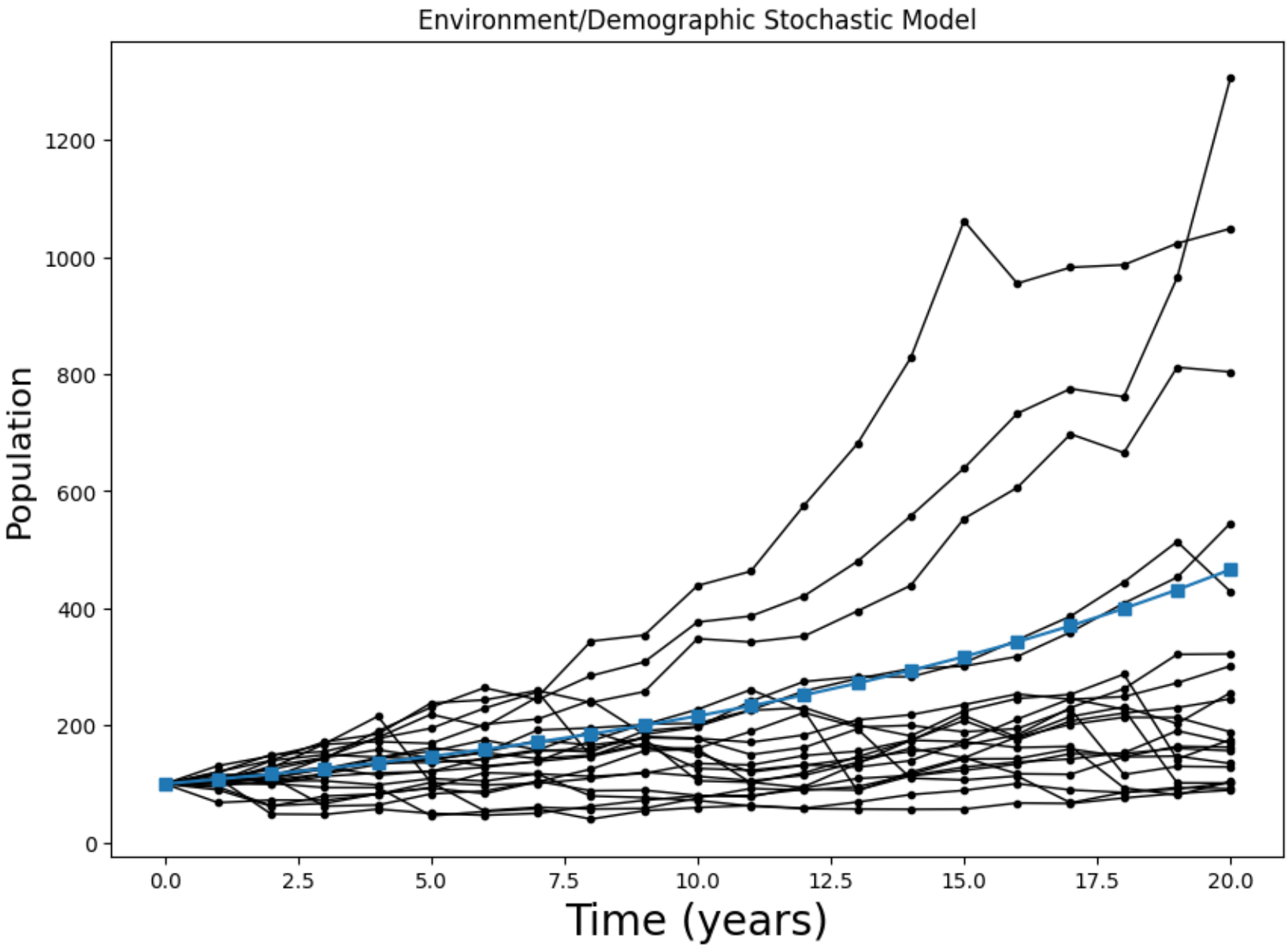
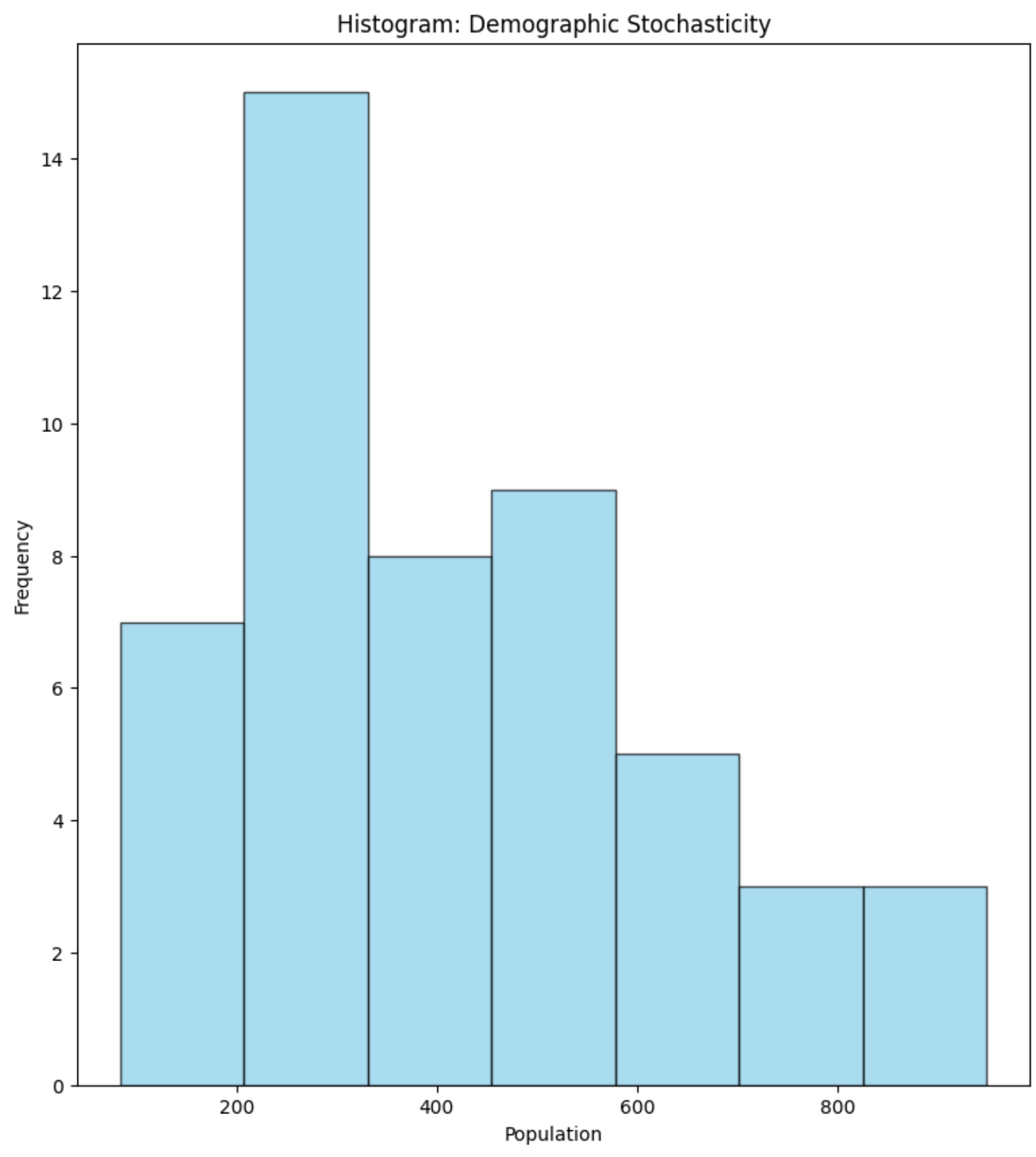
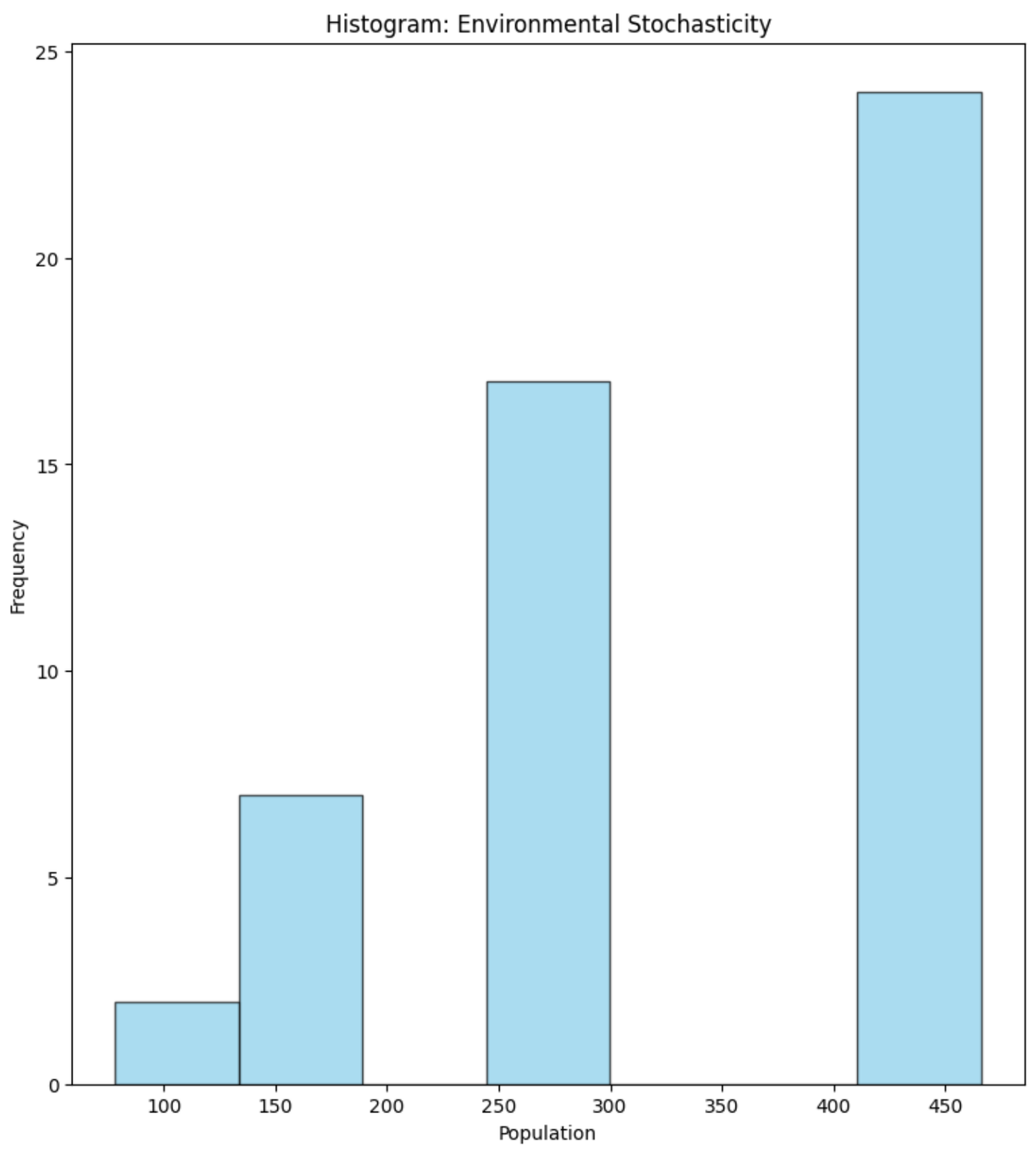
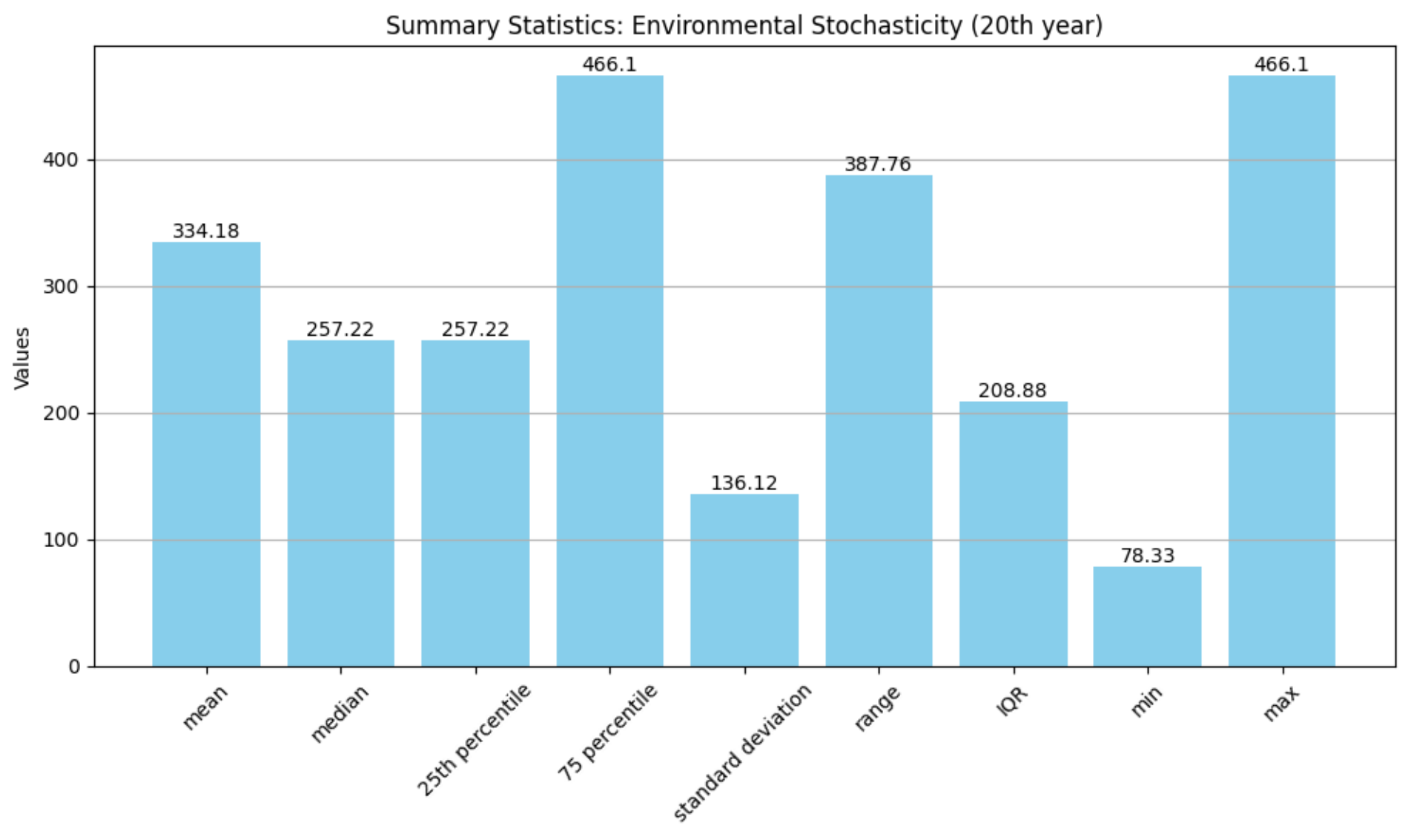
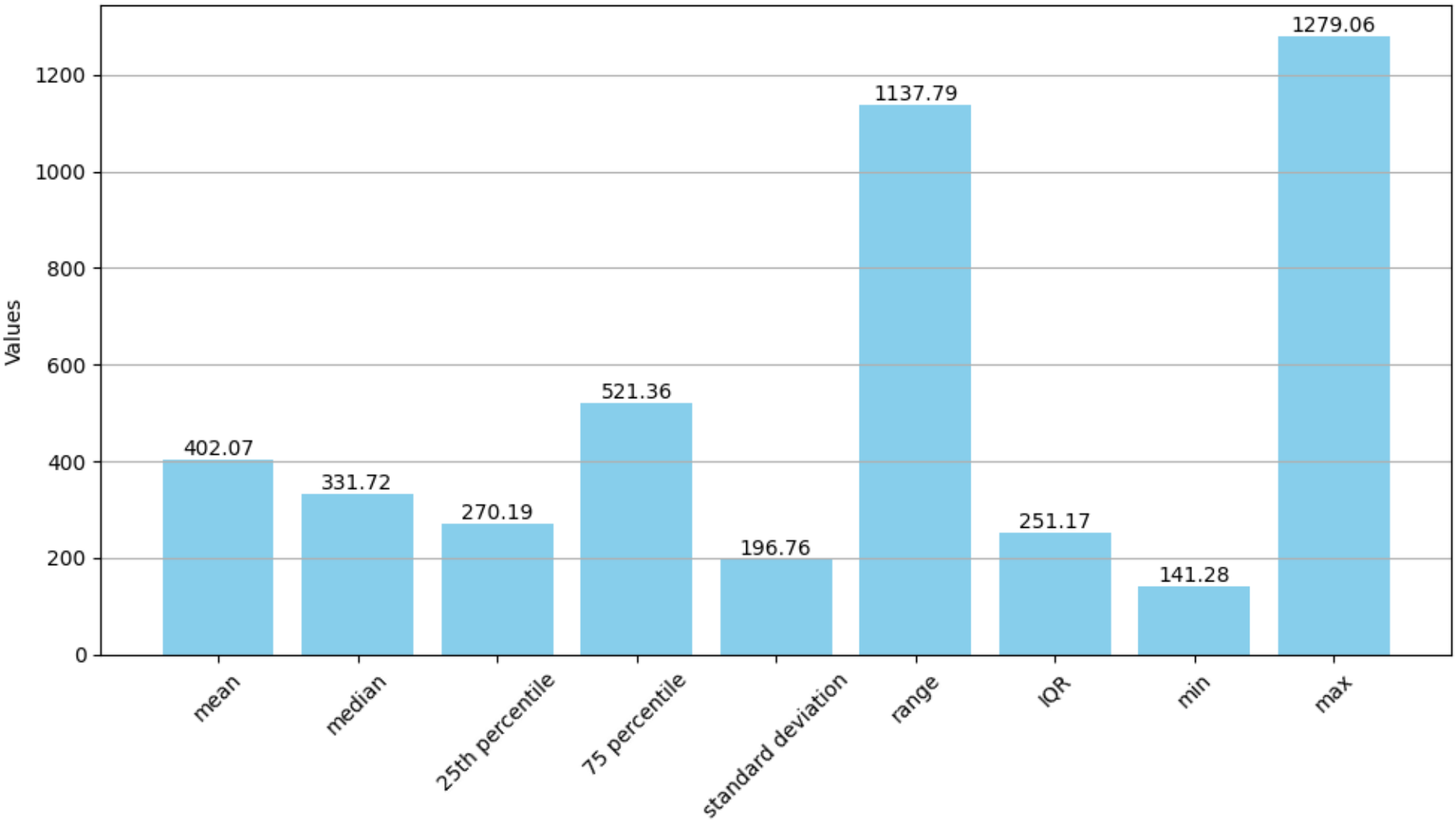
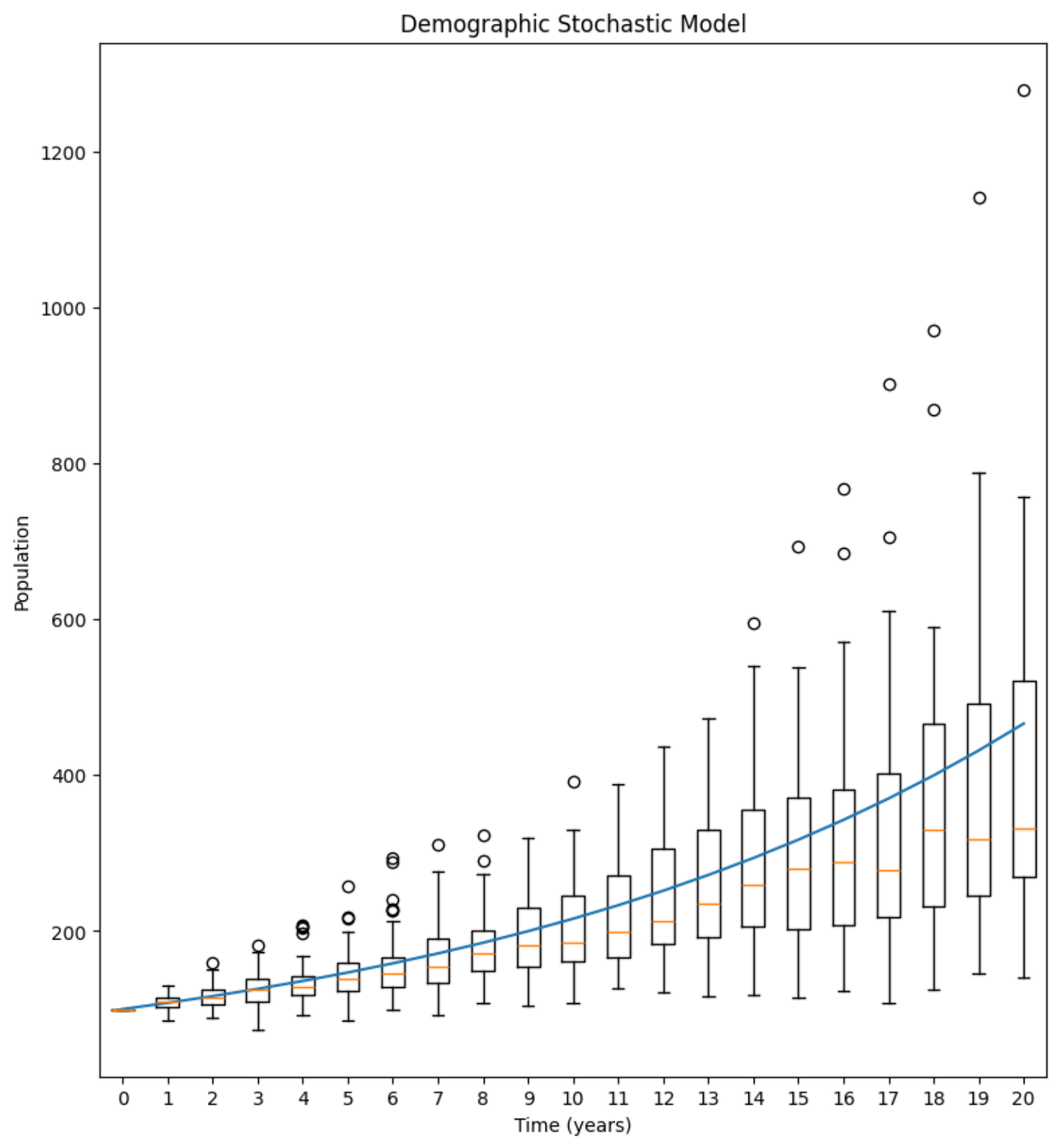

Environment/Demographic Stochastic Model
Population
Time (years)
0
200
400
600
800
1000
1200
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0

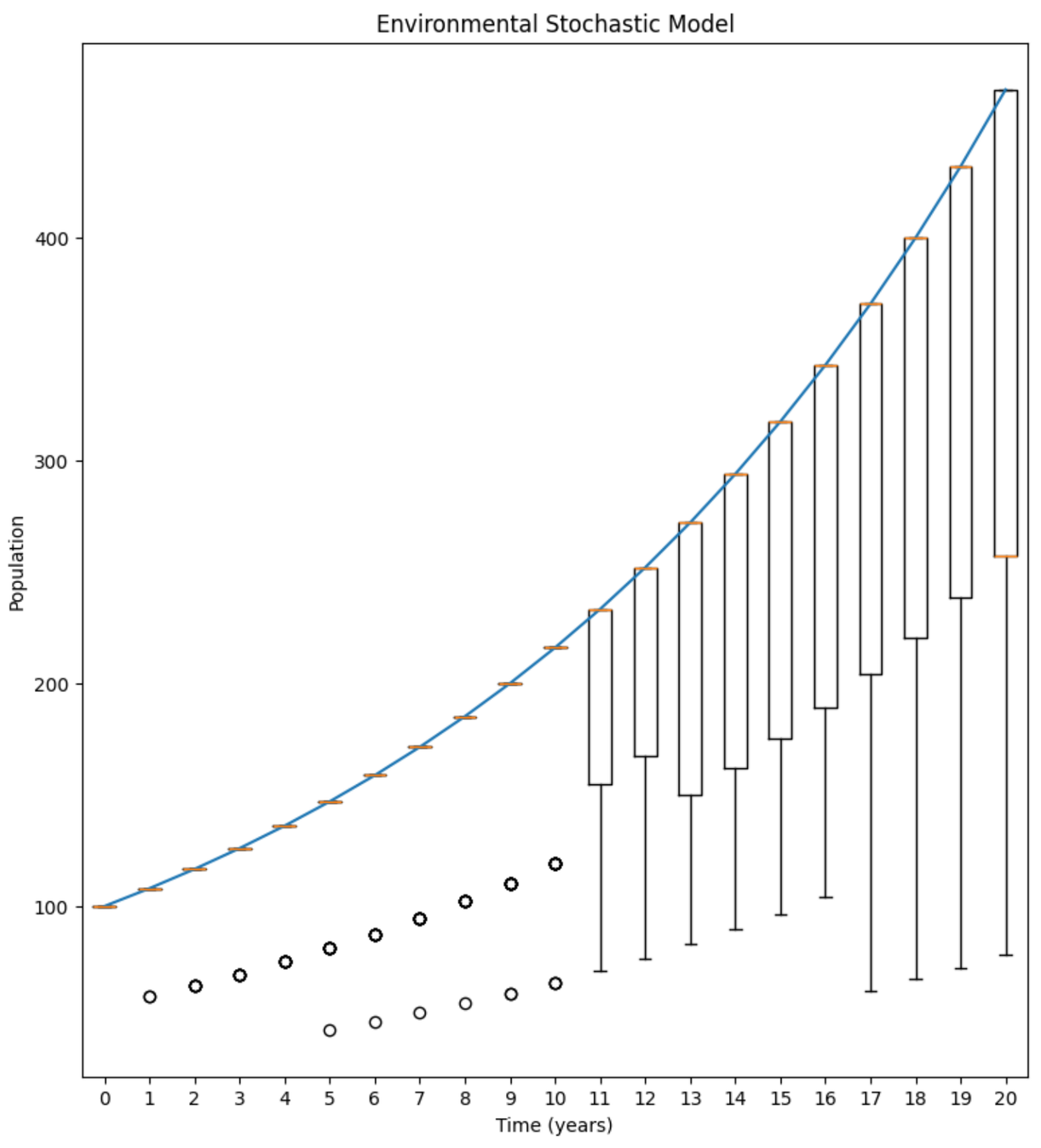

Histogram: Demographic Stochasticity
Frequency
Population
0
2
4
6
8
10
12
14
200
400
600
800

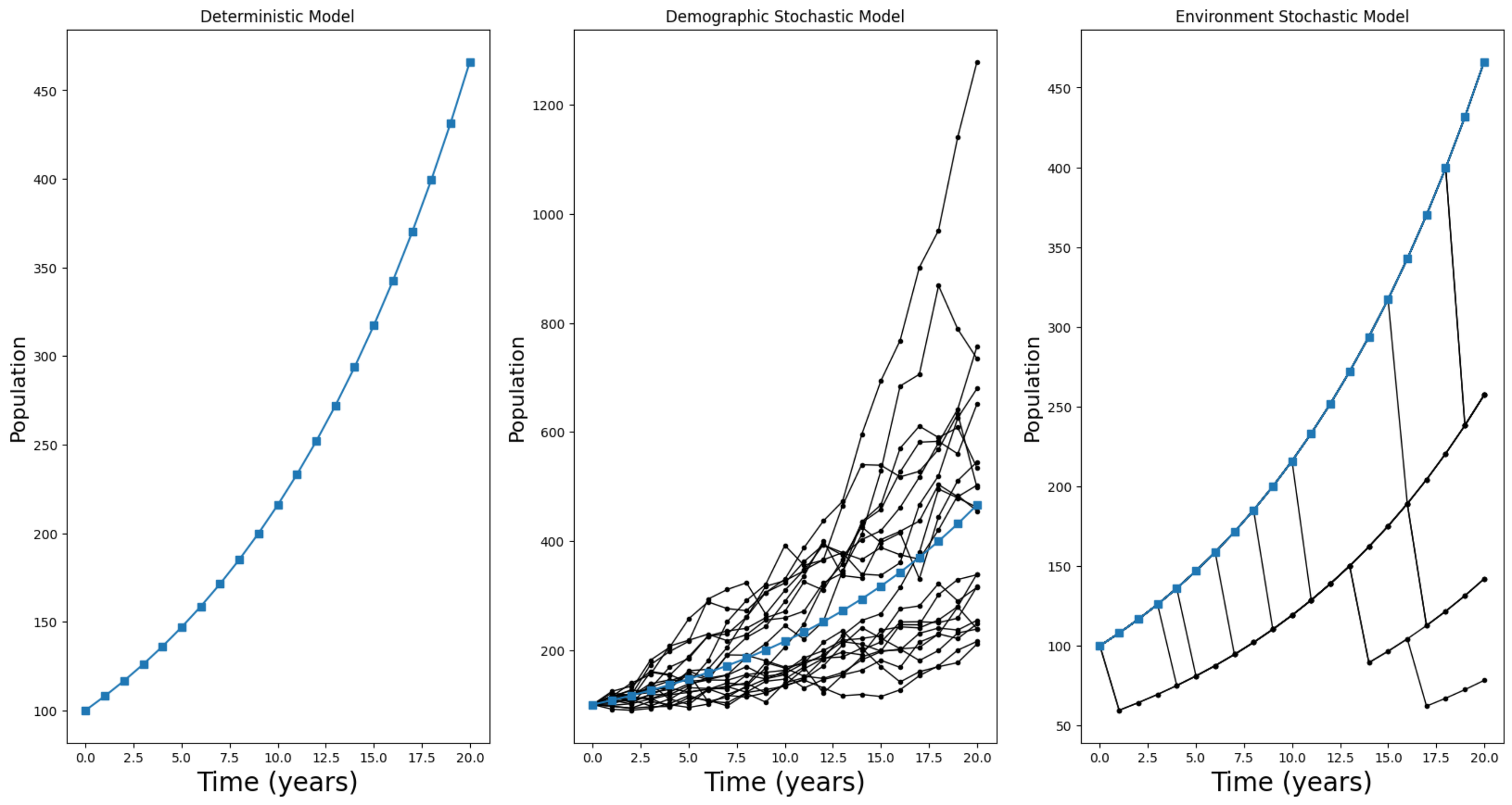

Histogram: Environmental Stochasticity
Frequency
Population
0
5
10
15
20
25
100
150
200
250
300
350
400
450


Summary Statistics: Environmental Stochasticity (20th year)
Values
0
100
200
300
400
334.18
257.22
257.22
466.1
136.12
387.76
208.88
78.33
466.1
mean
median
25th percentile
75 percentile
standard deviation
range
IQR
min
max


Summary Statistics: Demographic Stochaisticity (20th year)
Values
0
200
400
600
800
1000
1200
402.07
331.72
270.19
521.36
196.76
1137.79
251.17
141.28
1279.06
mean
median
25th percentile
75 percentile
standard deviation
range
IQR
min
max


Demographic Stochastic Model
Population
Time (years)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
200
400
600
800
1000
1200


Environmental Stochastic Model
Population
Time (years)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
100
200
300
400


Deterministic Model
Demographic Stochastic Model
Environment Stochastic Model
Population
Time (years)
100
150
200
250
300
350
400
450
50
600
800
1000
1200
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0

Box Plot Analysis:

For the demographic stochastic model, the population fluctuates highly in comparison to the deterministic model. In almost every year, there are several trials that are considered outliers. However, within the first 10 years of the model, we can see that the mean in each year stays relatively close to the deterministic model. This changes after 10 years, as the mean in each year is consistently less than the deterministic model in the corresponding year. In comparison to the demographic stochastic model, the environmental stochaistic model is different in several ways. Most notably, within the first 10 years, every outlier occurs below the deterministic model. Furthermore, from years 0 to 8, the environmental model was enkeeping with the deterministic. After this point however, the variance in each year begins to increase while the population never surpasses the deterministic model. This trend makese sense because in a catastrophe year, large segements of the population die causing the population in the catastophe year to not surposs the population is a "normal" year represetned by the deterministic model. Furthoremore, the environmental model represents the chance that a catastrophe may occur. Thus, when one does not occur, it follows that the model will be consistent with the deterministic model.

Environmental / Demographic Stochasticity

Based off the Environmental/Stochastic model, the effects of the demographic stochasticity is much more pronounced. In comparing this model to the isolated demogrpahic and isolated environmental model, the enviromental/demographic model is more more similar to the demographic model. A notable difference however, is that for the majority of the trials, the population is more likely to be less than the deterministic model. This is different from the demographic stocahisticity because the population was generally evenly distributed above and below the deterministic population, especially within the first 10 years.