

Assignment 4

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In [50]: sample_sizes = [15, 18, 10, 39, 29, 10]

test_statistics = []

def test_function(arr):
    return np.std(arr)

# generate 1000 posterior values of p
for i in stats.beta(107,141).rvs(1000):
    sixvalues = []

    # for each value of p
    for j in sample_sizes:

        # simulate 6 experiments, one for each in the control group.
        sixvalues.append(stats.binom(j, i).rvs(1)/j)

        test_statistics.append(test_function(sixvalues))

controltest = test_function(np.divide([9,11,4,21,12,0],sample_sizes))
print('P-value:', sum([1 for i in test_statistics if i>controltest])/len(test_statistics))
plt.hist(test_statistics)
plt.title('Distribution of standard deviations of replicated data')
plt.axvline(color='black')
plt.show()
```

P-value: 0.011

