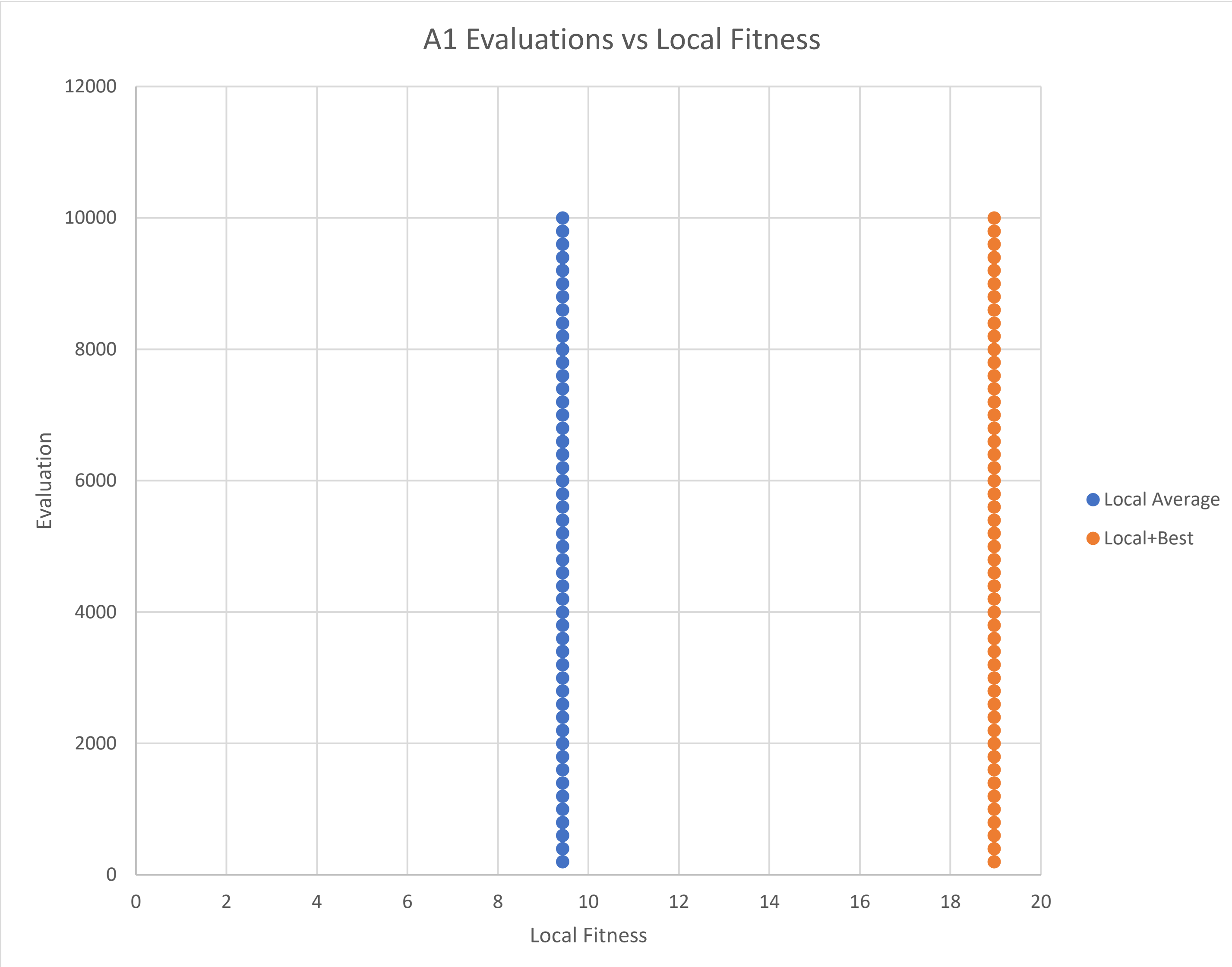
Problem Set A1 Analysis:



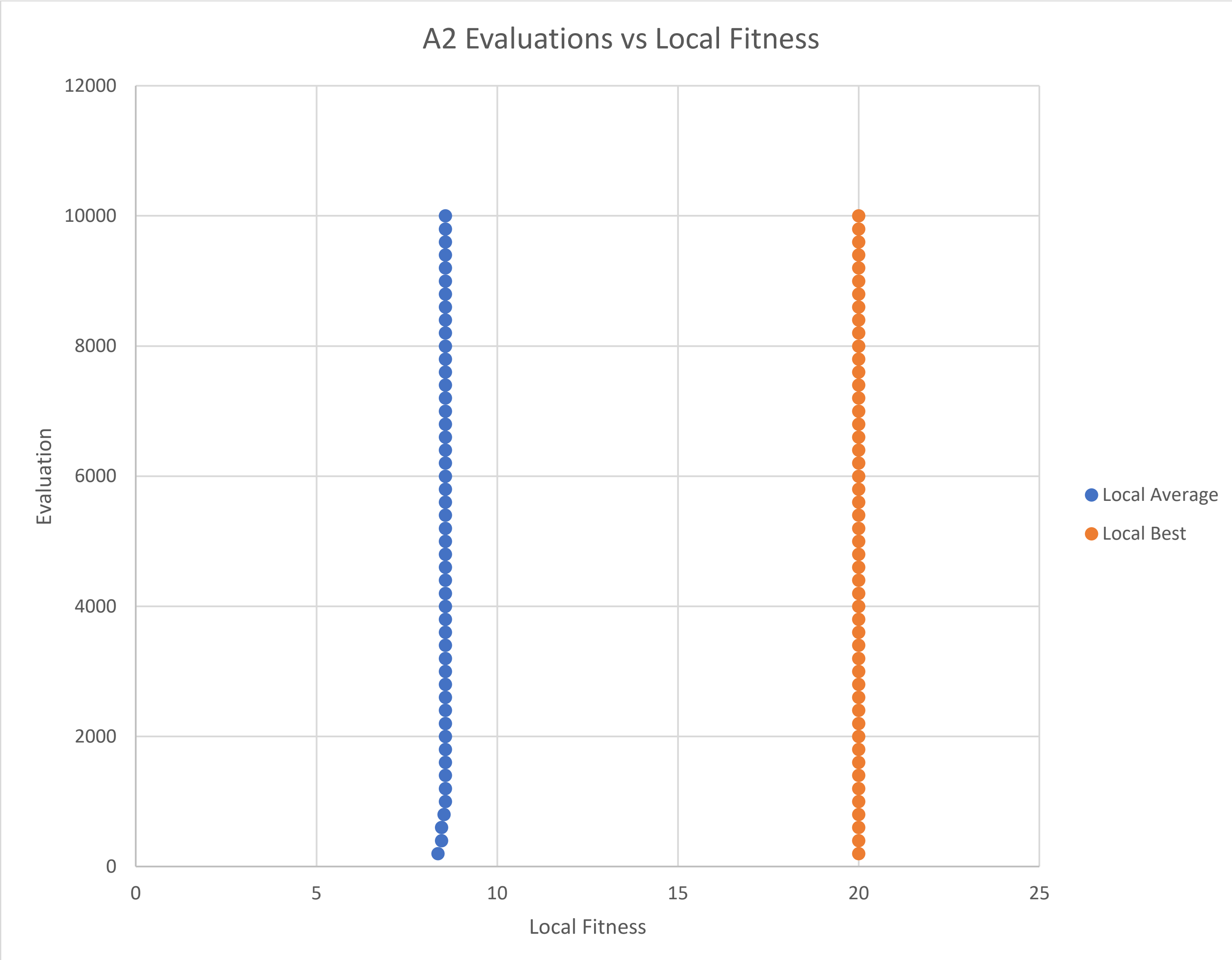
F-Test Two-Sample for Variances		
	1A Best Fitness	*1B Best Fitness*
Mean	19.93333333	18.96666667
Variance	0.064367816	0.37816092
Observations	30	30
df	29	29
F	0.170212766	
P(F<=f) one-tail	3.99847E-06	
F Critical one-tail	0.537399965	

t-Test: Two-Sample Assuming Unequal Variances		
	1A Best Fitness	*1B Best Fitness*
Mean	19.93333333	18.96666667
Variance	0.064367816	0.37816092
Observations	30	30
Hypothesized Mean Difference	0	
df	39	
t Stat	7.959148946	
P(T<=t) one-tail	5.36625E-10	
t Critical one-tail	1.684875122	
P(T<=t) two-tail	1.07325E-09	
t Critical two-tail	2.02269092	

Standard Deviation of 1A Best Fitness: 0.253708132
Standard Deviation of 1B Best Fitness: 0.6149479

First, I ran a F-Test in Excel to determine if the variance for 1A and 1B were the same. The variances were not the same, so I ran a Two-Tailed T-Test Assuming Unequal Variances in Excel. Now we can analyze the data from the T-Test. The |t Stat| = 7.959148946 and the |t Critical Two- Tail| = 2.02269092. Since |t Stat| > | t Critical Two- Tail|, I can reject the null hypothesis that the mean difference is zero. This means that algorithm 1A is statistically better for problem set a1, since it has a better mean.

Problem set A2 Analysis:



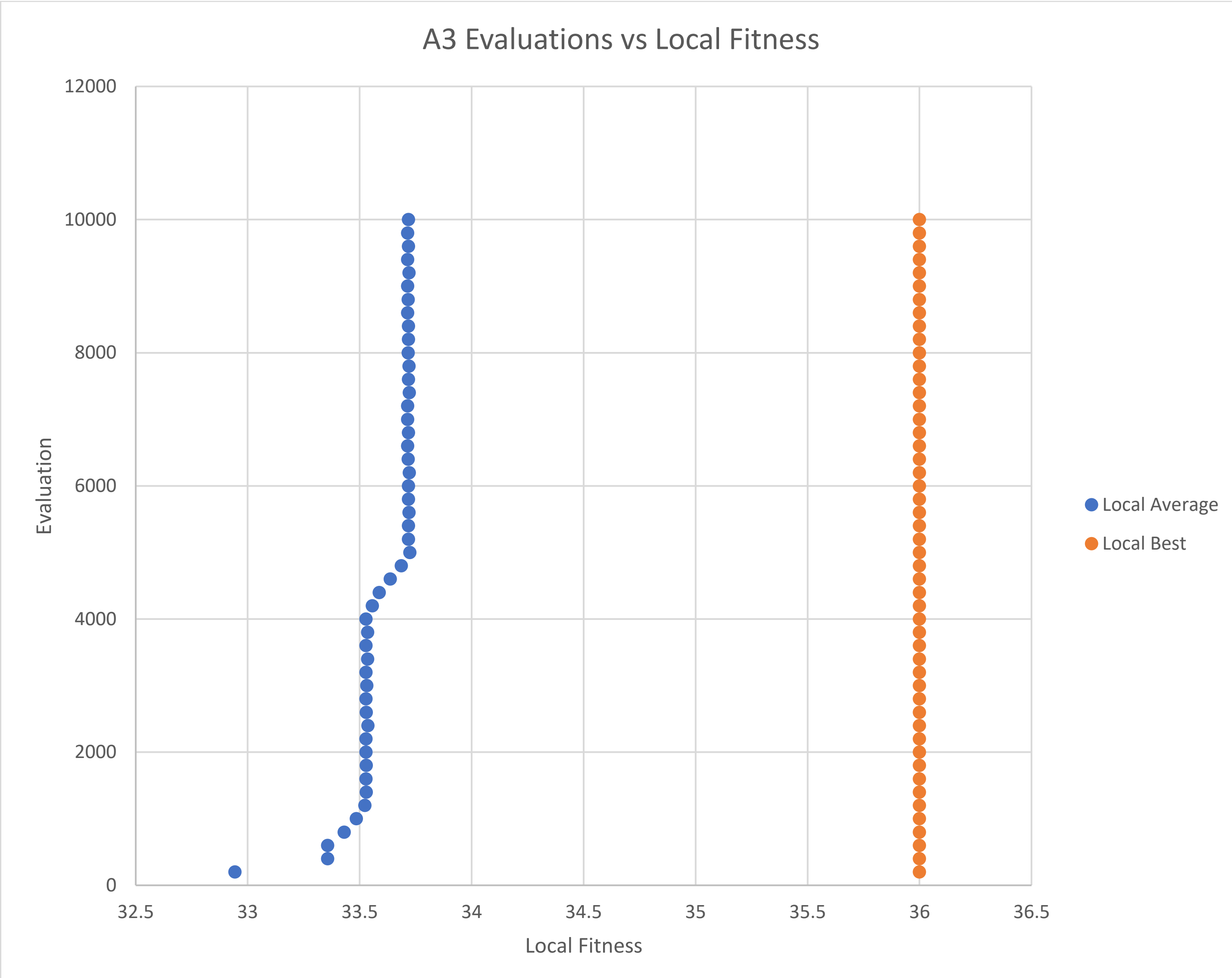
F-Test Two-Sample for Variances		
	1A Best Fitness	*1B Best Fitness*
Mean	37.3	23.86666667
Variance	2.010344828	89.29195402
Observations	30	30
df	29	29
F	0.022514289	
P(F<=f) one-tail	0	
F Critical one-tail	0.537399965	

t-Test: Two-Sample Assuming Unequal Variances		
	1A Best Fitness	*1B Best Fitness*
Mean	37.3	23.86666667
Variance	2.010344828	89.29195402
Observations	30	30
Hypothesized Mean Difference	0	
df	30	
t Stat	7.700227608	
P(T<=t) one-tail	6.84743E-09	
t Critical one-tail	1.697260887	
P(T<=t) two-tail	1.36949E-08	
t Critical two-tail	2.042272456	

Standard Deviation of 1A Best Fitness: 1.417866294
Standard Deviation of 1B Best Fitness: 9.449441995

First, I ran a F-Test in Excel to determine if the variance for 1A and 1B were the same. The variances were not the same, so I ran a Two-Tailed T-Test Assuming Unequal Variances in Excel. Now we can analyze the data from the T-Test. The |t Stat| = 7.700227608 and the |t Critical Two- Tail| = 2. 2.042272456. Since |t Stat| > | t Critical Two- Tail|, I can reject the null hypothesis that the mean difference is zero. This means that algorithm 1A is statistically better for problem set a2, since it has a better mean.

Problem set A3 Analysis:



F-Test Two-Sample for Variances		
	1A Best Fitness	*1B Best Fitness*
Mean	59.6	35.93333333
Variance	13.35172414	180.2022989
Observations	30	30
df	29	29
F	0.074092973	
P(F<=f) one-tail	2.32885E-10	
F Critical one-tail	0.537399965	

t-Test: Two-Sample Assuming Unequal Variances		
	1A Best Fitness	*1B Best Fitness*
Mean	59.6	35.93333333
Variance	13.35172414	180.2022989
Observations	30	30
Hypothesized Mean Difference	0	
df	33	
t Stat	9.317440329	
P(T<=t) one-tail	4.61087E-11	
t Critical one-tail	1.692360309	
P(T<=t) two-tail	9.22175E-11	
t Critical two-tail	2.034515297	

Standard Deviation of 1A Best Fitness: 3.654001114
Standard Deviation of 1B Best Fitness: 13.42394498

First, I ran a F-Test in Excel to determine if the variance for 1A and 1B were the same. The variances were not the same, so I ran a Two-Tailed T-Test Assuming Unequal Variances in Excel. Now we can analyze the data from the T-Test. The |t Stat| = 9.317440329 and the |t Critical Two- Tail| = 2.034515297. Since |t Stat| > | t Critical Two- Tail|, I can reject the null hypothesis that the mean difference is zero. This means that algorithm 1A is statistically better for problem set a3, since it has a better mean.