

## Assessing the Accessibility to Primary Percutaneous Coronary Intervention

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**Abstract :** Background: Ensuring patients with ST-elevation myocardial infarction (STEMI) access to hospitals that could perform percutaneous coronary intervention (PCI) in time is an important concern of healthcare managers. One commonly used the method to assess the coverage of population access to PCI hospital is the use GIS-estimated linear distance (crow's fly distance) between the district centroid and the nearest PCI hospital. If the distance is within a given distance (such as 20 km), the entire population of that district is considered to have appropriate access to PCI. The premise of using district centroid to estimate the coverage of population resident in that district is that the people live in the district are evenly distributed. In reality, the population density is not evenly distributed within the administrative district, especially in rural districts. Fortunately, the Taiwan government released basic statistical area (on average 450 population within the area) recently, which provide us an opportunity to estimate the coverage of population access to PCI services more accurate. Objectives: We aimed in this study to compare the population covered by a give PCI hospital according to traditional administrative district versus basic statistical area. We further examined if the differences between two geographic units used would be larger in a rural area than in urban area. Method: We selected two hospitals in Tainan City for this analysis. Hospital A is in urban area, hospital B is in rural area. The population in each traditional administrative district and basic statistical area are obtained from Taiwan National Geographic Information System, Ministry of Internal Affairs. Results: Estimated population live within 20 km of hospital A and B was 1,515,846 and 323,472 according to traditional administrative district and was 1,506,325 and 428,556 according to basic statistical area. Conclusion: In urban area, the estimated access population to PCI services was similar between two geographic units. However, in rural areas, the access population would be overestimated.

**Keywords :** accessibility, basic statistical area, modifiable areal unit problem (MAUP), percutaneous coronary intervention (PCI)

**Conference Title :** ICMGPH 2017 : International Conference on Medical Geography and Public Health

**Conference Location :** Amsterdam, Netherlands

**Conference Dates :** May 14-15, 2017