

ENHANCING THE UNDERSTANDING OF OFFICIAL STATISTICS WITH DATA VISUALISATION

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Recent data visualization developments provide new tools for displaying official statistics. These tools not only enhance the range of outputs of national statistics offices but can also be used for motivational and educational purposes. Visualisations that have been used in courses designed to teach statistics and official statistics concepts to government policy analysts and other adult learners include:

(i). a pin-graph where the heads of the pins form a 3-D scatterplot (created using ‘R’ www.r-project.org) to help students understand the concept of interaction in multiple regression models by looking at the consistency of pattern, for example, across highest education classes). Extension from three- to four-dimensions was achieved by the use of colour and the graph created used to discuss whether separate models should be fitted when the pattern is different for different groups (as in this case, where females dominated part-time work and males full-time work). Further increases in dimensionality are achieved by changing the size, shape or colour intensity of data points or by adding a dynamic feature (such as time as used by Hans Rosling (2007) in his Gapminder ‘bubble’ graphs (www.gapminder.org)).

(ii). dynamic population pyramids showing changes over time in the structure of national populations that demonstrate the demographic momentum effect (population growth resulting from a youthful age structure or population decline resulting from an older age structure) and allow learners to see population growth in action, leading up to and beyond the point (different for each country) where natural increase (growth) shifts to become natural decline.

(iii). representation of the Consumers Price Index as a circle with each group (and subgroup) having an area proportional to its weight (the produced by the Federal Statistical Office of Germany’s (<http://www.destatis.de> Price Kaleidoscope) to teach the concept of weights.

(iv). Geovisualisations such as the Statistics New Zealand interactive commuter flow tool, (www.stats.govt.nz) Commuterview, and the Penn State University GeoVista tool (<http://www.geovista.psu.edu>) that provide students with easy manipulation of massive official data sets, enable new questions to be answered and explore the geographic distribution of, and relationship between, variables.

References

Available from the author.