สมาชิกกลุ่ม
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# Diabetes Dataset

| # Pregnancies<br>Number of times pregnant | # Glucose<br>Plasma glucose concentration a 2 hours in an oral glucose tolerance test | # BloodPressure<br>Diastolic blood pressure (mm Hg) | # SkinThickness<br>Triceps skin fold thickness (mm) | # Insulin<br>2-Hour serum insulin (mu U/ml) | # BMI<br>Body mass index (weight in kg/(height in m)^2) | # DiabetesPedigree...<br>Diabetes pedigree function | # Age<br>Age (years) | # Outcome<br>Class variable (0 or 1) |
|---|---|---|---|---|---|---|---|---|
| 6 | 148 | 72 | 35 | 0 | 33.6 | 0.627 | 50 | 1 |
| 1 | 85 | 66 | 29 | 0 | 26.6 | 0.351 | 31 | 0 |
| 8 | 183 | 64 | 0 | 0 | 23.3 | 0.672 | 32 | 1 |
| 1 | 89 | 66 | 23 | 94 | 28.1 | 0.167 | 21 | 0 |
| 0 | 137 | 40 | 35 | 168 | 43.1 | 2.288 | 33 | 1 |
| 5 | 116 | 74 | 0 | 0 | 25.6 | 0.201 | 30 | 0 |
| 3 | 78 | 50 | 32 | 88 | 31 | 0.248 | 26 | 1 |
| 10 | 115 | 0 | 0 | 0 | 35.3 | 0.134 | 29 | 0 |
| 2 | 197 | 70 | 45 | 543 | 30.5 | 0.158 | 53 | 1 |
| 8 | 125 | 96 | 0 | 0 | 0 | 0.232 | 54 | 1 |

ข้อมูลตัวอย่าง

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|---|---|---|---|---|---|---|---|
| 4 | 110 | 92 | 0 | 0 | 37.6 | 0.191 | 30 |

P(Outcome = 0) = 0.4
P(Outcome = 1) = 0.6

Pregnancies = 4 (เจมส์)

If Outcome = 0
ค่าเฉลี่ย = (1+1+5+10) / 4 = 4.25
(ค่าความแปรปรวน)^2 = [(1-4.25)^2 + (1-4.25)^2 + (5-4.25)^2 + (10-4.25)^2] / (4-1) = 18.25
If Outcome = 1
ค่าเฉลี่ย = (6+8+0+3+2+8) / 6 = 4.5
(ค่าความแปรปรวน)^2 = [(6-4.5)^2 + (8-4.5)^2 + (0-4.5)^2 + (3-4.5)^2 + (2-4.5)^2 + (8-4.5)^2] / (6-1) = 11.1

P(Pregnancies = 4 | Outcome=0) = (1 / sqrt(2Pi) * 4.272) * e^-[(4-4.25)^2 / (2*18.25)] = 9.322 * 10^-2
P(Pregnancies = 4 | Outcome=1) = (1 / sqrt(2Pi * 11.1)) * e^-[(4-4.5)^2 / (2*11.1)] = 1.184*10^-1

Glucose = 110 (เจมส์)
If Outcome = 0
ค่าเฉลี่ย = (85+89+116+115) / 4 = 101.25
(ค่าความแปรปรวน)^2 = [(85-101.25)^2 + (89-101.25)^2 + (116-101.25)^2 + (115-101.25)^2] / (4-1) = 273.58
If Outcome = 1
ค่าเฉลี่ย = (148+183+137+78+197+125) / 6 = 144.67
(ค่าความแปรปรวน)^2 = [(148-144.67)^2 + (183-144.67)^2 + (137-144.67)^2 + (78-144.67)^2 + (197-144.67)^2 + (125-144.67)^2] / (6-1) = 1821.87
P(Glucose = 110 | Outcome=0) = (1 / sqrt(2Pi* 273.58)) * e^-[(110-101.25)^2 / (2*273.58)] = 2.097-10^-2
P(Glucose = 110 | Outcome=1) = (1 / sqrt(2Pi * 1821.87)) * e^-[(110-144.67)^2 / (2*1821.87)] = 6.72*10^-3

BloodPressure = 92 (เจมส์)
If Outcome = 0
ค่าเฉลี่ย = (66+66+74+0) / 4 = 51.5
(ค่าความแปรปรวน)^2 = [(66-51.5)^2 + (66-51.5)^2 + (74-51.5)^2 + (0-51.5)^2] / (4-1) =1193
If Outcome = 1
ค่าเฉลี่ย = (72+64+40+50+70+96) / 6 = 65.33
(ค่าความแปรปรวน)^2 = [(72-65.33)^2 + (64-65.33)^2 + (40-65.33)^2 + (50-65.33)^2 + (70-65.33)^2 + (96-65.33)^2] / (6-1) = 377.07
P(BloodPressure = 92 | Outcome=0) = (1 / sqrt(2Pi * 1193)) * e^-[(92-51.5)^2 / (2*1193)] = 5.808*10^-3
P(BloodPressure = 92 | Outcome=1) = (1 / sqrt(2Pi * 377.07)) * e^-[(92-65.33)^2 / (2*377.07)] = 8*10^-3

SkinThickness = 0 (เจมส์)
If Outcome = 0
ค่าเฉลี่ย = (29+23+0+0) / 4 = 13
(ค่าความแปรปรวน)^2 = [(29-13)^2 + (23-13)^2 + (0-13)^2 + (0-13)^2] / (4-1) = 231.33
If Outcome = 1
ค่าเฉลี่ย = (35+0+35+32+45+0) / 6 = 24.5
(ค่าความแปรปรวน)^2 = [(35-24.5)^2 + (0-24.5)^2 + (35-24.5)^2 + (32-24.5)^2 + (45-24.5))^2 + (0-24.5)^2] / (6-1) = 379.5
P(SkinThickness = 0 | Outcome=0) = (1 / sqrt(2Pi * 231.33)) * e^-[(0-13)^2 / (2*231.33)] = 1.82*10^-2
P(SkinThickness = 0 | Outcome=1) = (1 / sqrt(2Pi * 379.5)) * e^-[(0-24.5)^2 / (2*379.5)] = 9.286*10-3

Insulin = 0 (อีม)
If Outcome = 0
ค่าเฉลี่ย = (0+94+0+0) / 4 = 23.5
(ค่าความแปรปรวน)^2 = [(0-23.5)^2+(94-23.5)^2+(0-23.5)^2+(0-23.5)^2] / (4-1) = 2,209
If Outcome = 1
ค่าเฉลี่ย = (0 + 0 + 168 + 88 + 543 + 0) / 6 = 133.166667 = 133.17
(ค่าความแปรปรวน)^2 = [(0-133.17)^2 + (0-133.17)^2 + (168-133.17)^2 +(88-133.17)^2 + (543-133.17)^2 + (0-133.17)^2] / (6-1) = 44,883.36

P(Insulin = 0 | Outcome=0) = (1 / sqrt(2Pi * 2,209)) * e^-[(0-23.5)^2 / (2*2,209)] = 7.48*10^-3
P(Insulin = 0 | Outcome=1) = (1/ sqrt(2Pi *44,883.36))*e^-[(0-133.17)^2 /(2*44,883.36)]=1.87*10^-3

BMI = 37.6 (อีม)
If Outcome = 0
ค่าเฉลี่ย = (26.6 + 28.1 + 25.6 + 35.3) / 4 = 28.9
(ค่าความแปรปรวน)^2=[(26.6-28.9)^2+(28.1-28.9)^2+(25.6-28.9)^2+(35.3-28.9)^2]/(4-1)=19.26
If Outcome = 1
ค่าเฉลี่ย =(33.6 + 23.3 + 43.1 + 31 + 30.5 + 0 ) / 6 = 26.92
(ค่าความแปรปรวน)^2 =[(33.6-26.92)^2 +(23.3-26.92)^2 +(43.1-26.92)^2 +(31-26.92)^2 +(30.5-26.92)^2 +(0-26.92)^2] /(6-1) = 214.73
P(BMI = 37.6 | Outcome=0) = (1 / sqrt(2Pi *19.26)) * e^-[(37.6-28.9)^2 / (2*19.26)] = 1.274*10^-2
P(BMI = 37.6 | Outcome=1) = (1 / sqrt(2Pi *214.73)) * e^-[(37.6-26.92)^2 / (2* 214.73)] = 8.277*10^-3

DiabetesPedigreeFunction = 0.191 (อีม)
If Outcome = 0
ค่าเฉลี่ย = (0.351 + 0.167 + 0.201 + 0.134) / 4 = 0.21325
(ค่าความแปรปรวน)^2 = [(0.351-0.21325)^2 + (0.167-0.21325)^2 + (0.201-0.21325)^2 + (0.134-0.21325)^2 ]/(4-1) = 0.0092
If Outcome = 1
ค่าเฉลี่ย = (0.627 + 0.672 + 2.288 + 0.248 + 0.158 + 0.232) / 6 = 0.704
(ค่าความแปรปรวน)^2 = [(0.627-0.704)^2 + (0.672-0.704)^2 + (2.288-0.704)^2 + (0.248-0.704)^2 + (0.158-0.704)^2 + (0.232-0.704)^2 ]/(6-1) = 0.648969
P(DiabetesPedigreeFunction = 0.191 | Outcome=0) =(1 / sqrt(2Pi *0.0092)) * e^-[(0.191-0.21325)^2 / (2*0.0092)] = 4.048
P(DiabetesPedigreeFunction = 0.191 | Outcome=1) =(1 / sqrt(2Pi *0.648969)) * e^-[(0.191-0.704)^2 / (2*0.648969)] = 4.053*10^-1

Age = 30 (อีม)
If Outcome = 0
ค่าเฉลี่ย = (31 + 21 + 30 + 29 ) / 4 = 27.75
(ค่าความแปรปรวน)^2 = [(31-27.75)^2+(21-27.75)^2+(30-27.75)^2+(29-27.75)^2 ]/(4-1)=20.92
If Outcome = 1
ค่าเฉลี่ย = (50 + 32 + 33 + 26 + 53 +54 ) / 6 = 41.33
(ค่าความแปรปรวน)^2 = [(50-41.33)^2 + (32-41.33)^2 + (33-41.33)^2 + (26-41.33)^2 + (53-41.33)^2 + (54-41.33)^2 ]/(6-1) = 152.67
P(Age = 30 | Outcome=0) = (1 / sqrt(2Pi *20.92)) * e^-[(30-27.75)^2 / (2*20.92)] = 7.88*10^-2
P(Age = 30 | Outcome=1) = (1 / sqrt(2Pi *152.67)) * e^-[(30-41.33)^2 / (2*152.67)] = 2.121*10^-2

P(Outcome = 0 | x) = P(Pregnancies = 4 |0) * P(Glucose = 110 |0) * P(BloodPressure = 92 |0) * P(SkinThickness = 0 |0) * P(Insulin = 0 |0) * P(BMI = 37.5 |0) * P(DiabetesPedigreeFunction = 0.191 |0) * P(Age = 30 |0) * P(0) = 9.322 * 10^-2 * 2.097-10^-2 * 5.808*10^-3 * 1.82*10^-2 * 7.48*10^-3*1.274*10^-2*4.048*7.88*10^-2 = 0.1954823 = 1.95*10^-1

P(Outcome = 1 | x) = P(Pregnancies = 4 |1) * P(Glucose = 110 |1) * P(BloodPressure = 92 |1) * P(SkinThickness = 0 |1) * P(Insulin = 0 |1) * P(BMI = 37.5 |1) * P(DiabetesPedigreeFunction = 0.191 |1) * P(Age = 30 |1) * P(1) = 1.184*10^-1 * 6.72*10^-3 * 8*10^-3 * 9.286*10-3 * 1.87*10^-3*8.277*10^-3*4.053*10^-1* 2.121*10^-2 = 0.00059067182 = 5.906*10^-4

ดังนั้น ทำนายตัวอย่างข้อมูลว่า Outcome = 0