

## USING BURYING GROUNDS TO RECONSTRUCT THE EARLY DEMOGRAPHICS OF FRANKLIN COUNTY, PENNSYLVANIA

Paul Marr  
Department of Geography/Earth Science  
Shippensburg University  
1871 Old Main Drive  
Shippensburg, PA 17257

**ABSTRACT:** *This paper presents an attempt to reconstruct some of the basic demographic characteristics of Franklin county by using grave marker inscriptions for individuals born prior to 1800 as the primary data source. Inscriptions from 70 cemeteries and graveyards were compiled from published sources and field visits, resulting in a data set of over 1000 individuals. Data on age at death; death, birth, and conception date; and ethnicity derived from surnames were recorded for each burial. Results based on analysis of these data suggest that life expectancy was fairly long for those who survived past twenty years. Conception and natality exhibited seasonal characteristics while mortality did not. Men tended to marry later and on average live longer after their spouses died. The population was predominately rural, yet concentrated in a few areas. Finally, towns tended to be more ethnically diverse than rural areas and also exhibited more stable populations.*

**Keywords:** *Cemeteries, Colonial, Demographics, Pennsylvania*

### INTRODUCTION

There is a fairly extensive body of literature that uses information gleaned from burying grounds (cemeteries and graveyards) as the primary data source. A substantial portion of these works either focus on some aspect of grave marker iconography (e.g. Tarlow, 2005; Collier, 2003; Rainville, 1999; Gorman and DiBlasl, 1981) or on a specific site (e.g. Hobbs, 2005; Sledge, 2002; Davidson, 1998). Comparatively speaking, however, few of these studies attempt to place the information derived from burying grounds in a spatial context (e.g. Zelinsky, 1990; Francaviglia, 1971; Pattison, 1955). Yet burying grounds offer researchers several characteristics which make them particularly useful in placing past demographic characteristics within a spatial framework: they are spread across the landscape, occur in sufficient quantity, there is typically not an issue with “double counting” (inasmuch as people only die and are buried once), they are rather permanent, and are at a fixed point on the surface. The last characteristic is of particular importance since the location of a cemetery or graveyard remains constant while artificial boundaries (such as township or county boundaries) often change over time. One final characteristic of burying grounds is of the utmost importance—for nearly a century people have been reading, compiling, and publishing the grave marker inscriptions (Figure 1). From Josiah Thompson in

the early 1920s to modern genealogical societies, the recording of grave marker inscription provides researchers with an invaluable source of demographic information.

Burying grounds serve as a reflection of an area’s social, cultural, demographic, and economic structure. Since most are used over long periods, burying grounds also capture temporal changes in these structures. For example, Collier’s 2003 study of grave markers and their iconography has shed light on shifts from a preference for institutional associations carved on markers (e.g. religious or lodge affiliation) toward more individual and recreational associations (e.g. hunting or fishing scenes). Demographic and mortality information can be easily gleaned from grave markers and can give specific insight into local demographic changes at a level of detail not found in early enumeration data (Stockton, 2003). Yet there some serious limitation that need to be considered when using grave marker inscriptions are a primary data source. During the late 18<sup>th</sup> and early 19<sup>th</sup> centuries the expense of stone markers generally limited their use to individuals of some financial means. Individuals with limited financial resources were typically buried with wooden markers, very few of which have survived. Another means of marking graves common in rural areas during this period was the use of ‘field stones’. These markers were often simply flat stones gathered from the surrounding area and rarely had more than the departed’s initials carved into them. These burials are absent from the data set, skewing the



Figure 1. The oldest grave marker found by the author. This marker is located in the Falling Spring graveyard and reads “Here lies the body of William Forfythe who departed this life May y<sup>e</sup> 19 1759 aged 23 years.”

results toward the wealthier classes. Therefore it is important to keep these limitations in mind when interpreting the results of demographic information derived from grave marker inscriptions.

## FRANKLIN COUNTY’S BURYING GROUNDS

Franklin county lies in Pennsylvania’s Cumberland valley, west of the Blue Mountains and shares its southern border with Maryland. The sites used in this research were chosen based on the availability of grave marker transcriptions and legibility of the markers, the time period when the site was actively used, and whether the site could be located in the field. Approximately half of the locations used in this study had grave marker transcription compiled and made available through the internet. The other half of the locations used were compiled by the author during field work conducted in the summer of 2006. Burying grounds can be divided into three broad categories: (1) graveyards or interments that are proximate to church or meeting house and used by members of a specific religious denomination, (2) cemeteries or interments on designated public lands that can be use by any

religious denomination, and (3) family burial grounds or those interments on private land used by members of a single extended family (Figure 2).

Of the 67<sup>1</sup> burying grounds in Franklin county used in this research, 14 (21%) are cemeteries, 19 (28%) are family burial grounds, and 34 (51%) are graveyards. The distribution of sites chosen covers most of the county, with the exception of the mountainous areas southwest of Mercersburg and northwest of Saint Thomas. Marker inscriptions were recorded and compiled for 1048 individuals. Birth dates were calculated for those records where no birth date was given but the death date and exact age of the person (e.g. 63yrs, 7mo, 23days) were inscribed on the marker, resulting in 340 records which include both birth and death dates (day, month, year). For all records first and last names, year of death, gender, and location were recorded. A surname analysis was then used to attempt to associate each record with a specific ethnic group, resulting in 967 records with an ethnic association. For those records where both birth and death dates were available month of conception was determined by subtracting ten months (40 week gestational period). While somewhat imprecise, this method is more than adequate for examining monthly variations in conception (See Foster et al., 1998). Burying grounds were also coded as to whether they were found in a town or were rural, so that comparisons between the two could be made. A sample of 214 records where marriage ties were certain (e.g. *wife of* or *husband of* inscriptions) were subset to be used in further analyses.

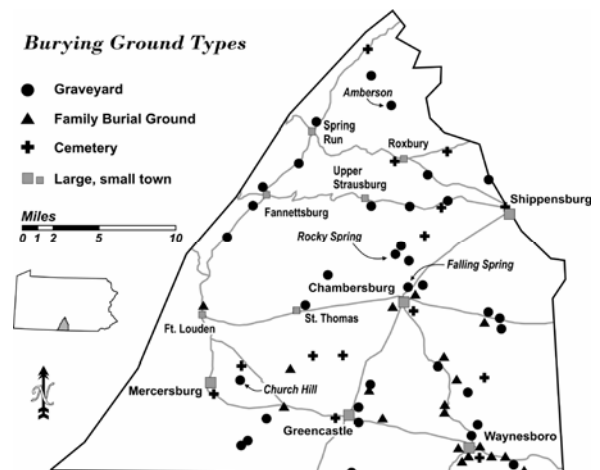


Figure 2. The location and type of burying grounds in Franklin county, Pennsylvania used in this study. Important burying grounds appear in italics.

## VITAL STATISTICS

### Mortality

The average age at death for all records was 66.7 years. The youngest person included in the data base died at 3 years, the oldest died at 108 years. Females accounted for 475 (45.3%), while males accounted for 573 individuals (54.7%) of the total sample. The average age at death for males over the age of 20 for entire study period was 67.8 years, while for females it was 67.4. However, these numbers are somewhat misleading. As can be seen in Figure 3 there were very few infant and child deaths recorded. This is not due to low infant mortality rates but rather that infants were often buried with plain markers that were rarely inscribed with anything beyond a given name or the word *infant* (Figure 4) (Dethlefsen, 1969). Had these young deaths been included in the data set, the average age at death certainly would have been much lower. Some perspective on infant deaths during the can be found at the Bethel Moravian Church cemetery in Swatara Township, Lebanon county. Of the 115 people born in the 1700s that are buried here, 36 were under the age of five years, or approximately 31% of the burials. In Philadelphia between the years 1751 and 1775, Smith (1977) infant death estimates ranged from a high of 330 per 1000 to a low of 98 per 1000. Also the lower socioeconomic classes, who are thought to have had substantially higher mortality rates, are under-represented in the data set. Unfortunately it is difficult to compare these results to other locations since most of the early

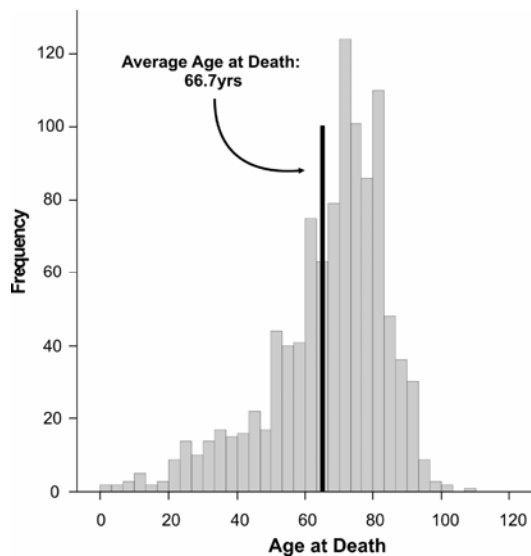


Figure 3. Age at death histogram.

demographic research has focused on cities (see Smith, 1977; Klepp, 1994), places where newly arrived immigrants and periodic epidemics dramatically increased mortality rates.

Deaths followed no obvious seasonal trend within the study area, with eight months falling within one percentage point of the mean (Figure 5). April, May, and August were above the mean but within two percentage points. There is no plausible explanation for the very low percentage of deaths seen in November, inasmuch as previous research suggests that older individuals die more frequently during winter months (Wrigley and Schofield, 1981). Given that so many people in Franklin county were over the age of 65 at their time of death, it would be expected that there would be a peak in deaths during the winter months. This suggests that within the study area seasonality did not have a strong influence on mortality.



Figure 4. A typical infant grave marker from the late 1700s lacking birth and death information. The inscription reads "Infants. Son and Dau. Of Johan and Fanie Johnston".

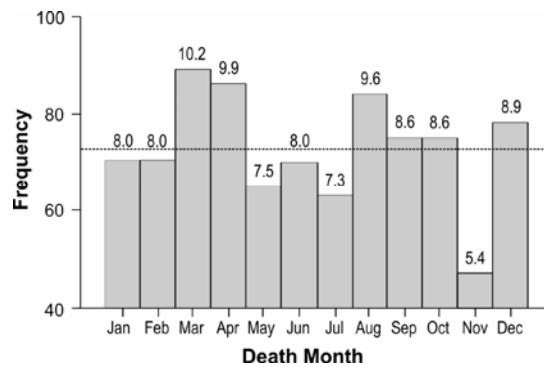


Figure 5. Frequency of deaths per month. The numbers above each bar correspond to the monthly percentage of deaths. The mean is denoted with a dashed line.

**Conception and Natality**

In their study of conception, natality, and mortality in Midwestern cemeteries, Foster et al. (1998) found that there were seasonal surges in conception. Specifically, the percentage of conceptions during the spring months were above the mean, while summer and fall months were below the mean, assuming that if births were randomly distributed throughout the year each month would have 8.3% of the total. This same pattern holds true for Franklin county, although it is not nearly as strong. In Franklin county conceptions were substantially higher than the mean in only two months, April and May (Figure 6), which corresponds to the increases in births during January and February seen in Figure 7. The general trend in the study area appears to be an increase in conceptions from January through May, and then a decrease through December. This trend would lead to births occurring during times when agricultural work was at a minimum, as noted by Bean et al. (1990). Interestingly, although present in both, when conception and natality were examined for urban versus rural burying grounds, it was the urban burying grounds that exhibited the spring/summer conception and fall/winter birth trend most distinctly.

**Marriage, Age Differences, and Longevity**

Two hundred and fourteen individuals for whom marriage status was certain were examined for differences in age at marriage and longevity after the spouse had died. Of the 107 married couples, in 79 couples the males were older at the time of marriage,

in 23 couples the females were older, and in 5 cases the couples were the same age. In those cases where males were older, they were older than their spouses by an average of 7.9 years. In several cases the males were over 15 years older than their spouses and may reflect second marriages (Table 1). Females were much less likely to be older than their spouses, and when older, were only an average of 4.8 years older.

Of the 107 married couples, males outlived their spouses in 51 cases while females outlived their spouses in 55 cases. In those cases where males outlived their spouses, they did so by an average of 18.7 years. Conversely, when females outlived their spouses they did so by an average of 15.1 years. When broken down by year ranges the disparity between male and female longevity following spousal death becomes apparent (Table 2). In 47% of the cases where males outlived their spouses, they did so by over 20 years, whereas only 29% of females outlived their spouses by 20 years.

**SPATIAL ANALYSES**

**Population Distribution**

The total number of burials in a given area can be used as an indication of the total population. The total burials were summed over the study period for each burying ground. Using the number of burials as the ‘z’ value, a burials surface was created from these data and contours were then generated. The largest concentration of burials occurred

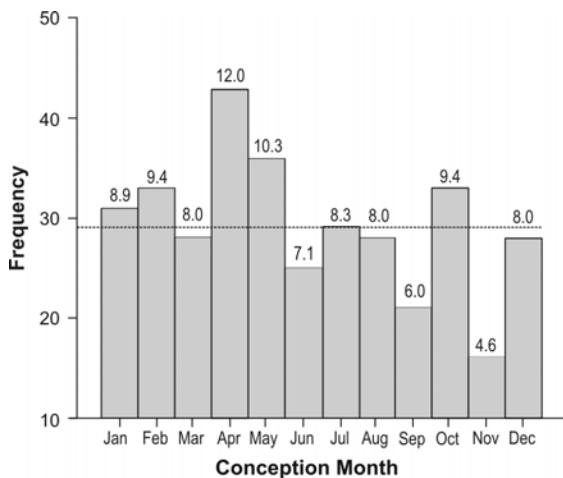


Figure 6. Frequency of conception per month. The numbers above each bar correspond to the monthly percentage of conceptions. The mean is denoted with a dashed line.

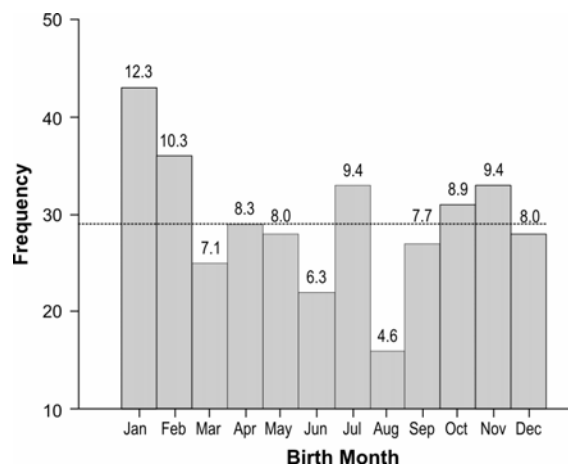


Figure 7. Frequency of births per month. The numbers above each bar correspond to the monthly percentage of births. The mean is denoted with a dashed line.

Table 1. Spousal Age Difference by Gender

Number of Years	Males		Females	
	#	%	#	%
1-5	39	49.4	17	73.9
6-14	28	35.4	4	17.4
+ 15	12	15.2	2	8.7
<b>Total</b>	<b>79</b>	<b>100.0</b>	<b>23</b>	<b>100.0</b>

Table 2. Longevity Following Spousal Death

Number of Years	Males		Females	
	#	%	#	%
1-9	17	33.3	18	32.7
10-19	10	19.6	21	38.2
+ 20	24	47.1	16	29.1
<b>Total</b>	<b>51</b>	<b>100.0</b>	<b>55</b>	<b>100.0</b>

east of Mercersburg, with smaller concentrations north of Chambersburg and in the vicinity of Shippensburg (Figure 8). The number of burials occurring outside of the nascent urban centers clearly indicates that not only was there a sizable rural population, but that this population was concentrated in a few areas. The location of the large grouping of burials east of Mercersburg coincides with an area of relatively low topographic relief and abundant water. Even now this area is overwhelmingly given over to farming, with little of the exurban development seen elsewhere in Franklin county.

**Ethnic Concentration**

Ethnicity was determined based on a surname<sup>2</sup> analysis of all of the names compiled from the grave marker inscriptions. English (25%, n = 269) and German (23%, n = 238) surnames accounted for the largest percentage of the burials, followed by Irish (17%, n = 173), Scots-Irish (15%, n = 158), Scottish (8%, n = 81), Swiss (2%, n = 26), and others<sup>3</sup> (2% n = 22). The ethnicity of 81 records (8%) could not easily be determined and were assigned as unknown. To better understand the distribution of the various ethnic groups with the study area the number of people for each ethnic group was subset and summed by cemetery. A kernel density analysis was then performed for each ethnic group in order to generate surfaces from the burying ground point data. These surfaces were then contoured using 0.5 as the breakpoint<sup>4</sup> and overlain on a single map to show concentrations of various ethnic groups. The Chambersburg and Mercersburg areas have the highest levels of ethnic diversity, with the Chambersburg area having significant numbers of each of the five major ethnic groups (Figure 9).

Single ethnic group concentrations were found in Waynesboro (German), Spring Run (English), east of Chambersburg at modern-day Fayetteville (German), and north of Roxbury at modern-day Doyleysburg (Irish).

**Familialism and Community**

To assess whether the communities within Franklin county during the study period were either stable or experiencing rapid population turnover (large transient populations) a person/surname ratio<sup>5</sup> was calculated for each burying ground. Large person/surname values (essentially the number of people with the same surname) indicate strong kinship and community ties, while small person/surname values indicate higher levels of

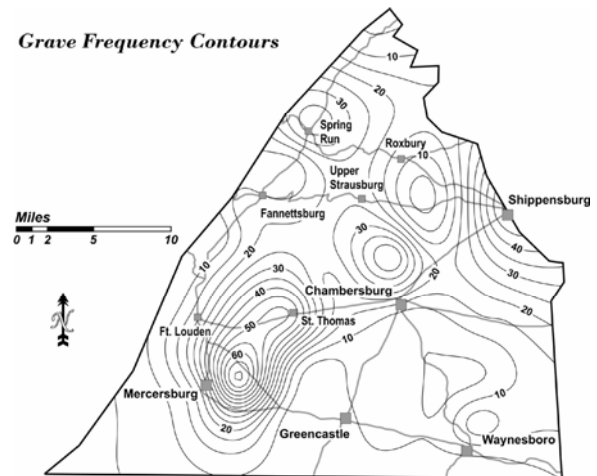


Figure 8. Population concentrations estimated by grave frequencies.

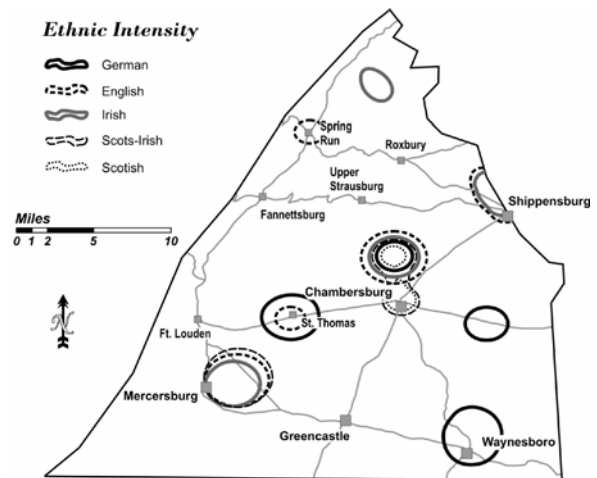


Figure 9. Ethnic concentrations based on surname.

population mobility and weaker community ties. As with the ethnic distribution, a kernel density analysis was performed on these data and then contours were derived. Contours of 0.25 (the dataset average) and above were subset and mapped. As seen in Figure 10, person/surname ratios were above average for three of the four major towns, and many of the areas with the highest person/surname ratios were located along the major routes in the study area. Conversely, relatively few locations of high person/surname ratios are found away from the major routes in areas where agriculture would have been the dominant occupation.

## DISCUSSION

Although the average age at death for all individuals was skewed toward the high end due to the near absence of data on infant deaths, it is clear that once past the age of 20 the chances for living well into old age were relatively high. Yet based on the number of small unmarked stones found in the burying grounds it is also clear that the infant mortality rate was also quite high. The derived life expectancy of about 67 years is likely an overestimation, but we should also keep in mind that mortality on the frontier may well have been lower than in cities. Distance alone would have acted as a sort of filter, keeping immigrants whose health was poor from moving westward. There did not appear to be a seasonal component to mortality, even when those burying ground which primarily served the nascent urban centers were subset and examined. This may be a function of the very rural nature of the study area. Death during the winter months has often

been attributed to the spread of infectious disease while people are living in close quarters. However, the predominance of farming families and the small urban populations, separated by vast distances and poor roads, may well have acted to limit the spread of infectious disease beyond the immediate family.

Both conception and natality exhibited characteristics often found in agricultural regions: conceptions occurring most often during the late spring and early summer, leading to births peaking during the slow agricultural months, typically the fall and winter. That this trend was most clearly seen in the urban burying grounds suggests that although urban in form, the early town inhabitants remained closely tied to the agricultural cycle and no doubt many town dwellers were also farmers. It is unclear why the trend was not as clearly seen in the rural burying grounds, but may be related to ethnicity. When examined by ethnic group the trend was most apparent in Germans, who were also slightly better represented in the urban rather than rural burying grounds.

Men tended to marry younger women and on average live longer after their spouses died. Half of the men who married younger women were over six years their senior. When women married younger men, the women were typically less than five years older. Nearly half of the men who outlived their spouses did so by more than 20 years, while less than a third of women did so. In agricultural regions of the period it was not uncommon for men to marry later, after they had time to accumulate enough wealth (typically land) to support a family. Their wives were usually in their prime child-bearing years, and given the number of children they bore and the difficulties of child-birth, many women died young (See Stockton, 2003, p. 155).

The spatial distribution of burials during the study period suggests a predominantly rural population, concentrated in a few areas. While several towns were ethnically diverse, others were overwhelmingly of a single ethnic group. The most diverse towns fell along the major routes leading through the county, while the less diverse towns were along routes with lower through-traffic (See Marr, 2002). The towns of the period had small but stable populations, apparently more stable than the rural areas, suggesting that rural existence was difficult and the population somewhat more transient. This fits well with past research on settlement patterns in south-central Pennsylvania, particularly the work of Lemon (1972). Farming became increasingly less commercial and more subsistence with distance from the major market cities of Philadelphia and Baltimore, fostering a somewhat less stable agricultural population. This was especially true as

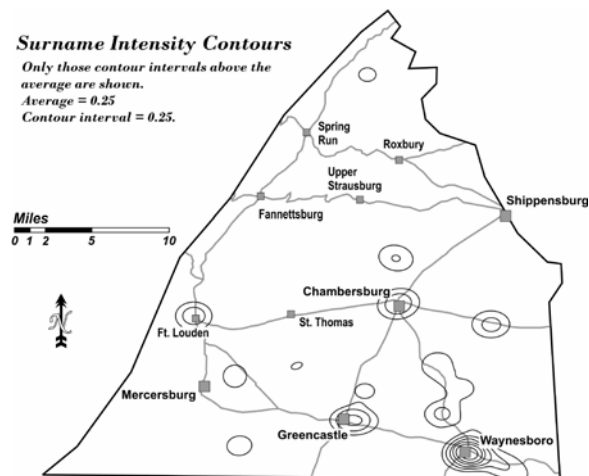


Figure 10. Population stability based on person/surname ratio.

one crossed the Blue Mountains into the Cumberland valley. Although the average farm size was higher in the Cumberland valley than in the east, the average amount of cleared land per farm was about 30 acres<sup>6</sup>, over 20 acres less than in Lancaster county (Lord, 1975). The high surname ratio results found in Waynesboro may well have been a result of the large German community there. While the English often rented land to tenant farmers, Germans seldom hired field labor (Gagliardo, 1959), creating a more stable agricultural population.

The information on Franklin county's early population derived from the burying ground data fits well within the broader picture of the demographics and settlement patterns of south-central Pennsylvania during this period. The usefulness of interment data lies in the ability to gather relatively site specific information that is otherwise unavailable prior to the first federal census. These data were particularly useful in the case of Franklin county, whose rural nature makes it particularly difficult to compile demographic data during and immediately after the colonial period. Future research into frontier demographics should focus on establishing true mortality rates for all social classes and age groups from any remaining church records of births and deaths. From this it may be possible to estimate the proportion of deaths found in church records that are not seen in burying grounds—something researcher of burying grounds sorely need.

## ENDNOTES

<sup>1</sup> Originally data from 70 burying grounds were examined, however the location of 3 small family burying grounds could not be verified and were subsequently dropped from the analysis.

<sup>2</sup> Surname analyses involves assigning ethnicity based on a person's surname. While there are obvious limitations to this technique, it has been greatly aided by the RootsWeb project searchable surname list (<http://rsl.rootsweb.com/#search>) which lists surnames, country of origin, dates of emigration, and emigration routes.

<sup>3</sup> The *other* category contains Welsh, French, Ukrainian, and Dutch surnames.

<sup>4</sup> The 0.5 breakpoint was determined based on the average of output values of the pooled ethnic intensity surfaces (range = 0 – 2.19).

<sup>5</sup> The person/surname ratio was used by Young

(1960) and Foster et al. (1998) to measure community stability and is calculated as the ratio of the number of burials to the number of unique surnames.

<sup>6</sup> Derived from data provided by Ross (2006).

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