Blueprint simulator

Description

A script that simulates how long it takes to gather all blueprints. With options of starting from scratch, using existing filaments or a strategy to save filaments to buy the last remaining blueprints.

By default the simulation works based on previously observed probabilities which are:

- Common: 0.6
- Decent: 0.25
- Nifty: 0.1
- Splendid: 0.05

Additionally, the number of required hours is also based on measured timings in which on average 9.5 hours is needed to claim all six blueprints for one week.

Script works as the following:

1. Draws a random blueprint based on tier probabilities (also called an attempt)
2. If that blueprint has already been collected, then recycle it, if not keep it inventory
3. Spender strategy:

- Save up until get 7200 filaments (in order to buy any tier)
  - Unless total cost of missing is less than the tier cost above the cost of missing
- Buy a missing blueprint at random
- Reduce the amount of filament according to cost
- Continue to buy blueprints if filaments are still greater than 7200.
- If only one missing blueprint left then buy it

4. Hoarder strategy:

- Saves up all filaments from each recycling
- Calculate the total filament cost of remaining missing blueprints
- If saved up filaments is equal or greater then the remaining cost for missing blueprints, then stop as you now can buy the remaining blueprints

5. Print out the number of attempts, time and filaments required (if saving up).

A total of 528 blueprints ready to be claimed.

Results

Ran using 1000 simulations per approach.

Spender strategy

Average hours required: 1922

Average weeks required: 202

Average years required: 3.9

Average number of recycled blueprints: 844

Hoarder strategy

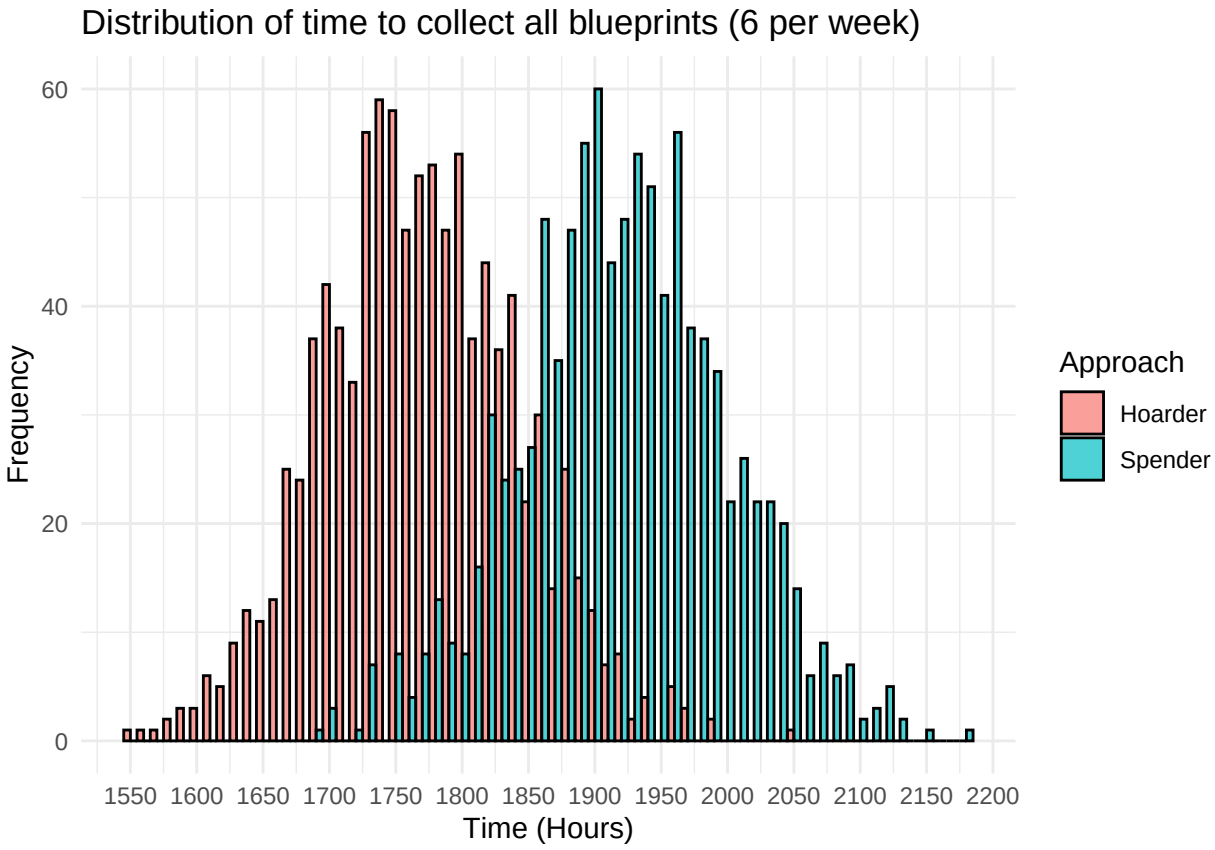
Average hours required: 1770

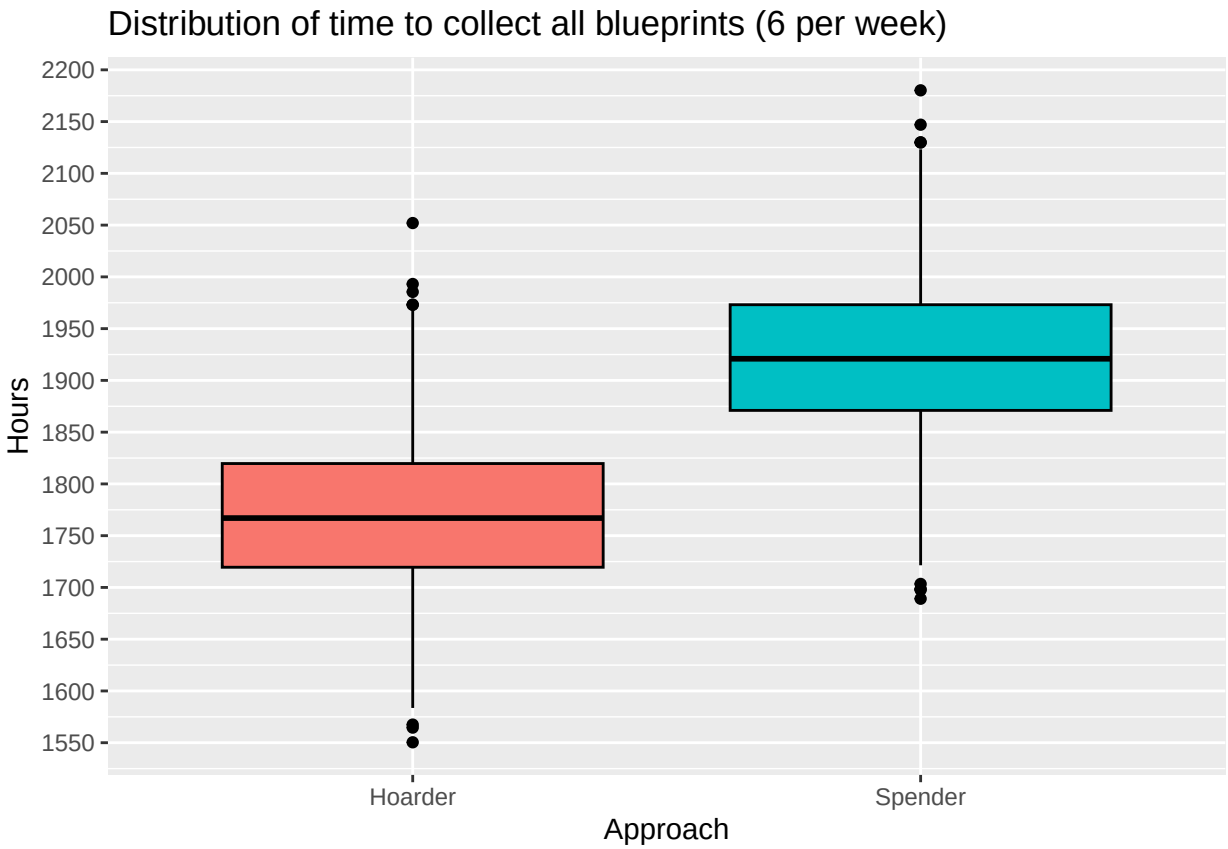
Average weeks required: 186

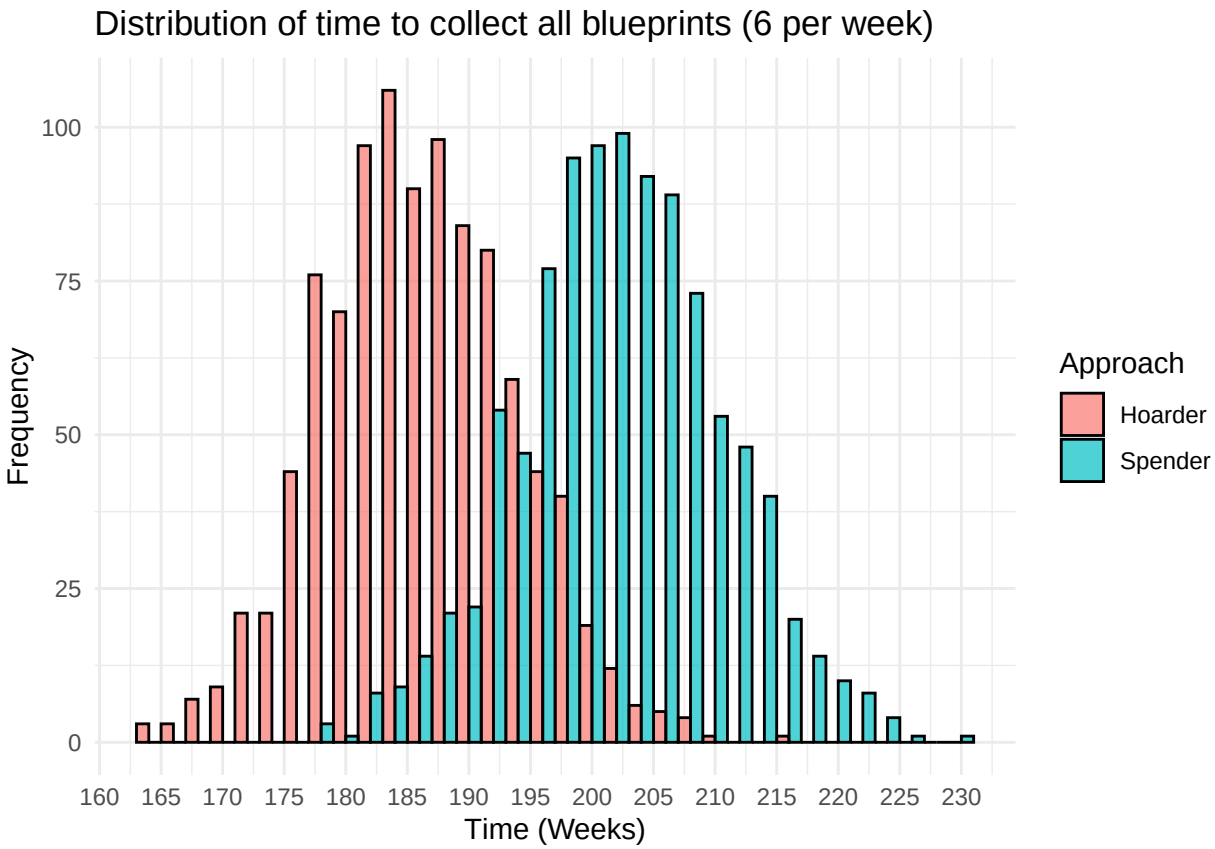
Average years required: 3.6

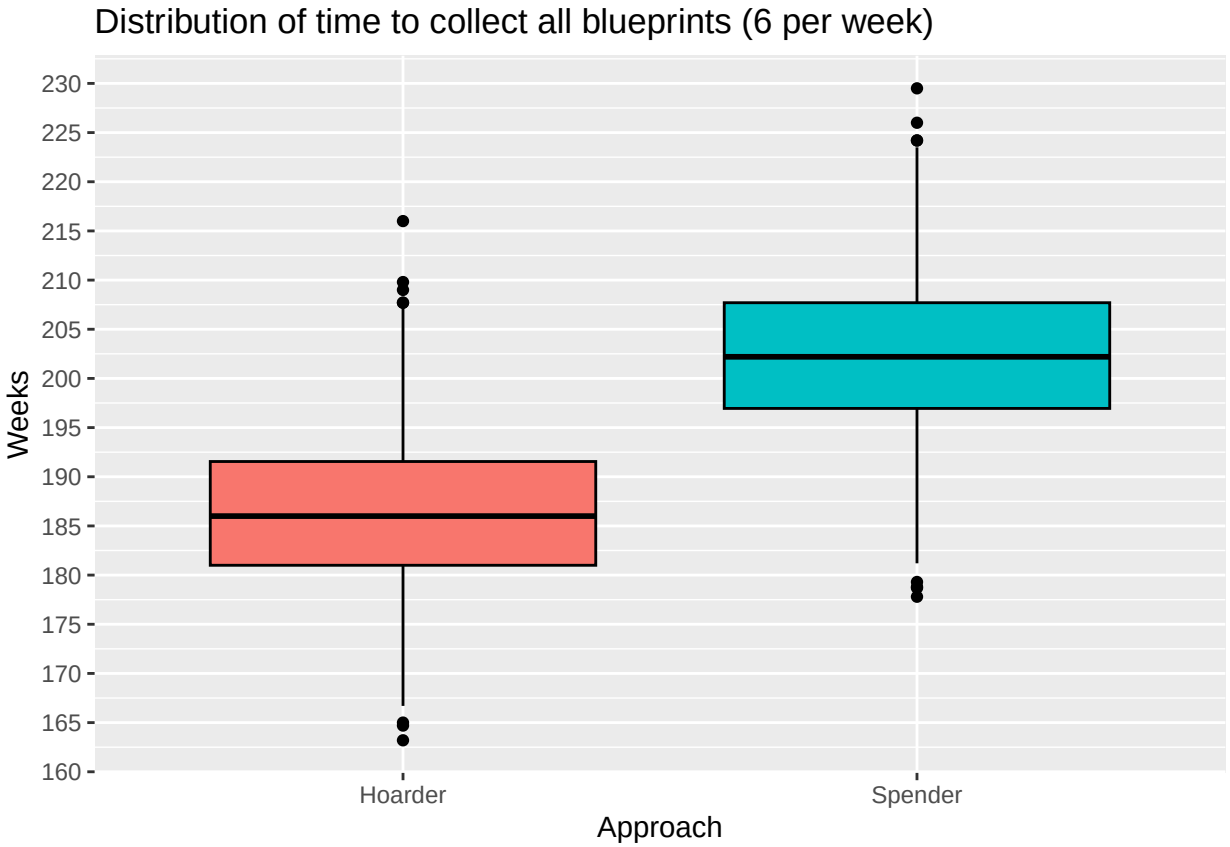
Average number of recycled blueprints: 698

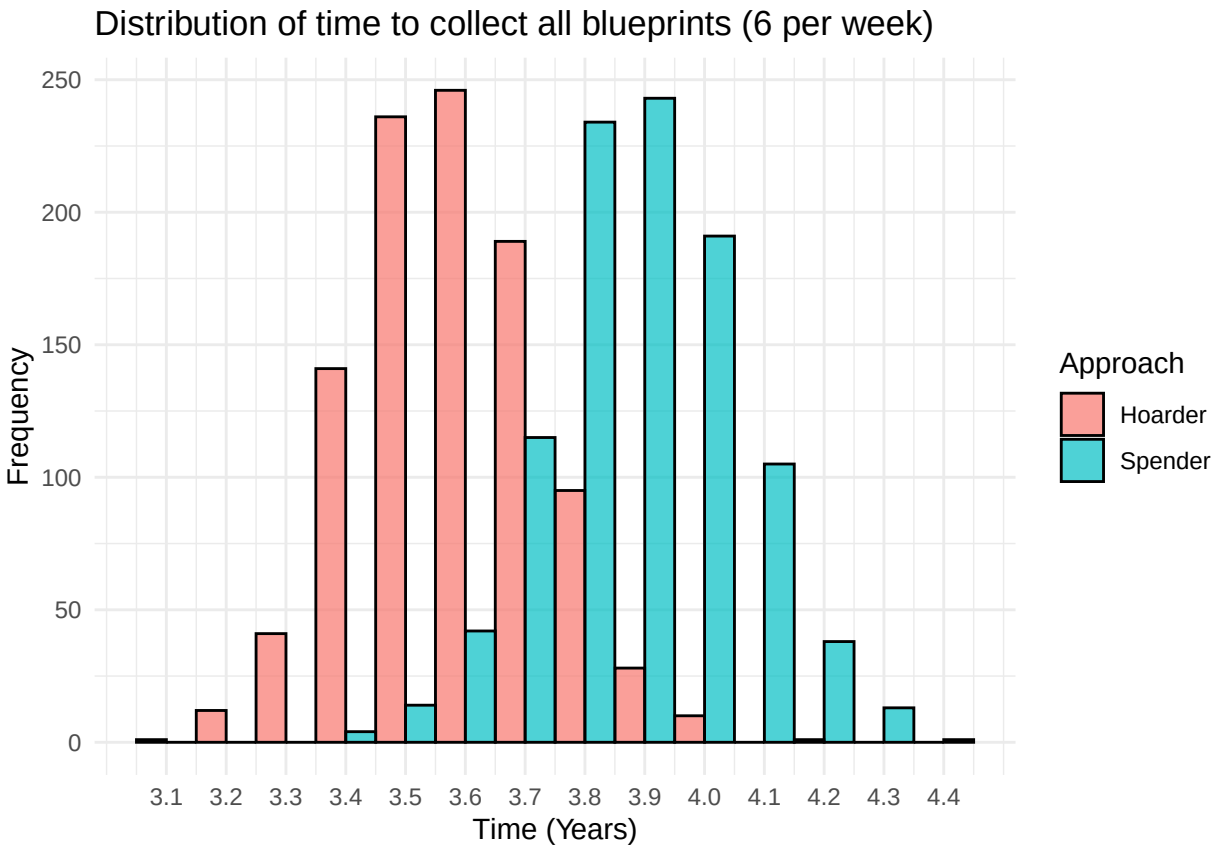
Average filament required for tipping point: 346K

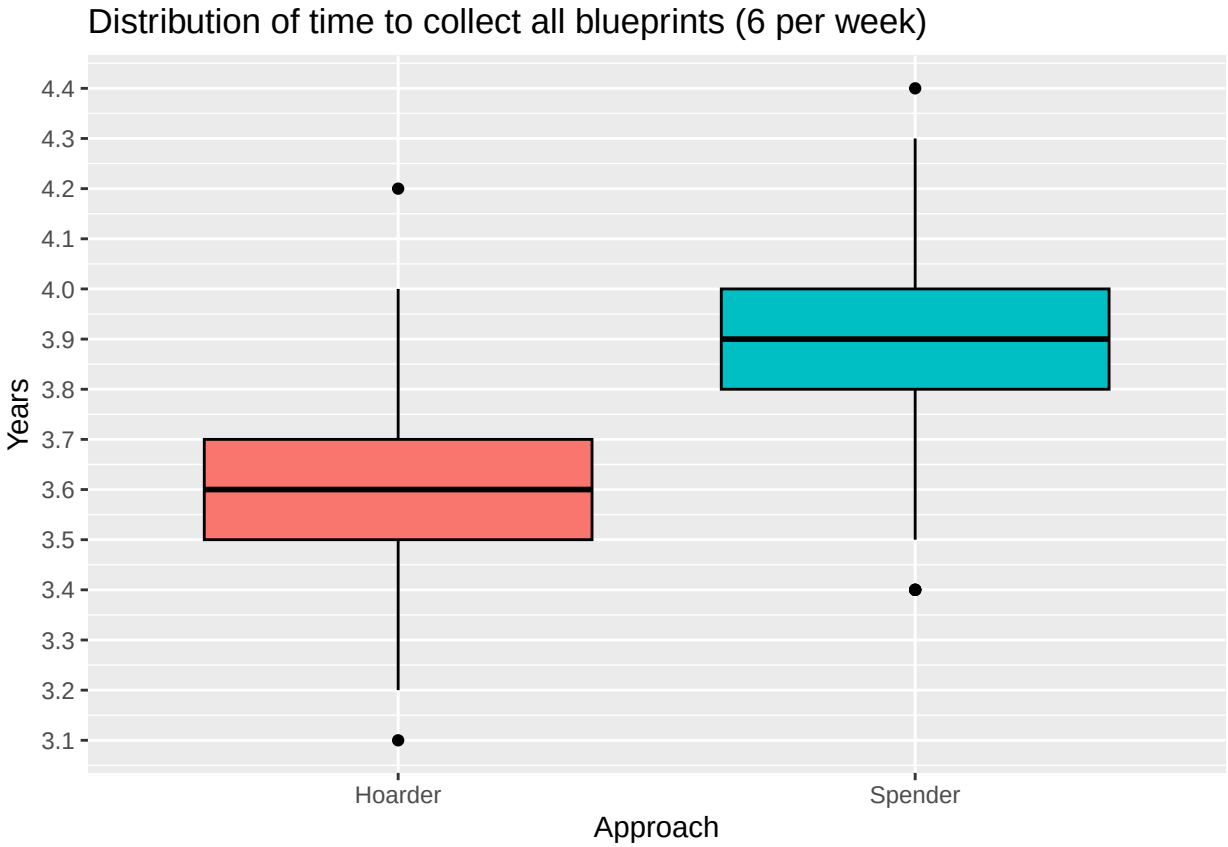


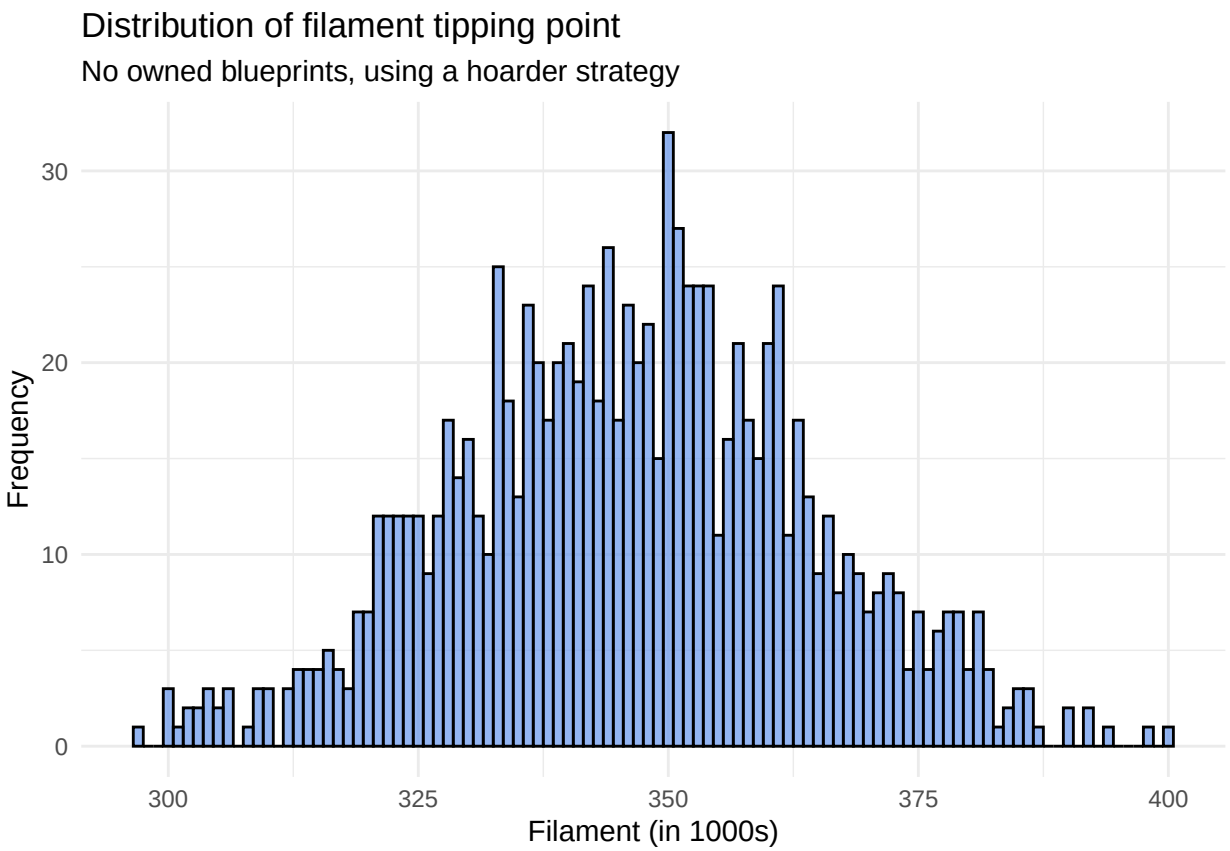

Distribution of time to collect all blueprints (6 per week)
Hours
2200
2150
2100
2050
2000
1950
1900
1850
1800
1750
1700
1650
1600
1550
Hoarder
Spender
Approach

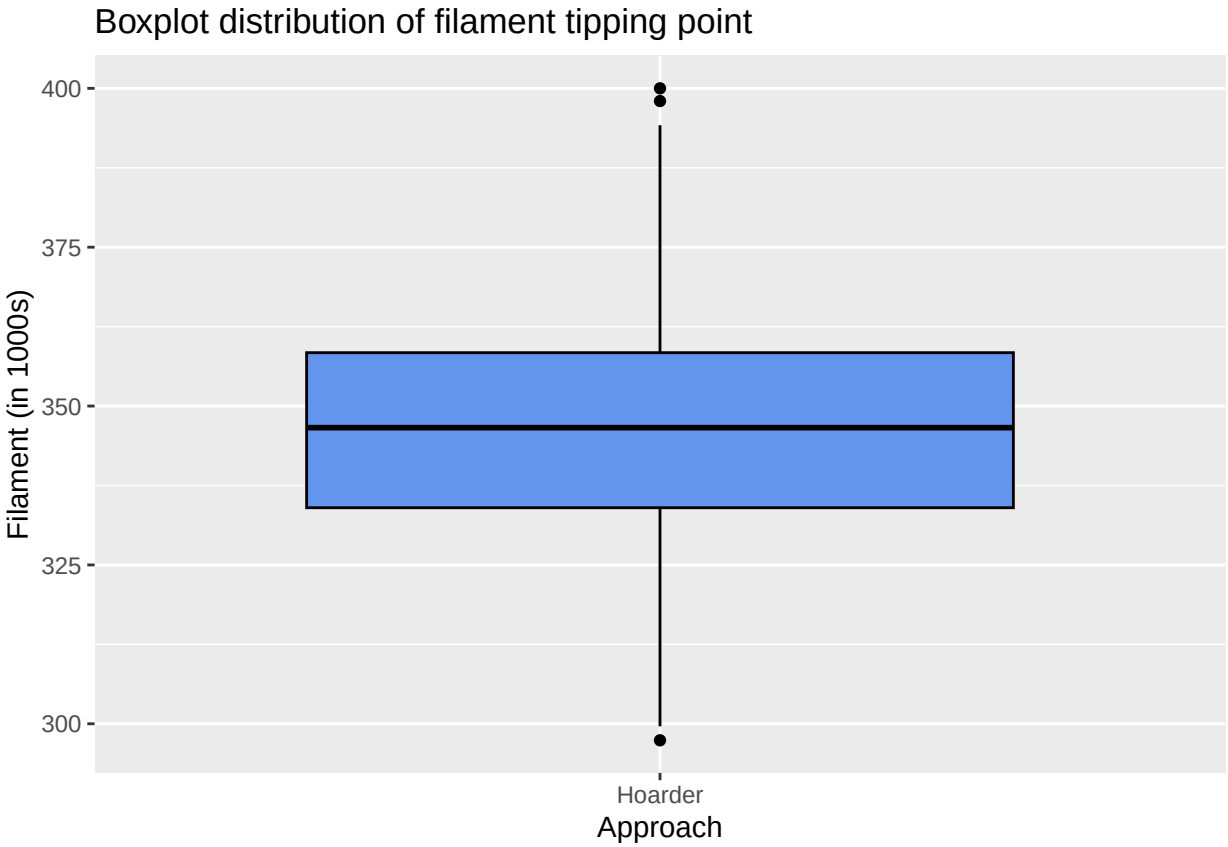

Distribution of time to collect all blueprints (6 per week)
Frequency
100
75
50
25
0
160
165
170
175
180
185
190
195
200
205
210
215
220
225
230
Time (Weeks)
Approach
Hoarder
Spender


Distribution of time to collect all blueprints (6 per week)
Weeks
230
225
220
215
210
205
200
195
190
185
180
175
170
165
160
Hoarder
Spender
Approach


Distribution of time to collect all blueprints (6 per week)
Frequency
250
200
150
100
50
0
3.1
3.2
3.3
3.4
3.5
3.6
3.7
3.8
3.9
4.0
4.1
4.2
4.3
4.4
Time (Years)
Approach
Hoarder
Spender


Distribution of time to collect all blueprints (6 per week)
Years
4.4
4.3
4.2
4.1
4.0
3.9
3.8
3.7
3.6
3.5
3.4
3.3
3.2
3.1
Hoarder
Spender
Approach


Distribution of filament tipping point
No owned blueprints, using a hoarder strategy
Frequency
30
20
10
0
300
325
350
375
400
Filament (in 1000s)


Boxplot distribution of filament tipping point
400
375
350
325
300
Filament (in 1000s)
Hoarder
Approach