

OneTwentyOne: Preventive Medicine Infrastructure

The facts

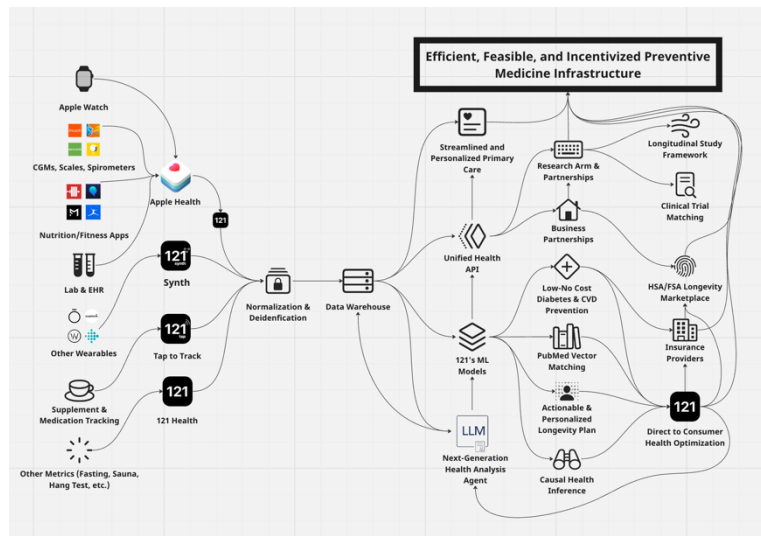
Longevity is hot. Just read the headlines. Andrew Huberman is bringing the latest science to millions. Bryan Johnson is radically applying it to himself. And Peter Attia is building a longevity-focused primary care practice. What underlines all of this: *a societal and scientific acknowledgement of aging as a decelerable, and perhaps reversible, biological process.*

This is the classic cycle of technology: scientific advancements are made, society accepts them, the rich and powerful implement them, after which they become integrated with the rest of society. We're clearly struggling with the last part. While Huberman, Johnson, and Attia create media that showcase these advancements, they have three distinct ways of affecting the last part of the cycle. Huberman publishes protocols for people to self-implement, Johnson open sources his methodology, and Attia gets the closest by running an actual primary care practice.

Each of these approaches are clearly insufficient. It's a full-time job to comb through your individual data, perform research, and separate the signal from the noise. Not to mention the arduous work of making that signal actionable and iterable. And, oftentimes, the only reward is an improvement in numbers, with no tangible improvement in one's quality of life. An incredible amount of friction. This is why Attia's private practice charges \$150k per year to do this for you.

Our big picture

People want to live healthier for longer, and advancements in our understanding of aging are making it possible. A shift from reactive to preventive medicine is inevitable. But current attempts lack unification, personalization, and actionability. We're going to create an incentive-based, unified system to reduce this friction.



Regardless of the implementation, the keystone of this abstraction is a rock-solid data processing system, represented by the left side of this graphic. Such a system enables an endless set of compounding possibilities. One path we see is illustrated on the right-hand side of the graphic.

A unified data structure

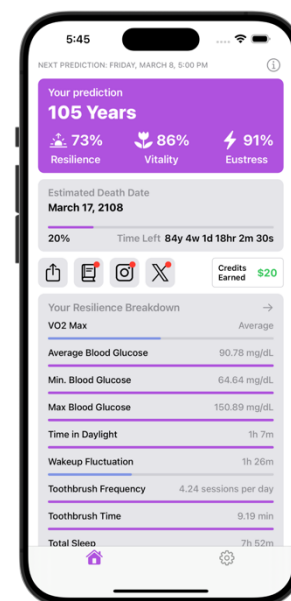
How can this requisite data structure be built? Apple Health leaves a few clues. Released in 2014, Apple Health has capabilities to track a suite of 90+ biometrics, making it a natural tool for the self-motivated health optimizer to keep their bearings. Yet, in classic Apple fashion, it's remained an unopinionated data display app since inception. Regardless, it's the industry standard for health devices and apps to sync data to Apple Health. In terms of metrics tracked, Apple Health is a "superset": specialized apps (MyFitnessPal, Whoop, Oura Ring, etc.) sync all the data types they can to Apple Health. Apple Watches, for example, sync around 500,000 data points per year across 60+ metrics to Apple Health. The Apple HealthKit API then enables developers to build off this existing ecosystem.

OneTwentyOne's first offering, 121 Health, capitalizes on this structure, leveraging Apple's legwork (pun intended) as the seed of a data system even more unified than that of Apple Health. It uses Apple Health's API to sync an initial dataset to our database, and then runs additional calculations to derive hundreds of unique metrics.¹ The 121 Health app further expands the system by integrating more aggressive and streamlined tracking tools, such as custom Apple Watch shortcuts, NFC-based supplement and medication tracking, and even cold-shower, sauna, and fasting tracking.

The best part: *we've already built this.*

Validating our data processing system

Our mouths watered when we discovered the amount of data Apple Watches track. In fact, there are over a hundred million of them sitting around in the USA alone. To build an initial user base and dataset, we built a model to calculate life expectancy based off 32 metrics tracked by Apple Health, around 25 of which are automatically tracked by an Apple Watch. This is just a "pre-launch" version of our app, but we've already expanded to 400 users, and accumulated over 200 million data points. More importantly, Apple has approved our extensive use of their API, first in their beta program, and then in an official App Store release. This serves as a crucial validation of both the infrastructure we've built, and the feasibility of our business plan.



Where we go from here

We've built the most comprehensive health data structure we can find. There's still room to expand it (lab data is next), but we've already reached the critical mass we need to start developing the right side

¹ Example: use raw sleep data from Apple Health to derive 20+ sleep-related metrics, like latency and efficiency.

of our fancy diagram. Our first proprietary ML model, Adam, which is a health metric causation engine, is implemented in a closed beta version of our app.² Adam enables us to create personalized and actionable health recommendations: for example, Adam has found that a major driver of many users' heart rate variability is their water consumption.³ From there, it can triangulate an optimal water intake and make a recommendation to the user, which they can accept or reject, and track in the "blueprint" section of our app.⁴

And the icing on the cake: we've built the framework to integrate each new model we build with our chatbot, "121" that enables users to talk with an intelligence that has full access to their health data and history.

The short-medium term: vertical infrastructure & partnerships

The 121 Health app can certainly be a neat business on its own. By catering to the growing niche of those interested in improving their health and longevity, a lucrative subscription-based business model naturally arises. Since users can access all their health data and model output through our chatbot, the 121 Health app will enjoy riding the AI wave on the foundation of our data infrastructure.

Yet in just a few more steps, we can transform the 121 Health platform into a fully extensible preventive medicine system. In the short term, it's feasible to expand vertically by developing a personalized marketplace for blood testing, supplements, and other longevity tools. Controlling these avenues won't just enable a streamlined user experience but will drive costs down, encouraging more to use our app as their preventive medicine solution. Then, after the momentum builds, we add doctors to the platform to add a layer of trust and enable distribution of longevity-focused medications.⁵

And to pay it forward, we can open our health API, integrating with existing businesses who want to expand the health data they have on their users and perform their own analysis. After that, we can then partner with researchers to further characterize aging as a complex interplay of trackable metrics, or even match our userbase to clinical trials, expediting the very longevity research that serves as the foundation for our models.

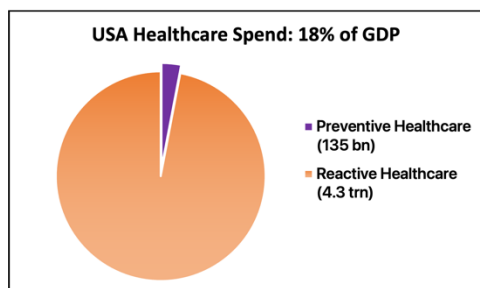
² We call the pre-launch version of our app "v0." This app tells, but does not show. "v1," in closed beta, grants our users access to directly actionable, personalized insights.

³ Adam is trained individually on each user. Although this requires lots of repeated training it enables the level of personalization we need. Heart rate variability is a crucial biometric for longevity, representing how parasympathetically driven your body currently is. It's notoriously a difficult metric to improve.

⁴ A clear hurdle is getting users to track certain metrics. While Adam handles null values gracefully, we're prototyping streamlined ways to track certain metrics, such as NFC-enabled "Tap to Track" water tags.

⁵ It's worth noting that we're open to expanding either vertically or horizontally, and will decide on a case-by-case basis whether OneTwentyOne should develop its own solutions or partner with others.

The long game: integration with insurance companies



Something is still missing from the big picture. This country is spending 4.5 trillion on healthcare annually,⁶ just 3% of which is spent on preventive practice.⁷ Our long-term vision is to decrease the total size of this pie through dominating and expanding the now tiny portion spent on preventive healthcare.

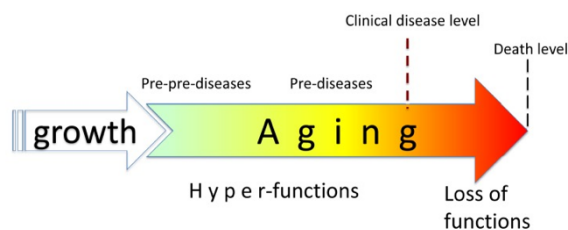
After the short-medium term, we'll have proven our ability to drastically increase the quality of our user's lives with our comprehensive preventive medicine infrastructure. But to affect major change, the solution is not to forever stand separate from the existing healthcare machine, but to integrate with it, gradually shifting it from reactive to preventive. This is how we shift the paradigm.

Consider health insurance companies. Broadly, their profits are defined as the difference in the premiums they charge and the costs they pay for healthcare. They're incentivized to widen this gap, and are seeking cost effective ways to do so. Independent Health, for example, partners with FitWorks, an at-home workout app. If businesses agree to (1) license this app through Independent Health and (2) incentivize their employees to use it through reduced healthcare costs or gift cards, they're offered reduced premiums. While this is just one example, it shows that insurance companies are beginning to recognize the potential of preventive medicine offerings to improve their business models.

OneTwentyOne has the potential to do so much better. A stunning one in four⁸ healthcare dollars are spent on those with diabetes. We propose to license a highly efficient subset of it 121 Health's features to combat diabetes, which has the potential to result in an incredible reduction of healthcare costs.

A streamlined, low-no cost diabetes program

Type II diabetes is understood to be a progressive disease. Type II diabetes, or metabolic syndrome in general, is characterized as a loss of the body's ability to utilize energy. It's diagnosed as "pre-diabetes" or diabetes based on blood test cutoffs for average blood glucose and fasting blood



⁶ [Peter G. Peterson Foundation](#)

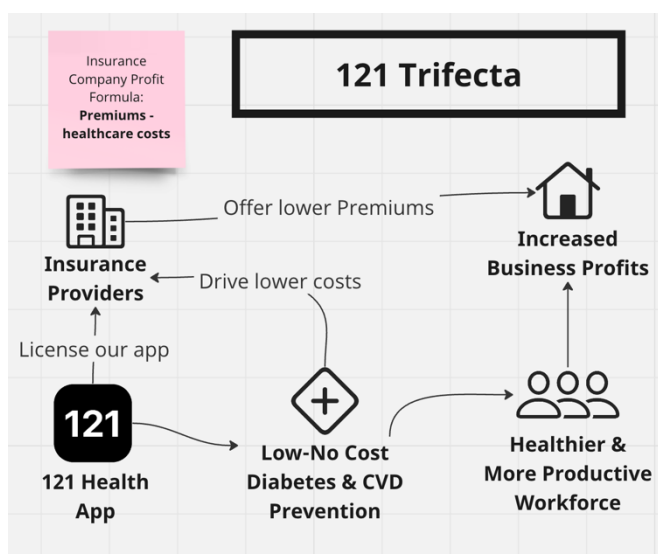
⁷ [Missed Prevention Opportunities](#)

⁸ [Economic Costs of Diabetes in the U.S. in 2022](#)

glucose. Yet it's helpful and accurate to think of this disease as a continuum. In most, diabetes-level insulin resistance takes decades to develop. This yields a notion of "pre-pre-diabetes" and even "pre-pre-pre-diabetes," etc.⁹ The most powerful fact here: with just a few lifestyle interventions and a reasonable level of adherence, diabetes can be prevented before retirement age, if not entirely.¹⁰ The problem: no proper solution exists to incentivize people make these interventions. Our minds simply don't think in the decades-long timeline required. Enter the 121 trifecta.

Moving the needle with the 121 Trifecta

1. We incentivize insurance companies by showing how our technology can reduce their healthcare costs, improving their margins.
2. We incentivize businesses through lower insurance premiums and a more productive workforce.
3. We incentive the workforce because they get paid (through reduced co-pays, gift card rewards for adherence, etc.) to improve their health.



This is how we leverage the existing research with our data infrastructure and ML models to begin to truly make preventive medicine a reality. While the details are all subject to change, this methodology can explode our userbase into the millions. But more importantly, our focus on data infrastructure gives us the ability to incentivize a true shift to preventive medicine. The 4.5 trillion number will drop, yet the relative portion spent on prevention will increase, leading to a more productive, healthier, and happier world.

⁹ [Disease or not, aging is easily treatable](#)

¹⁰ For the skeptical (uninitiated) reader, you can enter the rabbit hole [here](#)