 people/urban ha, urbanization rate 15% for towns covering 20+ ha and 10 % for smaller 'towns' >>> 2.18 million people in Cisalpine Gaul

In other words, if we assume that urbanization rates in the North were between 10% and 15%, and if we assume that the number of people per urban hectare was roughly similar to that found in most Italian cities of the late-medieval and early-modern period, we end up with a total population between 1.7 and 2.2 million. It will be immediately apparent that these estimates fall far short of the population required in Lo Cascio's high-count scenario.

If we retain Lo Cascio's own estimates of urbanization rates in early-imperial Italy, the only way to arrive at a much higher population is to assume urban population densities matching those found in medieval and early-modern Genova and Naples. But, as we have seen, the archaeological data presently available, fragmentary though they are, make it difficult to offer a convincing alternative reconstruction along these lines.

Before taking leave of the topic of urbanization, I should like to point out that in extrapolating the total population from the 'urban' population, I have classified all settlements which were 'towns' in a juridical sense as 'urban'. As we have seen, however, most analyses of medieval and early-modern towns ignore all centres having fewer than 5,000 or 3,000 inhabitants. If we want to avoid comparing apples with oranges, we must therefore exclude all Roman 'towns' covering fewer than 20 ha (cf. above). If we do this without altering our estimates for the total population of Roman Cisalpina, the number of 'urban' hectares drops to 1,700, and the overall urbanization rate to 12.8%.

This finding sheds an interesting light on the traditional claim that the low count for Roman Italy implies an implausibly high urbanization rate.[75] In the case of Cisalpina this claim is demonstrably incorrect. In fact there can be no doubt that even a low-count scenario for the North implies an urbanization rate which is very much lower than the rate for the same area in the early-modern period.

4. Free citizens and slaves

Although the foregoing discussion may already seem unduly speculative, I should like to add a few words about the quantitative importance of slavery in the North. Before proceeding with a brief discussion of this slippery topic, I hasten to say that we do not have any data which permit us to arrive at even a very crude estimate of the size of the unfree population of Cisalpine Gaul. My aim is simply to see whether it is possible to construct a more or less realistic *model* in which the findings of the foregoing sections can be related to the Augustan census figures.

Let me begin by noting that widely diverging estimates of the number of Italian slaves have been put forward during the past forty years. According to Brunt, for instance, early-imperial Italy had some 7 million inhabitants, of whom 3 million were of servile status. In his view, slaves made up roughly 40% of the Italian population.[76] In his *Conquerors and Slaves* Hopkins lowered these figures to 6 million and 2 million, in which case one-third of the Italian population would have been of servile status.[77]

In an article which appeared a few years ago I argued that the number of slaves needed on slave-run villas for the production of wine and olive-oil has been vastly exaggerated, and that Hopkins' estimate can only be defended by assuming that many slaves were employed in cereal cultivation and on smaller farms.[78] More recently, Scheidel has suggested that there may have been no more than between 1 and 1.5 million slaves in early-imperial Italy.[79] Finally, Lo Cascio operates with between 2 million and 3

[75] e.g. Lo Cascio (1994, 39; 1999, 164-5).
[76] Brunt (1971/1987, 124).
[77] Hopkins (1978, 7 n.13). Cf. Andreau and Descat (2006, 80-2), who hold that slaves made up between 30% and 40% of the Italian population in the late Republic and early Empire.
[78] De Ligt (2004, 746-7).
[79] Scheidel (2005) and in this volume.

million urban and rural slaves, making up between 15% and 20% of his Italian population of 15–16 million.[80]

This rapid survey shows that it is extremely difficult to put a figure on the number of Italian slaves. However, it is generally agreed that slaves must have made up at least 15–20% of the Italian population.

As far as Cisalpina is concerned there is very little to go on. It has often been claimed that there were fewer slave-run plantations in the North than in the Centre and South.[81] In view of the fact that slave-run *villae* in Central Italy were better placed to produce for the huge market in Rome, this seems a reasonable assumption. On the other hand, it does not seem far-fetched to suppose that the elites of the Latin and Roman colonies of Cisalpina set up slave-run *villae* on the central-Italian model, and that many others followed their example.[82] Such *villae* would have been oriented towards the growing towns of the North.[83]

As has already been noted, there is little evidence to back up this general argument. One of the few exceptions is the literary evidence concerning a slave-run estate of the Saserna family, which can be assigned to North Italy.[84] We also know that in various towns of Cisalpina slaves and freedmen were used in commerce and manufacturing, though we cannot put any figure on this phenomenon.[85] All in all, it is impossible to go beyond the inference that in Cisalpina, as in Central Italy, slaves were

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[80] Lo Cascio and Malanima (2005, 11-12); cf. also Lo Cascio (2002, esp. 62-3).

[81] Chilver (1941, 146-150: few large estates in the North; 151: more tenants than slaves in the North). Chevallier (1983, 206-7): slavery less in important in Cisalpina than in the Centre and South. Duncan-Jones (1982, 273) reckons with 28.6% slaves in Comum and its territory. This seems too high for a northern town.

[82] As Gabba (1979, 34) points out, the holdings of 100 and 140 *iugera* assigned to the *centuriones* and *equites* of the Latin colony of Aquileia were similar in size to Cato's model estate of 100 *iugera*.

[83] Of course, there is much archaeological evidence for rural *villae* in the countryside of North Italy. See e.g. Mansuelli (1957b); Righini (1979). Unfortunately, we have very little information on the labour force used on such estates. Note that there is no secure evidence for Tibiletti's suggestion that large landowners in North Italy tended to use 'indigenous wage labourers' ('salariati indigeni') rather than slaves: Tibiletti (1978, 93 n.44).

[84] Var. *R* 1.18.6 and 1.19.1; Col. 2.12.7-8, on which see Kolendo (1973, 14-16) and Bortuzzo (1994). Cf. also Chevallier (1983, 207 n.262), referring to Cic. *Mil.* 26 (rural slaves in the Apennine districts of North Italy) and *II* 11.592 (rural slavery near Pola).

[85] *Liberti* in trade and manufacturing: Chilver (1941, 177, 181); Lazzaro (1985 and 1989); Zampieri (2000). Cf. also Pelletier (1991): slaves and freedmen important in the urban economy. Most of the slaves referred to in inscriptions from the North are imperial slaves and slaves fulfilling various administrative tasks for towns or for private owners. See Chevallier (1983, 207-8).

employed not only as domestic servants but also as labourers and managers in all sectors of the economy.

Despite its meagerness, even this finding is not without interest. As the evidence from Roman Egypt shows, the proportion of slaves in the total population could easily be as high as 10% even in those parts of the empire in which most slaves were used either in households for domestic purposes or as personal agents for their masters' business dealings.[86] The north-Italian percentage is likely to have been somewhat higher than this.

In what follows I shall present the results of two calculations in which the share of the servile population has been set at 15% and 20% respectively. This does not mean that I attach any importance to these estimates.[87] My aim is merely to explore some of the ramifications of two more or less realistic reconstructions of the population of Cisalpine Gaul in the light of the debate between high-counters and low-counters. In other words, I am not implying that these are the *only* realistic scenarios.

If these estimates are combined with those offered in the foregoing sections, we can offer a range of estimates for the size of the free population of the North around 28 BC. However, if we want to compare the results of these calculations to the approximate sizes of the free population implied by the low count and high count for Cisalpline Gaul, we must also distinguish between those communities which had been given the citizenship before or in 89 BC and those which received it in 49 BC.

The first category comprises 22 towns, among which were Ariminum, Bononia, Aquileia, Mutina, Placentia, and Ravenna.[88] In the early Empire the 16 largest towns of this group of 22 covered some 600 ha, while the smallest centres covered a further 50 ha. This leaves some 1,350 ha for those towns which received the citizenship in 49 BC. If we

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[86] Bagnall (1993, 208-9); Bagnall and Frier (1994, 70-1). In a less affluent community in Upper Egypt slaves made up 7% of the urban population. See Bagnall, Frier, and Rutherford (1997). As Scheidel (2001, 61) points out, this suggests that Bagnall and Frier's earlier database need not be representative of Egypt as a whole.

[87] For my purposes the crucial question is not whether these percentages are accurate, but what happens to my estimates of the free population if the hypothetical share of the servile population is lowered or increased. For instance, if slaves made up 10% rather than 15% of the northern population, the share of the free population increases from 85% to 90%. This would increase my estimate of the size of the free population by 6%. In short, the hypothetical percentages that have been fed into my calculations are already so low that the effect of lowering the share of the unfree population on my estimates of the number of free inhabitants is negligible.

[88] See Appendix I, in which these 22 towns have been marked with an asterix. I have followed Brunt (1971/1987, 170) in assuming that Ravenna was Latin after 89 BC.

assign these towns between 120 and 150 persons/ha, put the nucleation rate at 15% for the large centres and at 10% for the smaller ones, assume 15–20% of the population to have been of unfree status, and put the share of adult male citizens at 28% of the total free population, we obtain the following results:

1. 120/ha, 10–15 % urban,[89] 20 % slaves >>> 268,800 new adult male citizens
2. 120/ha, 10–15 % urban, 15 % slaves >>> 285,600 new adult male citizens
3. 150/ha, 10–15 % urban, 20 % slaves >>> 336,000 new adult male citizens
4. 150/ha , 10–15 % urban, 15 % slaves >>> 357,000 new adult male citizens

As is immediately apparent, these four outcomes fall within a range that is entirely compatible with the low count, according to which roughly 300,000 new adult males in Transpadana acquired the citizenship in 49 BC.

Since these calculations are based on a number of assumptions that cannot be verified with the help of the surviving evidence, they do not *prove* the low-count interpretation to be correct. They do, however, show that it is possible to fit the archaeological data concerning the towns of the North into a coherent model that makes sense from a low-count perspective.

5. Some possible alternatives

At this point we must ask whether it is also possible to construct an alternative model which is compatible with the high-count scenario of Italian population development.

As is well known, the corner stone of the high-count model is the assumption that the census figure for 28 BC, when *c*.4 million *civium capita* were registered, refers to adult male citizens only. Since comparative evidence suggests that all premodern censuses were at least 10% defective[90] and because adult males must have made up *c*.28% of the population, this implies a total citizen population of *c*.15 million, of whom between 1.25 million and 2 million can be assigned to the provinces.[91] If we add between

[89] 15% for towns covering 20+ ha, 10% for smaller towns. Cf. section 3.
[90] Scheidel (1996, 167).
[91] 1.25 million citizens abroad: Lo Cascio (1999, 164); 2 million: Frank (1924, 333).

2 and 3 million slaves,[92] we end up with a total Italian population of at least 17 million. In Lo Cascio's most recent reconstruction between 35% and 45% of the population is assigned to Cisalpina as early as 225 BC.[93] If we apply this percentage (which is likely to have increased during the late Republic) to 28 BC, we end up with at least 6 million people in Cisalpine Gaul in the early Empire.

We are therefore faced with the task of manipulating our formula in such a way as to obtain a northern population roughly three times higher than the total implied by the low-count scenario. Since the number of urban hectares is a given, this can only be done by varying the number of people per urban hectare and/or the rate of urbanization. Just by way of illustration, I present four scenarios in which these two variables have been adjusted in such a way that the requirements of the high-count model for Cisalpina are met.

1. 1,900–2,000 urban ha,[94] 450 persons/urban ha, and 14–15 % in towns
2. 1,800–2,000 urban ha, 300 persons/urban ha, and 9–10 % in towns
3. 1,700–2,000 urban ha, 240 persons/urban ha, and 7–8 % in towns
4. 1,650–2,000 urban ha, 150 persons/urban ha, and 4–5 % in towns

In other words, it is entirely possible to fit 6 million people into Cisalpine Gaul, but only at the cost of making this area very sparsely urbanized or by giving its towns a very high urban population density.

The former alternative is directly at odds with Lo Cascio's assumption that between 15% and 20% of the population of Augustan Italy lived in towns. As I have noted, it also sits very uneasily with the likelihood that a consistent pattern of elite-residence in towns resulted in a relatively high urbanization rate.

The second alternative raises the question as to why the young towns of Roman North Italy should have had population densities twice or three times as high as most of

[92] Above at note 80.
[93] Lo Cascio and Malanima (2005, 9). Kron (2005, 458-9), suggests that early-imperial Cisalpina should have held at least 75 percent of the peninsular population, which works out as 42.9% of the total population of mainland Italy.
[94] With 450 persons/ha all settlements covering more than 6.7 ha would have had more than 3,000 inhabitants. With 150 persons/ha only settlements covering 20 or more hectares reach this threshold.

their counterparts in Renaissance Italy. One possible answer is that the towns of Roman Cisalpina had far more three- and four-storey buildings than their late-medieval and early-modern successors. As we have seen, however, the archaeological evidence relating to the urban make-up of the northern towns points in precisely the opposite direction.

By way of conclusion I can only repeat what I said at the beginning of this paper. We do not know and we shall never know how many people lived in Cisalpine Gaul in the late Republic and early Empire, and we shall never be able to disprove the high-count model for this area once and for all. Nonetheless it is my contention that my investigations into the towns of the North have provided ancient historians with some good reasons for thinking that the high-count interpretation of the republican and Augustan census figures is unlikely to be correct.

Appendix I. Cities and towns in early-imperial Cisalpina

Note: communities which are thought to have received the citizenship in 90 BC are marked with an asterix. Where multiple figures are given, the figures which are underlined have been used in my calculations.

1. Very important towns (> 40 ha) (15 towns)

Altinum: according to Tombolani (1987, 324) Altinum reached its maximum extent in the first century AD, when the *pomerium* enclosed an area of 120 ha. In addition to this there is evidence for a substantial suburb outside the northern gate, which began to develop in the early Augustan period (Tombolani 1987, 335-36). Up until the final years of the Republic, however, the town seems to have been bounded on its eastern side by the Sioncello canal (Tirelli 2003, 37; Cresci Marrone and Tirelli 2007, 62). If we assume that the area within the late-republican *pomerium* was entirely built up, it follows from this that Altinum covered *c*.80 ha in the late 30s BC.

*Ariminum: according to Conventi (2004, 49) walled area 41 ha at the time of foundation (not 34 ha as suggested by Beloch 1886, 487). Judging from the map in Ortalli (1995, 470) there was no habitation outside the republican wall, within which room was found for a theatre and amphitheatre of early-imperial date.

*Aquileia: according to Conventi (2004, 78) walled area 41 ha at the time of foundation. There are indications that the town had become considerably larger in the time of Augustus. It continued to grow in the early Empire, when it became a transit centre for the armies of the upper Danube (e.g. Chilver 1941, 57). The wall of the third century AD enclosed *c*.100 ha (Jäggi 1990, 163 n.15). In Late Antiquity the

town came to cover more than 125 ha (Verzár-Bass 2003, 74-5). It seems reasonable to give late-republican Aquileia ca. 60 ha (cf. Beloch 1886, 487: 64 ha).

Augusta Praetoria: 41.7 ha according to Conventi (2004, 149). Cf. Beloch (1886, 487: 41.4 ha). The town was founded in 25 BC.

Augusta Taurinorum: 54.7 ha according to Conventi (2004, 145). It remains unclear whether the town was founded in 29 BC or 27 BC (Chilver 1941, 21). The figure of 47 ha given by Beloch (1886, 487) is too low.

*Bononia: according to Conventi (2004, 70) inhabited area *c*. 50 ha at the moment of foundation, but the detailed discussion by Scagliarini (1991, 88) makes it clear that the figure of 50 ha actually refers to the size of the inhabited area in the early Empire. Strangely enough, no trace of a wall of republican date has been detected so far. Beloch's figure of 83 ha (Beloch 1886, 487; cf. 1898, 272) is much too high. Cf. also the map in Ortalli (2000, 440) and Garnsey (1998, 127 n.76), who gives Bononia 60 ha within the walls.

Brixia: walled area 36 ha according to Beloch (1898, 272), but ca. 50 ha in the age of Augustus according to Conventi (2004, 101). Within this area the hill of the *arx* was not entirely built up. See the map in Büsing-Kolbe and Büsing (2002, 33). On the other hand the town seems to have acquired a substantial *suburbium* at an unknown date (Tozzi 1974, 37). I have therefore retained Conventi's figure. It is unclear to me why http://www.bresciainvetrina.it/bresciastoria/epocaromana.htm gives Brescia only 29 ha in the Flavian age, when the town is supposed to have reached its maximum extension. For Brescia's growth under the Flavii see Rossi (2003, 27).

*Cremona: walled area 30 ha at the time of foundation according to Conventi (2004, 55). Since Cremona appears to have grown substantially during the late Republic and early Empire (Tac. *Hist*. 3.34), I have given it 45 ha.

Hasta: *c*.40 ha. *c*.42-45 ha. according to Panero (2000, 98). Cf. the map in Mercando (2003, 12).

Mediolanum: *c* 80 ha. in the late republic and early Empire according to Ceresa Mori (1995, 471) and Conventi (2004, 182). The much later wall of Maximianus Herculius enclosed 133 ha (Beloch 1886, 487).

*Mutina: according to Conventi (2004, 73) the inhabited area was 40 ha. at the moment of foundation, but according to the map in Giordani (2000, 424) *c*. 48 ha if later growth is included. These figures are considerably lower than the figure of 65 ha given by Beloch (1898, 272).

Patavium: as Beloch pointed out, the two branches of the river Meduacus enclosed an area of *c*.85 ha (Beloch 1898, 272). However, judging from the location of the extra-urban graveyards the late-republican *pomerium* was approximately twice as large (Gasparotto 1951, 83-91; Tosi 1987, 160-161), and there can be no doubt that a substantial part of the eastern half of this area was inhabited (Tosi 1987, 161; cf. Livy 10.2). If we assume that about three quarters of the area within the *pomerium* were built up in 28 BC, Patavium covered ca. 130 ha at this date.

*Placentia: according to Conventi (2004, 58) walled area 38.4 ha (cf. Mansuelli 1971, table iv), but inhabited area ca. 43 ha in the late Republic and early Empire

according to the map in Calvani (2000d, 378). For a brief discussion of Placentia's growth see Calvani (2000d, 376).

(*)Ravenna: *c*.60 ha. according to the map in Maioli (2000, 530).

Verona: walled area *c*.46.5 ha in *c*.50 BC (Conventi 2004, 115), but there appears to have been a substantial *suburbium* already under Augustus: see Cavalieri Manasse and Bruno (2003, 47). I have therefore followed Panero (2000, 205) in giving Verona *c*.50 ha.

Total: 878.4 ha
Average: 58.6 ha

2. Important towns (20-40 ha.) (31 towns of which 29 known)

Alba Pompeia: walled and inhabited area 38.6 ha under Augustus according to Conventi (2004, 96).

Albintimilium: inhabited area *c*.24 ha according to Conventi (2004, 98).

Atria: although very little is known about Atria's lay-out and size (De Min 1987, 259-262), the town had a theatre, an amphitheatre and a basilica (Tosi 2003, 503-506). As pointed out by Fogolari and Scarfi (1970, 47), these clues suggest that Atria was more important than some scholars have suggested. De Min (1987, 259 and 262) interprets the archaeological data as indicating that the town reached its acme in the first century AD.

Augusta Bagiennorum: area enclosed by early-imperial *vallum* 21 ha according to Conventi (2004, 151).

Aquae Statiellae: inhabited area ca. 28-30 ha according to Panero (2000, 55).

Ateste: although Str. 5.1.8 classifies Ateste as a small town, there are reasons for thinking that it had a substantial population in early-imperial times. The exact size of the area enclosed by the (pre-Roman) *pomerium* cannot be determined, but the location of the suburban cemeteries suggests that it was large (Baggio Bernardoni 1987, 221-223). From the map at the end of Tosi (1992a) it appears that remains of houses and *tabernae* are scattered over more than 50 ha, but the town seems to have been unwalled (Baggio Bernardoni 1992, 310) and to have consisted of three densely built-up nuclei which were surrounded by a scatter of isolated houses. Many of the domestic and non-domestic buildings which have been excavated were constructed during the first century of the Principate. Part of the explanation for Ateste's growth during this period may be the arrival of numerous veterans in or about 30 BC (Keppie 1983, 195-6). There are indications that Ateste declined in the second half of the second century AD (Baggio Bernardoni 1992, 318).

Bergomum: according to Scalvini et al. (1987, 7) modern estimates of the walled area of early-imperial Bergomum have ranged from 18.48 ha (Angelini) to 23.2 ha (Degrassi). I have used the latter figure, even though Angelini's estimate seems to be based on more accurate information.

*Caesena: small according to Str. 5.1.11. Built-up area *c*.20 ha. according to the map in Maioli (2000, 496).

*Claterna: small according to Str. 5.1.11. *c*.22 ha according to the map of Ortalli (2000, 456). *c*.18 ha plus some habitation along the roads according to the website of the Soprintendenza per i Beni Archeologici dell'Emilia-Romagna (http://www.archeobo.arti.beniculturali.it/claterna/claterna.htm).

Comum: walled area *c*.25 ha in 58/57 BC according to Conventi (2004, 104).

Concordia: although Str. 5.1.8 classifies Concordia as a small town, its walled area covered *c*.40 ha under Augustus; see Conventi (2004, 133).

*Dertona: walled area *c*.29 ha judging from the map in Panero (2000, 22).

*Eporedia: one of the *firmissima municipia* of Transpadana according to Tac. *Hist*. 1.70. Walled area *c*.26 ha judging from the map in Panero (2000, 187). The suburbs between the eastern gate and the amphitheatre are almost certainly to be dated to the second half of the first century AD. See Mercando (1990, 453).

*Faventia: small according to Str. 5.1.11, but built-up area *c*.22 ha. according to the map in Guarnieri (2000, 472).

*Forum Corneli: small according to Str. 5.1.11. This fits the situation in the first half of first century BC, when the town covered *c*.10 ha (Susini 1957, 95). But under Augustus it came to cover *c*.32 ha. See Mansuelli (1957a, 142-3), and the map in Curina (2000, 464).

*Forum Livii: inhabited area *c*.30 ha according to the map in Guarnieri (2000, 478).

Genua: *c*.25 ha judging from Melli (2003, 133, 137). Cf. Heers (1979, 372): Roman Genua smaller than 30 ha.

Industria: *c*.25 ha according to the nineteenth-century map reproduced in Zanda (1990, 566). At least some of the assumptions on which this map was based were confirmed by later research. See Zanda (1990, 564 n.8) and Mercando (2003, 10).

Laus Pompeia: walled area *c*.20 ha judging from the map in Tozzi and Harari (1990, 528).

Libarna: inhabited area 23 ha under Augustus according to Conventi (2004, 89).

Novaria: *c*.35 ha according to Panero (2000, 205). Cf. the map in Mercando (1990, between pages 462 and 463).

Opitergium: although Str. 5.1.8 classifies Opitergium as small, its built-up area covered *c*.35 ha under the Empire. See Busana (1996, table 2).

*Parma: *c*.30 ha according to the map in Calvani (2004b, 394). The figures of 16-18 ha and 21.6 ha given by Tozzi (1974, 55) and Conventi (2004, 76) are far too low for the early Empire.

Pedo: inhabited area *c*.22 ha according to Panero (2000, 229).

Pola: *c*.20 ha judging from Letzner (2005, Abb. 16). The figure of 16.5 ha given by Beloch (1886, 487) seems somewhat low.

Pollentia: inhabited area *c*.20 ha judging from the map in Panero (2000, 135) but *c*.34 ha according to Conventi (2004, 92). Although Panero's analysis of the topography seems sound, I have used the latter figure.

*Regium Lepidum: small according to Str. 5.1.11, but the built-up area covered *c*.21 ha under the Empire; see the map in Lippolis (2000, 412).

Tarvisium: judging from the map in Malizia (1987, 350) Tarvisium covered *c*.25 ha in the first century AD. If Palmieri (1980, 170-172) is right is conjecturing that the NW quarter of the town was built in or after the Augustan period, Tarvisium covered a

considerably smaller area in 28 BC, but the evidence supporting this hypotesis is very fragile (Malizia 1987, 350-351).

Ticinum: walled area 38.4 ha under Augustus according to Conventi (2004, 111).

Vercellae: one of the *firmissima municipia* of Transpadana according to Tac. *Hist*. 1.70. According to some specialists the town covered only 11-13 ha in the early Empire, but Panero (2000, 219) suggests that it may well have been at least twice as large. I have given Vercellae 30 ha.

Vicetia: although Str. 5.1.8 classifies Vicetia as small, the town wall of the second half the first century BC enclosed *c*.28 ha; see Conventi (2004, 118).

Total known = 794.2 ha
Average for known towns: 27.4 ha
x 31 = 849.4 ha

3. Unimportant towns (< 20 ha) (32 towns of which 15 known)

Acelum: although the area covered by late-republican and early-imperial Acelum cannot be determined (Furlanetto 1987, 427-428), the small size of its theatre (diameter of cavea = 54 m.) leaves no doubt that it was an unimportant town.

Albingaunum: area enclosed by the town wall of *c*.80– *c*.70 BC no more than 7 ha. See the maps in Massabò (2004a, 461-2; 2004b, 48). Cf. also Gambaro (1999, 87-8).

Auriate (Forum Germanianum): small according to Panero (2000, 257).

Bellunum: very little is known about the urban lay-out of early-imperial Bellunum, but if the northern section of the early-imperial *pomerium* coincided with the line of the medieval town wall running between the porta Dante and porta Doiona (thus Zanovello 1987, 446-449 with map), the town covered no more than 11 ha. If the *pomerium* ran along the northern edge of the Piazza dei Martiri, as indicated on the map on http://www.webdolomiti.net/storia/storia_origini_romani.htm, this figure rises to 13 ha.

Beria

*Brixellum: *c*.12.5 ha according to the map in Calvani (2000e, 408).

Ceva

Cemenelum

Dripsinum

Feltria: according to Rigoni (1987, 450-451) Roman Feltria was bounded by the river Colmeda to the west, by the Via Garibaldi and Via Nassa to the south and (probably) by Borgo Ruga to the east. This would give the town *c*.15 ha.

*Fidentia: inhabited area *c*.8.1 ha according to the map in Calvani (2000c, 390).

Forum Fulvii/Valentia: Forum Fulvii was originally a *vicus* which became more important than Valentia. Panero (2000, 253-256, 261) classifies both Forum Fulvii and Valentia as 'minor centres'.

Forum Iulii

*Forum Novum: *c*.2 ha according to the map in Calvani (2000f, 548).

Forum Popilii: *c*.6 ha. according to the map in Guarnieri (2000, 488).

*Forum Truentinorum

Forum Vibii: small according to Panero (2000, 258-260).

Iria

Iulium Carnicum: very small according to Mansuelli (1971, 78-9).

Laumellum: according to Maccabruni (1990) the size of early-imperial Laumellum (classified by her as a *mansio*) was approximately equal to that of the area enclosed by the late-antique walls. This would give the town *c* 9.5 ha; cf. the map ibid. 142. Gabba (1990) classifies Laumellum as a *municipium*.

Mantua: according to a brief article entitled 'civitas etrusco-romana' on the internet, which seems to summarize the main findings of Velardi (2003), Roman Mantua covered *c*.7.5 ha. Cf. Mart 14.195: *parva Mantua*.

Nesactium: walled area *c*.8 ha judging from Rosada (1999, Tav. 1) and Letzner (2005, Abb. 91).

*Otesini

Parentium

Potentia: according to Panero (2000, 75) the inhabited area was somewhat larger than the area bounded by the modern Via Palazzo di Città, Via Principe Amedeo, Via Silvio Pellico, and Via Vittorio Emanuele II. Since the area enclosed by these streets is *c*.12 ha, I have given Roman Potentia 15 ha.

Segusio: Roman Segusio had a very small amphitheatre (arena: 44 x 36 m), comparable in size to those of Tridentum (62 x 48 m) and Veleia (34.3 x 24.9 m). The walls of the third century AD enclosed *c*.15 ha (Panero 2000, 248), but the size of the town in early-imperial times remains unclear. For this reason I have excluded Segusio from my calculations.

*Tannetum: village with status of town

Tergeste: walled area not larger than 11 ha judging from the maps in Maselli Scotti (1990, 624) and Conventi (2004, 139). Conventi's figure for the length of the town wall (3,000 m) is much too high even for medieval times, when the town perimeter was *c*.1,700 m. In any case there can be no doubt that early-imperial Tergeste was a small town (Maselli Scotti 1990, 626).

Tridentum: walled area 13 ha in the time of Augustus according to Ciurletti (2003, 37) and Conventi (2004, 142). For the growth of suburbs in the late first century AD, see Ciurletti, ibid.

Vada

Vardagate: according to Panero (2000, 265) Roman Vardagate was bounded by the modern Via Luitprando, Piazza Mazzini, Via Duomo, and Piazza Rattazzi. This would give it *c*.3 ha. There was, however, some additional habitation near this urban nucleus (ibid.). I have therefore given this town *c*.5 ha.

Veleia: very small according to Mansuelli (1971, 78-9). *c*.10 ha judging from the provisional map in Calvani (2000a, 376: map 18).

Total known: 142.6 ha

Average for known towns: 9.5 ha.

x 32 = 304.2 ha.

Total: 2032 ha.

Appendix II: Population figures for largest northern cities, AD 1600
(figures taken from Bairoch 1988 and Malanima 1998)

Alessandria	14,000	Reggio Em.	11,000
Asti	9,000	Rimini	8,000
Bagnacavallo	5,000	Rovigo	4,000
Bassano	7,000	Sant'Angelo	4,000
Belluno	5,000	Savigliano	9,000
Bergamo	24,000	Savona	10,000
Bologna	63,000	Torino	22,000
Brescia	40,000	Tortona	5,000
Busca	5,000	Treviglio	6,000
Casale Monf.	10,000	Treviso	13,000
Cento	5,000	Trieste	5,000
Cesena	7,000	Udine	14,000
Chieri	7,000	Valenza	5,000
Chioggia	9,000	Venezia	140,000
Como	12,000	Vercelli	6,000
Conegliano	5,000	Verona	49,000
Cuneo	7,000	Vicenza	36,000
Crema	11,000	Vigevano	8,000
Cremona	40,000	Voghera	5,000
Faenza	12,000		
Ferrara	33,000	Total:	1,164,000
Forli	11,000		
Fossano	5,000		
Genova	65,000		
Gorizia	5,000		
Imola	6,000		
Lodi	14,000		
Lugo	7,000		
Mantova	31,000		
Milano	120,000		
Modena	18,000		
Modica	16,000		
Mondovi	11,000		
Monza	9,000		
Monselice	3,000		
Nicosia	15,000		
Novara	8,000		
Padova	36,000		
Parma	23,000		
Pavia	25,000		
Piacenza	33,000		
Pinerolo	5,000		
Ravenna	8,000		

Since North Italy had a population of *c*.5.4 million in AD 1600, the urbanization rate implied by these figures is *c*.21.6 %. However, since at least some towns having populations of between 3,000 and 5,000 are not included in Bairoch's lists (cf. Musgrave 1995, 254), the real rate must have been somewhat higher. If we take no account of cities having fewer than 5,000 inhabitants, the urbanization rate drops to *c*.18.4% (Lo Cascio and Malanima 2005, 108).