



GI-N2K

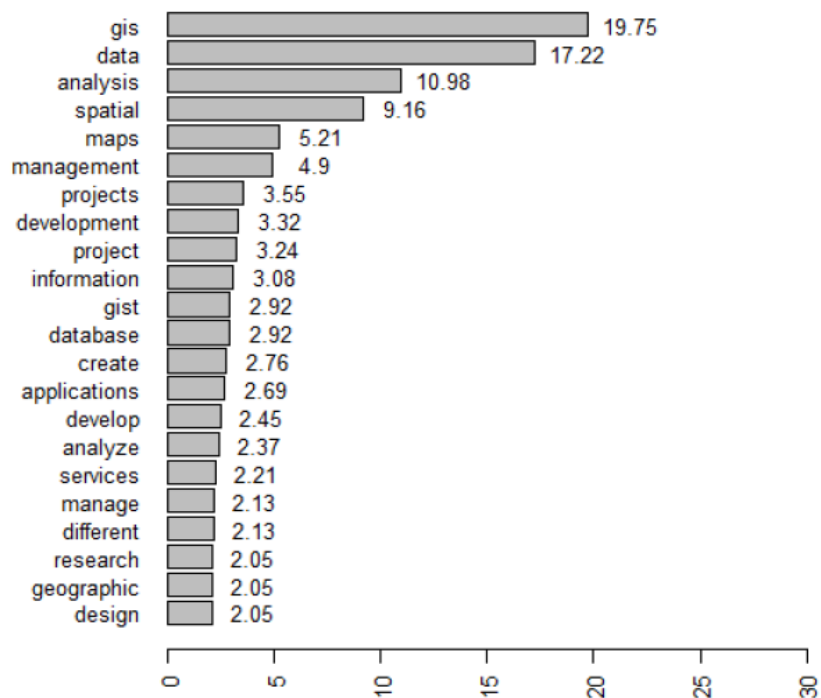
Geographic Information – Need to Know

Towards a more demand-driven geospatial
workforce education/training system

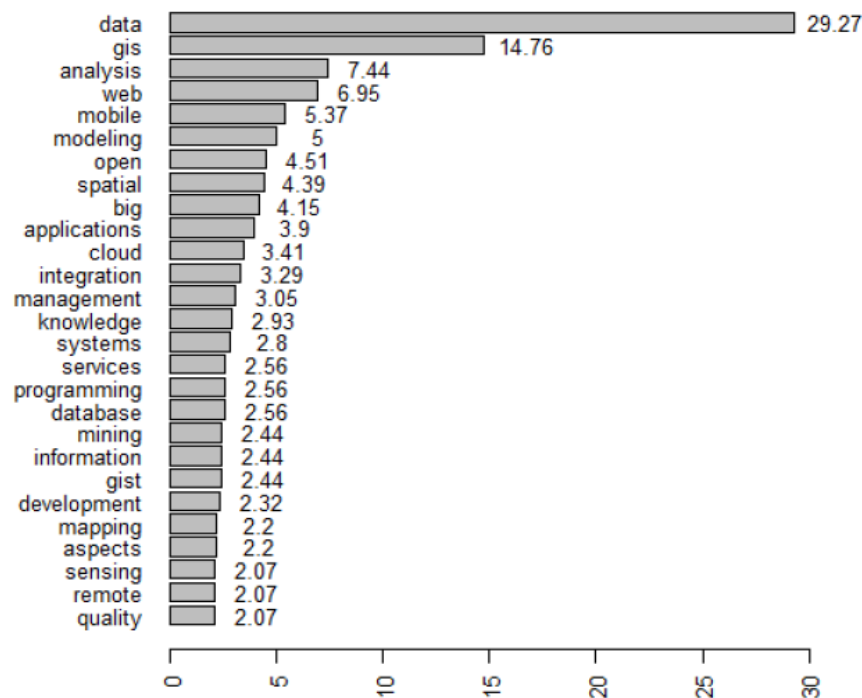
Socio-Economic Planning profiles: Sciences VS
Daily activities in public sector



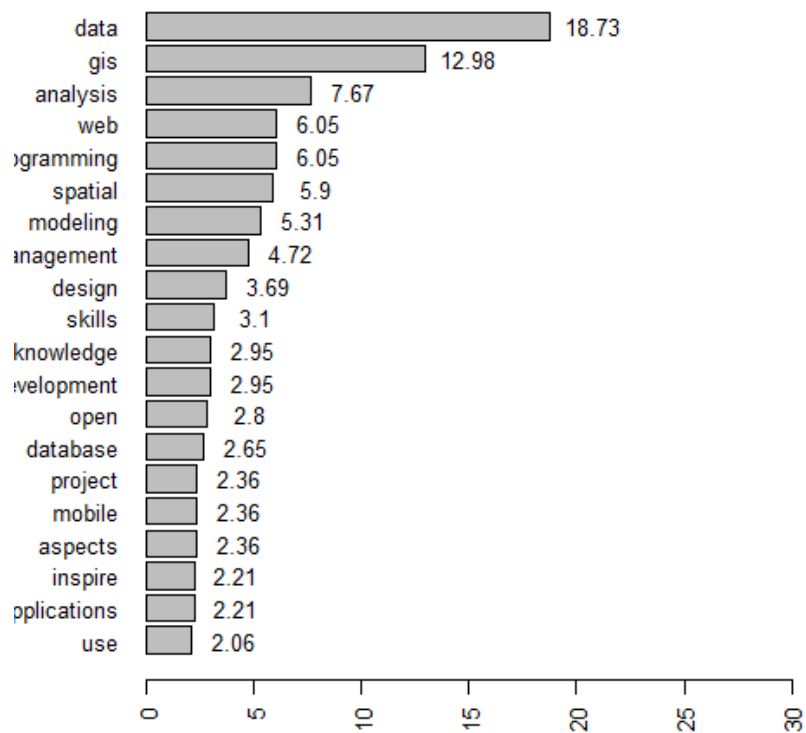
Which tasks do you frequently perform?



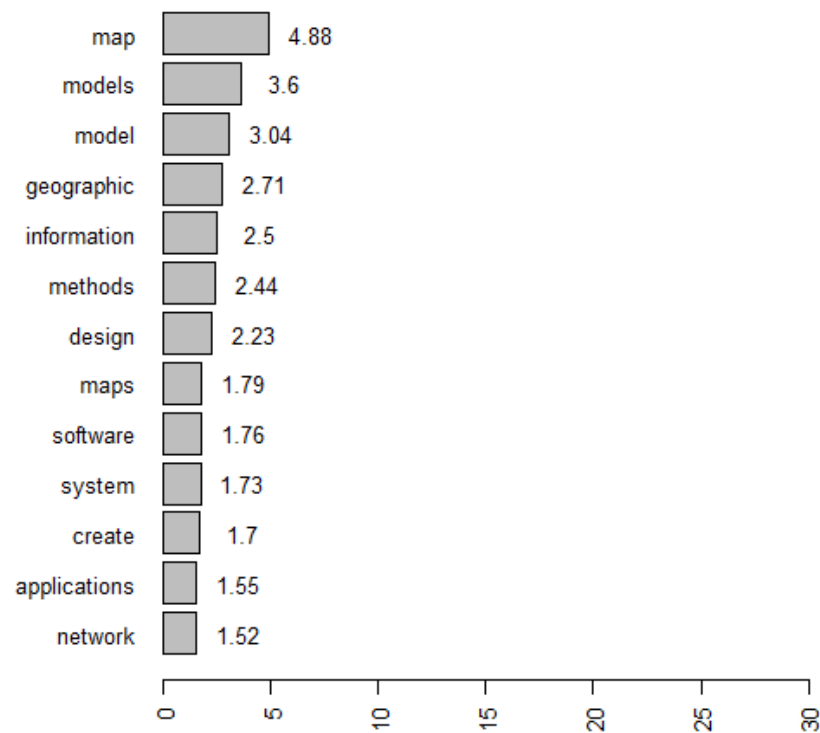
Which competences will gain importance in the future?

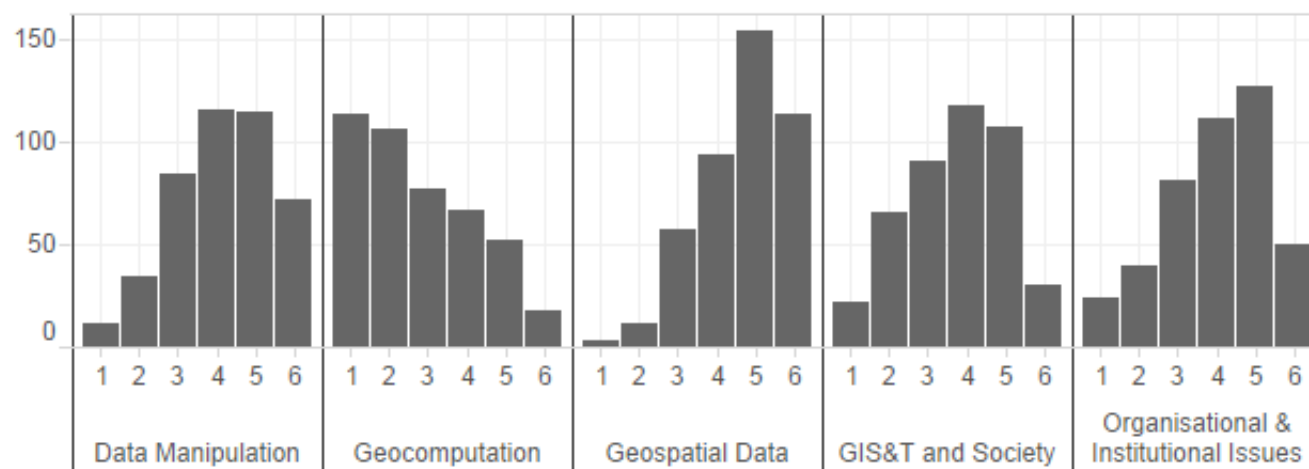
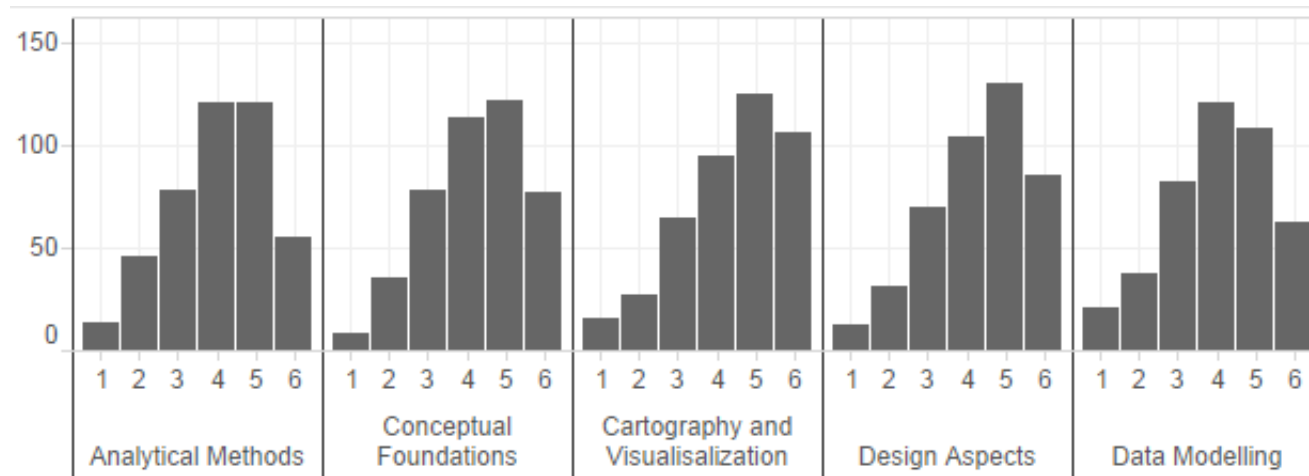


Which competences would you like to obtain?

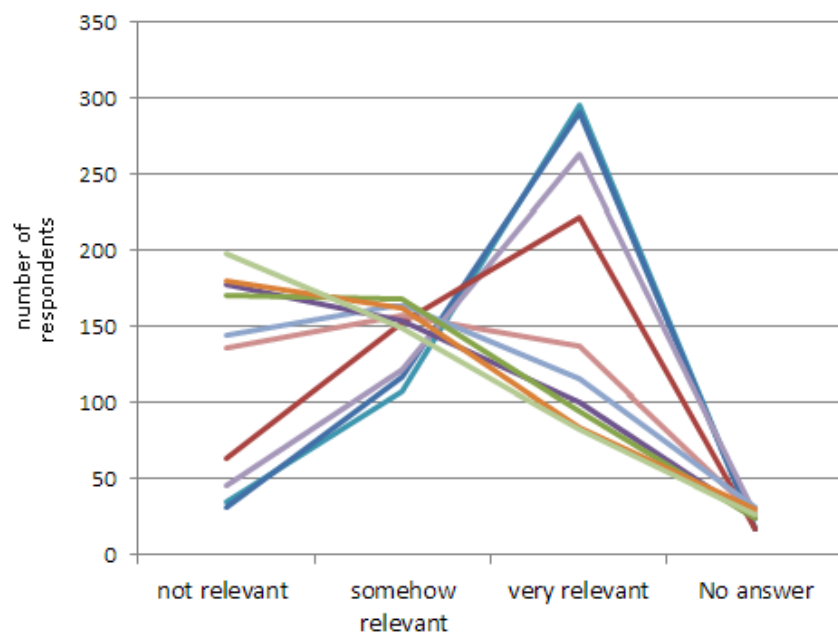


BoK Knowledge Areas and Units





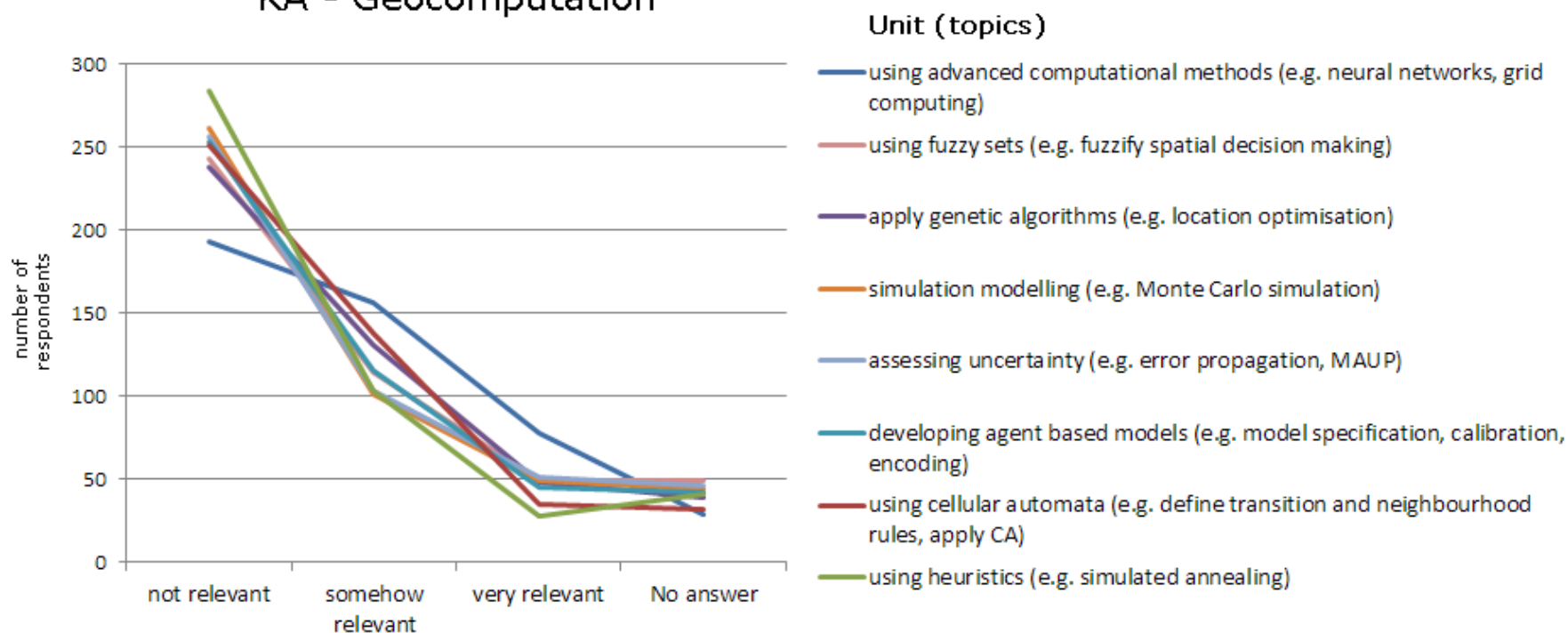
KA - Analytical Methods



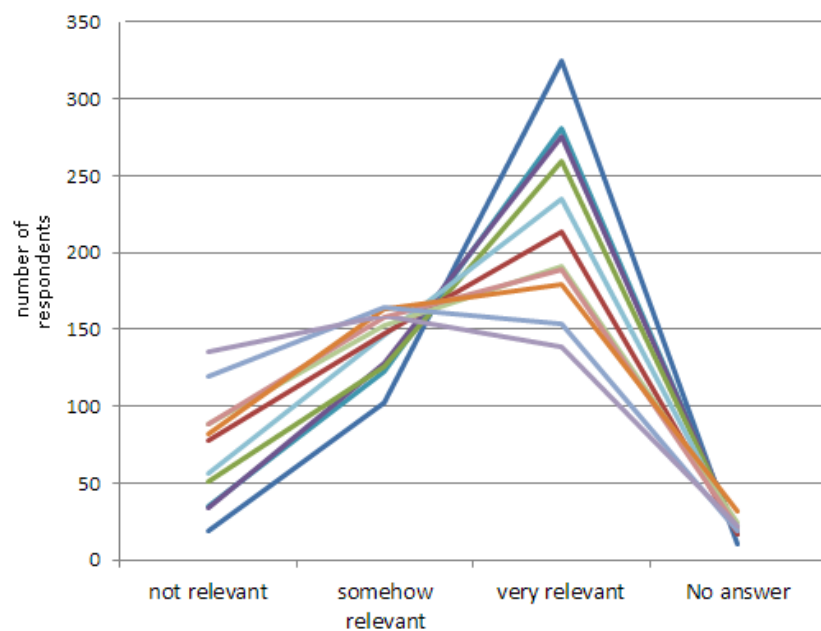
Unit (topics)

- measure geometric properties (e.g. distance, area, connectivity)
- use basic analytical operations (e.g. buffer, overlay, map algebra)
- query operations (e.g. SQL)
- analyse spatial data (e.g. point pattern analysis, multi-criteria evaluation)
- analyse networks (e.g. graph theory, routing, utility networks)
- data mining (e.g. BigData handling, knowledge discovery)
- use geostatistics (e.g. Kriging, semivariogram modelling)
- use spatial statistics (e.g. Morans I, spatial weights matrix)
- apply spatial regression (e.g. geographically weighted regression)
- mathematical optimisation (e.g. operations research, linear programming, location-allocation)

KA - Geocomputation

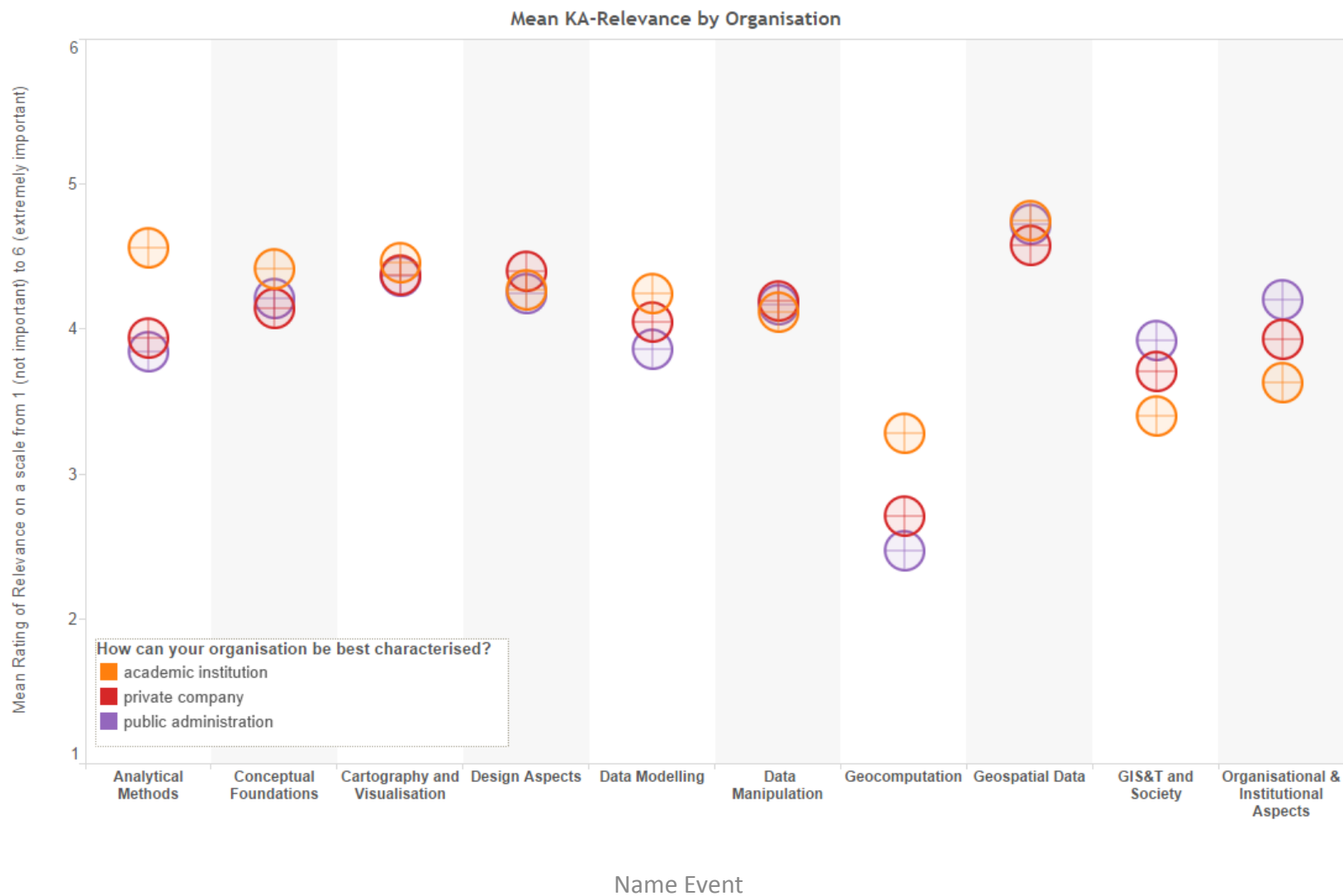


KA - Geospatial Data



Unit (topics)

- using georeferencing systems (e.g. geographic coordinate systems, linear referencing)
- assess data quality (e.g. geometric or thematic accuracy and resolution)
- understand map projections (e.g. projection classes, properties and parameters)
- specify geodetic datums (e.g. WGS84, vertical datums, NAP)
- metadata, standards and infrastructures (e.g. SDI, INSPIRE)
- working with land partitioning systems (e.g. cadastre)
- aerial imaging and photogrammetry (e.g. image interpretation, feature extraction)
- collecting field data (e.g. select sample size, field data technologies)
- land surveying and GPS
- digitising (e.g. with tablet, on-screen or automated vectorisation)
- remote sensing (e.g. applying algorithms and processing, accuracy assessment)



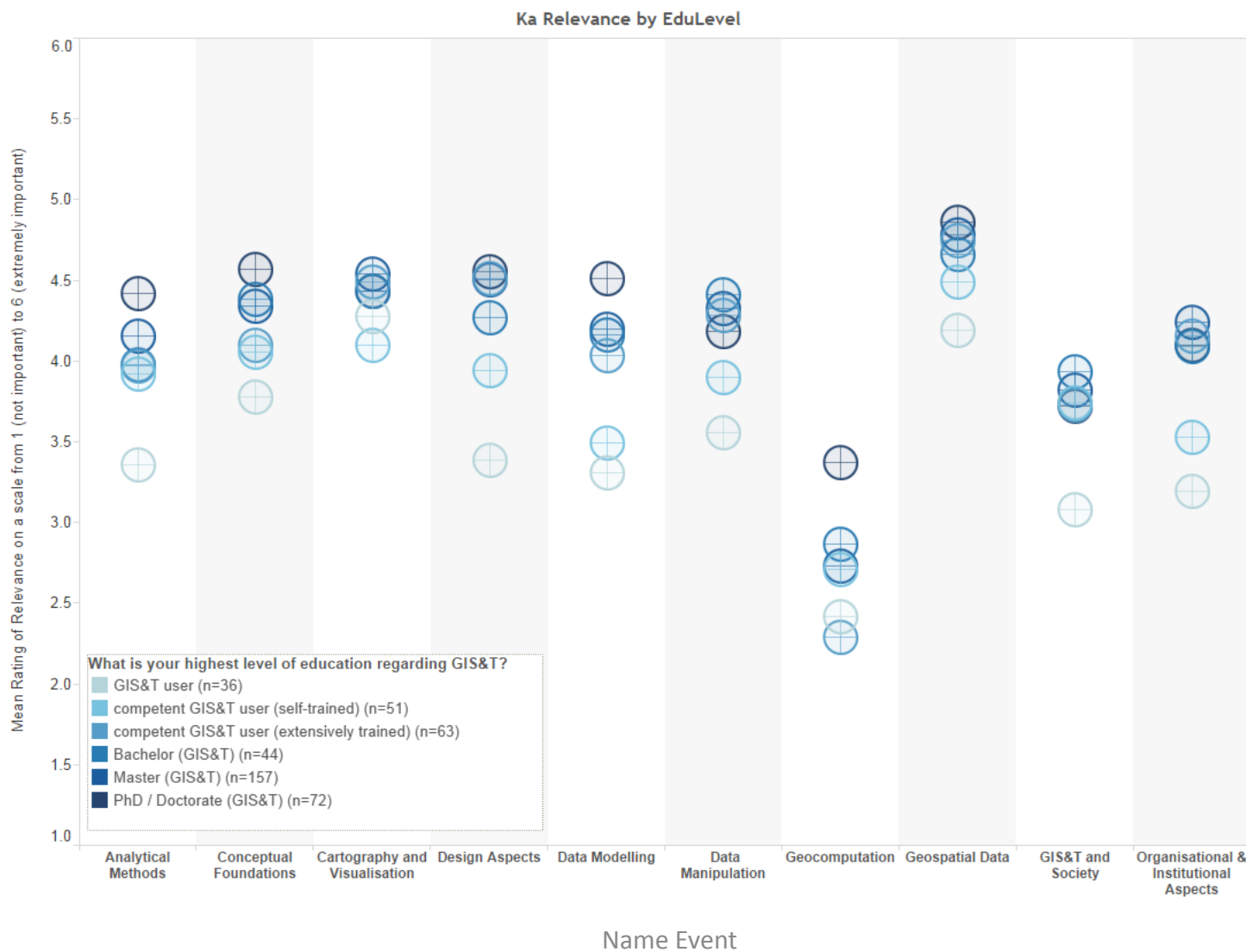
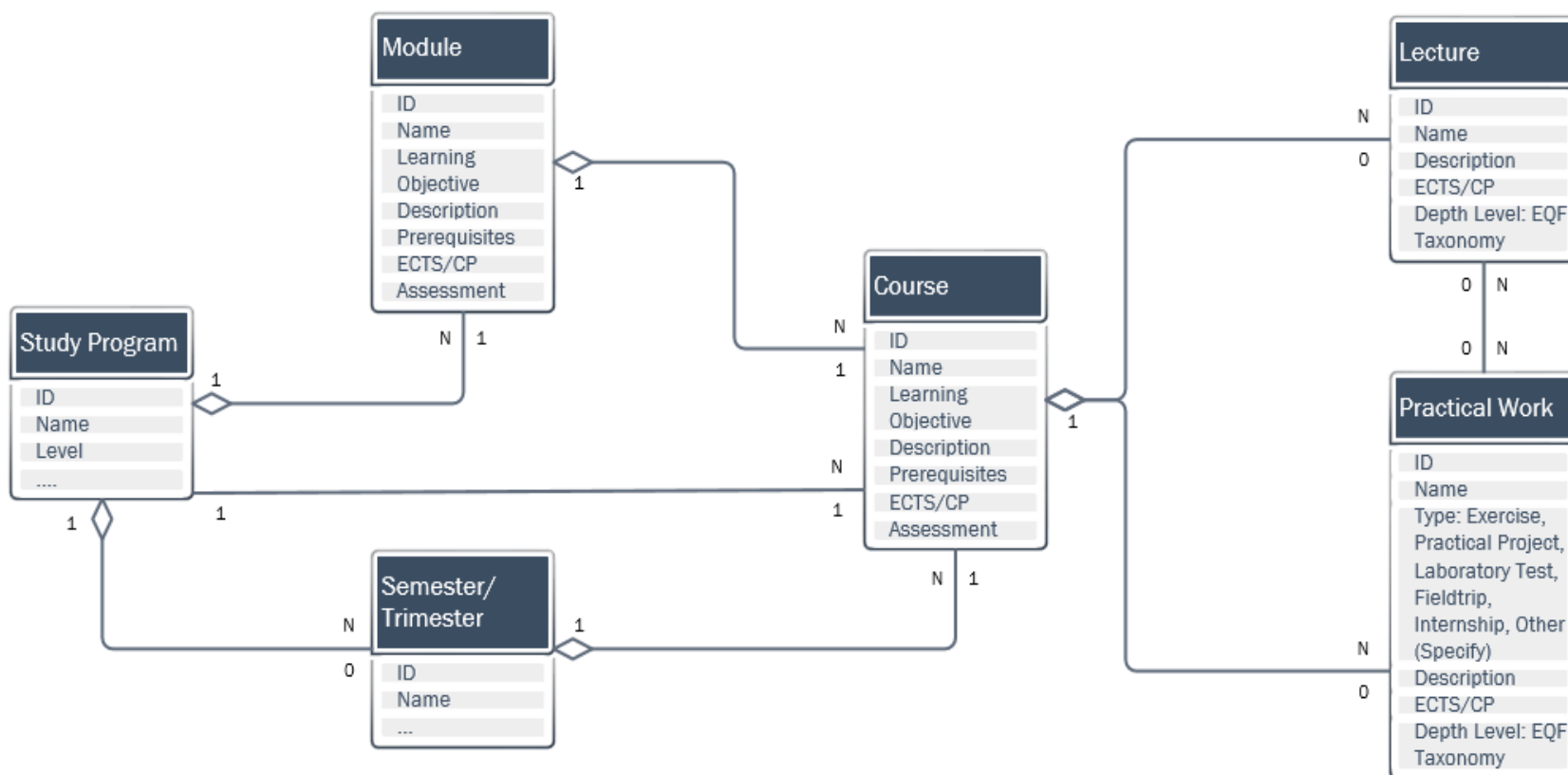


Table 5: Educational level of respondents according to the European Qualification Framework (EQF).

Educational Level		%
IS&T beginner	EQF 2	2,8
GIS&T user	EQF 3	8,3
competent GIS&T user (self-trained)	EQF 4	11,7
competent GIS&T user (extensively trained)	EQF 5	14,5
Bachelor (GIS&T)	EQF 6	10,1
Master (GIS&T)	EQF 7	36,1
PhD / Doctorate (GIS&T)	EQF 8	16,6



Modules



- Fundamentals of GIS
- Basics of Statistics
- Socio-economic indicators
- Demographic indicators
- Introduction to geostatistics
- Spatial Statistics
- Spatial Regression

Lectures



Fundamentals of GIS

- GIS COMPONENTS
- SPATIAL DATA MODELING (Vector Raster)
- GIS DATA (Attribute data, Spatial data)
- GEO-REFERENCING DATA
- LAYERS
- QUERYING GIS DATA
- DTM

Lectures



Basics of Statistics

- Mean
- Median
- Mode
- Range
- Variance
- Standard deviation
- Regression

Lectures



Socio-economic indicators

- Economic development
- labour productivity
- employment rate
- Investments by institutional sectors
- Real adjusted gross disposable income of households per capital

Lectures



Demographic indicators

- mortality rate
- natural increase
- International Migration trends
- Internal Migration trends
- dependency ratio

Lectures



Introduction to geostatistics

- Kriging
- Variogram
- Software for geostatistics

Lectures



Spatial Statistics

- Kernel density estimation
- Nearest neighbor distance
- Moran index
- G function by Getis and Ord
- LISA
- Software for spatial autocorrelation

Lectures



Spatial Regression

- OLS Regression
- Regression
- Geographically Weighted Regression
- GWR and Spatial Autocorrelation
- Software for Geographically Weighted Regression