

# Package ‘strategicplayers’

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**Type** Package

**Title** Strategic Players

**Version** 1.0

**Date** 2016-09-05

**Author** Miles Ott

**Maintainer** Miles Ott <miles\_ott@alumni.brown.edu>

**Description** Identifies individuals in a social network who should be the intervention subjects for a network intervention in which you have a group of targets, a group of avoiders, and a group that is neither.

**License** GPL-3

**Imports** sna

**RoxygenNote** 5.0.1

**NeedsCompilation** no

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*Strategic Players*

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## Description

Identifies individuals in a social network who should be the intervention subjects for a network intervention in which you have a group of targets, a group of avoiders, and a group that is neither.

**Details**

The DESCRIPTION file:

```
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Version:     1.0
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```

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sp                sp
strategicplayers-package
                  Strategic Players
```

~~ An overview of how to use the package, including the most important functions ~~

**Author(s)**

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**References**

~~ Literature or other references for background information ~~

**Examples**

```
require(sna)

network<-rgraph(20, tprob=.2)      #generate a bernoulli random network on 20 nodes
geo<-geodist(network)[2]$gdist    #get the geodesic distances of the network
targets<-1:10                     #defining the target group
avoids<-11:14                     #defining the avoidance group
theta<-.8                          #defining the theta parameter

spset<-sp(4, geo, targets, avoids, theta, n.loops=100) #find sp set of size 4
spset

distance(geo, targets, avoids, theta, spset)          #calculates distance metric for spset
```

```
#plot the network with the strategic player set highlighted in yellow
colors<-rep("white", 20)
colors[targets]<-"green"
colors[avoids]<-"red"
colors[spset]<-"yellow"
par(mar=c(1,1,1,1))
gplot(network, vertex.col=colors, usearrows=FALSE,
       edge.col="grey", vertex.border="grey", vertex.cex=1.7, pad=0, label=1:dim(network)[1])
```

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distance

*distance*


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### Description

Takes in the geodesic distances, targets, avoiders, a parameter that prioritizes avoiding vs targeting, and the current players and returns the strategic players distance metric

### Usage

```
distance(gd, targets, avoiders, theta, players)
```

### Arguments

gd	a matrix of geodesic distances for the network of interest
targets	a vector of indices of the people you want to spread the intervention to
avoiders	a vector of indices of the people you don't want to spread the intervention to
theta	a number between 0 and 1 which weights the distance metric, 1 only prioritizes closeness to targets, 0 only prioritizes maximizing distance from avoiders
players	the indices of people who you have chosen for the intervention (a subset of targets)

### Value

returns the distance metric for strategic players, which we want to maximize

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sp

*sp*

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### Description

Takes in the number of intervention subjects you wish to identify, geodesic distances, targets, avoiders, and a parameter that prioritizes avoiding vs targetting, and returns the indices of the strategic players

### Usage

```
sp(n.players, gd, targets, avoiders, theta = 0.5, n.loops = 1000)
```

### Arguments

n.players	the number of intervention subjects you wish to identify
gd	a matrix of geodesic distances for the network of interest
targets	a vector of indices of the people you want to spread the intervention to
avoiders	a vector of indices of the people you don't want to spread the intervention to
theta	a number between 0 and 1 which weights the distance metric, 1 only prioritizes closeness to targets, 0 only prioritizes maximizing distance from avoiders. Any number between 0 and 1 will be a compromise of these two goals.
n.loops	the number of loops to run, the more loops you run the more likely you are to identify the optimal set of strategic players

### Value

returns the indices for strategic players

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