# When a household is more than one family

Data from J.O.
MS 150 Statistics Fall 2009 Data Project

In 2010 the Federated States of Micronesia (FSM) is scheduled to perform a national population census. One of the parameters reported will be the average house hold size. In cultures dominated by the nuclear family structure, the average household size can be taken to be roughly equivalent to the average family size.

Data from the official FSM Statistics web site (http://www.spc.int/prism/country/fm/stats/Census%20&%20Surveys/2000/Household.htm) provides information on the average number of persons per house hold, and the average number of persons per family, but no data on the number of families per house hold. On Pohnpei, the average number of persons per house hold is six. On Pohnpei the average number of persons per family is 6.3. On aggregate, Pohnpei has 5630 households and 5335 families. This data suggests an average of 0.95 families per house hold. That the average is less than one leaves the suggestion that on Pohnpei many families are in their own home and some families have two homes. This is certainly not the case for all communities, and in the outer island community surveyed by J.O., the results are very different from the state wide averages.

Counting the number of families per home is difficult at best. The FSM is arguably a nation undergoing a series of cultural transitions. While some homes are traditional extended family homes with three generations living together within one compound, other homes are nuclear family homes with only parents and their immediate offspring in residence. The introduced practice of women taking their husband's last name at marriage and the tradition of men tending to remain in the family home means that both the traditional extended family home and the nuclear family home will often have only a single last name present in the home. In both instances one can argue that the home contains a "a single family unit."

There are homes, however, in which more than one last name is present. Given the tradition of a male headed household, differing last names in the home may indicate the presence more than one male headed family unit. Multiple last names can occur as the result of a husband of a daughter in the family moving in with his wife's family. Another scenario that introduces multiple last names is when relatives of the wife of the home owner move into the home.

Distinguishing whether these homes with more than one last name present function as a single extended family or as separate families under one roof is complex and beyond the scope of this study. In most instances, however, a male living in the home of his wife or female relative retains his own male head family status for his own wife and children.

Thus this study uses the "low hanging fruit" of the number of last names to quantify the number of families per house hold.

The data was gathered by going door-to-door to 13 family homes. Homes were listed by the last name of the home owner.

| Home owner last name | Number of last names present in home |
|---|---|
| Edmund | 2 |
| Johnnyboy | 1 |
| Johnson | 2 |
| Joshua | 2 |
| Lebehn | 3 |
| Lemuel | 1 |
| Malakai | 6 |
| Movick | 3 |
| Obed | 2 |
| Obed | 2 |
| Olter | 1 |
| Pretrick | 1 |
| Rosario | 1 |

Basic statistics for the data above

| Statistic | Value |
|---|---|
| level of measure | ratio |
| sample size n | 13 |
| minimum | 1 |
| maximum | 6 |
| range | 5 |
| midrange | 3.5 |
| mode | None |
| median | 2 |
| mean | 2.08 |
| standard deviation | 1.38 |
| coefficient of variation | 0.67 |

**Discussion**

The data suggests that equating household size with family size is potentially problematic. The home surveyed have, on average, two different last names present in the home. Given the male head of family structure, this suggests that homes have on average two families living within them. As noted by the researcher who gathered the data this will have an affect on household versus family income estimates, where the two cannot necessarily be equated. Having what potentially function as two separate families under one roof can lead to "commotion and

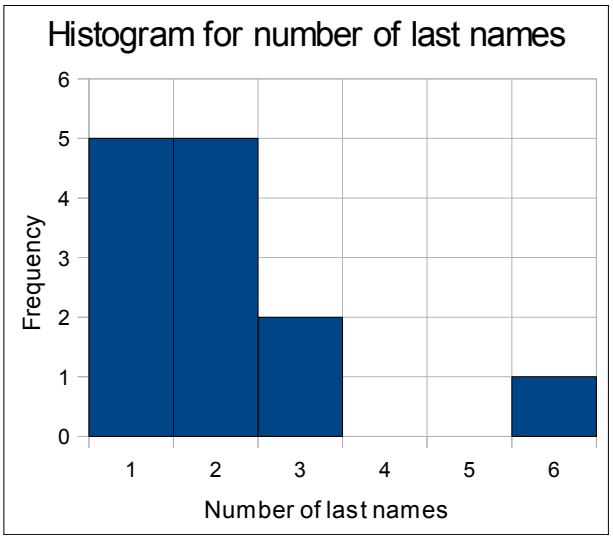
problems." (J.O.)

**Histogram analysis**

Note that the following is effectively a form of nominal level histogram: the number of names in each house are taken as categories, not class upper limits.

| Number in home | Frequency | Relative Frequency |
|---|---|---|
| 1 | 5 | 0.38 |
| 2 | 5 | 0.38 |
| 3 | 2 | 0.15 |
| 4 | 0 | 0.00 |
| 5 | 0 | 0.00 |
| 6 | 1 | 0.08 |
| **Sums:** | 13 | 1.00 |

**Histogram chart**




**Confidence interval calculation**

The 95% confidence interval for the population mean number of last names would presume that the data is continuous, ratio level data. The data is not continuous and has only a few values. In this situation the confidence interval does not have a useful meaning. Despite this, for the purposes of this class exercise, a confidence interval can be calculated.

The standard error is 0.38 and t-critical for a 95% level of confidence is 2.18, yielding a margin of

error of  0.84, roughly "one family name." The 95% confidence interval is contained by:

$p( 1.24 \leq \mu \leq 2.91 ) = 0.95$

Alternatively this can be written as $2.08 \pm 0.84$.

Given the problematic nature of this calculation, the population mean number of last names can be considered to be between one and three.  Even this rough estimate, however, rules out the possibility that the number of families per house hold is 0.95.

**Conclusions**

The data clearly supports a position that the number of families is not the same as number of house holds. One cannot presume that the number of people per home is the same as the family size.

The data also clearly shows that for this outer island community, the number of families is not outnumbered by the number of house holds. On the contrary, 62% of the house holds have more than one family under the roof, with on the order of 38% of the households having two families under one roof.

This data provides cautionary reasons for applying Pohnpei state wide data to a subgroup, especially an outer island group. This data also suggests that some of the stress and strain of "modern living" may in fact simply be a result of multiple families with multiple male leads within a single house hold.