|  |
| --- |
| > cor(Cheese)  Taste Acetic H2S Lactic  Taste 1.0000000 0.5495393 0.7557523 0.7042362  Acetic 0.5495393 1.0000000 0.6179559 0.6037826  H2S 0.7557523 0.6179559 1.0000000 0.6448123  Lactic 0.7042362 0.6037826 0.6448123 1.0000000 |

Simple Linear Regression Models

|  |
| --- |
| > FitA = lm(Taste ~ Acetic, data = Cheese)  > FitB = lm(Taste ~ H2S, data = Cheese)  > FitC = lm(Taste ~ Lactic, data = Cheese) |

|  |
| --- |
| > summary(FitA)  Call:  lm(formula = Taste ~ Acetic, data = Cheese)  Residuals:  Min 1Q Median 3Q Max  -29.642 -7.443 2.082 6.597 26.581  Coefficients:  Estimate Std. Error t value Pr(>|t|)  (Intercept) -61.499 24.846 -2.475 0.01964 \*  Acetic 15.648 4.496 3.481 0.00166 \*\*  ---  Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1  Residual standard error: 13.82 on 28 degrees of freedom  Multiple R-squared: 0.302, Adjusted R-squared: 0.2771  F-statistic: 12.11 on 1 and 28 DF, p-value: 0.001658 |

|  |
| --- |
| > summary(FitB)  Call:  lm(formula = Taste ~ H2S, data = Cheese)  Residuals:  Min 1Q Median 3Q Max  -15.426 -7.611 -3.491 6.420 25.687  Coefficients:  Estimate Std. Error t value Pr(>|t|)  (Intercept) -9.7868 5.9579 -1.643 0.112  H2S 5.7761 0.9458 6.107 1.37e-06 \*\*\*  ---  Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1  Residual standard error: 10.83 on 28 degrees of freedom  Multiple R-squared: 0.5712, Adjusted R-squared: 0.5558  F-statistic: 37.29 on 1 and 28 DF, p-value: 1.374e-06 |

|  |
| --- |
| > summary(FitC)  Call:  lm(formula = Taste ~ Lactic, data = Cheese)  Residuals:  Min 1Q Median 3Q Max  -19.9439 -8.6839 -0.1095 8.9998 27.4245  Coefficients:  Estimate Std. Error t value Pr(>|t|)  (Intercept) -29.859 10.582 -2.822 0.00869 \*\*  Lactic 37.720 7.186 5.249 1.41e-05 \*\*\*  ---  Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1  Residual standard error: 11.75 on 28 degrees of freedom  Multiple R-squared: 0.4959, Adjusted R-squared: 0.4779  F-statistic: 27.55 on 1 and 28 DF, p-value: 1.405e-05 |

Regression Models using two or more independent variables.

|  |
| --- |
| > Fit1 = lm(Taste ~ Acetic + H2S, data = Cheese)  > Fit2 = lm(Taste ~ Acetic + Lactic, data = Cheese)  > Fit3 = lm(Taste ~ H2S + Lactic, data = Cheese)  > Fit4 = lm(Taste ~ Acetic + H2S + Lactic, data = Cheese) |

Akaike Information Criterion

|  |
| --- |
| > AIC(FitA)  [1] 246.6389  > AIC(FitB)  [1] 232.0245  > AIC(FitC)  [1] 236.8724 |

For the multiple linear regression models.

|  |
| --- |
| > AIC(Fit1)  [1] 233.2438  > AIC(Fit2)  [1] 237.3884  > AIC(Fit3)  [1] 227.7838  > AIC(Fit4)  [1] 229.7775 |

Summary of model selection metrics.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Model | Ind. Variables | Multiple R2 | Adjusted R2 | AIC |
|  |  | (highest \*) | (highest \*) | (lowest \*) |
| FitA | Acetic | 0.3020 | 0.2771 | 246.6389 |
| FitB | H2S | 0.5712 | 0.5558 | 232.0245 |
| FitC | Lactic | 0.4959 | 0.4779 | 236.8724 |
| Fit1 | Acetic, H2S | 0.5822 | 0.5512 | 233.2438 |
| Fit2 | Acetic, Lactic | 0.5203 | 0.4847 | 237.3884 |
| Fit3 | H2S, Lactic | 0.6517 | 0.6259 \* | 227.7838 \* |
| Fit4 | All Three | 0.6518 \* | 0.6116 | 229.7775 |