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Allocating Vaccination Appointments: Why we should (and could) do better than digital Hunger Games

Von Christopher P. Lueg | 1 Comment

It is often said that the measure of society is how it treats its weakest members. We know that "first come first serve" or "Es hät solang es hät" isn't geared towards achieving equity plus more equitable approaches are readily available and they would not break the bank. Why do we keep seeing allocation approaches resembling digital Hunger Games?

In countries that have access to vaccines the demand for vaccinations often greatly exceeds the number of vaccinations that are available at a time. This means measures need to implemented to ensure safe and equitable allocation of available vaccination opportunities to eligible persons.

The measures implemented by several of the Swiss cantons (states) leverage vaccination appointment booking web sites and phone lines as well as the "first come first serve" or "Es hät solang es hät" approach for the actual allocation. From a socio-technical and ethical point of view, "first come first serve" is a concern since the approach is likely to benefit certain parts of the community while disadvantaging others.

Consider for a start this report from the great North American city of Chicago of Al Capone and Blues Brothers fame. Grassroot media reported in early 2021 that "*thousands of Chicagoans are scrambling to find coronavirus vaccine appointments, staying up until midnight to refresh pharmacy websites or calling doctor's offices again and again in hopes something will open up. […] 'It's like the Hunger Games,' said a city worker who recently received her first shot after days of waking up in the middle of the night to refresh vaccination websites*" (Bower and Bloom 2021).

How it is done in Zurich

Swiss media report similar experiences. The Swiss Canton of Zurich released a new batch of vaccination appointments end of December 2020 specifically for vulnerable elderly citizens. As the local newspaper *Tagesanzeiger* reported at the time that the respective web site collapsed within minutes (Siegrist 2020). Reporting suggests that elderly citizens spent hours trying to obtain vaccination appointments from the failing site that would not just fail to deliver (e.g., "web site unavailable") but exhibit erratic behaviors. Already selected first vaccination appointments would disappear while booking the second of the two appointments which would then render the second appointment invalid with the effect that the elderly to restart the whole booking process. On other occasions elderly struggling with the booking site would be told that something "could not connect to host".

It goes without saying that having an appointment booking site melt down within minutes is unacceptable. High demand was to be expected and computational resources should have been allocated accordingly. In any case the site should produce error messages that would help the elderly understand what went wrong and what they could possibly do about it. Error messages like “could not connect to host” may be appropriate for the web site’s own developers but they are confusing and discouraging to anyone else and may even lead to appointment seekers blaming themselves for having done something wrong. Research into usability has been emphasizing for decades the importance of appropriate language : “[t]he design should speak the users’ language. Use words, phrases, and concepts familiar to the user, rather than internal jargon” (Nielsen 1994, heuristic #2: “Match between system and the real world”).

How it is done in Bern

Similar experiences were also reported when the Swiss Canton of Bern announced in early May 2021 that all eligible adults would be able to book vaccination appointments. Very high demand was expected. Like in Zurich, the Bern appointment booking web site collapsed almost immediately once a batch of available appointments was released. Newspaper reporting suggests that appointment seekers spent hours trying to obtain vaccination appointments from a failing system that would not just fail to deliver but also exhibit erratic behaviors. Error messages enjoyed by this author include “cannot open the page because the network connection was lost”; “502 bad gateway” and “Unexpected error while processing a request to the identity provider.” As pointed out earlier, such error messages may make some sense to IT professionals but they are inappropriate for anyone else.

The fact that the appointment booking websites were not fit for the task at hand is not the main issue though even when considering that the people who have to deal with those failures actually paid for the service with their taxes.

Even fully operational web sites would not have resolved the problem that “first come first serve” allocation mechanisms aka digital Hunger Games benefit certain parts of the community while disadvantaging others.

People more likely to obtain vaccination appointments from overloaded if not failing appointment booking websites are people who have a) relevant online experience b) decent uninterrupted internet access that they trust (means they know the problem is not on their side), and c) the resources to engage with the appointment booking web site at the specific time when batches of new appointments are released (or have friends or family who would act on their behalf).

People much less likely to obtain vaccination appointments from overloaded if not failing appointment booking websites are members of the community who already struggle to use a computer anyway not to mention navigating websites they don't know especially when those web sites produce cryptic error messages. Not to mention all those people who do not actually have a working internet connected computer or don't have access to the computer at the time. Phone services were offered but they tend to be much slower resulting in appointments being long gone when people finally get through.

Between Usability and failing Technology

Elsewhere we have pointed out that (good) usability is a social justice issue (Twidale, Nichols, Lueg 2022) and there are few domains where this is more pertinent than when dysfunctional technology and bad usability limit access to potentially life-saving medications. Using digital Hunger Games based allocation approaches, aggravated by failing technology, is a major concern.

Some people including outspoken Swiss business personalities argued this lack of fairness is a non-issue since there isn't a single point in time when all eligible persons would be available to make a booking (Peterhans and Fassbind 2021). As we pointed out, people cannot be considered equals regarding their digital skills or People Like Us aka PLUS (Showell and Turner 2013).

We should, and we can, do better than digital Hunger Games.

Preveting that booking web sites collapse when facing more demand than they can handle can be ensured by using digital queuing systems. The Museum of Old and New Art (MONA) in Hobart, Tasmania that also organizes week-long events featuring various sought-after uses an approach where they guarantee that one can access their booking site when they release new shows however they do not and cannot guarantee that one's preferred event choices are still available when it is their turn to book. The MONA booking site uses a load-balancing frontend that redirects requests to an online queueing system when demand exceeds supply. Upon entering the queue people are told how long it will approximately take until they can access the actual booking system. A countdown timer as well as notifications are included in the waiting process.

One could also use approaches would not require being physically available right at the time when resources (event tickets or vaccination appointments) are released. Such approaches would implement an Expression-of-Interest period lasting a certain period of time, say 24h. At the end of the EOI period one would draw randomly from pooled requests until capacity is reached. That way all interested parties, including the people that need a bit more time to lodge their requests, are afforded the same chance to book a certain appointment. The City of Zurich successfully uses such an approach when offering sought after rental properties (Siegrist 2020) and it remains unclear as to why the Canton of Zurich didn't adopt a similar approach when offering sought after vaccination appointments.

Booking should not take hours

Also missing in the public debate is the economic impact of having thousands of people spending considerable time engaging with failing websites. In my case it was about two hours that I spent on finding and booking my vaccination appointments a process that should not take more than a few minutes. Say 15,000 citizens spend an hour each dealing with a failing booking web site makes 15,000 hours (or 625 24h days or 1,875 8h working days or 5.1 years) that could be spent on something more worthwhile. It would seem odd if that wasn't factored in as a cost when deciding on the scale of the computational resources to be allocated.

So why are digital Hunger Games allocation mechanisms so popular? Back in my home state of Tasmania the government used such an approach even to give away taxpayer funded travel vouchers meant to help the local tourism industry recover. The result was similar to vaccination web sites described earlier: crashing systems causing erratic error messages resulting in questionable if not outright unfair distribution of vouchers to those that were better at coping with the failing web site. Once again, using a digital queuing system like MONA's (also based in Tasmania) would have prevented the melt down. Implementing an EOI period would have afforded a degree of fairness.

Perhaps managers and/or developers of such IT systems mistakenly believe that decisions made by computers (like "who is the next person to be able to book an appointment or download a voucher") are less "subjective" since "determined" by a computer. Or perhaps it is that decision makers tend to underestimate "soft" social and cultural factors affecting technology use.

When a Professor of Computing at the University of Tasmania I used to teach a postgraduate class called Social and Cultural Issues in the Design of Interactive Systems. Computing students told me at the time that they thought they enrolled in just another fluffy unit where we would merely talk rather than do "real" computing stuff like programming. And that they quickly found themselves deeply engaged in thinking about issues at the very core of technology design which is, how it impacts on people, and ultimately also what it means to be human.

It is often said that the measure of society is how it treats its weakest members*. There are lots of opportunities where we can do better and it won't break the bank.

* attributed to Thomas Jefferson, among others

References

1. Kelly Bauer and Mina Bloom (2021). Finding A Coronavirus Vaccine Appointment In Chicago Is 'Like The Hunger Games' — But City Says It's Focused On Equity, Not Just Speed. *Block Club Chicago* 5 Feb 2021 https://blockclubchicago.org/2021/02/05/chicago-slow-vaccine-rollout-among-worst-in-nation-coronavirus-appointment-is-like-the-hunger-games/
2. Jacob Nielsen (1994, updated 2020). *10 Usability Heuristics for User Interface Design*. https://www.nngroup.com/articles/ten-usability-heuristics/
3. Anielle Peterhans, Tina Fassbind (2021). Sie gingen beim Impfen leer aus und fordern jetzt eine andere Lösung. *Tagesanzeiger* 10 May 2021.

4. Chris Showell and Paul Turner (2013). The PLU problem: are we designing personal ehealth for people like us? *Stud Health Technol Inform*. 2013;183:276-80.
5. Patrice Siegrist (2020). Corona-Impfung in Zürich: 100'000 Zugriffe und 60'000 Anrufe – Impftermine sofort weg. *Tagesanzeiger* 30 Dec 2020.
6. Michael Twidale, David Nichols, and Christopher Lueg (2021). Everyone Everywhere: A Distributed and Embedded Paradigm for Usability. *J Assoc Inf Sci Technol*. 2021;1–13., Wiley. DOI: 10.1002/asi.24465

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