

Nusa Tenggara Timur with the participating districts shown in grey.



This project has shown how mobile mapping and GIS technologies can be appropriate and effective tools for public health applications in rural areas of developing countries. Health mapping is now being used to inform health resource allocation, project development and advocacy including: comprehensive health service audits in remote, regional districts; innovative maternal and neonatal health.

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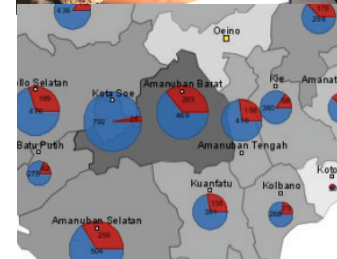
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Public health mapping for effective health services in Nusa Tenggara Timur - Indonesia.

As one of the poorer areas in a developing country, East Nusa Tenggara faces a number of chronic public health challenges for its population of 4.5 million. While clinical treatment is crucial, primary disease prevention is based on good quality health information and analysis.

Indonesian health workers, both administrators and field staff, are being equipped with low cost GPS enabled mobile phone (HTC Touch) and trained in the use of analysis software. The result is colour coded visual maps that enable quick and easy assessment of local health trends. Such "health mapping" is now being used to inform health resource allocation, comprehensive health service audits and innovations in mother and child health



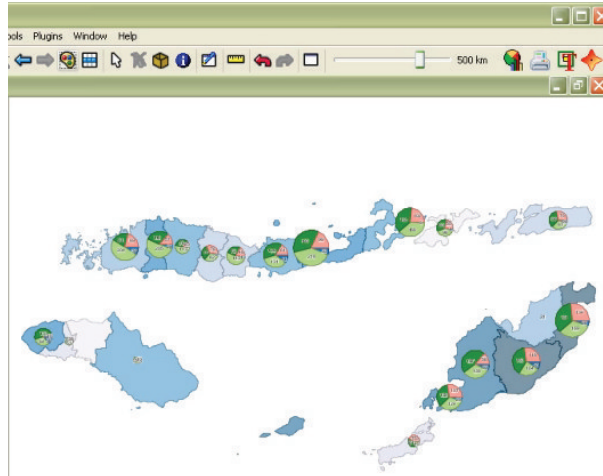
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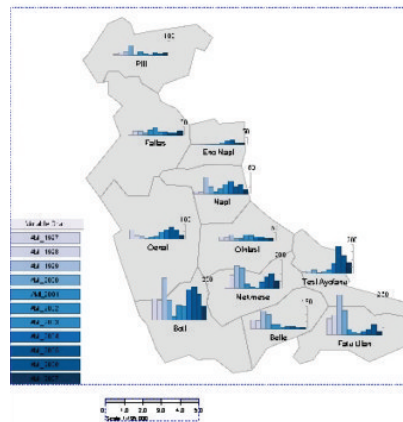
Health mapping improves understanding and analysis through data visualisation. The benefits include the ability to:

- see relationships between data
- ask smarter questions,
- support health planning and monitoring effectiveness
- provide effective health education and advocacy



Health staff mapping in Nusa Tenggara Timur using Open Jump open source GIS.

Malaria Di Kecamatan Kie 1997-2007



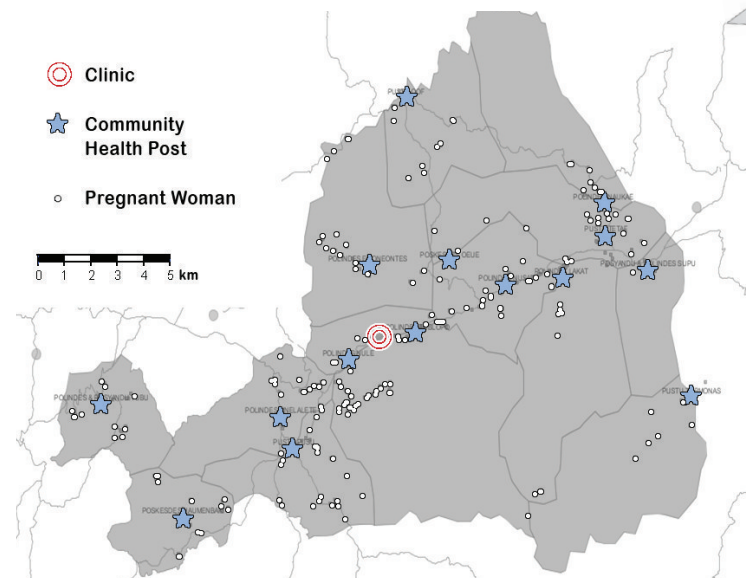
A ten year malaria trend map

Specific Benefits

- Mapping district health indicator and infrastructure data
- compare funding with outcomes - immunisation funding to subdistricts with number of immunisations conducted.
- compare infrastructure with outcomes - sanitation amenities with cases of diarrhoea
- compare human resources with outcomes - number of trained midwives to number of maternal deaths.
- compare programs with outcomes - mosquito net distribution to cases of malaria
- Multiple options to present data

- simple animations
- presentations
- printed maps

Through this project, one clinic in collaboration with local health department staff, was able to improve access to maternal health services. To facilitate the provision of neonatal and skilled birthing services, the location of all pregnant women (217) in their sub-district were recorded along with their expected birthing date. Busy mid-wives and other clinic staff were able to easily visualise priority areas and plan a more efficient check-up schedule. The maps (see below) also enabled the efficient use of clinic transport services to assure that women were in a location with access to trained health staff for birth.



The location of pregnant women collected using HTC Mobile Phone running 'cybertracker' field data collection freeware.