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**PART 4a: GIS BASED PRODUCTS**

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1. **BACKGROUND**

Geographic Information Systems (GIS) have demonstrated their powerful capabilities to enable data integration, analysis, display and dissemination. Hence, remote sensing techniques, GPS and GIS have become ubiquitous in developing policies for integrated management (Laaribi, 2000).

Well-targeted census data dissemination is one of the most important ways to educate the public and aid policy analysts in determining areas of intervention, though is often neglected by NSO’s.

This paper reviews some of the GIS-based products which can be generated by NSOs and a few considerations to take into account.

1. **PLANNING GEOGRAPHIC OUTPUTS**

Too often NSO’s take on new projects and collections prior to signing off on a census project and complete product dissemination tends to be left out, or poorly conducted.

The scheduling of the release of geographic outputs needs to be well planned and closely coordinated within the timetable of the full census project as activities such as tabulation are required before the data can be mapped.

Past experience of which geographic products census data users are looking for can serve as a guide, though demands do change. In the last census round desktop GIS (PopGIS) and hardcopy maps were used, though in the last five years increases in internet speeds have resulted in web-based data dissemination becoming highly sought after. Now users expect to have all the data at their fingertips in a web-mapping environment to aid in various policy decisions. Demands for hardcopy reports and atlases have also dropped as users now expect to be able to download them in digital formats. Those without access to the internet must not be forgotten though and these users still need to be presented with hardcopy alternatives.

The NSO is strongly encouraged to make results, products and services as widely available as possible through an open data-dissemination policy. An open data-dissemination policy—i.e., low-cost or free access to data—can help reduce the workload of the census office and increase utilisation of the data.

1. **A VARIETY OF “SPATIAL” PRODUCTS**

A wide range of GIS products and applications exist depending on needs:

* 1. *Maps* can be used to illustrate indicators in census reports, provincial profiles etc. Patterns are much easier to understand on a map, rather than in a large table.
	2. *Infographics* have become a popular way of presenting specific indicators or subjects in an attractive, often simplified fashion which is very easy for a non-expert reader to understand.
	3. *Atlases,* both static and interactive are a great way to present indicators. Links in PDF files can allow navigation between indicators, html webpages can provide a rich user experience with the integration of photos, videos etc.
	4. *Interactive GIS* which enable users a “portal” to the census data. The data is clearly stored in a fashion which is easy to access, with good explanations and metadata. The extracted data can be visualised in a map form, often with the option to display a satellite image backdrop, modify colours, zoom in to specific areas. PopGIS was very popular in the 2010 census round and since has greatly evolved into a versatile web mapping tool called PopGIS2.
	5. *Table-builders* including map output functionality. REDATUM is used by a few countries in the Pacific to allow users to the ability to tabulate their own data. The resulting table can be mapped, though functionality is very limited.
	6. *Spatial analysis* can go one step further and explore more complete patterns between indicators by spatial location. Heat maps show clusters in data. Distance analysis can extract populations within Xkm of the coast, or Xm above sea level. Outputs can be both interactive and static.
1. **CONCLUSION**

As the saying goes, “a picture can tell a thousand words”. Spatial census products play a vital role in getting the “message” out to the general public, stakeholders and other data users. Assuming census datasets are cleaned and output in a timely manner, the challenge is then to best address the data and information needs of those who will be using the data products for planning, policy development and a range of other useful purposes. Currently technology advancements give NSO’s many more possibilities in regards to types of products which can be shared. With the changes in technology users’ needs are also changing. NSO’s need to be able to be innovative and able to adapt or they will lose touch with the new generation of users, but also need to take into account those who still expect hardcopy maps, and standard tabulations.

1. **REFERENCES**

*Laaribi, Amor: SIG et Analyse Multicritère. A book published in French by Hermes-*

*Science, Paris, 2000.*