

SIMULATION REPORT ON

THE BULLET:

YOUR PERSONAL ALL-IN-ONE SMART
MIXED DRINK SHAKER

By: Bardan Sigdel, Product Innovator and Strategy Advisor

For: Development & Strategy Team, The Bullet Co.

Through our simulation project, we can soundly endorse the need for a \$1,080,000 investment to complete the established business process timeline for The Bullet starting from market research all the way through its release to the planned markets in a total timeframe of 51 weeks. Following market release, we anticipate tremendous sales projections that will take us to the “breakeven” point in 8 weeks (by the 59th overall week). Then, by the 60th overall week, we project The Bullet Co. can begin paying back the initial investment in weekly increments of \$85,000.

PRODUCT:

In this age of mixed drinks ascendancy, where there are more mixed drinks ideas and recipes than one could imagine, it has never been simpler to treat your guests to array of cocktails – recipes are abundant, grocery stores carry ingredients for practically anything you would need, and the demand is ever-growing. What might be missing, however, is the mixology expertise at our disposal; unless you have been trained for the bar, chances are your cocktails often tend to miss the mark. Even if you have seemingly mastered a drink on a particular day, you might struggle to replicate the excellence on a different one. This is where our groundbreaking vision of the smart cocktail shaker, The Bullet, comes in: this bar gadget's introduction, based on the classic cocktail shaker, is meant to disrupt the mixology industry by combining unprecedented technology and sleek design in offering a tool that eliminates effort, guesswork and imprecision in crafting any mixed drink. A touch-screen interface in the gadget feeds information into the computer through which users can conveniently look up or upload mixed drink recipes, which then prompts the addition of ingredients tracked through the in-built weighing scale. The Bullet finally automates the ingredient mixing process based on the recipe to deliver the exceptional drink every single time.

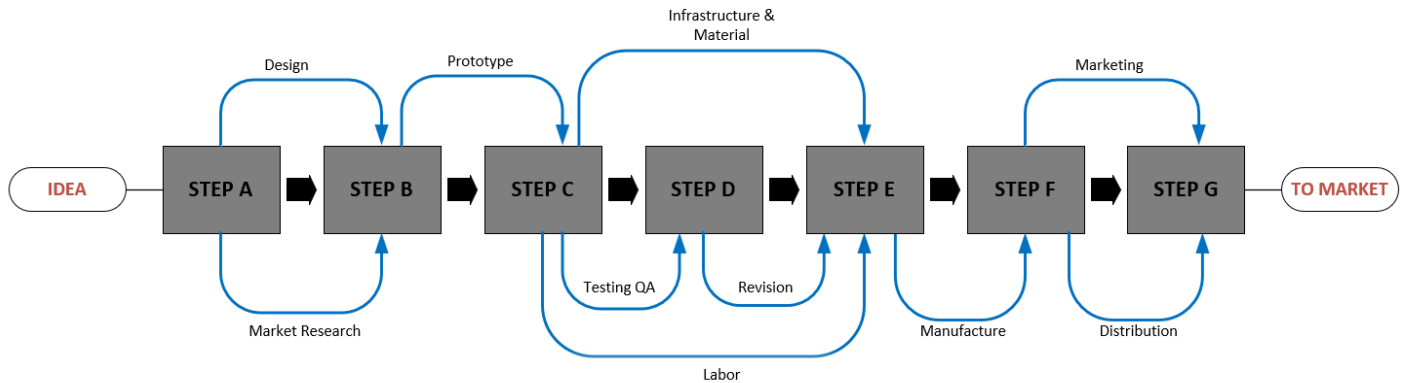
PROPOSAL:

Through this simulation report, we have crafted a business flow plan and used simulation to establish timelines through our task distribution for each individual step of the process, which subsequently provides us the framework for making an overall timeline projection and estimating investment figures.

On the back of these steps and the simulation process, we are confident in projecting a 51-week overall timeline to get The Bullet out of our doors and through to the market. Following the introduction to our five ascertained markets in the cities of Denver, Los Angeles, Phoenix, San Francisco and Seattle, we anticipate exceptional demand that promises the sale of 20,000 units in the first six months. During this timeframe of market sales – weeks 52-75 since the commencement of our very first business step – we project reaching the “breakeven point” in just two months. **By the end of week 60, even by conservative projections, our forecast of product sales puts us at a profit of \$151,844, at which point we anticipate returning the invested amount in weekly payments of \$85,000.** We foresee a total product revenue of \$2,999,700 by the time The Bullet completes six months since market introduction (75-week-point in the total timeline) and has sold 20,000 units, at which point we will be comfortably situated in the high return on investment zone and can develop plans for the next phase of market expansion. Our confidence in the appeal and quality of the product as well as its projected demand is such that our proposal involves the manufacturing of the entire first batch of 35,000 units at the same time, before we even commence the final stages of the marketing process.

In this proposal report, we have determined the timeline and associated milestones that need to be achieved to bring the product's journey to fruition.

BUSINESS PLAN FLOW:



MODEL AND OUTPUT:

The simulated model here factors in all the steps outlined in our process flowchart from idea conception through to market introduction and projects individual timelines for the same (first 200 sample of the 10,000-trial simulation in Appendix B). The sampling for outcomes for our outlined steps using various distributions for time projections lands us at a total projection until the “to market” phase at an average of 49.9 weeks with a normally distributed total range between 44 and 56.2 weeks. Our projections for individual tasks through the business process flow, however, allowed us to feel confident in proposing a **51-week total progression**. Through our business process flow, we have attempted to build in maximum efficiency by completing several steps simultaneously without affecting the flow harmony, wherever possible. We will discuss cost and revenue analysis to meet investor expectations later in the report, when the timeline for return on investment will also be expanded on.

Here, we discuss our flow through the various tasks in our process timeline and our final decisions through each major step. The distribution details for each task are expanded on in **Appendix A**.

1) Step A to Step B

The tasks whose completion take us from A to B are market research and product design, which we determine entirely conducive for parallel undertaking. While we will procure a surveying and competition analysis tool as well as seek part-time consultancy through a self-service market analysis platform for market research, our two-man innovation team will work on the product design and modeling with the assistance of a freelance designer. The negative skew observed in the design process

distribution of this step helps make the determination that we will not burn ourselves and take the cautious approach of proposing a timeline slightly over the distribution average (see Appendix A for distribution discussion and histogram). Since the design phase which will run parallelly with the market research has a higher max across the distribution, we are also content with the market research taking the full 5 weeks and the complete progress from Step A to B to be completed in an anticipated **5.5 weeks**.

2) Step B to Step C

The move from step B to C in the model represents the creation of the prototype, utilizing our two-person innovation team paired with a two-person engineering team which we have identified for the job. Based on the observation through the simulation of a normally distributed timeline, we confidently project a timeline for completion of **7.5 weeks**, which is also where the mean of the distribution is precisely.

3) Step C, D, E

Between Steps C and E, we will work on several product development and building simultaneously, with a projected cumulative time of **9.5 weeks**. Central to all the processes involved in these steps are setting up of foundational infrastructure (manufacturing facility, developer stations, open work areas), material procurement and production labor search as well as training. We are considering these steps to run simultaneously through steps C to E, while our core development and engineering team also works on the testing/QA followed by revision based on the assessment. To navigate this process efficiently for moving from C to E in our model, we utilized the idea that the total time would be determined by the maximum time between the Infrastructure & Material and Labor steps in addition to the Testing QA and Revision steps (see Appendix A for details). In line with the observed normally distributed cumulative timeline for these steps, we propose a timeline slightly above the mean of 9.14 to account for any delays in this multi-faceted phase of the timeline.

4) Step E to F

With a total range of 14 to 17.8 weeks and the peak of the normal distribution around 15.4 weeks (see Appendix A) observed through our simulation for the manufacturing step which indicates the move from step E to F, we propose a **16-week** timeframe for completion. We have allowed a tiny bit of cushion here (about half a week) to account for various uncertainties and incidental delays.

5) Step F to G

The final step jump before we take The Bullet to market will involve marketing and distribution tasks, for a total projected time of **12.5 weeks**. Since these steps will run in parallel with adjacent teams and allow for added efficiency, we took the approach of estimating this timeline as a maximum value

between the two individual steps. The costs associated with these key steps before the product hits the market shelves are discussed in the Cost and Revenue Analysis section.

COST AND REVENUE ANALYSIS

COST OUTLINE

Here, we outline the breakdown, phase by phase, of the \$1,080,000 cost projection and investment request.

Foremost, we project a cost of \$4,000 per week for the market research phase, which includes the fixed cost of procuring the required surveying and competition analysis tools as well as obtaining part-time consultancy through a self-service market analysis platform. Adjacently, we will spend \$5,000 a week on the design process, which will include conceptual development, product sketching and modeling. The \$5,000 also covers the procurement of a temporary product design freelancer for the duration of this design process. As discussed in the previous section, we have ascertained completion times of 5 and 5.5 respectively for these two processes. These projections put us at a total of \$47,500 to reach the stage at which our Step A can be culminated for the start of the prototype-building. Developing the prototype, then, will require the expenditure of \$35,000 across the projected 8 weeks at \$4,375 per week. This process will include expenditure on the material to build the prototype of The Bullet as well as electronic components that go into it; additionally, since our two-man engineering team will be solely responsible for the building, we incorporate their labor expenses into these costs.

For steps C through E, the testing, quality assurance and revision will be conducted by our aforementioned in-house team, albeit with the assurance supervision of an external quality assurance tester who will be hired at the rate of \$1,500 a week for only a week. Additionally, we will allot \$4,000 to the procurement of electronic components and tools for testing as well as adjustment to the prototype design.

The majority of our costs in this phase will be through labor and infrastructure procurement: we predict a total cost of \$150,000 for the rent and setting up of the manufacturing facility with an additional \$50,000 for the rental acquisition of machinery and equipment. To this, we will also add a \$60,000 expenditure on raw material and electrical components for the manufacturing process. Alongside, across the duration of these infrastructure setup and procurement tasks, we will also acquire the required labor force (technicians and factory workers), who will be trained before the beginning of the manufacturing process. The process of acquisition (listings and selection as well fees for third-party hiring services) and training for the hired individuals until the start of the manufacturing process is slated at \$25,000. We will also address the subsequent salaries for the hired individuals through the completion of the manufacturing process here; through the 16 weeks of projected manufacturing period, we will account for a senior-level technician at \$1400 per week and an entry-level technician at \$800 per week. In addition, our production projection (35,000 units in 16 weeks) necessitates the hiring of 20 mid-level factory assemblers at \$600/week. Between the two employee buckets, we are estimating a \$227,200 total wage cost, rounded up to \$230,000 to account for any adjustments.

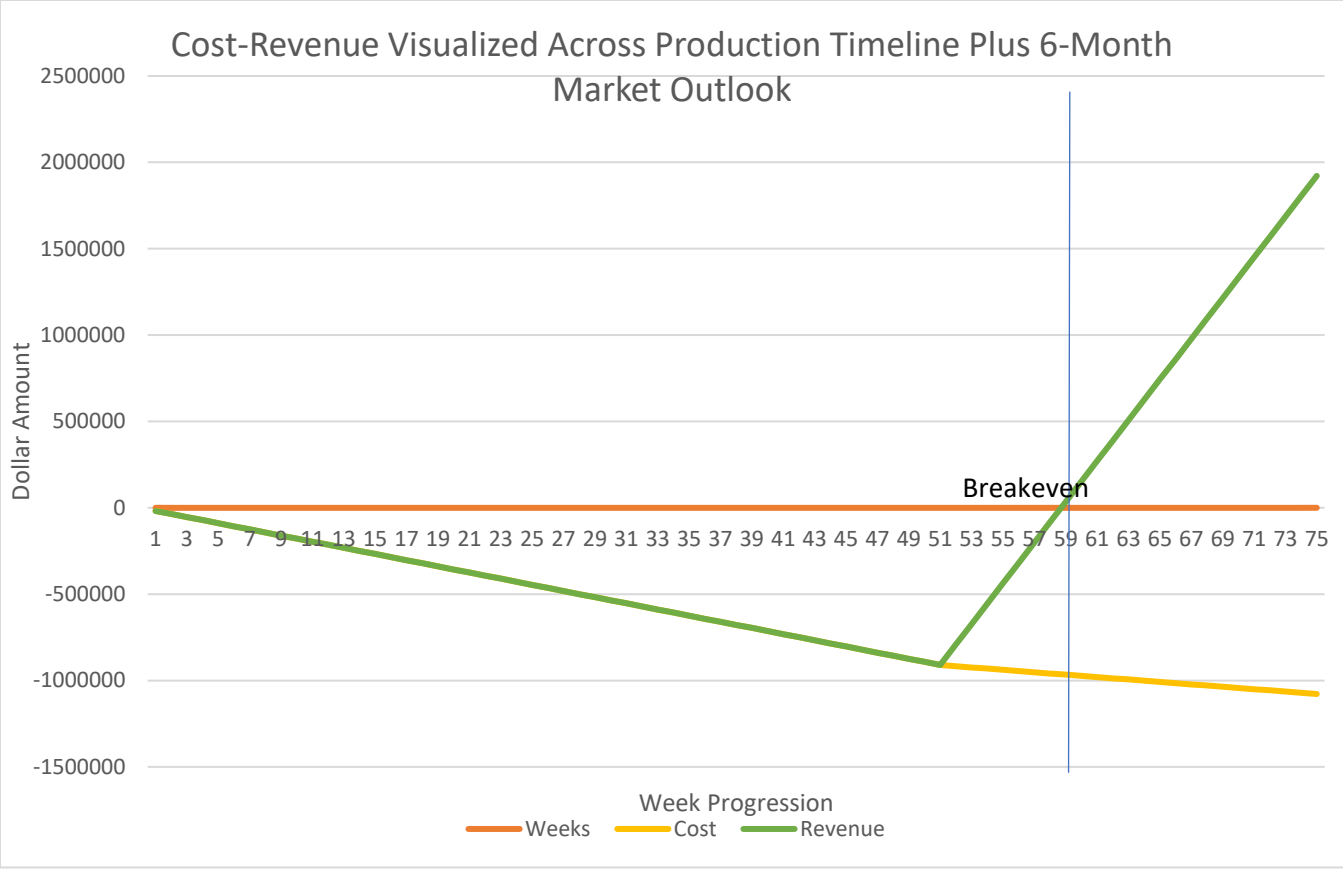
Once at the manufacturing stage, with labor costs already accounted for and material procured, we anticipate a \$100,000 total production cost across the 16-week period. Following the culmination of the production for the 35,000 projected units, we will shift to the final Step G in the process flow, which we first have an anticipated \$80,000 marketing cost between traditional advertising campaigns and influencer collaboration fees through the 12.5 weeks until the product hits the planned markets. In addition, our initial distribution (largely consisting of packaging and logistics for shipments to sellers or dropship setups) will set us back another \$50,000 for the totality of the initial production.

Lastly, to account for miscellaneous overhead expenses not accounted for in the individual development processes, we project a \$100,000 budget to address administrative costs, insurance-based needs and human benefit expenses for our in-house team for the duration of our overall timeline. Once we will have completed the first batch of planned production at 51 weeks, the only ongoing costs will be our dropship and logistics costs as well as overhead and contingency expenses – we estimate these at a total of \$7000 per week for a total of 6 months.

REVENUE AND INVESTOR RETURN OUTLINE

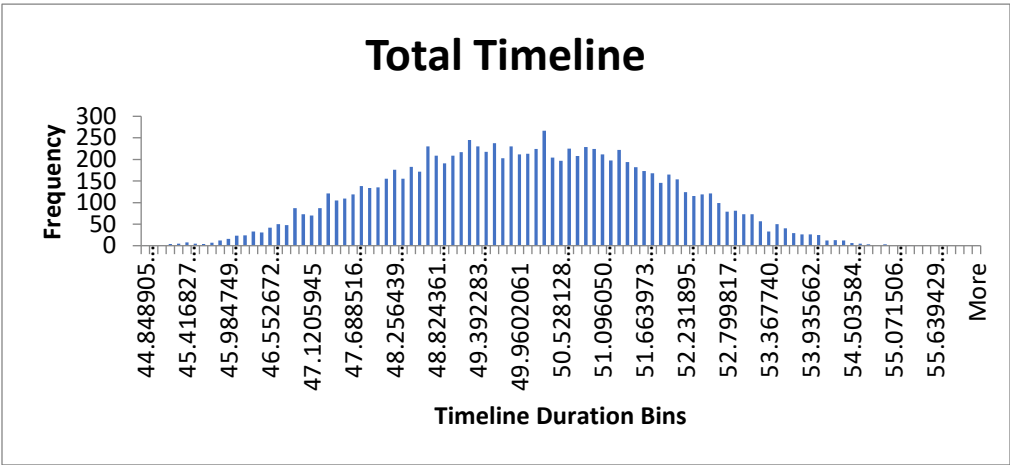
Our initial launch following the 51-week creation process is planned across five Western American cities of Denver, Los Angeles, Phoenix, San Francisco and Seattle at a per unit cost of The Bullet at **\$150**. Our team projects 20,000 unit sales across the five markets in the first six months.

From our sales estimates, we find the revenue projection across the first six months after The Bullet hits the market (following the 51-week creation process) at \$3,000,000 with a total of 20,000 units sold. During this time, we will have completed the first batch of planned production and the only ongoing costs will be our dropship and logistics costs as well as overhead and contingency expenses at an estimated \$7,000 per week. We expect a linear sales trajectory for the first six months owing to our robust marketing strategy and projection, which would suggest an average of a little over 3300 sales per month in this timeframe. If we dial this back to a more conservative estimate of 3000 units per month, we should cover the initial investment amount of \$1,080,000 in a little over two months (“the breakeven point”). By the end of week 60, our forecast of product sales puts us at a profit of \$151,844, at which point we anticipate returning the invested amount in weekly payments of \$85,000. By the same projection, we conservatively anticipate a total product revenue of \$2,999,700 by the time The Bullet completes six months since market introduction (75-week-point in the total timeline) and has sold 20,000 units.



Appendix A

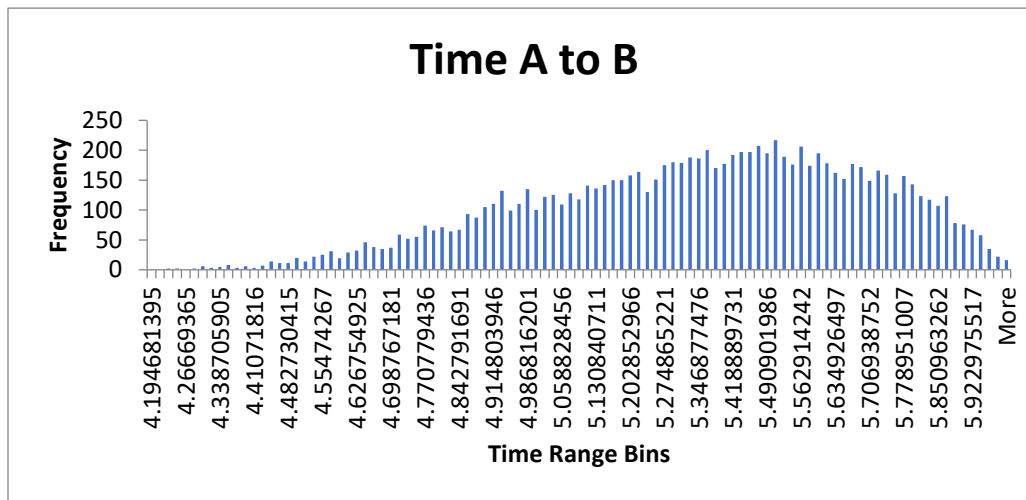
Distribution & Description of Total Time



Time Total	
Mean	49.97713765
Standard Error	0.017839784
Median	49.97833936
Range	11.35844642
Minimum	44.84890522
Maximum	56.20735163
Sum	499771.3765
Count	10000

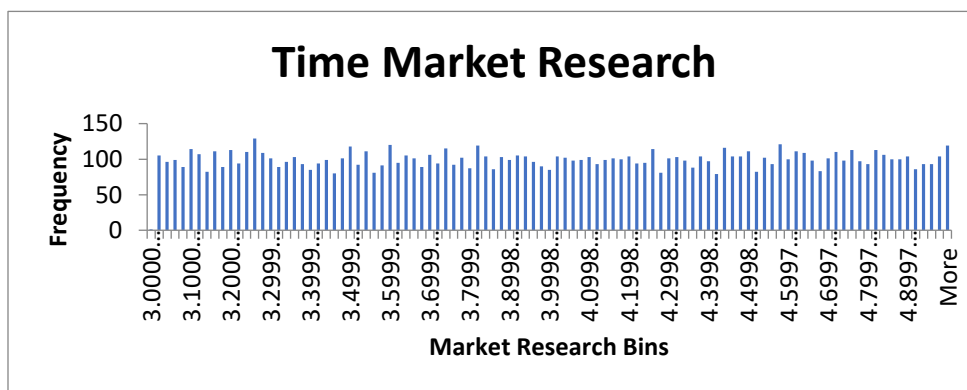
The histogram for the total project completion time illustrates the anticipated normally distributed time volume across our simulation. We see an average of 49.98 weeks across the simulation. The distribution here is a fair marker of how confident we should be in the notion that we will likely end up closer to the mean than not in driving through steps A through G.

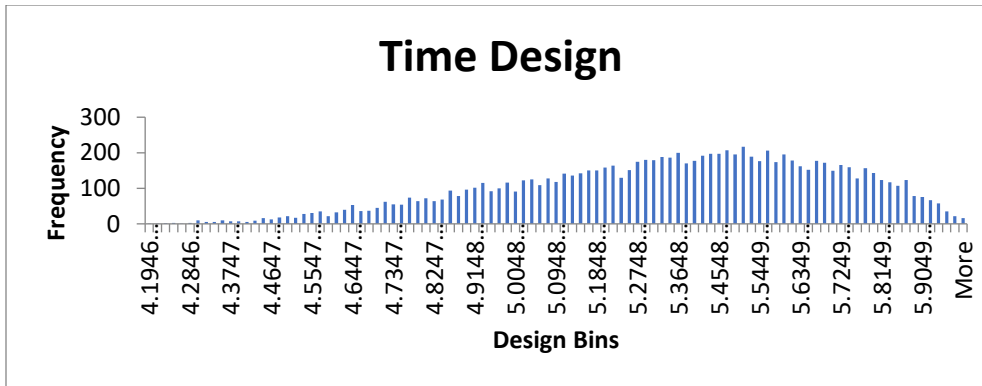
1. Step A to B



Individual Steps:

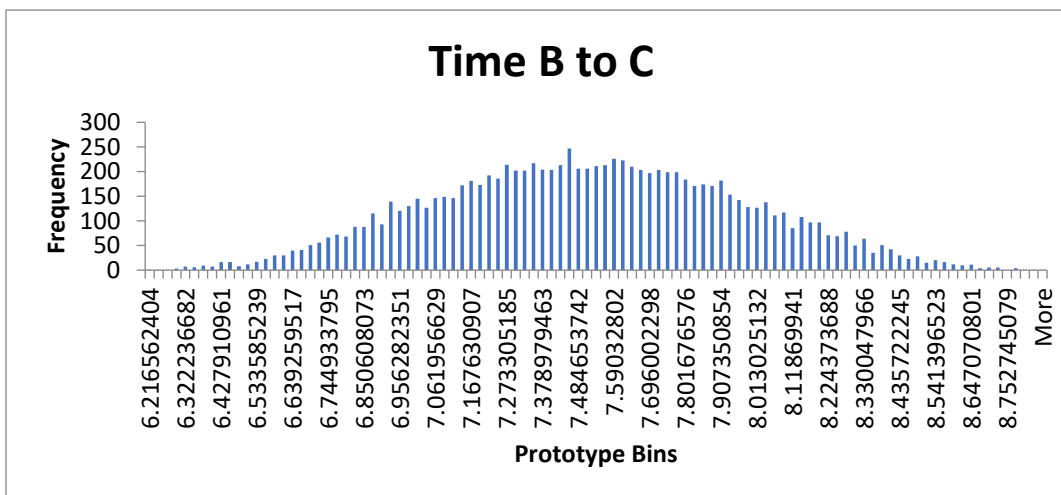
For the market research part of the model simulation, we account for an anticipated baseline of 3 weeks with an added linear scaling of 2 additional weeks. We have a linear transformation of the uniform distribution of our market research timeline with values between 3 and 5. Adjacently, an inverse cumulative distribution function of the beta distribution (4,2) for the design phase gives us an anticipated lower and upper bound of 4 and 6 weeks where we observe a negative skew in the distribution for this process.



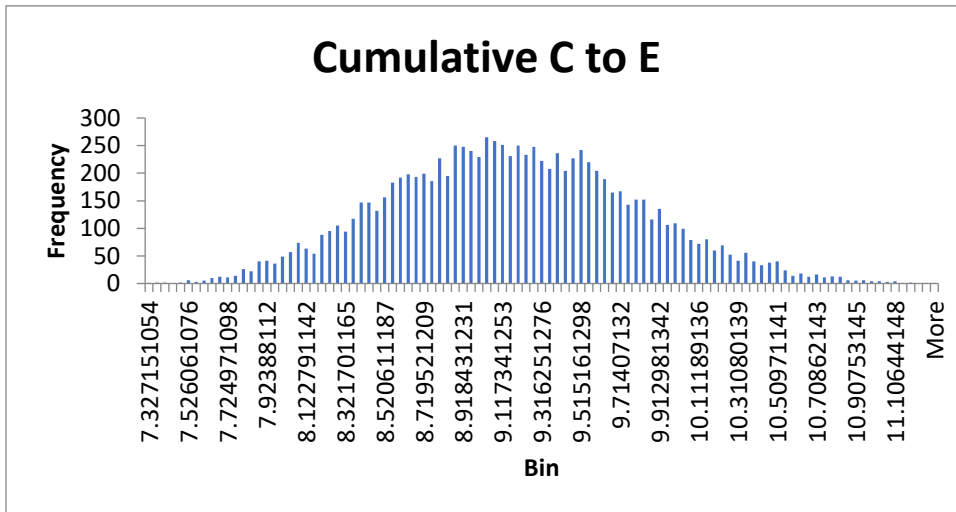


2. Step B to C

The prototype step here representing the move from B to C based on a beta (5,5) distribution with 6 and 9 weeks as the bounds. As discussed earlier, we observe a normal distribution with higher probabilities clearly concentrated towards the center of the time range.



3. Steps C,D,E



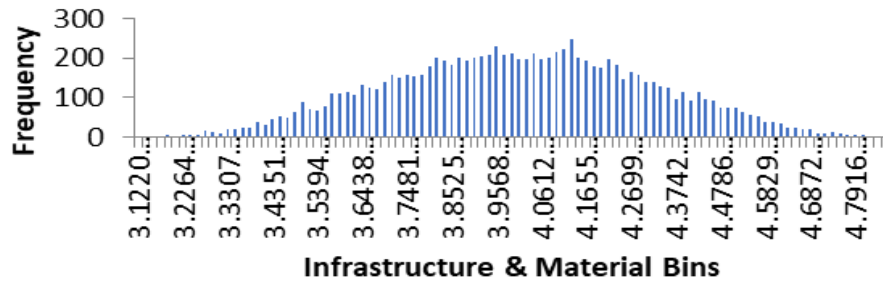
Individual Steps:

The process of aligning infrastructure and procurement of material for the ensuing manufacturing step is distributed using a beta (5,5) distribution while the entire labor assembly process is uniformly distributed with a base timeline of 4 weeks, giving us a total range between 4 and 5 weeks.

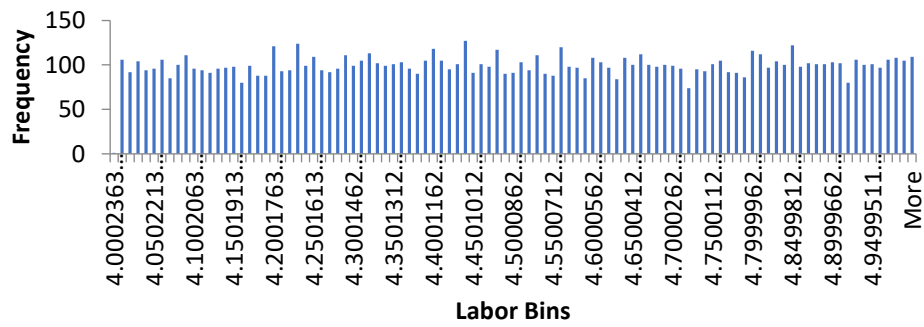
The Testing/QA and Revision steps which would run back-to-back between the two – but also simultaneously with the first two steps in this phase – follow a uniform distribution with a linear scaling factor of 1 week and a beta (3,5) distribution with 2- and 5-week bounds, respectively.

The cumulative distribution of time for this phase from C to E aligns superbly with our individual estimations based on the distributions we observe here.

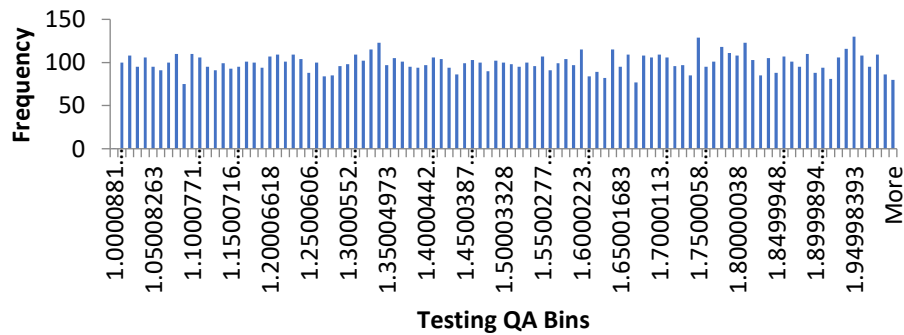
Time Infrastructure & Material

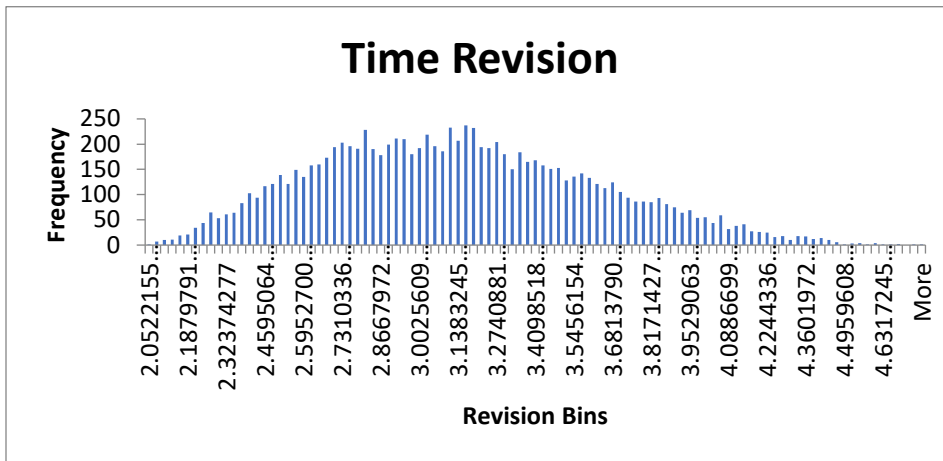


Time Labor



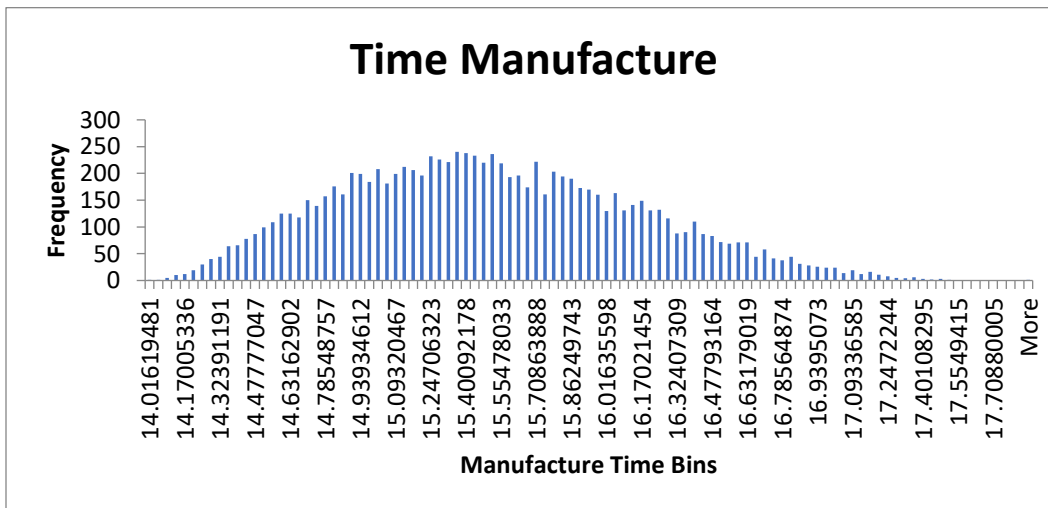
Time Testing QA



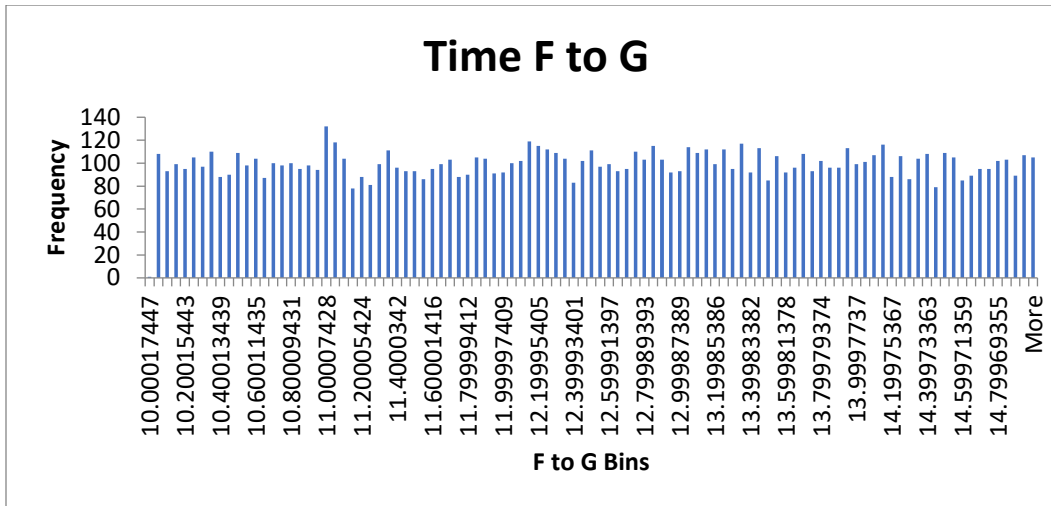


4. Step E to F

This phase consists solely of the timeline for manufacturing our product with the assumption that the setup and assembly of labor/material is completed by the start of Step E. The process has been distributed in a beta (3,5) distribution with 14- and 18-week bounds.

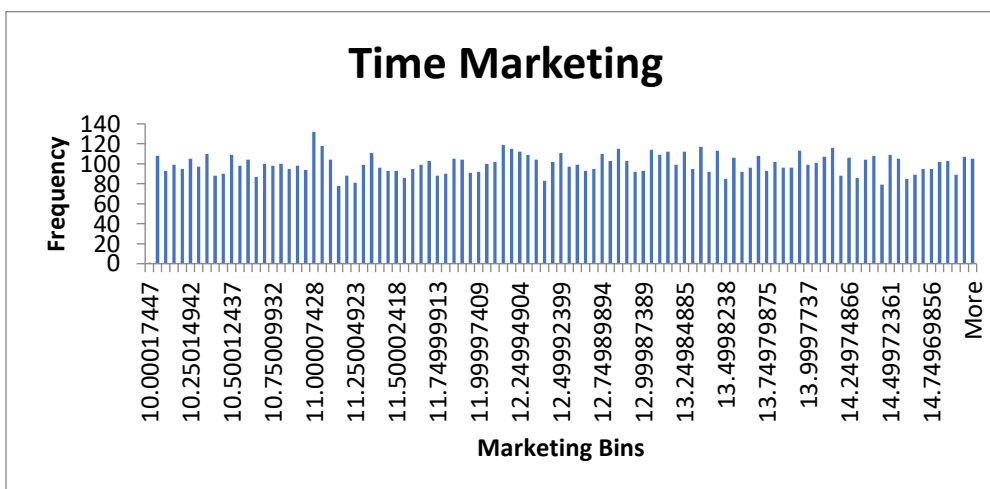


5. Step F to G

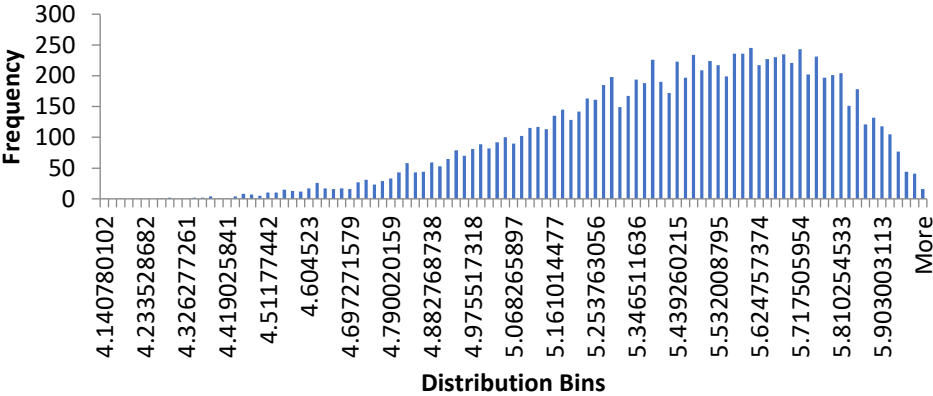


Individual Steps:

Upon the culmination of the manufacturing process, our marketing and distribution tasks will kick off in parallel and as such, the total time to move from F to G is represented by the maximum time it will take to complete either step. The marketing process here follows a uniform distribution with a base timeline of 10 weeks and ranging in totality from 10 to 15 weeks (linear factor of 5 weeks). The Distribution timeline, on the other hand, is distributed with beta (5, 2) and as we can observe here, the range moves between 4 and 6 weeks with an evident negative skew in the distribution.



Time Distribution



Appendix B: Simulation Sample (First 200 trials)

[illegible]

101	0.0339782	0.0734261	0.0405151	0.1718811	0.0671135	0.4201616	0.1761833	0.0474869	0.0424037	4.2339566	5.9182735	5.8507833	6.8899375	6.8899375	3.7012884	4.0016188	1.0492805	2.9705031	4.6827709	14.9449434	14.9449434	20.8806915	5.2118974	46.068127	47.6981212
102	0.0339403	0.0732626	0.0397048	0.1702891	0.0659142	0.4182269	0.1757054	0.0473174	0.0423375	4.2348426	5.9207292	5.7088237	6.8899375	6.8899375	3.7012884	4.0016188	1.0492805	2.9705031	4.6827709	14.9449434	14.9449434	20.8806915	5.2118974	46.068127	47.6981212
103	0.0339403	0.0732626	0.0397048	0.1702891	0.0659142	0.4182269	0.1757054	0.0473174	0.0423375	4.2348426	5.9207292	5.7088237	6.8899375	6.8899375	3.7012884	4.0016188	1.0492805	2.9705031	4.6827709	14.9449434	14.9449434	20.8806915	5.2118974	46.068127	47.6981212
104	0.0339403	0.0732626	0.0397048	0.1702891	0.0659142	0.4182269	0.1757054	0.0473174	0.0423375	4.2348426	5.9207292	5.7088237	6.8899375	6.8899375	3.7012884	4.0016188	1.0492805	2.9705031	4.6827709	14.9449434	14.9449434	20.8806915	5.2118974	46.068127	47.6981212
105	0.0339403	0.0732626	0.0397048	0.1702891	0.0659142	0.4182269	0.1757054	0.0473174	0.0423375	4.2348426	5.9207292	5.7088237	6.8899375	6.8899375	3.7012884	4.0016188	1.0492805	2.9705031	4.6827709	14.9449434	14.9449434	20.8806915	5.2118974	46.068127	47.6981212
106	0.0339403	0.0732626	0.0397048	0.1702891	0.0659142	0.4182269	0.1757054	0.0473174	0.0423375	4.2348426	5.9207292	5.7088237	6.8899375	6.8899375	3.7012884	4.0016188	1.0492805	2.9705031	4.6827709	14.9449434	14.9449434	20.8806915	5.2118974	46.068127	47.6981212
107	0.0339403	0.0732626	0.0397048	0.1702891	0.0659142	0.4182269	0.1757054	0.0473174	0.0423375	4.2348426	5.9207292	5.7088237	6.8899375	6.8899375	3.7012884	4.0016188	1.0492805	2.9705031	4.6827709	14.9449434	14.9449434	20.8806915	5.2118974	46.068127	47.6981212
108	0.0339403	0.0732626	0.0397048	0.1702891	0.0659142	0.4182269	0.1757054	0.0473174	0.0423375	4.2348426	5.9207292	5.7088237	6.8899375	6.8899375	3.7012884	4.0016188	1.0492805	2.9705031	4.6827709	14.9449434	14.9449434	20.8806915	5.2118974	46.068127	47.6981212
109	0.0339403	0.0732626	0.0397048	0.1702891	0.0659142	0.4182269	0.1757054	0.0473174	0.0423375	4.2348426	5.9207292	5.7088237	6.8899375	6.8899375	3.7012884	4.0016188	1.0492805	2.9705031	4.6827709	14.9449434	14.9449434	20.8806915	5.2118974	46.068127	47.6981212
110	0.0339403	0.0732626	0.0397048	0.1702891	0.0659142	0.4182269	0.1757054	0.0473174	0.0423375	4.2348426	5.9207292	5.7088237	6.8899375	6.8899375	3.7012884	4.0016188	1.0492805	2.9705031	4.6827709	14.9449434	14.9449434	20.8806915	5.2118974	46.068127	47.6981212
111	0.0339403	0.0732626	0.0397048	0.1702891	0.0659142	0.4182269	0.1757054	0.0473174	0.0423375	4.2348426	5.9207292	5.7088237	6.8899375	6.8899375	3.7012884	4.0016188	1.0492805	2.9705031	4.6827709	14.9449434	14.9449434	20.8806915	5.2118974	46.068127	47.6981212
112	0.0339403	0.0732626	0.0397048	0.1702891																					