



**SE MAG**

**Here's to  
your health!**



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TOULOUSE SCHOOL OF ECONOMICS

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## KNOWLEDGE IS POWER

This magazine is part of TSE's strategic pivot towards shaping the leaders of tomorrow. In line with our researchers' focus on the Common Good, each issue aims to provide the public with scientific insights about the 21st-century challenges that concern us all.

Younger readers, we want to inform, inspire and empower you to take action and make a difference!

We want to hear from you! Got an idea for an article? Share it! Confused about a concept? Ask away! Just want to say hi? We're all for it!

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## EXPLORE AND LEARN



Find all the sources referenced in creating this magazine in our bibliography.



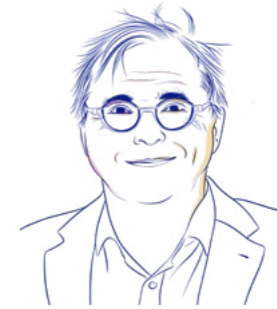
## BUILDING BRIDGES

Founded by Jean Tirole in 2011, the Institute for Advanced Study in Toulouse (IAST) is a social science research center dedicated to bridging disciplines and inspiring experts to engage with a diverse range of fields.



Its success led to the creation of TSE's Department of Social and Behavioral Sciences in January 2023, a free-thinking hub where researchers can draw on a glittering array of talent, perspectives, and cutting-edge tools.

# Taking the pulse



Today's TSE students came of age in the aftermath of a global pandemic. Many of us lost loved ones. We witnessed the vulnerability of our health services and supply chains. We promised to build back better.

Have we learned these painful lessons? Are we spending enough on health systems and research to protect us from new threats? Are we doing enough to safeguard our own health?

It's not too late to improve our answers. In the following pages our researchers discuss how to **EAT** and **MOVE, SHARE** and **CARE** to look after our bodies, minds... and each other. They also explain how the ingenuity of economics and AI can help us **CREATE** and **INNOVATE** our way to a healthier future.

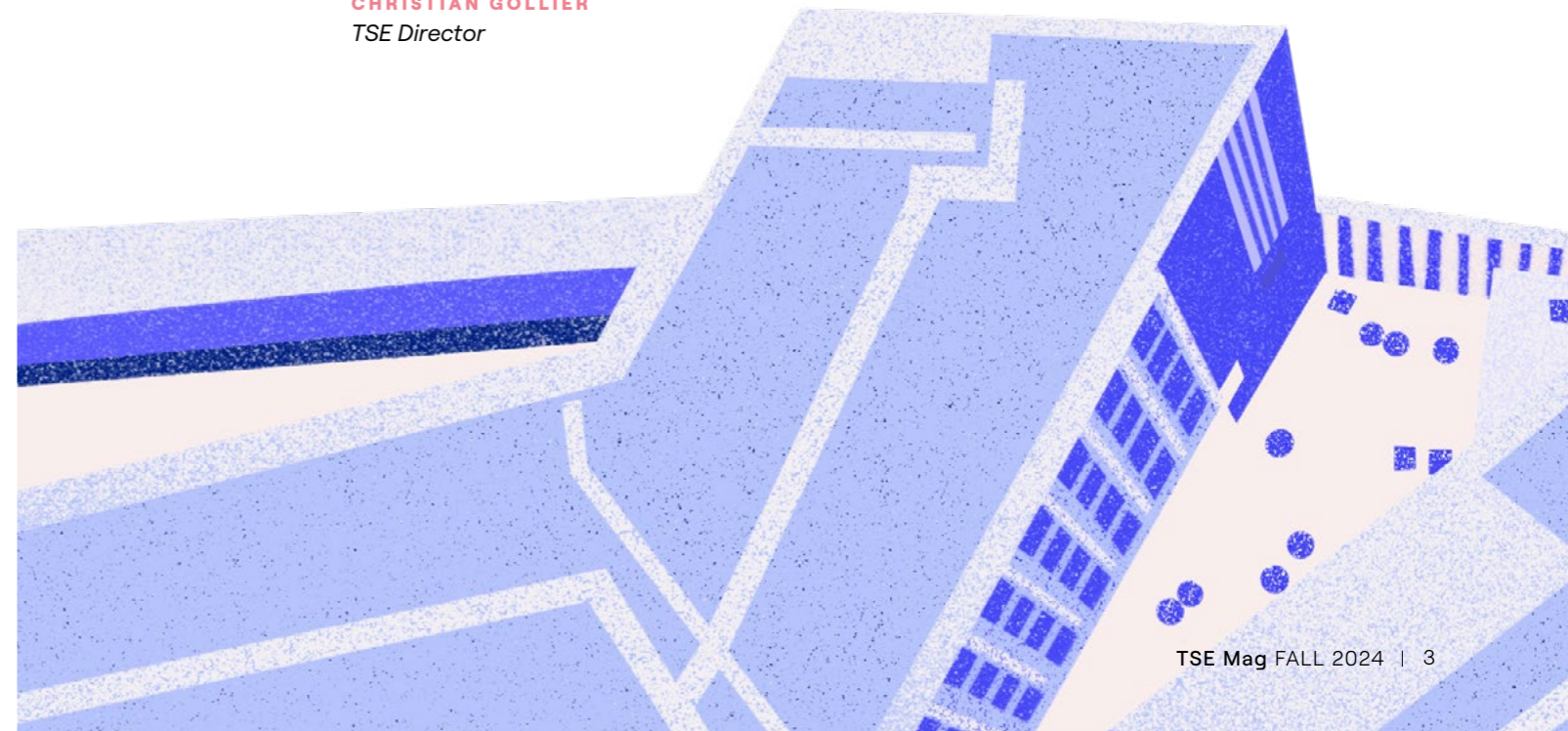
TSE has a wealth of experience in these subjects, and you can explore this treasure trove of knowledge by visiting our [website](#).

Please send us your thoughts and ideas. TSE economists want to stimulate your minds and we love a healthy debate!

Wishing you well and an enjoyable read,

**CHRISTIAN GOLLIER**

*TSE Director*



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HEALTH OF NATIONS

# Economics is good for you



**Health underpins every aspect of society. Prioritizing health can help us live longer and better lives, foster growth, and promote global stability and security. TSE's Nobel laureate reviews some of today's key challenges and suggests how economics can help us stay in shape.**

Our health depends on a complex array of factors, including genetics, social determinants, care access, economic policies, and global cooperation. The challenges are closely interlinked – with diverse ‘threat multipliers’ such as globalization and climate change – and fraught with inequalities based on wealth, race, and geography.

insurance systems. Big Tech platforms can make increasingly accurate predictions about our risk of illness, based on our purchases and online activity. This puts them in a position to offer cheap insurance to ‘healthier’ customers, leading to devastating inequality.

**FRANCE IS GETTING OLDER**

Higher life expectancy is a great achievement, but it increases the burden of caring for the elderly. New care homes must be built and pension systems balanced, either by reducing benefits, higher contributions, or raising the retirement age. We need a unified system that is transparent, fair and flexible.

**HOW CAN ECONOMISTS HELP?**

The task of economics is to identify the institutions and policies that will make the world a better place. TSE researchers engage with a wide range of disciplines including epidemiology, psychology, medicine, and biology. In line with the

As a global average, a child born in 2019 had a life expectancy of **73 years**

*As microbes evolve protection to the drugs used to fight them, antibiotic resistance threatens us all. Driven by overuse of antibiotics in humans, animals and plants, it puts many medical advances at risk.*

New infectious diseases, such as Covid-19, capture the limelight while **antibiotic resistance** and other pandemics gain strength in the shadows. Chronic conditions like heart disease, diabetes, and cancer, amplified by poor diets and sedentary lifestyles, are among the leading killers. Air and water pollution are not far behind. Obesity and mental health disorders are rising; alcohol and drug addiction is widespread.

**BIG DATA IS WATCHING YOU**

Health care is also in the eye of the digital storm. New technologies promise advances in efficiency, prevention, access, diagnosis and treatment. But the information age could also destroy health

**One Health** approach, they collaborate with care providers and policymakers to highlight social, economic, and environmental factors and propose more effective solutions.

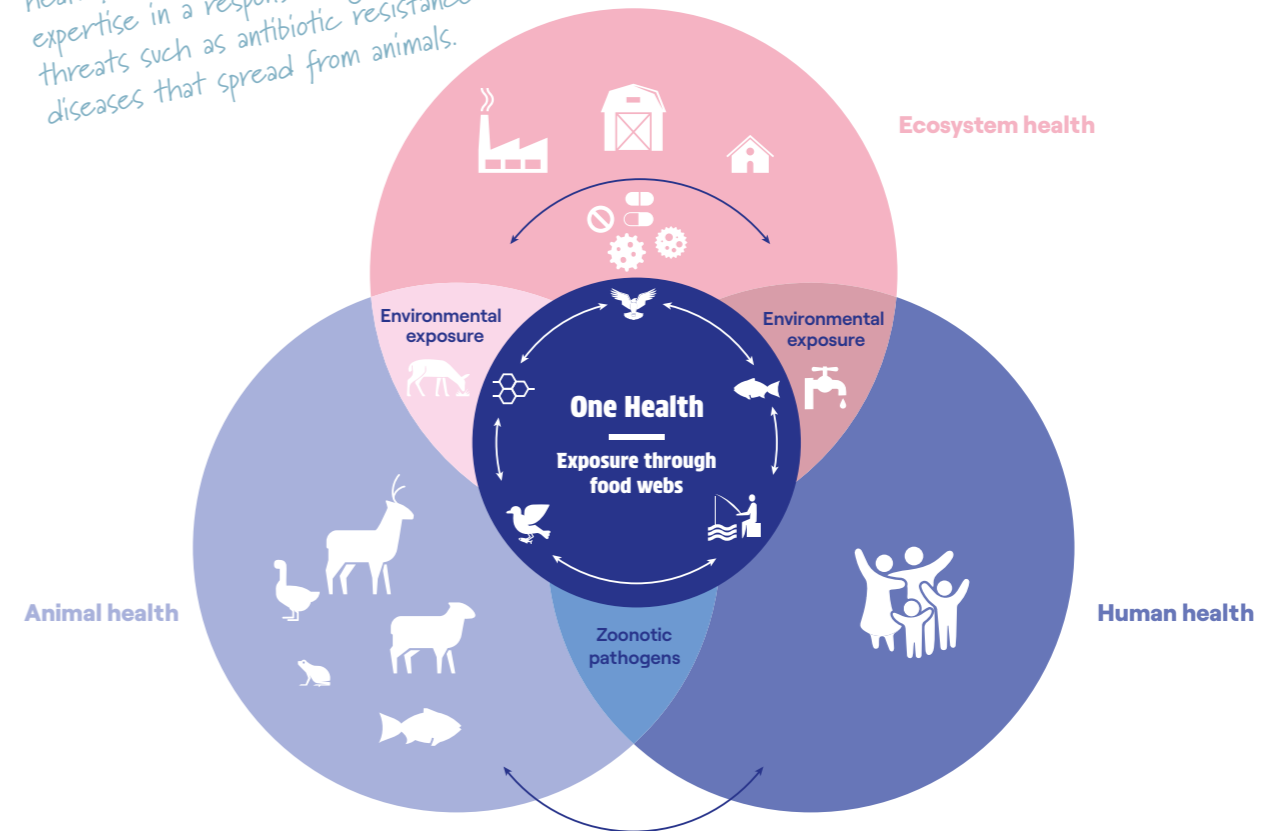
Our analytical tools can help to identify health trends, predict the spread of a disease, and optimize resources during a crisis. Above all, economic expertise is essential to evaluate the cost-effectiveness of policies and help governments to fund research efficiently. Economists can also pinpoint the incentives that push firms to make healthier products, while behavioral insights can encourage people to quit smoking or eat more greens.

**HEALTH BY NUMBERS**

Saving lives presents us with terrible dilemmas. Life is not priceless. You may claim otherwise, but there is a limit to how much you would pay for a safer car or a healthier meal. Hospitals are often forced to choose who will live and die. Economics can help us to make these disturbing but inescapable calculations about existing budgets. For a brighter future, it can also help us rethink how we allocate our collective resources. ●

**8.9 million deaths** are linked to heart disease, the world's leading cause of death in 2019

*The One Health strategy combines public health, veterinary, and environmental expertise in a response to global health threats such as antibiotic resistance and diseases that spread from animals.*



Source: USGS Ecosystems Mission Area, 2023

# LIVE LONG AND PROSPER

How can our bodies give us longer, happier lives? In this section, TSE experts offer advice on what to eat and how to stay in shape.



LET'S GET MOVING

# Is modern life bad for us?



JONATHAN STIEGLITZ

Medical and public health advances have saved countless lives, but modern lifestyles have also led to the rise of obesity, type 2 diabetes, and many other chronic non-infectious diseases which may have been rare or absent in our evolutionary past. Rather than holding up professional athletes, bodybuilders and YouTube influencers as healthy ideals, IAST's Scientific Director says we also have a lot to learn from Amazonian villagers.

Shielded by dense jungle and the soaring Andes, the Tsimane people of Bolivia's lowlands have much in common with the hunters, foragers and small-scale farmers of our evolutionary past. They are very physically active and eat a high-fiber diet of complex carbohydrates like rice, manioc and plantain, supplemented with fish, game, fruit, nuts, and honey.

**An 80-year-old Tsimane has the coronary arterial health of an American in their 50s**

For the past two decades, Jonathan Stieglitz has co-directed the Tsimane Health and Life History Project to produce anthropological and biomedical research that regularly hits the headlines, revealing the benefits of non-sedentary living. The Tsimane have some of the world's cleanest coronary arteries, lowest prevalence of atrial fibrillation, and escape many chronic non-infectious diseases. Riddled with parasites and infections, they



also tend to have much healthier brains, livers, and prostates than Westerners.

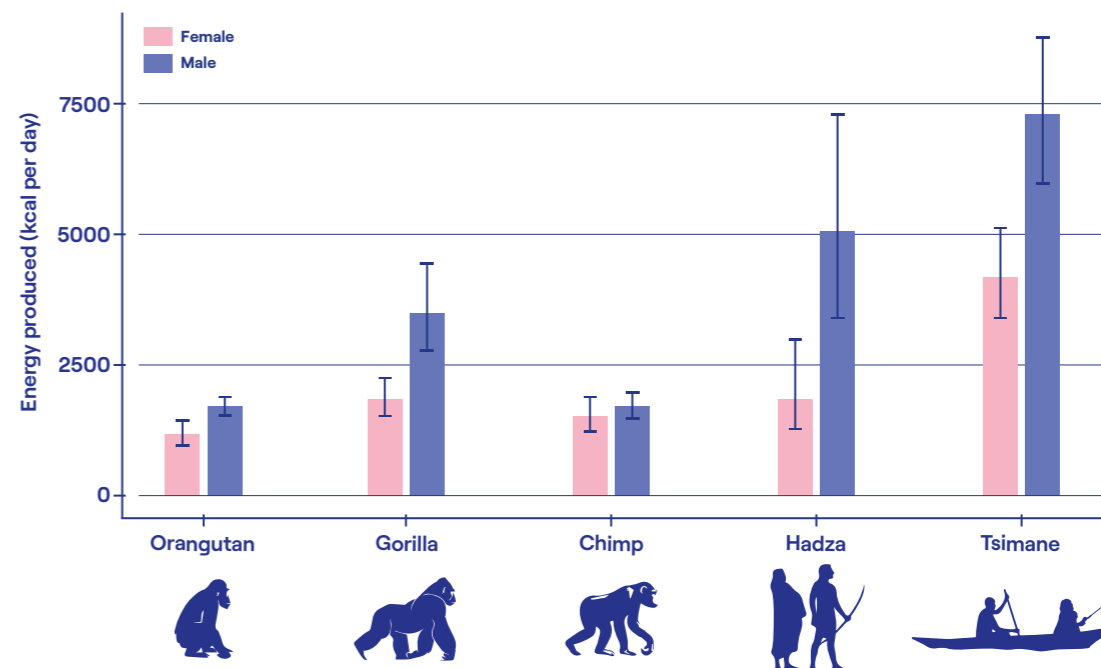
**CURSE OF ABUNDANCE**

A recent paper by Jonathan and former IAST colleagues compares how great apes including humans in subsistence societies like the Tsimane get food. Surprisingly, humans expend a lot more energy than other apes: walking long distances, climbing trees, digging tubers, and clearing trees. However, they also earn lots of calories in much less time. This risky strategy may have allowed humans to evolve valuable but energy-thirsty traits like large brains, high fertility and long lifespans.

Many of today's health problems stem from our runaway success in overcoming the challenges of food scarcity. Our bodies evolved to be highly physically active, and our brains seek the greatest reward for the least effort. Surrounded by instant and abundant calories due to rapid environmental changes, evolved human biology is now mismatched with our current lifestyles.

**CALORIE COSTS**

Humans can afford to burn more energy (and less time) on subsistence than other great apes, because they acquire much more energy per hour. Tsimane horticulturalists have even higher return rates than Hadza hunter-gatherers, adding to evidence that farming provides greater energy gains (per time spent working).



Source: The energetics of uniquely human subsistence strategies, 2021

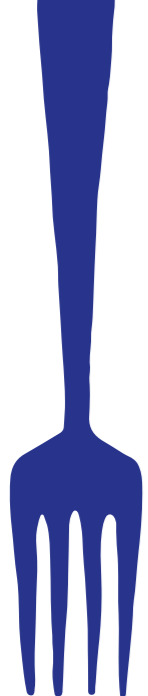
**AVERAGE STEPS PER DAY:**

Tsimane adults **17,000**  
US adults **5,100**

More than **80%** of adolescents don't do enough exercise

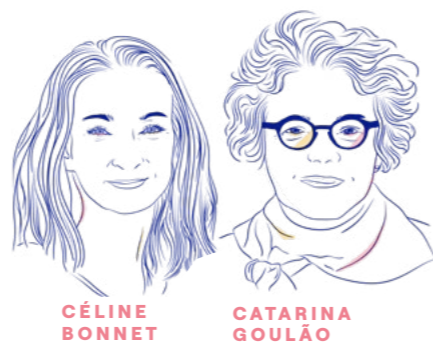
Globally, **1 in 4** adults do not meet recommended levels of physical activity. Most Tsimane do (71%)





KEEP IT REAL

# Junk food is deadly



CÉLINE BONNET

CATARINA GOULÃO

Healthy eating offers powerful protection against the world's biggest killers. It dramatically reduces the risk of non-communicable chronic diseases (NCDs) – such as heart conditions, diabetes and cancer – that account for three quarters of global deaths. We asked TSE experts on the economics of food, health and obesity about how to eat better.

Increasing prices of sugary drinks by 1 cent per ounce could save more than **\$17 billion** in US healthcare costs

## WHAT'S WRONG WITH ULTRA-PROCESSED FOOD?

**CATARINA GOULÃO:** Most food is processed to some extent but today's industrial transformations generally have too much salt, fat, and sugar, not enough fiber and vitamins, and are linked to obesity and NCDs. Ultra processed foods (UPFs) are an increasingly large part of our diets, 36% in 2015 against 14% in early 90s.

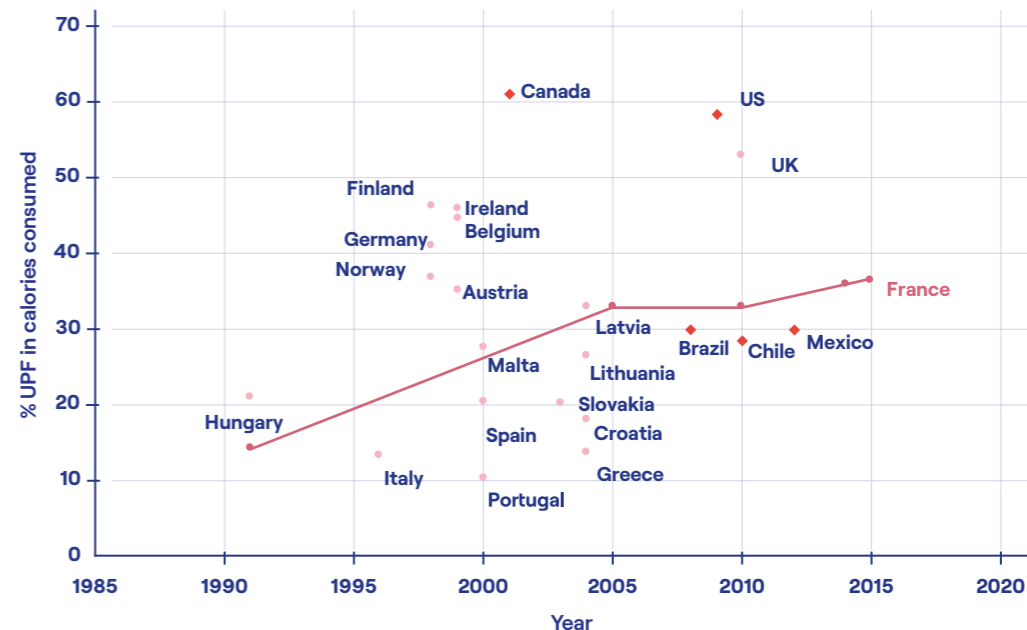
Comparing French families over 10 years, we found UPF consumption is linked to obesity, poverty, rural, northern and eastern regions. Within households, only drastic changes such as the arrival of young children or becoming single appear to encourage UPF-consumption. Our data also suggests younger generations eat more UPF food because their preferences have been warped by greater exposure to UPFs. If so, the table is set for French diets to get even worse.

Worldwide adult obesity has **doubled** since 1990 while adolescent obesity has **quadrupled**



## INDUSTRIAL DIETS

French citizens are eating more ultra-processed food than ever before



Source: Adapted from Bonnet and Goulão (2024). Values for France are based on the authors' own calculations, while data for other countries were gathered from existing literature. For more details, see their paper.



## HOW CAN GOVERNMENTS IMPROVE OUR DIETS?

**CÉLINE BONNET:** Food labels and recommendation campaigns are common policy tools. Pierre Dubois and I found that France's Nutriscore label successfully promoted highly nutritional products. But **sin taxes** and other policies may be better suited for discouraging junk food. For instance, my research with Valérie Orozco calls for restrictions on fast-food restaurants because they are linked to higher local obesity. Catarina Goulão with Helmuth Cremer and Jean-Marie Lozachmeur have shown that taxing grams of sugar needs to be combined with taxing litres of soda to account for the industry's product reformulation in response to taxes.

*Sin taxes aim to reduce consumption of 'harmful' goods – such as alcohol, tobacco, UPFs, or gambling – by increasing their price.*

Taxes on specific junk foods can be undermined by firms and consumers switching to equally unhealthy products. A tax on sugary drinks may increase consumption of cookies, for example, or a tax on sugar may encourage the food industry to add more salt, fat and artificial sweeteners of doubtful health consequences.

Policies that take aim at UPFs in general – such as Colombia's tax on products laden with sugar, salt and fat – are likely to be more effective. We show that consumers switch to non-UPF options when all UPFs get more expensive. Governments should also target vulnerable populations like the young and poor, as they seem particularly receptive to price changes. ●



**2 million deaths** per year are linked to eating too much salt

MEAL IDEALS

# 3V vision



MARION DESQUILBET

The message is clear. As well as damaging our bodies, poor dietary choices place huge strain on health services, biodiversity and the environment. But are consumers buying it? In a recent study, Marion Desquilbet tracked receipts in 122 French hypermarkets to see how closely their customers follow the '3V' rule for a varied, plant-based diet that avoids highly processed foods.

Her team found that the average shopping basket fell far short of 3V guidelines: nearly two-thirds of its calories were from ultra-processed food (UPFs); animal products made up 41%. Variety was just 25% compared to the ideal, while more varied baskets contained less UPFs. Healthy choices can save money: Marion's

3V-based basket cut shopping bills by nearly 5%. She calls for 3V subsidies and UPF taxes, and urges hypermarkets to rethink their food arrangements and promotions. ●



## WHAT'S THE 3V DIET?

Based on traditional and scientifically based healthy diets, and 2050 sustainability scenarios, the 3V rule offers three simple recommendations:

V is for...

**VÉGÉTAL**  
Eat plants.



Just **15%** of calories from animal products

**VRAI**  
Eat real.



No more than **15%** of calories from UPFs

**VARIÉ**  
Eat variety.



Ideally organic, local and seasonal

Not all vegetarian diets necessarily have health benefits, because of potential adverse effects of UPFs on nutritional quality and healthiness of diet.

# SMART CHOICES Health hacks

Kick-start your journey to better health with these wellness picks curated by the TSE community.

## FEEL BETTER LIVE MORE+

Dr. Chatterjee simplifies health with expert advice and life-hacks. Join him and top health experts to debunk myths and transform how you eat, sleep, move, and relax.



*gaba*

Dive into mesmerizing storytelling soundscapes and meditations by Adam Martin. It's a surprising audio experience you won't want to miss.

*Yuka*

Make better choices about food and cosmetics with this independent app. It can decode product labels and suggest healthier alternatives.



*ShutEye*

Track your sleep cycle with this program for deep, restorative rest. Or cut down on screens and caffeine with the 10-3-2-1-0 sleep rule.

## MAJOR MOVEMENT

From easing pains to building muscles, learn to love your body with this popular French physiotherapist.



## TECH SAVVY

Smart devices can get you off the sofa and into shape, with simple reminders to stand up, stretch, or go for a walk. ●





# SOCIAL HEALTH

We must look after each other. In this section, our experts examine why the poor get unfair treatment, mental health around the world, and how happiness depends on human connections.



CASH OR CARE?

# The health and wealth gap



Designing an equitable and efficient health care system has become increasingly important in light of rising health inequality: low-income individuals have poorer health, shorter lives, and have benefited less from technological progress in medicine than their higher income counterparts. Yet simply making care more affordable may not be the solution to reducing health inequities. Angelique Acquatella explains why the most vulnerable do not always benefit from subsidized care.

**WHY IS IT SO DIFFICULT TO OVERCOME HEALTH INEQUALITIES?**

Despite suffering from worse health, the poor use fewer health care resources than their wealthier counterparts. Even when care is free, low-income individuals are less likely to use health care services. In

other markets, low-income individuals are usually highly price-sensitive. In the health care market, however, I find that the poor are *less* responsive to changes in health care prices. This is because a

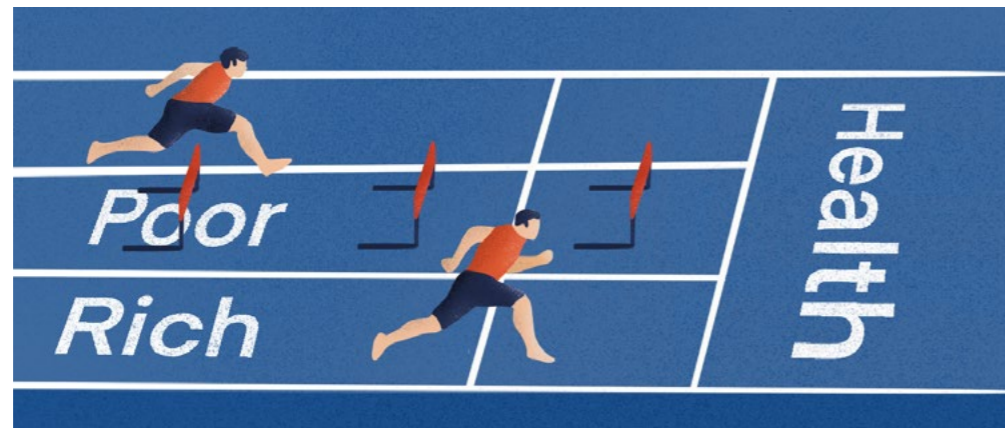
disproportionate share of them use zero health care, even when it is free.

**WHY WOULD PEOPLE IN NEED AVOID GETTING TREATED?**

The key insight is that cash constraints present the poor with very different trade-offs. Giving up resources is very costly for those with low incomes: an individual with chronic back pain may be well aware that physical therapy is valuable, but she may not be willing to forgo her monthly rent payment in order to go to the doctor. They must decide whether the benefits of care outweigh other basic needs.

Even when treatment is free, there are social determinants that raise the

From 2001-2014, the richest Americans gained approximately 3 years in longevity, but the poorest Americans experienced no gains



transaction costs of using care. Taking the bus to go to the doctor, getting a day off from work, or finding temporary childcare, are factors that contribute to the ability to take up care, above and beyond the direct costs of the doctor's visit.

For example, the direct provision of low-cost primary care services in low-income neighborhoods significantly reduced mortality among beneficiaries (Bailey and Goodman-Bacon, 2015). We need better hospitals and health centers in poor areas, with better transport and information about how to access care. ●

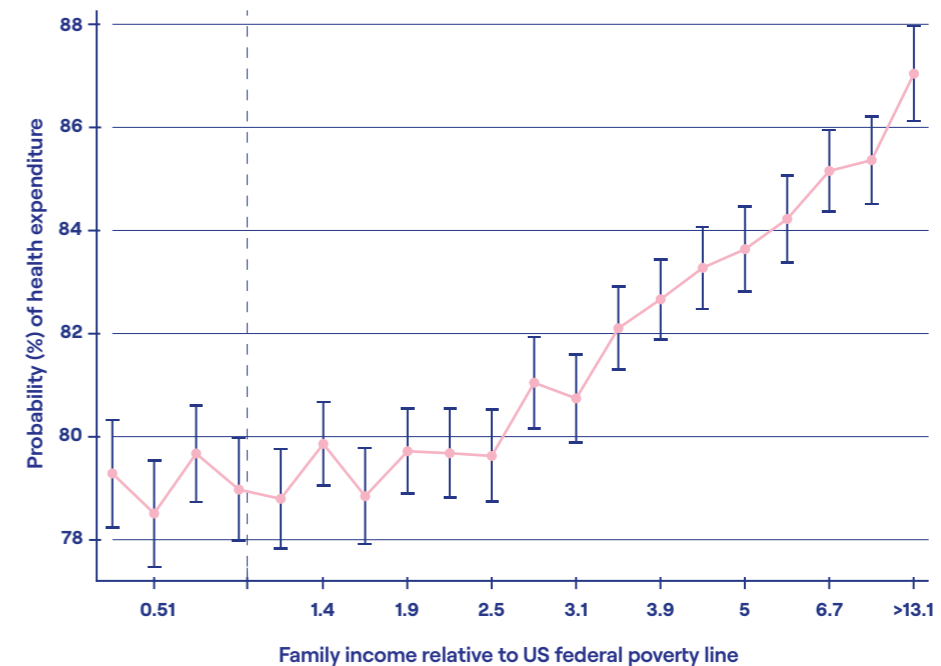
**HOW CAN THESE INSIGHTS HELP TO ENSURE ALL CITIZENS OBTAIN APPROPRIATE CARE?**

Directly targeting the social determinants of health is a crucial first step to reducing health inequality. Public health policy must go beyond health care subsidies directly targeting the transaction costs that make it difficult for disadvantaged individuals to participate in the health care system.

Many governments use health subsidies to provide benefits. These are often financed through tax revenue. In the US, for example, funding for Medicaid and other programs is sent to care providers and insurers to reduce health costs for low-income families.

**WHO USES HEALTH CARE?**

Despite poorer health, the poor are *less* likely to use health care services than high-income individuals.



Source: Health Care Demand Among Low-Income Individuals, 2024

MENTAL HEALTH

# Why are girls less happy?



OLYMPIA CAMPBELL

Women struggle with anxiety and depression more than men, often almost twice as much. A global study by Olympia Campbell (IAST) and her coauthors investigates whether this gender gap in mental health can be found in teenagers from different cultures.

Unlike previous research on **WEIRD** societies, Olympia's study uses multiple measures of mental health collected in the same way across 74 countries. Her results confirm that teen girls report lower well-being than boys, especially in terms of psychological distress and life satisfaction. But the size of the gender gap is highly variable and even reversed in some places, such as Saudi Arabia and Jordan, suggesting it is rooted in social structures rather than biological differences.

Surprisingly, she finds larger **mental health** gaps in more gender-equal countries. "A possible explanation is that advances in equality often hide modern forms of sexism," says Olympia, "producing a gap

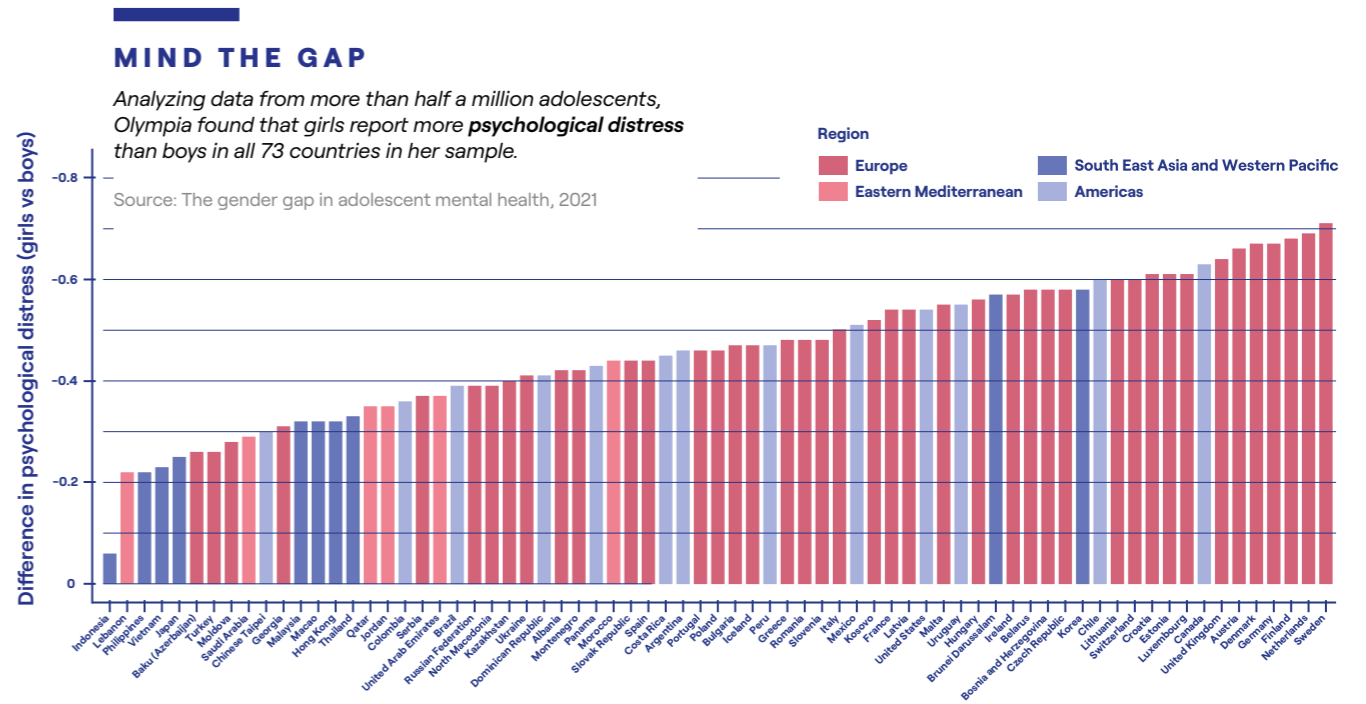
*We cannot understand human behavior by studying only WEIRD societies that are Western, Educated, Industrialized, Rich, and Democratic.*

*Olympia measures mental health in four ways... Life satisfaction is contentment with your life today. Psychological distress is how often you feel scared or sad, akin to measures of anxiety and depression. Hedonia is how often you feel joy. Eudaimonia is your sense of purpose and meaning.*

between expectations and reality whereby girls expect a great deal more equality than they find." She also points to the "multiple and often incompatible roles that women in gender-equal countries must balance", combining traditional and modern ideas about the ideal woman. It may be that clarity about a woman's role in society produces lower levels of distress in gender-unequal countries.

These challenges for modern women do not mean they prefer traditional gender roles. "Without better measures of sexism," Olympia adds, "we cannot know the true impact of social changes. Nor do we know how women will feel if advances in gender equality continue." They may well be much happier. ●

## Suicide is the 4<sup>th</sup> leading cause of death among 15- to 29-year-olds



MANVIR SINGH

## Does tech make us depressed?

Despite their startlingly healthy, communal and low-tech lives, the Tsimane seem just as likely to get depressed as Americans. Writing in **Wired**, Manvir Singh used research by TSE and IAST colleague Jonathan Stieglitz to challenge popular ideas about mental health.

The Tsimane live in small villages where family is everywhere, food is shared, and interactions are face to face. Internet and electrical devices are extremely rare. But physical activity and interdependence, which are supposed to improve well-being, appear to make the Tsimane more susceptible to depression.

Productivity depends so heavily on physical exertion and tight-knit social bonds that any rupture can be devastating. Accordingly, two of the things that most accurately predict Tsimane depression are bodily injury and social conflict. New technologies may turn Westerners into stay-at-home loners, but they also insulate us from the stresses of pre-modern life. ●



SOCIAL NETWORKS

# Nurture bonds



Human connection is essential to staying healthy. Friends and family make our lives longer, as well as happier, but are rarely prescribed by doctors. Social network scientist Marion Hoffman (IAST) has studied the link between social interactions and depression, teenage segregation and the spread of Covid-19. Here are her top tips for social health...

Invest effort in maintaining **strong ties** to gain intimacy, trust, and support that can prevent loneliness and mental health problems.

Combine these close bonds with a larger, diverse set of **weak ties** to access wider possibilities, such as job information, fresh perspectives, or a new hobby.

Aim for **resilience**. Friendship networks must not collapse when an individual tie is severed.

Socialize in diverse contexts to **burst bubbles** and connect with others. If political rows start over coffee, try playing squash instead! ●

## Take care of your self

Mental health is as important as your physical health. Throughout life, we all have to overcome hardships that can trigger emotions that are hard to deal with: anxiety, sadness, fear, etc. It's OK to ask for help!

Lots of great tips and advice can be found online.



## Social isolation

- Isolation increases risk of stroke by **32%**, dementia by **50%**, early death by **29%**
- **330 million adults** endure weeks at a time without speaking to family or friends
- **Loneliness is more deadly than obesity**
- **One in five of adults** have no one they can ask for help

# GET INSPIRED Feel better

## I want to be useful

Age is no barrier! Founded by Léa Moukanas when she was 15, the charity Aïda now supports 2,200 teenagers and young adult cancer patients in France.



## A Woman's Voice

Join an eye-opening adventure into women's health in this graphic novel by former Toulouse student Aude Mermilliod.



## INSIDE OUT

This film highlights the importance of engaging with emotions like Joy, Sadness, Anger, Fear, and Disgust.

## SEX EDUCATION

Follow teenagers Otis and Maeve as they set up a clandestine sex therapy clinic, tackling relationships, insecurity and prejudice.



## PANDEMIC

Discover Toulouse's vibrant board gaming scene and dive into 'Pandemic', in which players work together to fight disease outbreaks.

## Knitting

Slow down and embrace the health benefits of knitting. It sharpens your focus and creativity, offering escape from daily stress. ●

# SCIENCE FOR THE COMMON GOOD

New techniques are transforming health care. In this section, TSE economists discuss how to use game theory and AI innovation to advance the frontiers of medical science.

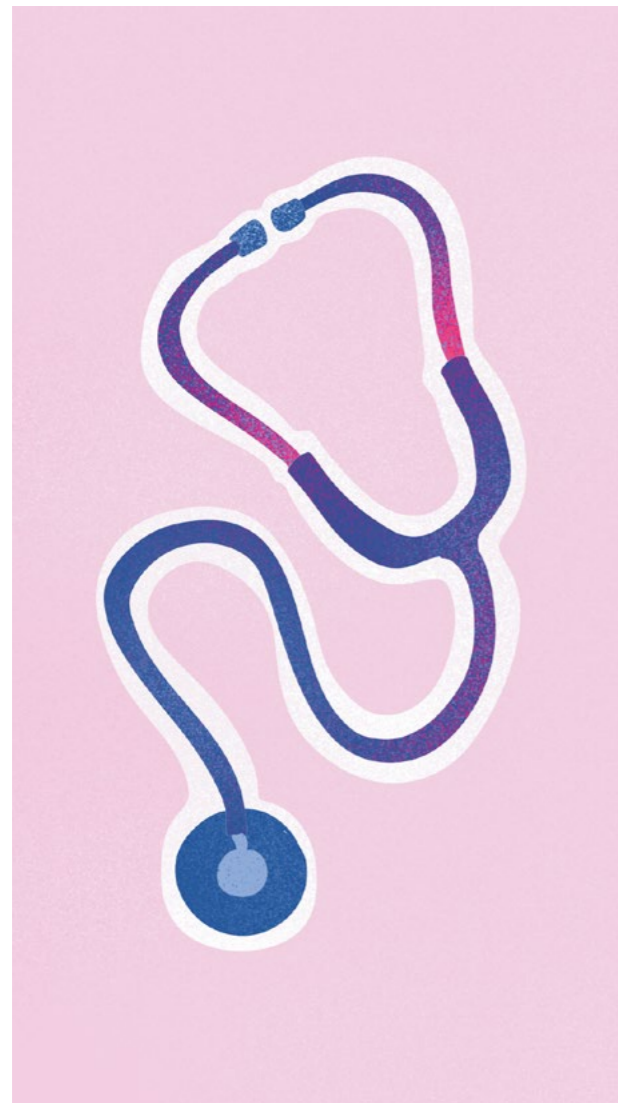


KNOW YOUR ENEMY

# A game of life and death



In the war on cancer, humanity suffers heavy losses. But the tide may be turning thanks to new interdisciplinary research, including the work of TSE economists. Péter Bayer is taking game theory into battle against this shape-shifting destroyer, helping doctors to marshal their forces and save lives.



### WHY IS CANCER SUCH AN ELUSIVE OPPONENT?

Cancer differs from most other diseases in that your own rapidly mutating cells are making you ill. Chemotherapy drugs can destroy the cancer cells, but they also kill fast-dividing normal cells, leading to painful side effects. The maximum tolerated dose (MTD) is usually given to kill as many cancer cells as possible without causing unacceptable harm to the patient.

Unfortunately, cancer's fast mutation makes it very resilient. If a treatment damages it a little, it can build itself back up the same way; if treatment damages it a lot, it may rebuild itself completely differently and become resistant. Adapting quickly to different threats, cancer's mutations can, for instance, allow it to 'hide' from or 'fight back' against the body's immune system.

Once cancer becomes metastatic, spreading to vital organs, it tends to be fatal. The first few MTD doses often work for a while, before resistance kicks in. Every successive type of drug tends to have the same outcome, until the patient dies.

**One in every six deaths are from cancer**

### HOW CAN GAME THEORY COME TO THE RESCUE?

As an economist, I use **game theory** to anticipate how cancer will respond to treatment. Therapy-sensitive cancer cells, resistant, and normal cells can be seen as 'players' interacting in a complex ecosystem. Flooding this environment with chemotherapy will wreak havoc on sensitive cells, but it also allows resistant cells to multiply without competition. In immunotherapy, drugs that target 'hiders' clear the way for 'fighters', and vice versa. Analyzing such games can identify the best treatment for each situation.

*Game theory is the mathematical tool for studying situations in which participants can impact each other's success. Players might be individuals, corporations, cancer cells, or computers; strategies represent their actions or the traits they are born with; payoffs could represent profit, happiness, or reproductive success.*

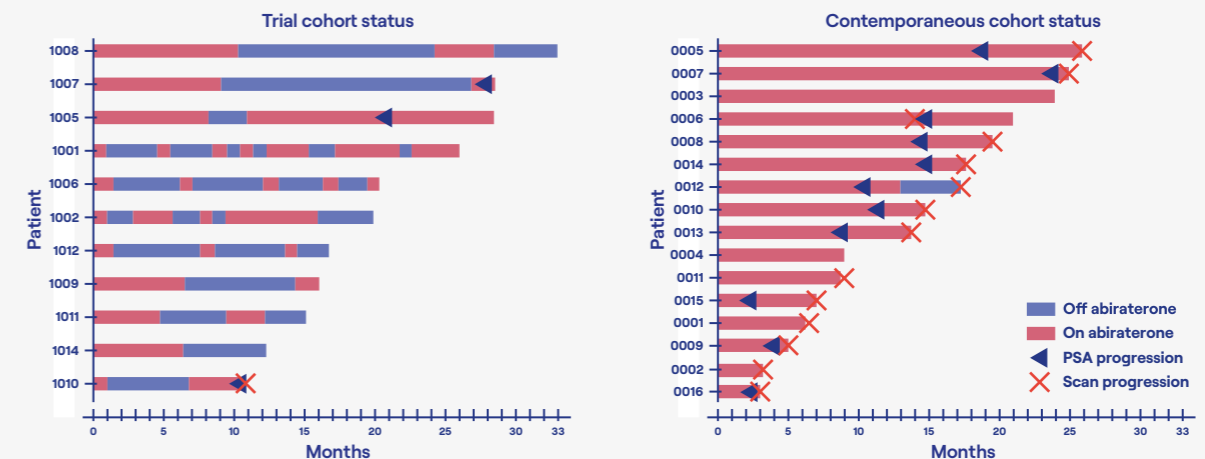


Inspired by game theory, adaptive therapy uses lower doses to try to manage the cancer and turn it into a chronic disease, rather than using MTD until all cancer cells are exterminated or the patient dies. Chemo drugs are expensive and toxic to patients, so this approach could save valuable resources, reduce suffering, and lengthen lives, as well as inspiring future medical advances and paradigm shifts about cancer treatment.

Even if we stick to the goal of eradication, game theory can be a game changer. Today's standard of care is to only switch medication once it stops working and cancer is fully resistant to it. However, one of game theory's main lessons is to keep changing the environment **before** cancer can adapt. By introducing a new drug only when the tumor has evolved a defense, the physician unwittingly helps cancer adapt. New research suggests these drugs can be more effective if applied together or in quick succession. ●

### GAME CHANGER

This graph shows results from the first clinical trial of adaptive therapy as of early 2018. Metastatic prostate cancer patients on adaptive therapy (left panel) get less treatment and survive longer than those receiving the current standard of care (right panel). Progression means therapy failure and, in this case, the patient's death.



Source: Integrating evolutionary dynamics into treatment of metastatic castrate-resistant prostate cancer, 2017



PIERRE DUBOIS

SCIENCE FOR OUR FUTURE

# Will AI heal the world?

Artificial intelligence is doing wonders for our health. But Europe must race to keep up with the biotech revolution, says the Director of TSE Health Center, finding ways to improve data access and boost innovation.

Over the past five years, the use of AI in clinical trials has grown exponentially. With the capacity to process staggering amounts of data, digital technologies allow researchers to move faster, cut costs, and explore exciting new techniques such as **digital twins**. They can also drive huge efficiency gains for hospitals, via telemedicine and the use of AI to improve workflow, clinical notes, scheduling, and triage.

*Data simulations, known as **digital twins**, have opened a new world of possibilities for analysis of medical drugs and devices. In the future, doctors may use virtual patients to customize our treatment.*

## AI RESEARCH NEEDS HUMANS

AI is not a substitute for doctors and scientists, it's complementary. For example, AI can find associations between genes and diseases which would otherwise be very difficult to detect; but humans who have scientific expertise are often better at weeding out false positives and other statistical errors before conducting clinical trials on the biomarkers and drugs targeted by AI.

## ACCESS TO DATA

AI advances also raise privacy and competition concerns about ownership, sharing and use of data. Our governments need to balance these fears against the risk of stifling innovation with excessive data restrictions. Europe must find ways to relax its data protection rules when it is in the public interest, providing access to standardized health data in a **sovereign cloud** and other carefully designed ecosystems.

*Unlike public or private clouds, a **sovereign cloud** stores data within national or EU borders and adheres to local data protection laws. This ensures sensitive information is treated according to regulatory standards.*

## FORWARD THINKING

Biomedical R&D is increasingly expensive. In the early 1990s, the cost of developing a new molecule was about \$800 million to \$1 billion. Today, it has tripled. AI may bring down these costs, but Europe must provide its biotech firms with the right mix of incentives and support. For instance, tax credits and guaranteed minimum purchases can be combined with a US-style research subsidy agency.

A far-sighted approach recognizes the price of inaction. The immense initial outlay required to develop new antibiotics, for example, will be dwarfed by the long-term costs of ignoring the rise of antibiotic resistance. If we fail to invest and improve the way we reward innovation, Europe will fall further behind the US and Asia and expose its citizens to future health crises. ●

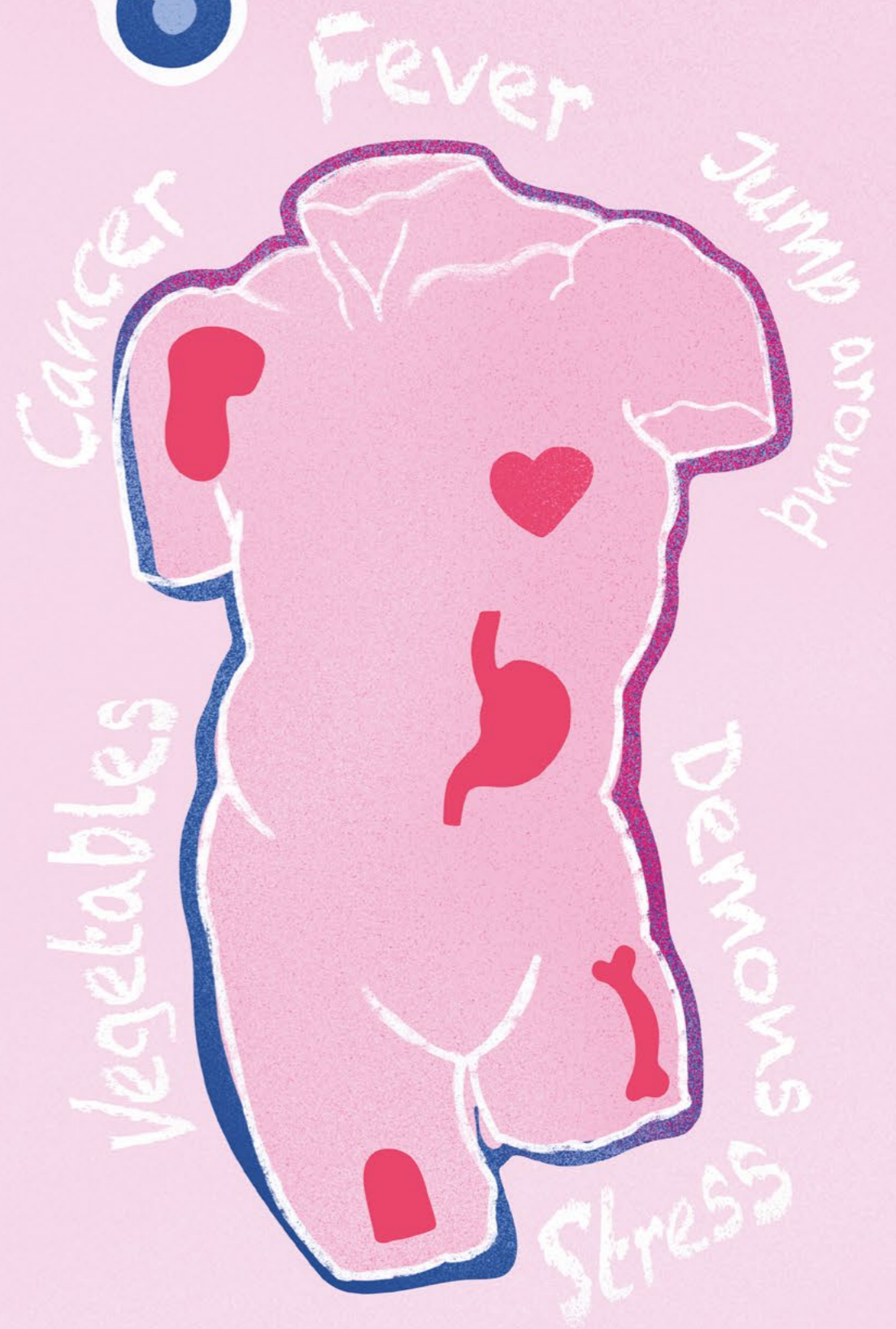


# THE PLAYLIST

## HEART BEATS

This collection celebrates songs about wellness, from mental struggles and heartache to overcoming illness and addiction. Enjoy tracks that highlight physical activity, the pleasures of food and drink, and the journey to find balance.

**Let the music heal your soul.**







## NEW GENERATION

# Caring for the future

Their careers have just begun, yet these TSE alumnae are already making their mark in health economics. They discuss their inspiration, how to make a positive impact, and their hopes and fears for the future.



**MATHILDE BERTELET**

Head of Data Science Team, Quinten Health  
**TSE Alumna - Master Statistics and Econometrics**

*Based in Paris, Mathilde leads a team of AI and data science experts developing intelligent healthcare solutions for pharmaceutical laboratories, healthcare agencies and hospitals.*

### "Stay curious"

**WHAT INSPIRED YOU TO BECOME A HEALTH ECONOMIST?**

The possibility to combine two fascinating fields: data science and healthcare. The healthcare ecosystem offers a unique blend of use cases and applying AI, allowing me to make a tangible impact.

TSE provided a solid foundation in advanced mathematics and statistics techniques, software manipulation and database management. This gave me the quantitative and analytical skills to tackle real-world health challenges.

**HOW DOES YOUR WORK MAKE AN IMPACT ON OTHERS?**

As a manager of a data science team, I oversee project realization and keep our

team fully operational and competitive. My day involves coordinating with various stakeholders and technical teams and ensuring our solutions meet client requirements.

We developed a diagnostic algorithm for a rare disease that can significantly accelerate patient diagnosis and treatment, improving patient outcomes and the efficient use of healthcare resources.

**ANY ADVICE FOR FUTURE HEALTH ECONOMISTS?**

Focus on developing strong analytical and coding skills and gaining interdisciplinary knowledge. Stay curious, as the field is constantly evolving with new technologies and data sources.

## "Contribute to the real world"

**WHAT ATTRACTED YOU TO HEALTH ECONOMICS?**

**GÖKÇE:** This field combines what I value greatly, the well-being of the people; and what is intriguing intellectually, solving related problems with the help of modeling and data.

Within the scope of well-being, focus on health is thanks to my mother, who is a physician working on public health-related topics. She has been my main inspiration and sparked my interest in these issues early on.

**VALENTINA:** I've always been passionate about health and medicine. While studying economics, I realized I could apply economic methods to enhance healthcare systems. I am inspired by numerous economists who have conducted research to improve everyday lives. Many are women working on health, gender, and maternity.

**WHAT DO YOU HOPE TO ACHIEVE THROUGH YOUR RESEARCH?**

**GÖKÇE:** I seek to deepen our understanding of physician behavior, balancing financial motivations, altruism, and patient needs to optimize healthcare interventions. I wish to contribute to both academic knowledge and real-world practices, leading to better health outcomes and more efficient healthcare systems.

**VALENTINA:** My goals include improving health insurance systems, incentivizing cheaper treatments while fostering innovation, as well as addressing how to price new treatments and drugs in the future and determining who will bear these costs.



**GÖKÇE GÖKKOÇA**

Former TSE PhD student  
**Associate at Analysis Group**

*Gökçe completed her PhD in June 2024. Her research has investigated antibiotic markets and physician's use of antibiotic prescriptions. Since September, she has been working at the Analysis Group in Paris.*



**VALENTINA REIG**

TSE PhD student  
*Valentina's research focuses on the impact of regulated prices on shortages of medicines and how health insurance policies affect consumers and insurers. She works on how government's regulations and policies influence firm decisions and consumer welfare.*

**WHAT'S THE OUTLOOK FOR GLOBAL HEALTH?**

**GÖKÇE:** My hope is that nations will achieve more equitable health outcomes through improved healthcare access, innovative treatments, and preventive measures. However, I fear that socioeconomic disparities could widen, with low- and middle-income countries facing increasing healthcare challenges because of climate change, pandemics, and other global threats.

**VALENTINA:** I worry that highly innovative treatments will be prohibitively expensive and difficult to access for poorer countries. Many nations still struggle with limited access to essential treatments. It's crucial to find ways to incentivize innovation while also ensuring these new drugs are accessible to all. ●



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February 8, 2025

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Economics for the  
Common Good



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GET IN TUNE WITH  
OUR HEALTH PLAYLIST