Big Data Analytics System for Fact/Data-driven Decision Making

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Project Background and Objective

The Cooperative Local Investment Plans (CLIPs) of Lambeth council

Provide an evidence-based area plan bringing together an overview of the council’s strategies and services that relate to the built environment (transport, parks, education, etc).

Bring together information about existing assets (including physical and organisational spatial assets), existing demographic and business intelligence (such as demographic data and categories and levels of deprivation), investment made and investment planned by the council and other public and private partners.

To enable the community to provide their views and identify priorities for spend of the Neighbourhood Funding.
Data & Data Sources

- Multiple and Diverse, including
  - NOIMS (National Online Manpower Statistics)
  - Census
  - Gov.uk
  - London Data Store
  - Annual business survey
  - School survey
  - IMD (Index of Multiple Deprivation)
  - Met Police
  - Health Stats
  - ...

Data & Data Sources

- Graphical information is essential
  - Latitude and longitude
  - Postcode
  - LSOA code (Lower Layer Super Output Areas)
  - Ward code
  - LA code (Local authority code)
  - The council is particular interested in LSOA level’s data

- Time

- Use of APIs
The target data sets

Demographics (Census: Population, Ethnicity, Disability, Gender, Tenure, Household composition)

Employment (NOIMS, Census, and Annual business survey: Working age, Unemployment by age and gender, Employment by industry, Year-on-year change in unemployment, NEETs, Jobseekers, )

Deprivation (NOIMS, IMD, Census, and School survey: Child and working tax credits, Free school meals, IMD scores, DLA claimants, Benefit claimants)

Health care (Health stats: Childhood obesity, Percentage of people with respiratory problems, number of hospital admissions, live expectancy, deaths)

Transport (Gov.uk: Road accident instances, Year-on-year change in road accident instances)

Crime (Met police: Average monthly total crimes, Year-on-year change in total crimes), etc.
Project Deliverables

Tableau-based solution
- Enable quick and easy data visualization in an interactive and hierarchical way
- Engage the community in the planning process
- View multiple measures based on polygon maps

SQL Server-based solution
- Parallel with the Tableau-based solution
- More powerful functionality
- Can be linked to Tableau

A set of APIs
Project Deliverables
Project Deliverables

Please select a borough
- Lambeth

Please select a ward
- Bishop's
- Brithon Hill
- Clapham Common
- Clapham Town
- Coldharbour
- Femdale
- Miley Hill
- Herne Hill

Household_Income in London by Borough (%)

No of Road Casualties in London by Borough (%)

Yearly No of Casualties in London by Borough
Project Deliverables

- SSIS: ETL Process
- SSAS: Create Cube and Dim
- SSRS: Create Report
- ETL: Data Conversion Transformation
- Dimension Hierarchy
- Load Spatial Data
Project Deliverables

Crime count of London
Project Deliverables

Crime count of outer London
Project Deliverables

Crime count within 20KM radius of a selected location
Key Lessons

- Appropriate Infrastructure and architecture for data pre-processing is essential
- Using APIs to allow automatic update of new data
- Data authority
- Data consistency and accessibility
- A centralised data hub needed
- Involvement of the council
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Questions & Comments