Data Analysis: Opponent Map Spawn Rate

We've spent some time gathering data and I'd like to share it along with a little analysis. I'm sure parts will be too basic for some, but hopefully others will find the background helpful. There have been a lot of threads about opinions/theories. I am going to try to stick to facts and data here, boring as it will be. If you already have the background, probably you'll want to skip to "Data." This is long - a hazard of data analysis, I have some spare time today. And I mean long, like psycho long, like if it was an email from your SO, you'd take one look and call to file a restraining order, but I enjoy thinking through this stuff.

Definitions.

Spawn Rate: The rate at which other players are spawning on [player's] map.
Daily Spawns: The total number of other players that spawned on [player's] map on a given day.
Opponent Map Appearance Rate: The rate at which [player's] base is spawning on opponents' maps.
Daily Opponent Map Appearances: The total number of times [player's] base appears on opponents' maps on a given day.
NPC bases: "Non-Player Character" bases. These are the blackguard bases.
PVP bases: "Player-vs-Player" bases. The other players in the game whom you attack and who attack you.
VP: Victory Points.
Unique Scouts: The number of different player who scouted that day (first line, second number on your daily summary)
Unique Attackers: The number of different players who attacked you that day (second line, second number on your daily summary)
Unique Raids: The number of different players who successfully raid on a given day (third line, second number on your daily summary. (It can and does often happen that one player raids twice in a single day.))

What am I talking about?

I am going to talk about the *opponent map appearance rate*. (I used 'spawn' in the title because that's a typical reference, but need to differentiate now.) I won't be talking about the spawn rate. In my experience, spawn rate is variable, but is roughly equally variable across many player accounts. When people keep their map clear, they get more spawns; less map clearing = fewer spawns, as it should be. These total spawns are variable on a daily basis, but over time currently seem to be reasonably similar over most accounts with similar clearing behavior. The opponent map appearance rate does not seem to be similar over most accounts. We don't receive explicitly the figure "opponent map appearance rate" in game, but we'll see what inferences we can make in a minute. My goal is to show you why many people think the opponent map appearance rate is grossly different across different accounts.

Why is it important to some people?

Supercell measures Victory Points and uses that measure to post the top players globally, locally (and now crabbily!, but not with VPs). After getting maxed, a lot of players choose to test their skills

and strategy against others by climbing the leaderboards. After the double-VP medal NPC bases and the few Hammerman bases, every action in the game is VP neutral, apart from PVP bases.
NPC spawn = -1 VP. Kill or Destroy the NPC = +1 VP. *VP neutral.*
Lose a resource base = -1 VP. Regain it = +1 VP. *VP neutral.*
PVP base spawn = -1 VP. Kill that PVP = +2 VP. *Net VP +1.*
Get raided by a PVP = -1 VP. *Net VP -1.*
So, over a long period of time, the equation for gaining VP is really simple!:
(Total successful PVP raids) - (Total times being PVP raided) = Net change in VP.
This way, the number of opponents who kill me each day is exactly as important for VP gain as the number of opponents I kill each day. No other magic to it. If I raid 10 bases average for a month and get raided 7 times a day average, I will gain 90 VP. If I raid 10 bases per day and get raided 13 times a day, I will lose 90 VP. If you've fallen asleep already, you may need to get some water and a snack to get through.

Global 1000 ("VP pushers") game-play.
For those who have not pushed, the VP area approaching the Global 1000 spawning pool threshold is very crowded. You can go through 100s of ranks in a single clearing session and regress by the same amount each night. It's important to understand, in order to have gotten into the Global 1000 and keep climbing, you needed to clear or nearly clear your map every day, usually multiple times a day. To go up 100 VPs, you need to kill 100 more PVP bases than raids you receive. This takes time, and if you are not raiding you quickly fall out of the Global 1000. I am going to try ***not*** to lean on these assumptions because people get stuck on them, but it's important to understand, as a matter of math, there are very few players in the Global 1000 pool who aren't scouting and attacking everything on the map. To clarify something else - there is no 2 boosted ice layout that I can't take unboosted, and that is not because I am more talented than others - I'm not. There is no 2 boosted ice layout that anyone in the Global 1000 can't take easily. If there was, you'd see the layout everywhere. Layout does not matter. Protos do not matter. If a player can't take 2 ice, they don't make it to the Global 1000. Again, I will try *not* to lean on this, but for background -- this is not an opinion, it's just a fact of game-play. As has been pointed out, 1000 players is not that many players: they know how to attack Boom Beach bases.

Data.
Here are three players' data for the past ~30 days (or however long each player has been recording screenshots), all roughly around Global rank 100-200. Date orders might be messed up in a couple cases, but you will see that doesn't matter. Day 1 is yesterday. I am calling them Player A, B, and C. This is primarily to avoid confusion in this post. They are willing to talk to Supercell and as has been pointed out, Supercell can verify any of the data on their own they want. I have seen the screenshots from each day, and this info has been taken from those screenshots. I am including a description of the ice and VP for each player here, too. Spoiler Alert!: These accounts are roughly identical.
Player A: Has had 2 ice, 1 boosted for the first 27 days. 2 ice, none boosted for the last 5 days. VP 1500-1620
Player B: Has had no ice for the duration. VP 1600-1700.
Player C: Had 2 ice boosted in the beginning of data collection, has had 2 ice non- boosted for last two weeks. VP 1540-1460.

Recommend center-clicking to pop out the data attachment:
datamap3.jpg

Inferences. aka: Back to the Borophyll.
Refocus - We are trying to determine how many opponents' maps a player spawns on per day. Supercell does not give us this information. Let's have a look at the data and see whether we can get there. Bear with me as we slowly plod toward the point:
1. In the data, we see Unique Attackers are never more than Unique Scouts, so we can reasonably assume that either nobody at this level attacks without scouting, or an "attack" also counts in the unique scouts figure. Yes, there is room to argue theoretically that some people attack without scouting and others scout without attacking and it cancels each other out. However, with this margin of error (so few extra scouters than attackers), to make that argument without seeing even a single instance of more attackers than scouters, and so many instances when they are actually equal, isn't reasonable.
2. Almost everybody who attacks ends up successfully raiding on that same day. Doesn't need a ton of explanation: There's not a lot of defending going on. For Player A, there were 10 instances out of 209 attackers who moved on without raiding on the day they first attacked. At *most*, that's 10 players out of 209 (5%), and possibly fewer (somebody holds the base for more than one day for their own reasons). For Player B, this number is 3 out of 275 (1%). Player C is 11 out of 522 (2%).
3. Almost everybody who scouts ends up attacking on that same day. Player A is pretty popular. 246 unique scouts led to 209 same-day attacks. The other 37 unique scouters (15%, and again that's maximum, maybe there are repeats, or the scout-attack straddled the calendar day) either waited for the next day or never attacked. Only 8 out of 283 (4%) waited/passed on Player B. 67 out of 589 (11%) waited to attack or passed Player C.

OK!! SOOOOOOOOOOOOOOO..... what does this all mean for trying to figure out the opponent map appearance rate??? It's getting really exciting, #arewehavingfunyet.
There are two alternative scenarios with this data:
Scenario A -- These numbers are roughly representative of the opponent map appearance rate. For some reason over this time period, Player A appears on about 6 maps a day and eventually mostly everybody raids him. Player B appears on about 10 and eventually mostly everybody raids him, and Player C appears on about 14, same same.
Scenario B -- These players actually are all appearing on roughly the same number of maps each day of this whole month, let's say maybe 20 +/-5 each day?, and every single day the right number of people collude to skip Player A so that we only ever see 6, 7, or 8 (and in rare cases 5 or 9) raids. A couple people scout to have a look, but the vast majority don't even scout. Likewise, opponents from around the world collude to come up with these stable, but specific, different, numbers for Player B and Player C (and every other player).

Without belaboring the point any more, hopefully we can agree on Scenario A as far as being at all plausible? For some reason these Players are appearing reliably on specific, different numbers of maps and these numbers from the daily summary reflect about how many maps that is. That is to say: ***over time, a number between "Unique Scouts" and "Raids" in the case of players with few or no defends, ought to give us a statistically reasonable estimation of opponent map appearances***.

Analysis.

Great! So these guys are appearing on a different number of maps, I get it, so what?
So let's see if there is anything we can say mathematically about how statistically significant the opponent map appearance rate differences are. Have you added any scotch to that water yet? When you have an event that happens every so often with a consistent probability, you have a bell-shaped, normal distribution curve... let's not even go that far and instead just say we have an even-ish distribution and the same equation governs each player's spawn rate for similar accounts, as it should, and as everybody including SC argues it does. Let's say the mean is 10 and the variance is such that we see numbers as low as 0 and as high as 20. (Aside, for this VP, it seems in practice to be more like mean of 14 and range of 4-30 with the heaviest distribution skewed toward the front and a very thin tail on the high side, but the same analysis works.) The area of the curve under each range of results (5-9 for Player A, 8-13 for Player B) is the probability that any given instance - a day's worth of opponent map appearances - will fall in that range. To make it totally easy for calculations, let's just say a player's results all end up being less than the mean (anywhere less than 10), like Player A. There's a 50% chance each day will result in a number lower than the mean (and a 50% chance it will be higher). A (0.5*0.5) = 25% chance we'll see two in a row below the mean in 2 tries (same as flipping a coin on heads twice). (0.5*0.5*0.5) = 12.5% for three out of three tries (3 heads in a row). The chance that it will happen 20 times in a row is 0.50^20 = 0.000095%, which is 1 in 1 Million. The chance that it will happen 30 times in a row like we are seeing here is 0.50^30 = 0.000000093%, which is 1 in 1 Billion. Just one 1-in-1-Billion event should be enough, but almost every low ice account we are seeing is a 1-in-1-Billion distribution. It is all about the range of the results (variance, for stat-friends), as opposed to the mean. There are accounts stuck between 5-9 daily raids, 8-12, 10-18, as we see here, but also 18-24, and 20-30. Pick a mean wherever you want and a curve of whatever shape, and you will find that there are more accounts in the 1-in-1-Billion camp than there are with results scattered across the range of distribution. If the real mean is 14, then there are loads of 1-in-1-Billions in the lower half; if the real mean is 6, then there are loads of 1-in-1-Billions in the upper half. The cumulative chance we will see that many accounts out of 1000 with (very conservatively estimated) 1-in-1-Billion results is ultimately the chance we are seeing just a one month aberration in this data.

So what's the problem?
The problem is that the raid figures completely and totally overwhelm anything that can be made up with skill, strategy, planning, or persistence. In practice, some players push for up to a year. Let's say Player A and Player C push for just 3 months. If Player A averages 6 raids over the period and Player C 14 raids, as we see here, that difference accounts for 8*30*3 = 720 VP over the period, and it's all pure luck. zlolllzzzzzzzzzzz?

You made it to the first ending!! Hopefully with the exciting mathelogical journey we have all taken together, you agree that there is a map appearance rate problem here. Before the megaphone starts making the rounds, I want to try to address a bunch of common questions that have shown up on threads on this topic, and I'm sure will show up again.

Dec, I heard there is a maximum number of maps an account can be on at any one time, so inactive accounts or friends holding the account explain all this, right?

Sure! And this one's easy. If the opponent map rate works as you suggest, the intrinsic problem should have been obvious when the devs of yesteryear were programming it. If it somehow wasn't obvious, the problem should have been apparent when the issue was first brought up. Regardless, the loopholes, both intentional and circumstantial are clear and they should fix it, full stop.

C'mon DeCoverly, something doesn't seem right, why would these players with low opponent map rates be helping point out the problem?
First of all, many thanks to the large number of players *benefitting* from this issue who have been interested to help. Each of them says roughly the same thing - "It's no fun reaping the rewards of an achievement based totally on luck." These guys don't know why their accounts are doing this. Some of them never had ice. Some had ice and dropped it. Some went inactive for awhile and came back to the game, some didn't. Some started pushing at a very low VP level, some have been pushing for months while the raids slowly decline as their VP rises. I was surprised when I got into pushing how friendly the VP pushing community is. Lots of attack shares, lots of strategy shares and collaboration. The competition is what is fun.

This is all just math and proves nothing, you can make data look how you want, the real variable is human behavior. You don't know why certain people will skip a base or refuse to scout it.
Sure, maybe people do weird stuff. I did some weird stuff myself just last night. One problem in this case is that you can't consistently skip a large number of bases without falling out of the Global 1000. The other issue is that while these players are spawning people all over the globe, every person from all these countries would have to conspire to non-scout certain bases the exact number of times to control this steady stream of raids. You'd have to have a "Player A" page dynamically updated with each person who spawns Player A in real time and then all of the players who spawned him would have to get together and decide which 6, 7, or 8 players are going to attack in the calendar day time zone of Player A.

C'mon DeCoverly, these guys must be in a Global help group. They are colluding to cut down on raids, right?
Let's say a really big group has 200 members of the Global 1000, and every single player skips Player A every single time he spawns. His raids would drop to 80% of typical raids. Problems.... 1. Player A isn't getting 80% of the raids, he is getting less than 50% of the raids of Player C, and just 25% versus the higher raid accounts. 2. The consistency would be impossible to produce. 3. There are tons of "Player A's." Mathematically, this is impossible for just one player, let alone dozens. 4. What's going on with Player B, junior tier cheater? 5. You'd see a heck of a lot more dimes and intel donations (attackers that move on without raiding)... many per day, if that's what is happening, right?

What about ice accounts, Dec? Why not include those?
I included the accounts I happened to find that were the most similar by ice and VP, and low ice also means low/no defends which just makes the data easy to see and analyze. I know of a few ice accounts that seem to be getting low raids, but typically we are seeing them getting many more raids at this VP level. 7/7 ice bases getting 12-18 raids per day every day is typical, but the daily results are more varied because there are defends in the mix. Personally, I do not think this a (statue --> map appearance rate) cause and effect issue, I just think the people getting raided the most have

responded by adding ice. Simple. The people who aren't getting raided a lot haven't needed to place ice to climb. Not too many people start a push at 1000VP by placing and boosting 7 ice. You add ice as your raids mount on the way up. But I want to be clear, this post is ***not*** about ice vs magma, offense-defense balance, or any of that. That's a separate topic.

Boxers or briefs Dec?
Why choose? Let's just say I avoid leather chairs. Next question.

Dec, this is cherry-picking data, you found these extreme examples from all the Global 1000 accounts and now you're trying to draw all these conclusions from them.
These are actually the only three accounts I have complete data for right now because these players happened to say "Something's weird. I am getting X raids. They are getting Y raids. I have low/no ice. My VP is around Z." And I said, "Interesting, I'm Dec, would you mind sharing your data?" There are plenty of other players whose _incomplete_ data I also have seen. It is mostly just as consistent. Some players are currently getting 25-30 raids per day every day. Some have been getting 15-20 a day for months. But again, the story is not actually in the number of raids, it is in the tiny variance in daily raids per account which points to each account being beholden to some separate mean/range. We can provide much more data, but Supercell should be able to see it too, and hopefully will agree it's not necessary. The other thing is, if this is just very lucky cherry-picked data, it will not be predictive. We identified these accounts weeks ago, nothing has changed in the data. We can keep watching them all to see what happens going forward.

But the data seems unbelievable Dec. Wouldn't it be fair to say you are a big fat liar with a smelly butt and you smell your own butt?
Does two out of three count. If this data is untrue, Supercell can easily disprove it. They should have just as easy a time confirming it. If they can't do either of these things, that would seem like we have bigger problems.

Ok Dec, you figured it out, the game isn't fair, big deal. I like it that the leaderboard is getting shaken up. What if Supercell doesn't want a fair game?
If that's what they want, please I hope they'll just say so and pull down the leaderboards because they mean nothing, then we can all boom beaches in peace. If it's too much trouble to say it in public, Drew please PM me in secret, I'll sign an NDA, pour a martini over the last 1.5 years of VP prepping, and ctrl+X BB from my phone.

Why do you care so much?
I love this game. There are a couple endgames available for maxed players... VP pushing, TF pushing and now Crab competition. I have spent a long time learning and trying to help other people learn VP pushing and gathering the resources for a push, because I like PVP attacks. I've met a ton of great guys and girls. This is the endgame available for PVP attacks, period, and without trying to sound superlative, if the VP system is this broken, the leaderboards are meaningless, and VP pushing is dead. If Supercell's goal is to provide more gameplay for maxed accounts, it seems to me that first maintaining the current options would be a lot less work and a lot more lucrative than devoting all of the team's resources to experimenting with new game play. Furthermore, the longer this goes on, the less chance it is fixable.

Well, I'm not VP pushing, I just like to boom beaches, why should I care?
It's really unlikely that this phenomenen is restricted to Global 1000 accounts. For accounts at different VP levels, it will be *much* harder to witness because of much less dependable PVP play and much less obvious statistics. Assume for a minute that all accounts are being affected this way because they are all treated the same, as Supercell states. That means the VP system is pretty well broken up and down. For all of you who worry about match-making, you'll probably be interested to know if you may arbitrarily be, over time, hundreds of VP higher or hundreds of VP lower than you ought to be. Again, this post isn't about match-making, but it's about the VP system, which governs the whole game.

I really loved this book, do you have any more science fiction coming out?
Yes, I am planning on releasing Return Of The Lizard People 2 in the Fall. It is just a series of charts and graphs, but if you relax your eyes right, you will be able to make out all of the lizards hidden in the data.

Dec, why do you write so much, do you have a life or any friends whatsoever?
I probably spent too much time on this yesterday, but the last few weeks' tribes have made clearing my map take about 12 minutes instead of a couple of hours, so actually I'm way ahead of the game! But again, separate topic for another day.

Are you single? This is the hottest very poor statistical research I've ever seen. What's your number?
I'm married for now sorry. (psssssssssttttt, if you show my wife this nerdy post, I could have a lot of availability coming up.)

In all seriousness, I'm not really interested in arguing but I am actually really open to be proven wrong and am into sinking my teeth into debate as well. I hope responders who are still alive after reading this will address the content itself instead of the usual ad hominen stuff that often goes on in this forum and many(most?) other discussion groups all over the internet, to be honest.

There are lots of people who have been collaborating about this. Great job guys. And kudos again especially to those holders of advantaged accounts helping demonstrate the problem.

As a quick note - I and other players tried to engage this topic in a less comprehensive way and it didn't go anywhere, so this post is way overly detailed and comprehensive, but the more accessible approach was recently hand-waved away. With all due respect, given the prevalence of bugs in almost all updates and now most tribe releases, a majority of recurring events, and ongoing perennial bugs throughout the game, I would really have hoped the dev team would be less flippant in dismissing the concerns of a broad group of experienced players that there may be a serious underlying problem. Hopefully this is now enough to remove the burden of evidence from the players and puts the burden of action on the devs. If the bottom line problem is that the team is too small, maybe it needs to be bigger? Or maybe gameplay needs to be fixed before more is produced? I wouldn't presume to understand all the devs' challenges, but in the past I have genuinely offered to

help, and many others have too. Whether that is feedback on strategizing new gameplay, beta testing to kill bugs, identifying OP boost combos, or some other interaction, the offers have been made.

If this doesn't provide enough information to prove there is a problem, please at least respond and tell me what more evidence do you need? How many more accounts? What kind of facts would be compelling? What variables do we need to include to explain opponent map appearance rate?

Absent an explanation of why VPs don't matter, it would be great to hear:
A. What happened?
B. How is this going to be fixed?

Thanks.