

# Handbook on Population and Housing Census Editing (Studies in Methods Series F)

## Incorporating GIS Building Data and Census Housing Statistics for Sub-Block-Level Population Estimation

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This article presents a deterministic model for sub-block-level population estimation based on the total building volumes derived from geographic information system (GIS) building data and three census block-level housing statistics. To assess the model, we generated artificial blocks by aggregating census block areas and calculating the respective housing statistics. We then applied the model to estimate populations for sub-artificial-block areas and assessed the estimates with census populations of the areas. Our analyses indicate that the average percent error of population estimation for sub-artificial-block areas is comparable to those for sub-census-block areas of the same size relative to associated blocks. The smaller the sub-block-level areas, the higher the population estimation errors. For example, the average percent error for residential areas is approximately 0.11 percent for 100 percent block areas and 35 percent for 5 percent block areas. **Key Words:** block population, dasymetric mapping, population estimation, population interpolation, sub-block.

这篇文章提出了一个确定性模型以作为人口分板块级估算。该研究的数据来自地理信息系统(GIS)和三个板块级人口房屋普查。为了评估这个模型,我们总计了普查里的板块区并计算各自住房统计来制造几个人造板块。接着,我们运用模型来估计人造板块区的人口并以这些地区的现实对照的人口普查来评估概算。我们的分析指出人造分板块区的人口估计平均百分点误差能媲美那些相同大小的分普查板块区。分板块级的区越小,人口估计的误差越高。举例来说,住宅区百分之一的板块平均百分点误差是大约0.11%,而百分之五的板块只有35%的误差。  
**关键词:** 人口板块, 分区密度制图, 人口估算, 人口插值, 分板块。

En este artículo se presenta un modelo determinista para el cálculo de la población a nivel de sub-bloque con base en el volumen total de edificios derivado de datos sobre edificios obtenidos con el sistema de información geográfica (geographic information system, GIS) y tres estadísticas sobre vivienda a nivel de bloque del censo. Para evaluar el modelo, generamos bloques artificiales agregando áreas de bloques del censo y calculando las estadísticas de vivienda respectivas. Entonces aplicamos el modelo para calcular las poblaciones de las áreas de los sub-bloques artificiales y evaluamos los cálculos con las poblaciones de las áreas del censo. Nuestro análisis indica que el porcentaje medio de error del cálculo de la población en áreas de sub-bloques artificiales es comparable con el de las áreas de sub-bloques del censo del mismo tamaño en relación con los bloques asociados. Cuanto más pequeñas sean las áreas a nivel de sub-bloque, más grandes serán los errores en el cálculo de la población. Por ejemplo, el porcentaje medio de error en áreas residenciales es de aproximadamente 0.11 por ciento en áreas con bloques de 100 por ciento, y un 35 por ciento en áreas con bloques de cinco por ciento. **Palabras clave:** población en bloques, mapeo dasimétrico, cálculo de la población, interpolación de la población, sub-bloque.

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