Project 2: Analyzing Women’s Olympic 100-Meter Race times using Polynomial Regression

By: Lake Summers

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|  | Linear | Quadratic | Cubic |
| 1,2,3,4 | 0.03836388 | 0.03547085 | 0.03493587 |
| 5 | 0.17617588 | 0.0677583 | 0.03510245 |
| 1,2,3,5 | 0.04601539 | 0.03278981 | 0.03269359 |
| 4 | 0.06439725 | 0.0516594 | 0.05729374 |
| 1,2,4,5 | 0.05363736 | 0.04265187 | 0.04109596 |
| 3 | 0.03145726 | 0.0073972 | 0.00945486 |
| 1,3,4,5 | 0.04994162 | 0.03514046 | 0.0344135 |
| 2 | 0.04240102 | 0.03622194 | 0.03410313 |
| 2,3,4,5 | 0.03283572 | 0.02553375 | 0.04161484 |
| 1 | 0.19941898 | 0.11547845 | 4.63690816 |
| Mean for Training | 0.04415879 | 0.03431735 | 0.03695075 |
| Mean for Testing | 0.10277008 | 0.05570306 | 0.95457247 |

Beyond quadratic, the testing squared error cost function skyrockets therefore you should not use this to estimate. Between the quadratic function and linear function it seems as though the mean J for testing is much lower on the quadratic so this should be the model we use to calculate our weights from the full set of data