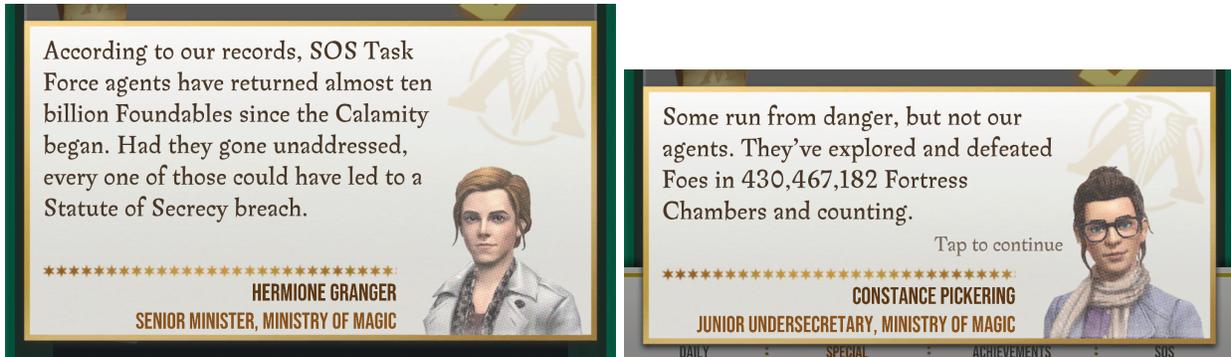


During the 2nd anniversary event WB/Niantic released various statistics from players' interactions with the game from the previous 1-2 years.

One of those caught our attention and decided to run a player-made survey of our own to see if we could either verify or debunk official 'statistics'. The statistics that caught our eye were the number of foundables returned ("almost ten billion") and fortress chambers completed (430 million), which means the ratio between Foundables:Forts is  $10E9:430E6 = \sim 25:1$ , so for every 25 foundables caught each player completed 1 fort battle, according to the data posted by WB/Niantic.



## The questions asked in the survey were:

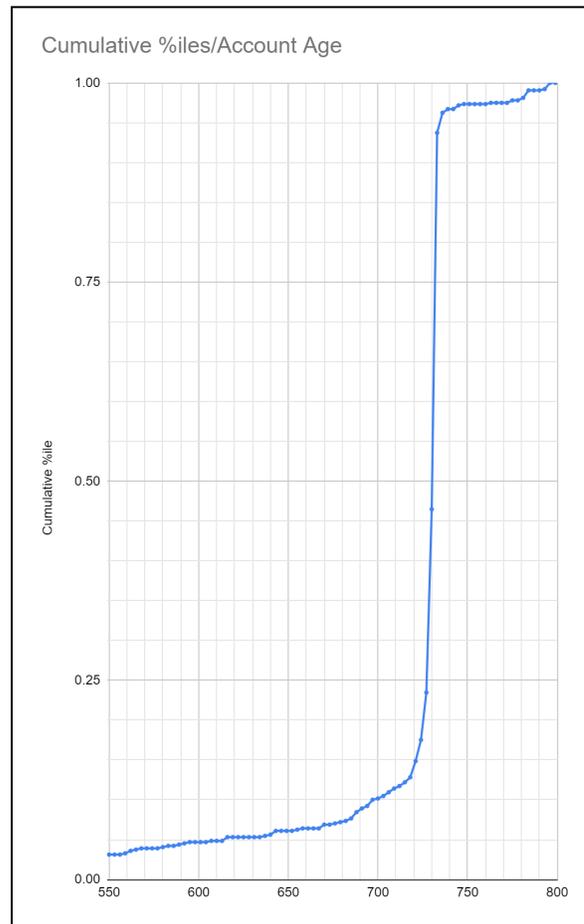
1. Date joined/started playing the game.
2. Foundables returned (as shown in Ministry ID).
3. Forts/Challenges completed (as shown in Ministry ID).
4. Sos score (Calamity Essentials).
5. Profession plan(s) Completed (combat training) 0-3.
6. AAC (Advanced Adversarial Combat) (adversaries profession plans) completed 0-3.

## Short summary of results:

- 662 responses, of which we discarded 23 for start date validation (we filtered the reported start date based on the beta and official release dates; in some cases, it was apparent what the player meant, but we didn't want to guess; in others, the dates were clearly wrong).
- Average values for Foundables and Fortresses were 44 619.8 and 5 689.8, respectively. This gives a ratio of 7.8:1.
- 50th %ile values for Foundables and Fortresses were 45 736.2 and 6 099.9, respectively. This gives a ratio of 7.5:1. That means 50% of respondents returned more than 45 736 foundables, and 50% of respondents returned less.

- 95th %ile values were ~95 000 and ~12 400, respectively. This gives a ratio of 8:1. That means that if you have more than 95 000 foundables returned, you are in the top 5% of respondents, for example.
- 50th %ile values for foundable and fortress rate (calculated by dividing foundables and fortresses by account age) were ~ 65 and 9/day, respectively.
- 95th %ile values for foundable and fortress rate were approximately 135 and 18/day, respectively.
- SOS score was not a normal distribution - 50th %ile was 35 076; 95th was ~57 500.
- We estimate the number of players is 75 000 to 220 000, based on the average values. With 10B foundables returned in total, and an average of 45K per player, that gives 220K players; with 430M fortresses completed in total, and an average of 5.7K per player, that gives 75K players.
- With 639 validated responses, that means we captured anywhere from 0.3% to 0.8% of all players in this survey.
- This is the cumulative distribution of account age, which almost takes the form of a “step function” - only 5% of the responses were from accounts < 600 days old. The 50th percentile and 95th percentile are almost the same value, hence = step function. The <5% that are <600d is worrying - basically it's telling us this is as many players as the game will ever have, and the barriers to newbies are too high. This isn't healthy for the game's continued existence.

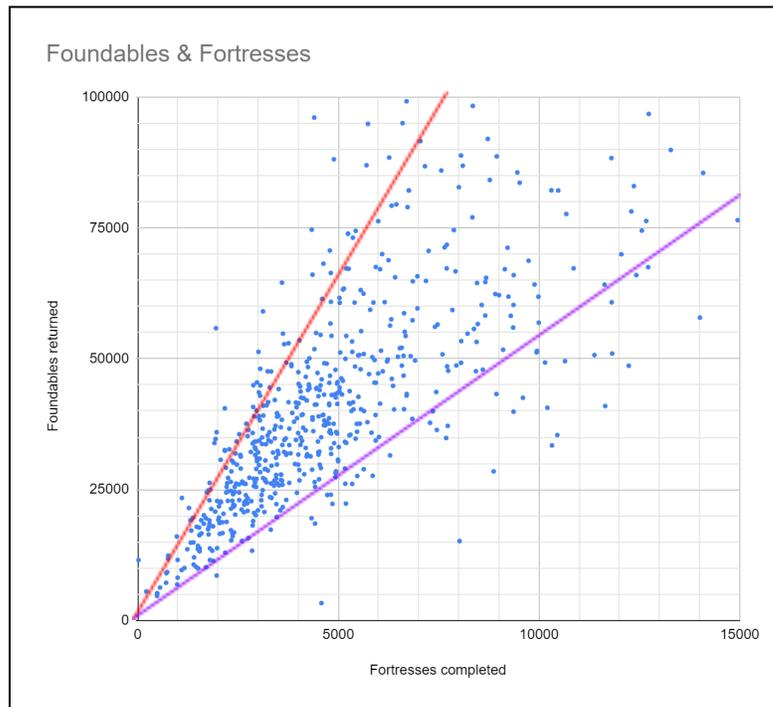
**Expected reason for this:** Unlike other games (offline or online, mobile or otherwise) this game's very hard/tedious/frustrating for new players who are not hooked yet and have little to no reason to pay, and becomes progressively very easy for longtime/regular players who are hooked and would/could/can pay. Game's model seems to be “frustrate the new players into paying to make things easier” which is unintuitive and counterproductive. Most new players won't pay, they (will) leave.



## So what is the final ratio we came up with?

Based on the data (50th, 95th percentiles; averages), the ratio of foundables:fortresses should be closer to 8:1.

The scatter plot of foundables returned (y-axis) and fortresses completed (x-axis) is shown to the right, along with bounding lines with approximate slopes of 5.3:1 (purple) and 13:1 (red), plotted by eye. The data suggest these bounding lines are reasonable. Because the number of foundables returned at the first year anniversary (5B) is almost exactly half of the number returned at the second year anniversary (10B), it is possible the number of fortress chambers completed at the second year anniversary was under-reported.

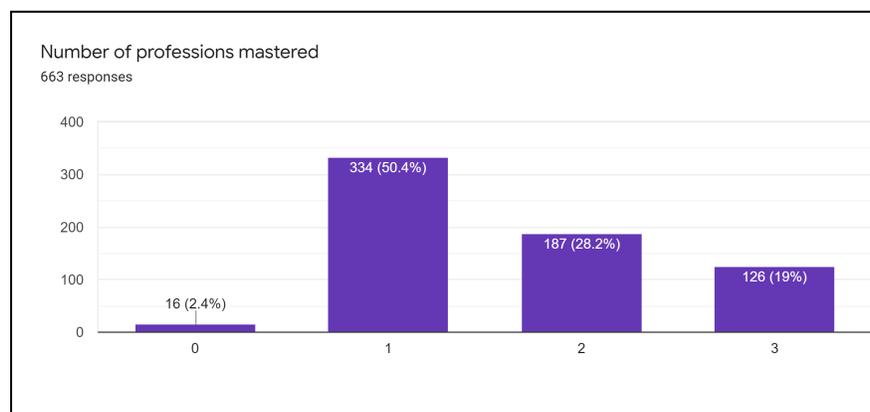


Potential reasons for this:

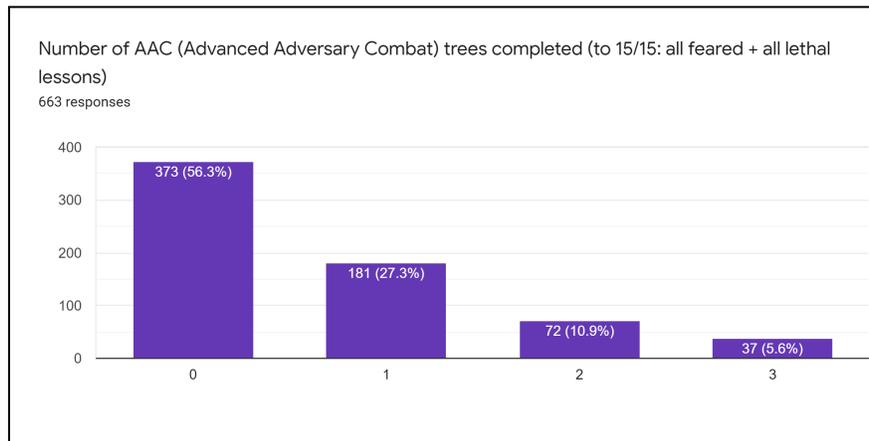
1. Niantic/WB made a mistake (considering all the bugs it'd be unsurprising).
2. They use(d) data sources we don't have access to.
3. They may have calculated the 25:1 from the end of 1st year to 2nd year anniversary, instead of both years.
4. People changed their (foundables:forts) playing habits after certain key points in the game (knight bus intro, may 2020 frag update, sos, (still ongoing) world wide pandemic), most of which are either shortly before 1st year anniversary or between 1st and 2nd+.

## How about lesson completion?

- 50.4% of replies have finished 1 Profession plan, while 28.3% have finished 2 and 19% have finished all 3. And 2.4% haven't finished any plan(s).



- In contrast 56.3% have not finished a single adversarial plan, whereas 27.3% > 10.9% > 5.6% have finished 1 >2> 3 plans respectively.



- Because of potential confusion, the instructions for the AAC question were changed part-way

through the survey. Some early feedback we got was that some wix thought that 3 AAC trees completed meant all dodge lessons, all critical lessons, and all lethal (accuracy) lessons (15/15 for a single profession), while we intended it to be 15/15 for all the professions. This confusion may have polluted the results.

#### Expected reasons for 2.4% of respondents not completing a profession:

1. Very new accounts (new players) to have either grinded the red books required and/or managed enough Brilliant Events for the restricted (green) books required for plan's completion.
2. Older accounts that are very casual in their playstyle not wanting to grind red and/or green books required.

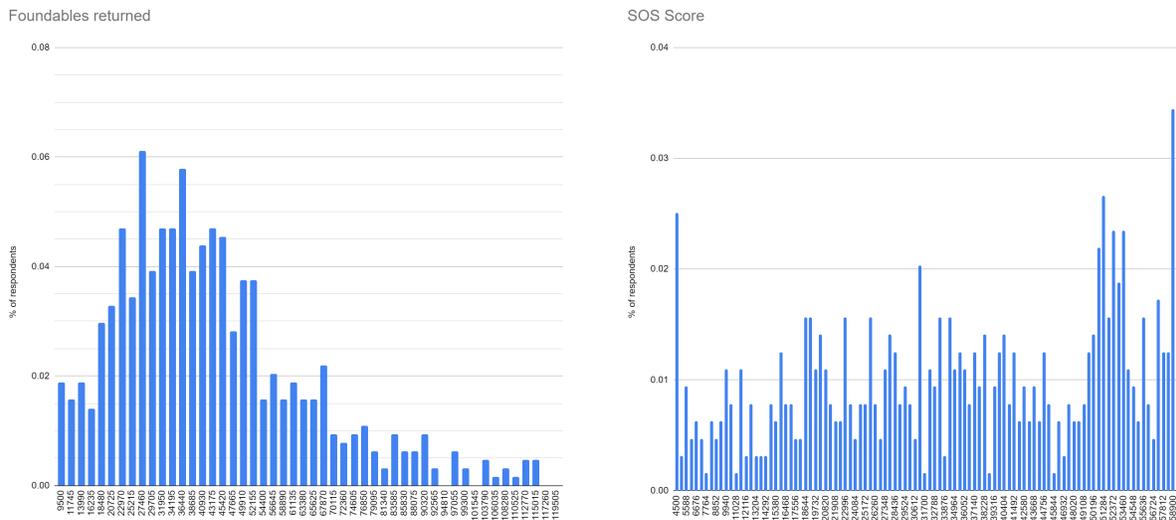
#### Expected reasons for 56.3% of respondents not completing an AAC tree:

1. Must have completed main/1st profession plan(s) to be allowed access to adversarial plan(s).
2. Resources required (especially DADA books) are very high per plan. (3000 scrolls, 600 reds, 14 rsbs, 1150 DADAs per plan, (6000, 1200, 28, 2300 for 2 plans) (9000, 1800, 42, 3450 for all 3). Adversary chains are tougher than foundables, or forts considering in higher-level forts (forest-darks) there's (hopefully) a team (that knows what it's doing), with all three professions to hex/buff etc. whereas Adversaries are a solo battle w/o ability to use hexes or buffs (weaken/ confusion/ deterioration hex/ bravery/ shields/ proficiency.).
3. For that reason use of potions is almost certainly required, especially for auror and/or professor. In theory all three professions can do all 10 feared adver. chains potion-less but rng must be perfect which is almost never the case.
4. Some prefer to throw DADA's in sos first (usually after completing at least 1 adver. plan) rather than go for (more) adver plans.
5. Adversaries require the player to be stationary, pausing small/big difficulty in doing whilst walking which defeats the core purpose of the game.
6. In recent adversary events (March 2021+) Dark Mark spawns have increasingly decreased on the map making them > DADA farming more difficult.

- Anecdotal evidence is that some players are saving their currencies until lethal adversaries are released to ensure they invest wisely in the most effective profession.

## SOS Scores

Earlier we had noted that SOS scores did not follow a normal distribution. For comparison, here is the distribution for foundables returned (left) and SOS score (right):

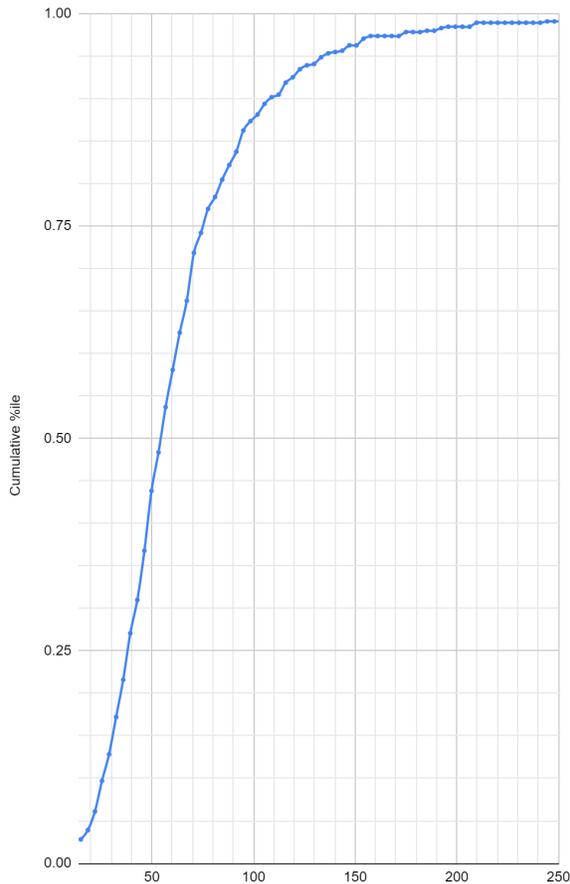


Foundables returned follow what appears to be close to a normal distribution (bell-shaped curve), while the SOS score is almost a constant/uniform distribution instead. This may be due to the multiple different ways (all valid choices!) to spend time-limited resources (Restricted Section Books are used for professions, AAC, and SOS lessons). Because players specializing in a single profession are more likely to have RSBs available for AAC and SOS lessons, three-profession players are unlikely to have completed the SOS lessons; however, there is a slight plurality (~3%) of all respondents who have completed the SOS tree entirely (SOS score 58870), indicating that many players have not mastered multiple professions.

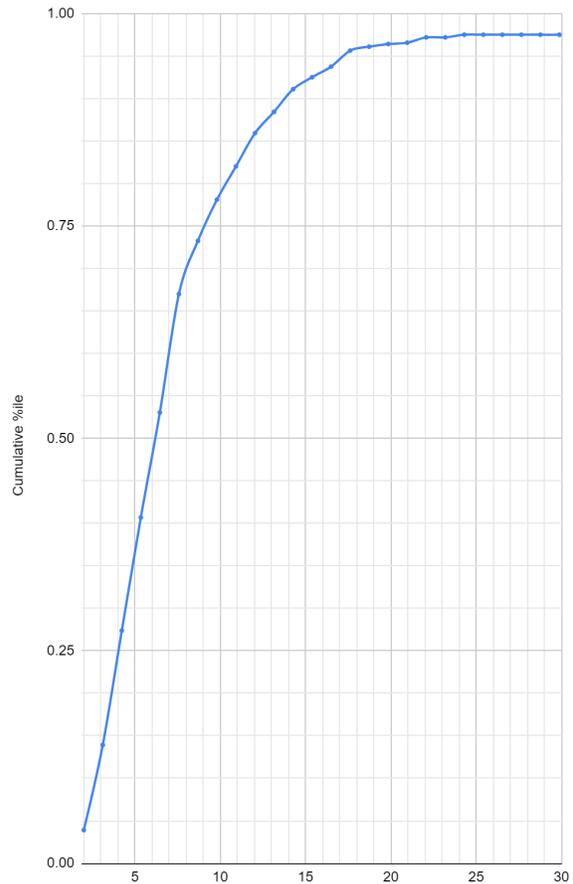
## Play Rates

Finally, we looked at typical play rates - by dividing the number of foundables and fortresses completed by the account age, we came up with some values for foundables/day and forts/day.

Cumulative %iles/Foundables/day



Cumulative %iles/Forts/day



The “typical” respondent averages 63.1 foundables and 8.1 fortress chambers per day. The 95th percentile values for these are (judging by eye from the charts above) approximately 135 and 17/day, respectively, approximately double the average. Less than 5% of respondents return fewer than 20 foundables/day and complete fewer than 2 fortress chambers per day.

## References

More graphs and charts can be found in the **Raw Data** google sheet in the **validated tab** (scroll down).

### Raw Data:

<https://docs.google.com/spreadsheets/d/1VIQry5sbDDr3Wgfnxpn660ZnQm9MJSTSleoYrD1HGjk/edit#gid=0&fvid=500731487>

### Un-analysed gathered responses:

<https://docs.google.com/forms/d/e/1FAIpQLSdxWPXOhsCne54SYCVCCum63PxlnrsLF33O2zeDbD0pX7Xicw/viewanalytics>

- Year 1 statistics: <https://twitter.com/hpwizardsunite/status/1274733902570102784?s=21>
- Year 2 statistics: <https://twitter.com/hpwizardsunite/status/1407037413885685762?s=21>

**Authors** (discord and ingame names):

Drakonite

9mac2

**Data analysis:**

9mac2

Special thanks to Duckbeak206 for questioning the values in the first place. Thanks for reading this far. And thank you to those who took the time to fill out the survey!