JDiBrief - Analysis

Vulnerable Localities Index: METHOD (3 of 5)

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The VLI integrates data collected at the neighbourhood level to form an overall composite index value of vulnerability for a locality. As residential neighbourhoods are the focus of the analysis, census output areas (OAs) are used. These are the smallest geographical unit in England and Wales that reliable data are collected at. Other countries' census geography could also be used as the unit of analysis when the data and geographic boundaries are reliable.

Household and population data for each OA need to be sourced for the analysis. A further six variables (datasets) – collected at the OA (or LSOA) level - are required to calculate the VLI: counts of burglary dwelling, counts of criminal damage to a dwelling, income deprivation score, employment deprivation score, count of 15-24 year olds and educational attainment.

ANALYTICAL PROCESS: The following steps outline the analytical process that needs to be undertaken to calculate the VLI. A Microsoft Excel template has been created to help calculate VLI values – this is available through a link on the resources page.

1. Insert OA codes (or other reference code for each geographical unit), household and population data into the VLI template spreadsheet for the whole study area.

2. Insert the six variables into the VLI template spreadsheet for each OA in the study area.

3. Next, the variables need to be normalised. This means standardising each variable: for the two crime datasets this involves creating rates per 1,000 population; for the educational attainment and young people this requires counts to be converted into percentage representations.

4. The index value is now created. This is achieved by taking the mean of each (normalised) non-zero variable value and using it as a benchmark value against which each OA value is compared. The formula for this calculation is:
   (normalised value in OA / mean value for study area)*100.

5. Now that the variables are in a common form they can be aggregated in a meaningful way. The VLI is calculated as the sum of each of the six variables' indices divided by six. OAs with a value of 100 are considered to be average for the study area. The higher the overall VLI score the more vulnerable the locality.

6. The results are visualised by mapping them thematically by OA in a Geographical Information System. Practice suggests that five thematic classes should be used and set with the following thresholds: 0-80, 81-120, 121-160, 161-200, greater than 200. Any OA - or collection of adjoining OAs - with a VLI over 200 should be prioritised for further analytical attention.

DEVELOPMENT: Since the widespread application of the VLI for policing and community safety purposes it has been noticed that rural areas were oversensitive to the indexing process. This was attributed to crime in these areas being concentrated in just a handful of areas (i.e., many OAs have no crime at all). To mitigate for this, a development in the VLI method was made. The calculation for the benchmark value – used to create the indices – was changed so that it took the mean value of all OAs where *the value was non-zero*.