

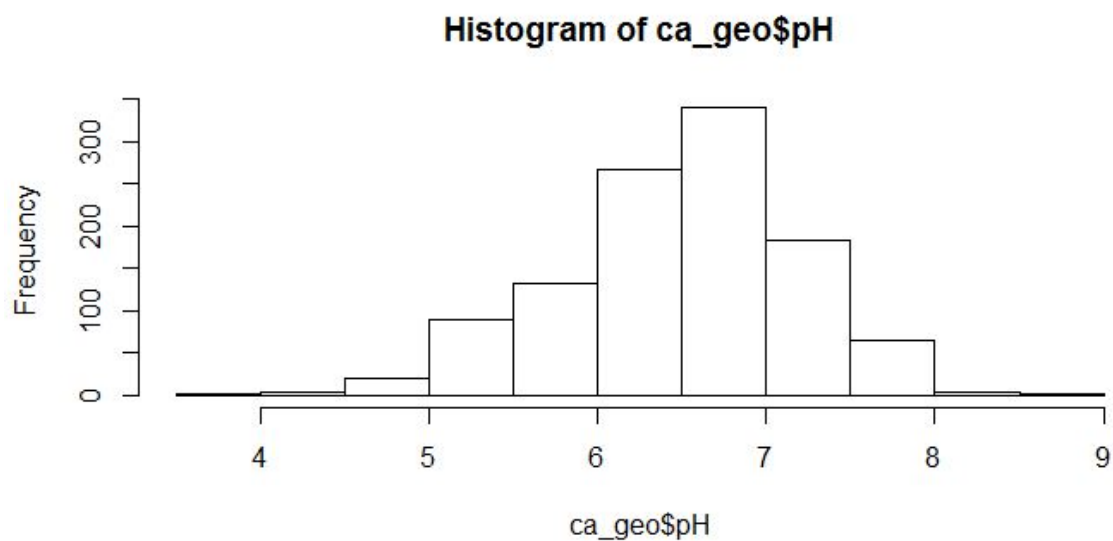
Sprawozdanie
Geostatystyka ćw 8
Wstęp do Geostatystyki. Estymacja wariogramu.
Natalia Gadocha 304165
Geoinformatyka II

```
ca_geo <- readRDS("C:/Users/natal/Desktop/ca_geo.rds")
names(ca_geo)
summary(ca_geo$pH, , rm.na = TRUE)
```

```
> names(ca_geo)
[1] "ID" "Elev" "pH" "Zn" "Cu" "Pb" "Ni" "Co" "Ag"
[10] "Mn" "Fe" "Mo" "U" "W" "Sn" "Hg" "As" "Sb"
[19] "Ba" "Cd" "V" "Bi" "Cr" "LoI" "F" "Au"
> |

> summary(ca_geo$pH)
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.   NA's
 3.900  6.100  6.600  6.531  7.000  8.700    33
```

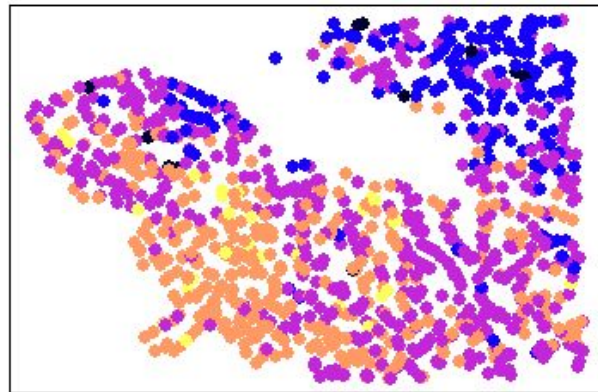
1
hist(ca_geo\$pH)



```

2
na <- is.na(ca_geo$pH)
table(na)
spplot(ca_geo[!na, ], "pH")

```



```

• [3.9,4.86]
• (4.86,5.82]
• (5.82,6.78]
• (6.78,7.74]
• (7.74,8.7]

```

I Dopasowanie powierzchni trendu. Interpolacja.

```

3
coordnames(ca_geo)
m_lin <- lm(pH ~ x + y, as.data.frame(ca_geo))
summary(m_lin)

```

```

> coordnames(ca_geo)
[1] "x" "y"
> |

```

```

> summary(m_lin)

Call:
lm(formula = pH ~ x + y, data = as.data.frame(ca_geo))

Residuals:
    Min       1Q   Median       3Q      Max
-2.83561 -0.32091 -0.00761  0.33188  2.06249

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)  8.358e+01  3.002e+00  27.84  <2e-16 ***
x          -5.691e-06  3.483e-07  -16.34  <2e-16 ***
y          -1.313e-05  5.319e-07  -24.68  <2e-16 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.5299 on 1104 degrees of freedom
(33 observations deleted due to missingness)
Multiple R-squared:  0.4237,    Adjusted R-squared:  0.4227
F-statistic: 405.9 on 2 and 1104 DF,  p-value: < 2.2e-16

```

4

```
miss <- is.na(ca_geo$pH)
ca_geo_miss <- as.data.frame(ca_geo)[miss, ]
Predict <- predict(m_lin, newdata = ca_geo_miss, se.fit = TRUE)
```

5

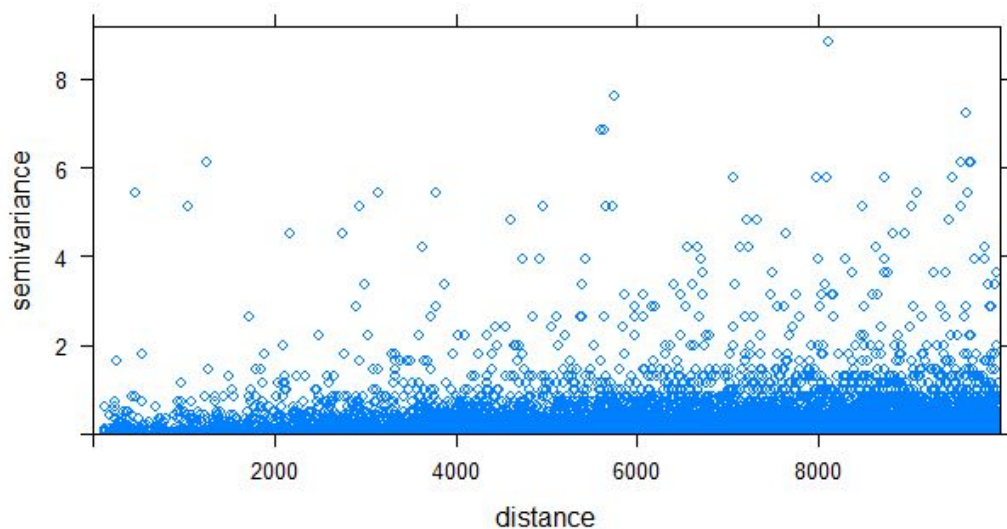
```
prawd <- 1 - pnorm(7, mean = Predict$fit, sd = predictions$se.fit)
```

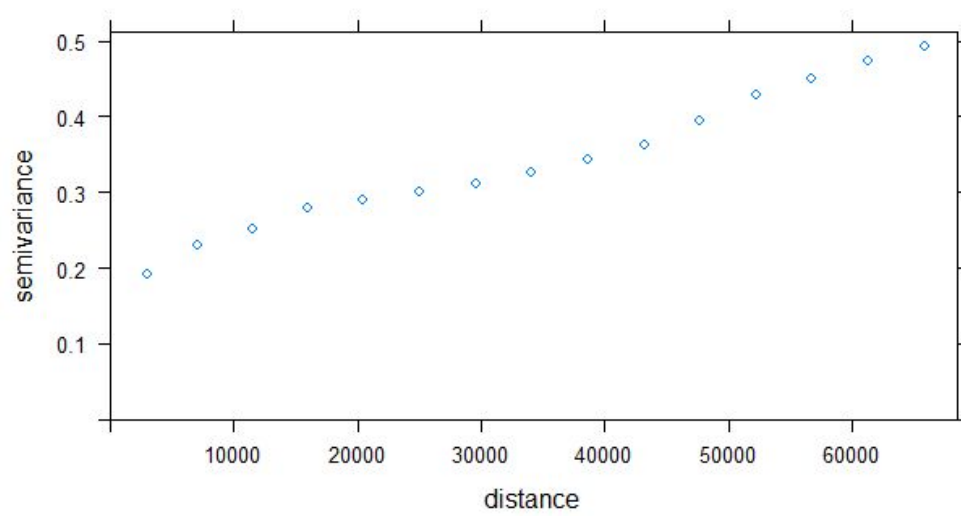
```
> prawd
      16      44      45      258      360
8.978975e-01 9.979506e-01 9.597152e-01 1.583942e-01 0.000000e+00
381      487      507      508      523
0.000000e+00 1.398312e-03 0.000000e+00 0.000000e+00 3.330669e-15
534      541      554      647      664
5.107026e-15 0.000000e+00 0.000000e+00 0.000000e+00 0.000000e+00
684      686      740      744      755
1.204135e-05 0.000000e+00 6.220570e-04 0.000000e+00 4.953997e-03
759      813      820      821      824
0.000000e+00 8.332408e-07 0.000000e+00 2.220446e-16 0.000000e+00
851      859      864      867      877
4.440892e-16 0.000000e+00 0.000000e+00 0.000000e+00 2.087948e-03
890      1055      1196
0.000000e+00 0.000000e+00 0.000000e+00
> |
```

II. Estymacja wariogramu

6

```
plot(variogram(pH ~ 1, ca_geo[!miss, ], cloud = TRUE, cutoff =
10000))
plot(variogram(pH ~ 1, ca_geo[!miss, ]))
```





7

```
pH_variog <- variogram(pH ~ x + y, ca_geo[!miss, ])  
plot(pH_variog)
```

