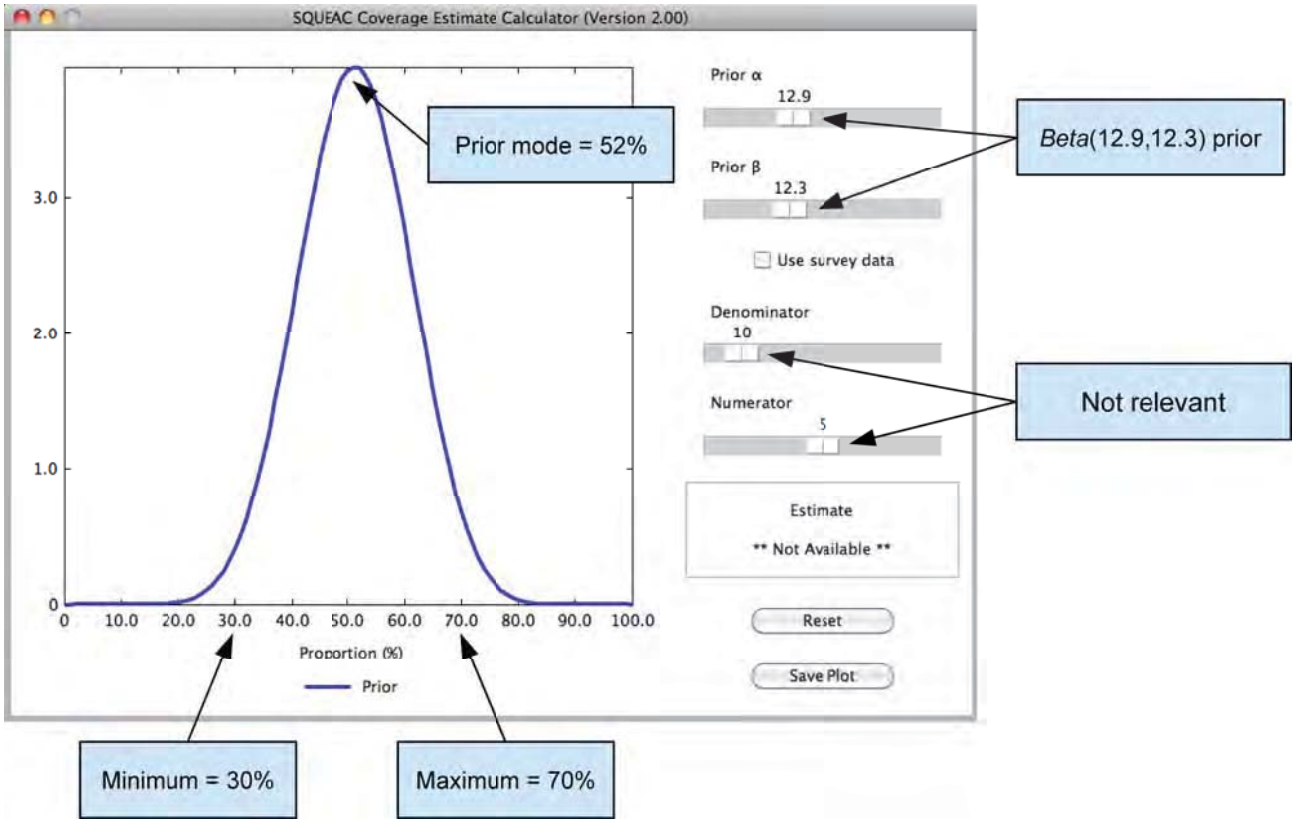
Case Study: Within-Community Sampling in Urban Settings

This case study illustrates the challenges faced when sampling in an urban setting. The case study is based on a SQUEAC assessment of a MOH-implemented CMAM program in a city in northern Nigeria.

With information from the initial SQUEAC investigation, the mode of the prior was defined to be at 52%, and the minimum and maximum credible values of the prior were defined to be about 30% and 70% respectively. Using the **BayesSQUEAC** calculator, the α_{Prior} and β_{Prior} values were found to be 12.9 and 12.3, respectively. The prior distribution is shown in **Figure 96**.

Figure 96. The *Beta(12.9, 12.3)* prior in **BayesSQUEAC**



Once the prior had been defined, the sampling frame for the likelihood survey was designed. Based on the administrative hierarchy of the city (**Figure 97**), the section was chosen as the primary sampling unit. A minimum sample size of 23 current and recovering SAM cases was calculated using the simulation approach for a precision of better than about ± 15 percentage points (**Figure 98**). Given the high prevalence of SAM and the high number of admissions observed from routine program data, it was estimated that a total of five sections would need to be sampled to reach the target sample size. Five sections were selected at random from a full list of all sections in the city by drawing section names from a hat.

Figure 97. Administrative hierarchy of the city

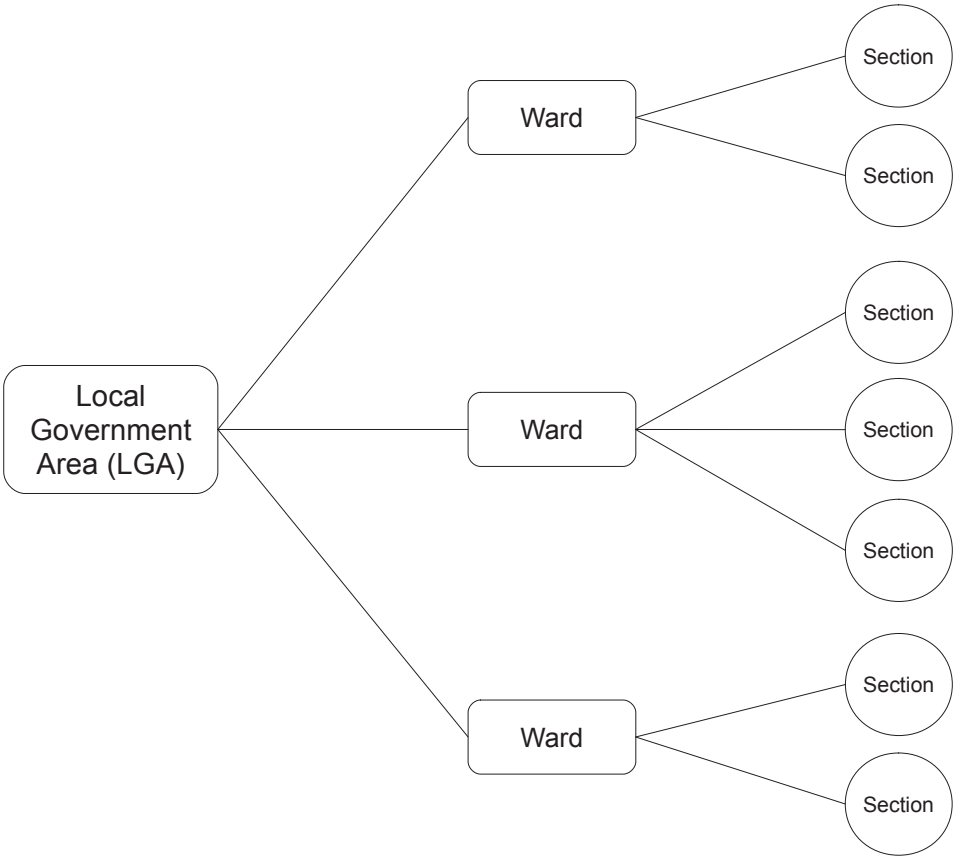
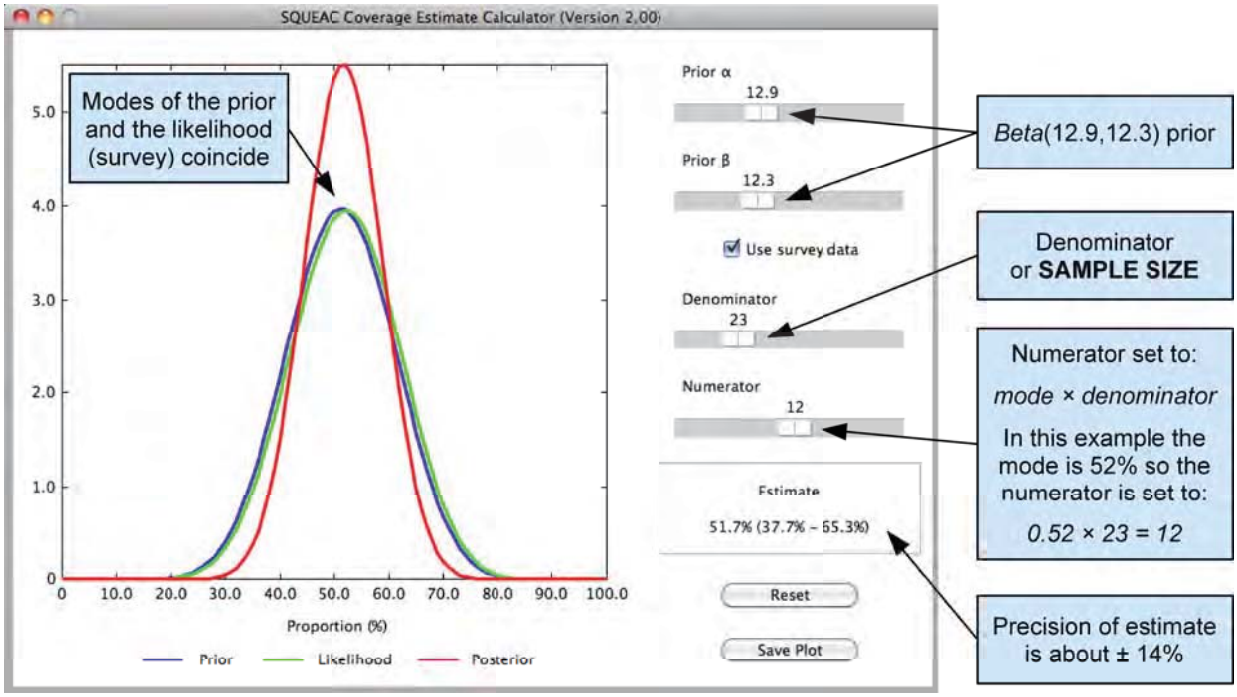


Figure 98. Sample size by simulation approach using **`BayesSQUEAC`**



Different numerators and denominators are tried until the displayed estimate shows the required precision

The active and adaptive case-finding method (see Box 3, page 65) was used for within-section sampling in each of the five selected sections. The district or ward heads served as the community *entry points* and were consulted to determine the boundaries of the selected sections. Once the boundaries were determined, the sections were divided into smaller geographical blocks in which different survey teams were assigned to conduct case-finding. This was initiated by locating identified key informants, such as district or ward heads, *imams* or *sheikhs*, TBAs, traditional healers or *wanzami* (persons who perform circumcisions). Key informants were asked whether they knew of children suffering from *olu*, *tamuwa*, *sefa* or *nono* (the terms that most people in the city use for children that are very thin or have distended abdomens, brownish or discoloured hair, and scaling of the skin) or children that had *kumburi* (the term used for children with kwashiorkor). In addition, the key informants were asked if they knew of children that had *kurga*, a condition in which the child is passing loose or watery stools and was associated by most local people with wasting and kwashiorkor. If they knew of such children, they were asked to lead the team to the children's homes, where the children were examined and their MUACs measured. The same case-finding questions described above were asked of carers of children examined and of other key informants identified. This process was repeated until all identified key informants had been consulted.

Active and adaptive case-finding was unsuccessful in this context. Only five current and recovering SAM cases were found. During the case-finding process, key informants were unable to lead the survey teams to more SAM cases despite high prevalence in the area and many current cases in the program at the time of the survey reported to be living in the selected sections. One possible explanation for this failure is that social dynamics in a big town or city are different from those in villages or rural areas, where active and adaptive case-finding has been shown to work well. The method is based on the assumption that the community being sampled has considerable social connections amongst its members. In large towns and cities, such assumptions often do not hold true.

As can be seen in **Figure 99**, the posterior distribution is only marginally stronger/narrower than the prior distribution. This is because the small sample size likelihood adds little new information to inform the posterior. The effect of not finding enough SAM cases on the coverage estimate is that the coverage estimate is dominated by the prior. The prior and likelihood do not conflict so any bias is likely to be small.

The problems finding cases suggests that building-to-building and door-to-door sampling would have been better in this urban setting and should probably be used as an alternative to active and adaptive case-finding in situations where the assumption of social connectedness amongst people in the survey area is uncertain.

Figure 99. The conjugate analysis in **BayesSQUEAC**