

Sprawozdanie
Geostatystyka ćw 4
Analiza Zbiorów Punktowych – Wprowadzenie. Badanie Losowości
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Geoinformatyka II

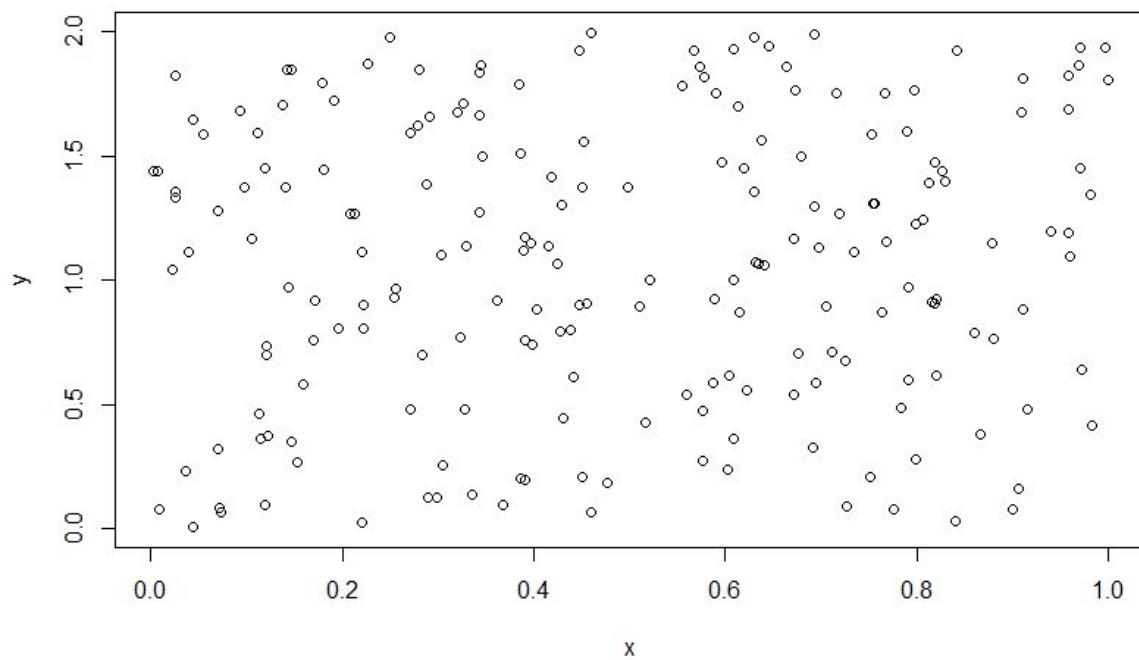
I Generacja punktów losowych

1.

```
set.seed(500)  
x <- runif(200)  
y <- 2* runif(200)
```

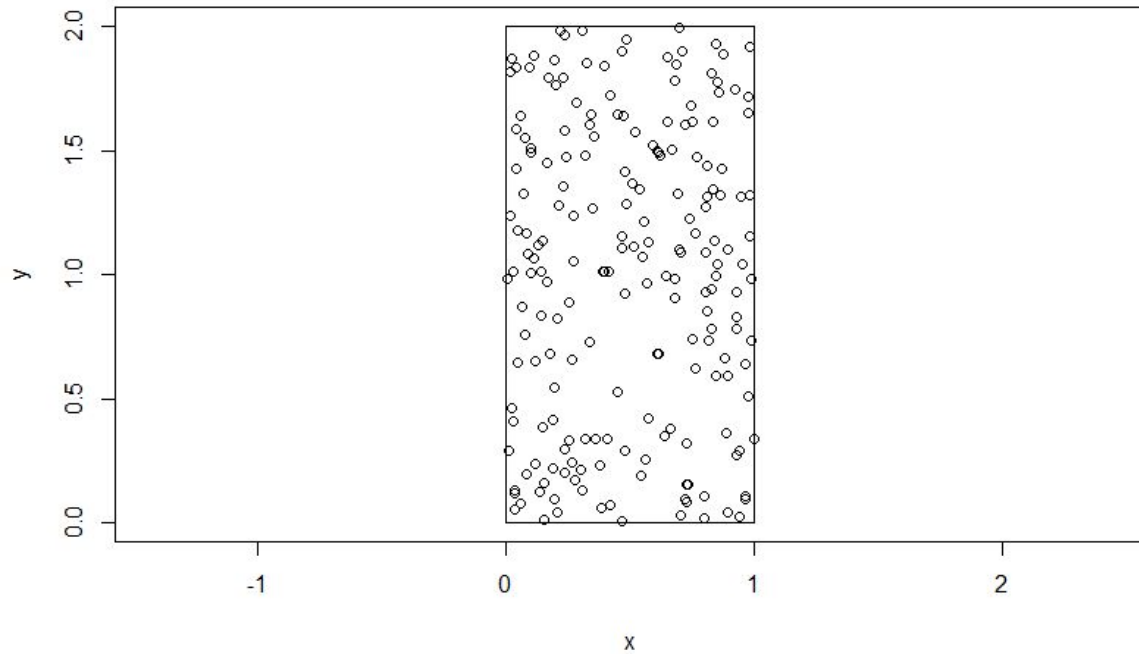
2.

```
plot(x,y)
```



3.

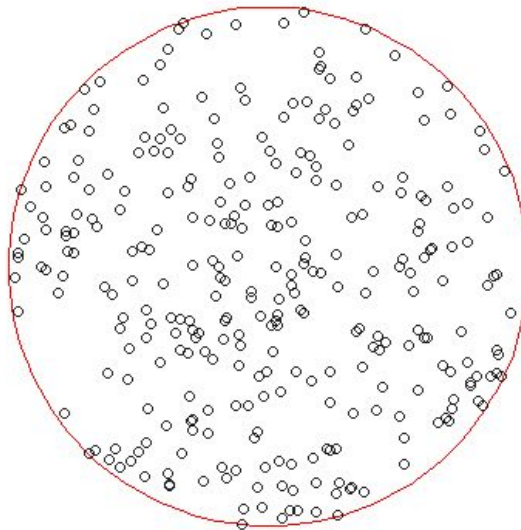
```
plot(x,y, asp=1)  
rect(0, 0, 1, 2 )
```



4.

```
r_squared = runifdisc(300, radius=100, centre=c(100,100),  
                      nsim=1, drop=TRUE)  
angles <- seq(0,2*pi, length.out=100)  
  
xs <- sqrt(r_squared$x)*cos(a)  
ys <- sqrt(r_squared$y)*sin(a)  
  
disc1=disc(radius =100, centre = c(100, 100), nsim=1)  
plot(disc1)+plot(r_squared, border="red", main="disc")
```

disc



II Testowanie losowości rozmieszczenia punktów

5.

```
ppp1 <- ppp(r_squared$x, r_squared$y, window = disc(r_squared, radius
=100, centre = c(100, 100), nsim=1) , xrange, yrange)
```

```
ppp1
```

```
p = plot(ppp1)
```

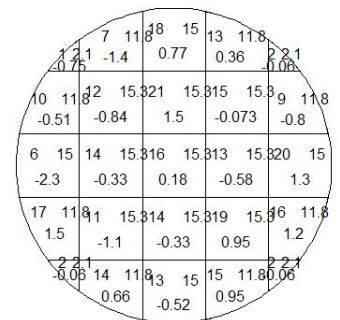
```
qt = quadrat.test.ppp(ppp1, 5, 5)
```

```
residuals(qt)
```

```
plot(qt)
```

p-value nie jest bardzo mała, jej wartość wynosi 0.8677, co sprawia, że nie odrzucamy hipotezy zerowej o całkowicie losowym rozmieszczeniu punktów.

qt



```
> qt
```

Chi-squared test of CSR using quadrat counts

```
data: ppp1
x2 = 22.219, df = 24, p-value = 0.8677
alternative hypothesis: two.sided
```

```
Quadrats: 25 tiles (irregular windows)
```

```
> |
```

6.

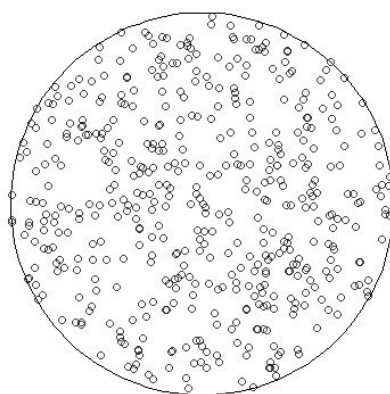
```
okrag = disc(radius =10, centre = c(10, 10), nsim=1)

lambda=100/(2*pi*10)

rpoispp(lambda, lmax=NULL, win=okrag, nsim=1, drop=TRUE, ex=NULL,
        warnwin=TRUE)

plot(rpoispp(lambda, lmax=NULL, win=okrag, nsim=1, drop=TRUE,
ex=NULL, warnwin=TRUE), main = "rpoispp")
```

rpoispp



Wynik, jaki otrzymujemy jest zawsze zbliżony do ilości 500 punktów.

III Projekt

7.

```
dane<-load(url("http://github.com/mgimond/Spatial/raw/master/Data/ppa  
.RData"))
```

8.

```
marks(starbucks) <- NULL
```

9.

```
Window(starbucks) <- ma
```

10.

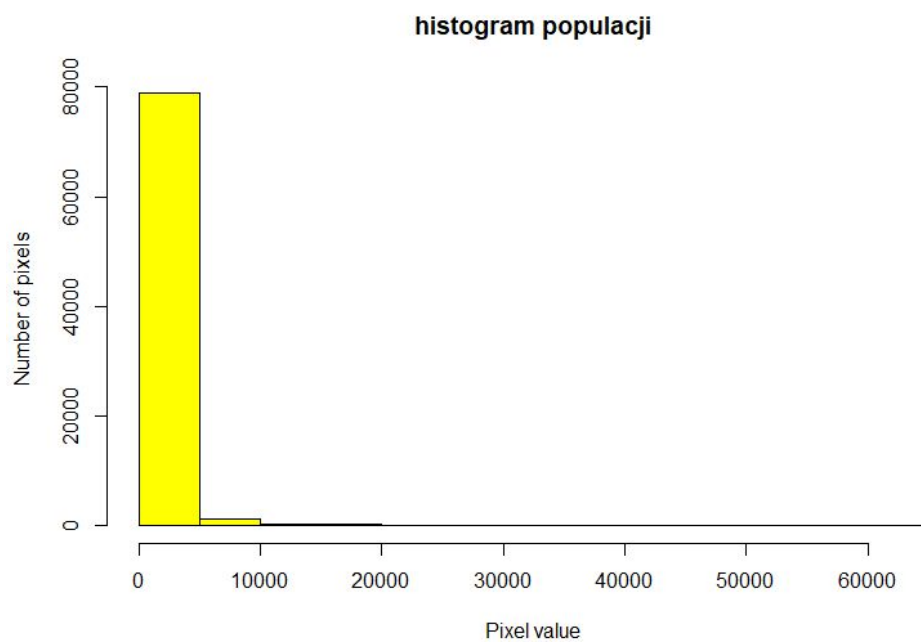
```
plot(starbucks, main="starbucks", cols="grey", pch=20)
```

starbucks



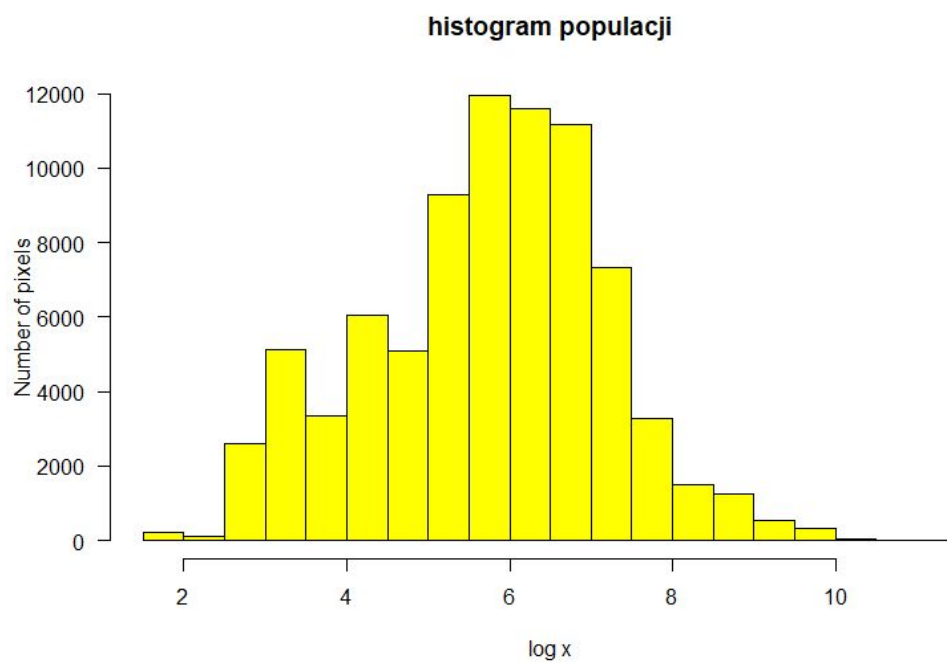
11.

```
hist(pop, main="histogram populacji", col = "yellow")
```



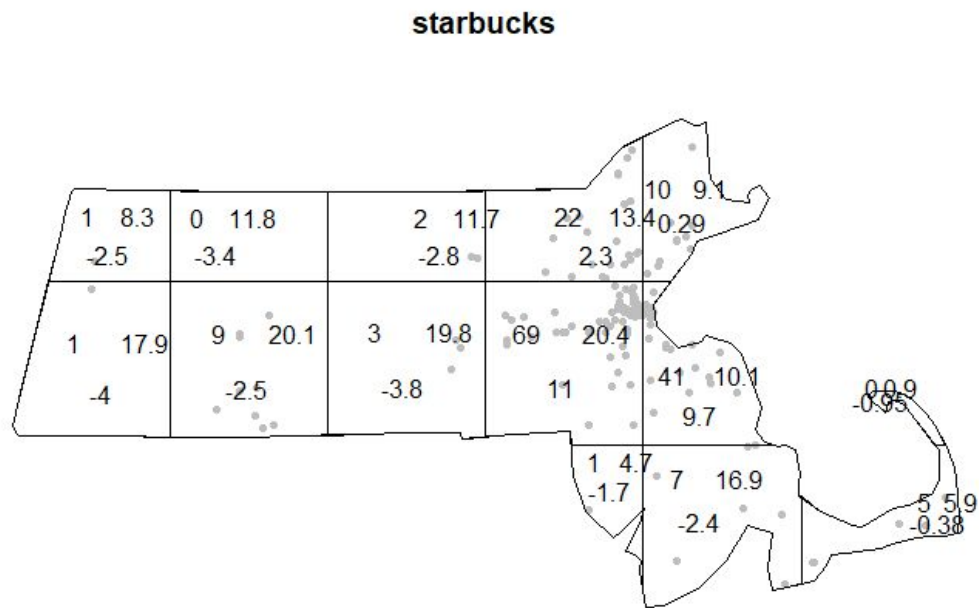
12.

```
plog <- log(pop)  
hist(plog, main="histogram populacji", xlab="log x", col="yellow", las=1)
```



13.

```
kw <- quadrat.test(starbucks, nx= 6, ny=3)
plot(starbucks, pch=20, cols="grey")
plot(kw, add=TRUE)
kint <- intensity(kw)
```



```
> kw
      Chi-squared test of CSR using quadrat counts

data: starbucks
x2 = 288.12, df = 13, p-value < 2.2e-16
alternative hypothesis: two.sided

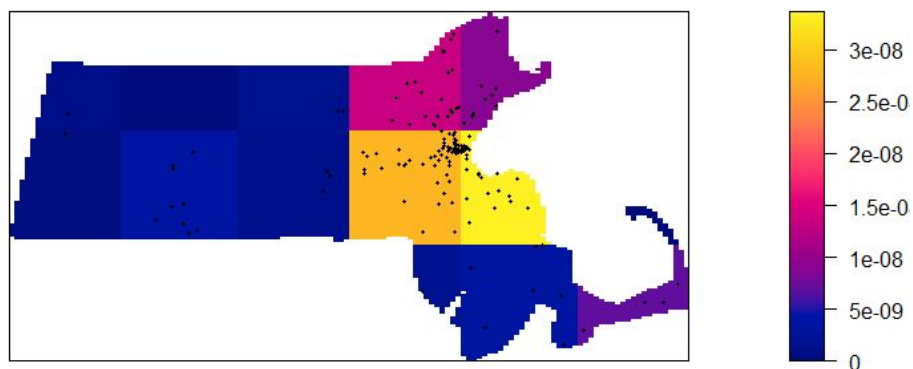
Quadrats: 14 tiles (irregular windows)
> |
```

Wartość p-value jest niewielka i wynosi $<2.2e-16$, co sprawia, że możemy odrzucić hipotezę zerową

14.

```
Kw <- quadratcount(starbucks, nx= 6, ny=3)
Kwd <- intensity(Kw)
plot(intensity(Kw, image=TRUE), main="Gęstość punktów w kwadratach",
las=1)
plot(starbucks, pch=20, cex=0.6, col="black", add=TRUE)
```

Gęstość punktów w kwadratach



15.

```
kw2 <- quadratcount(rescale(starbucks, 1000, "km"), nx= 6, ny=3)
kint2 <- intensity(kw2)
plot(intensity(kw2, image=TRUE), las=1)
plot(rescale(starbucks, 1000, "km"), pch=20, cex=0.6, add=TRUE)
```

