Bringing Geospatial Tasks into the Mainstream of Business Analytics

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Why Geospatial Data Tasks?

- Everyone collects geospatial data
- Geospatial data tasks are outside the mainstream

What Is Visual Analytics Software?

- Spotfire, Tableau, others
- Think: Excel on steroids

Spotfire Has an R Engine Built In

- TIBCO Enterprise Runtime for R (TERR)
- Configure R scripts to run in Spotfire analysis documents
- Apply R scripts without looking at the code

Data Function

Basic Geospatial Data Tasks

- Transform coordinate reference systems
- Perform spatial overlay
- Find unions, intersections, differences
- Calculate lengths, areas, perimeters
- Calculate geographic coordinates of shapes for drawing on maps

Packages for Basic Geospatial Data Tasks

Essential packages

- **sp**
- **rgdal**

Other important packages

- **geosphere**
- **rgeos**
- **maptools**

Transform CRS

```
spTransform(
    Spatial,
    CRS=CRS("+proj=longlat +ellps=WGS84 +datum=WGS84 +no_de
)
```

Returns Spatial object with coordinates transformed to the new coordinate reference system (in this example, WGS84 longitude/latitude coordinates)

Perform Spatial Overlay

```
SpatialPoints %over% SpatialPolygons
```

Returns vector of indices of the polygons in which each point falls

Try It Yourself

Spotfire software: spotfire.tibco.com/trydesktop

Data functions: github.com/ianmcook/useR-2015