#### Week 3: Use R as GIS

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#### Basic R cheat sheet

R cheat sheet

# Spatial objects in R

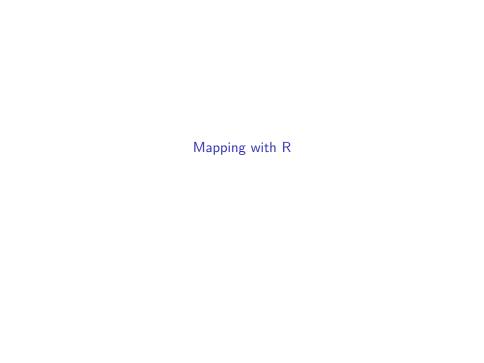
	Without attributes	With attributes
Points	SpatialPoints	SpatialPointsDataFrame
Lines	SpatialLines	${\sf Spatial Lines Data Frame}$
Polygons	SpatialPolygons	SpatialPolygonsDataFrame
Raster	SpatialGrid	${\sf SpatialGridDataFrame}$
Raster	SpatialPixels	${\sf Spatial Pixels Data Frame}$

# Commonly used GIS-related packages

- ▶ Basic: sp
- ► Input and output: rgdal
- Mapping: RColorBrewer, classInt
- ▶ Raster: raster
- Overlay sp, rgeos

#### Open a spatial dataset

- Open a shapefile: readShapePoly or readOGR
- Open a raster: raster
- ▶ Open from a remote data repository: getData



### Basic Mapping

- Display a map: plog
- Color selection: brewer.pal, classIntervals and findColours
- Legend: legend
- ▶ North arrow: north.arrow

# Mapping with static Google Maps

- Use Google Maps as a base map: GetMap from library RgoogleMaps
- ► Make sure spatial data has right projection information

#### Mapping with dynamic Google Maps

- Use Google Maps as a base map: plotGoogleMaps from library plotGoogleMaps
- ► Make sure spatial data has right projection information

#### Changing map projections

- Query or specify projection information: proj4string()
- Change map project of a vector dataset: spTransform()
- Change map project of a raster dataset: projectRaster()



# Basic operation

crop or erase

vector analysis (overlay)

► Overlay: over()

### Raster analysis

- Raster overlay, raster calculator
- ► Slope, aspect: terrain()
- Hill shade: hillShade()
- Contour lines: contour()
- Crop a raster: crop()

Reading

Chapters 2-4 of Applied Spatial Data Analysis with R