Living Standards, Transcendental Meditation and the Perúvian Miracle: A 41-Year Study of Social and Economic Factors

Lee Fergusson[1,*], Javier Ortiz Cabrejos[2] & Anna Bonshek[3]

[1]Principal Doctoral Advisor, School of Education, University of Southern Queensland, Toowoomba; Professor of Vedic Science, Education, and the Environment, Maharishi Vedic Research Institute, Gold Coast, Australia

[2]Director, Instituto Maharishi de Ciencia y Tecnología del Perú, Lima, Perú; Professor of Maharishi Vedic Science Research, Maharishi Vedic Research Institute, Gold Coast, Australia

[3] Professor of Art and Vedic Science, Maharishi Vedic Research Institute, Gold Coast, Australia

*Correspondence: PO Box 1620, Oxenford, Queensland 4210, Australia. ORCID: 0000-0002-1041-3760

Received: June 12, 2023 Accepted: November 3, 2023 Online Published: November 13, 2023

doi:10.5430/wjss.v10n1p8 URL: https://doi.org/10.5430/wjss.v10n1p8

Abstract

More than 60 well-controlled empirical studies since 1974 have indicated there is a statistically observable causal link between the number of people who practice the Transcendental Meditation technique and the state of order, harmony and prosperity in a city, region, country or the world. Such a phenomenon is based on the level of brainwave coherence generated by the practice and the effect this increased coherence has on spontaneously stimulating similar neurophysiological responses in others, even at a distance. The brainwave coherence produced during Transcendental Meditation, measured by electroencephalography (EEG) and other procedures such as functional Magnetic Resonance Imaging (fMRI), reflects high-level synchronicity or orderliness in the functioning human brain, particularly in areas associated with higher-order thinking, reflective ability, and critical reasoning. The sociological effect of stimulating neurophysiological responses in meditating practitioners and others, mediated by an unmanifest field of collective consciousness, has been theoretically explained as well as quantifiably measured in individuals and small groups, as well as in larger populations, such as cities and countries. Beneficial effects in neighbouring countries have also been measured. Studies on this phenomenon in Cambodia, Canada, Israel, Lebanon, Mozambique, United Kingdom, and United States, for example, have used a range of rigorous research methodologies, including interrupted time series regression analysis and independent assessment analysis and transfer functions. This preliminary descriptive study seeks to determine if there is *prima facie* evidence to suggest the phenomenon has also occurred in Perú. If so, further investigation using sophisticated statistical measures may be warranted.

Since 1996, more than 53,600 Perúvian children and adolescent students have been trained in and regularly practice Transcendental Meditation in groups as part of their school's curriculum. However, whereas extensive prior research by these authors suggests a range of both short- and long-term personal and educational benefits from this practice in Perú, the association, should it exist, between group practice of Transcendental Meditation and broader sociological factors related to living standards has yet to be explored. We therefore ask whether any data in the public record indicate such practice has had an observable impact on Perúvian living standards and whether, after 25 years of practice by these children and adolescents, any evidence suggests Perú has achieved a higher living standard than other Latin American countries as a result. In this study, we compare the cumulative number of children and adolescent students who learned Transcendental Meditation between 1995 and 2020 to annualised data from 1980 through to 2020 on 20 dependent variables organized into four categories: society; health; education; and economy. Specific variables include data on poverty, undernourishment, deaths and disappeared people, violence against civilians, pregnant women receiving prenatal care, yellow fever deaths, gross domestic product (GDP), per capita GDP, GDP per person employed, short-term national debt, unemployment, and inflation. Our goal is to determine if a *prima facie* relationship between the number of children and adolescents taught Transcendental Meditation and changes in Perúvian living standards can be observed in these data. Comparative data on eight summative variables in 2020 and 2021, which consider the relationship between living standards in Perú and its neighbours, have also

been examined.

To all appearances, the present 41-year study in Perú provides relevant data to suggest the coherence generated by practice of Transcendental Meditation over a 26-year Impact Assessment Period (1995 to 2020) may have had a salutary effect on, or at the very least appears associated with, a range of measurable social and economic factors which can reasonably be called surrogates for improved living standards when compared to a Baseline Period (1980 to 1994) before Transcendental Meditation was introduced. That Perú's citizens are now among the most prosperous in Latin America and the third most optimistic people in the world further support this inference.

Keywords: Perú, living standards, Transcendental Meditation, children and adolescent students

1. Introduction

In 2015, U.S. President Barak Obama described Perú as the "envy of the world" because of its "outstanding economic growth" and because it lifted millions of people out of poverty between 2000 and 2015 (Andina, 2015, para 1). In 2016, many observers called it the 'Perúvian miracle' (e.g., Vietor, D'Alessio, & Pino, 2016) because Perú was the leading emerging market in Latin America. By 2020, the International Monetary Fund (IMF, 2020, para 2) said "Peru continues to be one of the best-performing Latin American economies. With annual real GDP growth averaging 5.4 percent over the past fifteen years, Peru has been one of the fastest-growing economies in the region, which enabled it to make significant progress in reducing poverty". Indeed, poverty in Perú decreased from 60% in 2004 to just 21% in 2018, another legitimate reason given for declaring its dramatic social and economic turnaround a 'miracle'.

Bellido (2013, p. 35) identified two factors which might have contributed to this phenomenon: good luck and good policy. He concluded "the Perúvian miracle of the last 10 years has much to do with good luck, and, in part, with good short-term macroeconomic policies". But was it really good luck which contributed mostly to this 'miracle' or was some other hidden, less obvious, influence as (or even more) important than luck? Certainly, good macroeconomic policy may have played a part, but if the greater role was 'good luck', is it possible that some hitherto unidentified, but nevertheless well documented, influence was involved in creating the luck? Perhaps the good luck and good short-term policy were both the result of this other hidden influence?

The end of the civil war in the mid-1990s and coming off a low economic base must have accounted for some of the changes in Perú's good fortune, and perhaps the adoption of new government economic policies did indeed contribute "in part" to them, as Bellido suggested. But we posit there is another likely explanation for this change in fortune: a significant contribution of coherence made to the collective consciousness of the country—that is, to the collective state of Perú's awareness, thinking, decision making, policy settings, and behaviour—by increased brainwave coherence, orderliness, and harmony generated by group practice of the Transcendental Meditation program by tens of thousands of school children and adolescents during these years of social transformation.

In this paper, we will explore such a possibility and present evidence to support our view. The influence of coherence in collective consciousness and the mechanics by which it generates benefit for a city, state, region, nation, and the world have been explained elsewhere (e.g., Orme-Johnson & Fergusson, 2018; Orme-Johnson et al., 2022) as well as empirically documented in countries as diverse as Cambodia, Canada, Israel, Lebanon, Mozambique, United Kingdom, and United States. The main purpose of the present research, which delves into the fundamental origins of the shift from the civil war years of the 1980s to the 'Perúvian miracle', is to explore this relationship between generation of coherence in collective consciousness by the group practice of Transcendental Meditation and the many diverse measures which reflect the salutarily changed living standards of Perúvians since that time.

1.1 Perú's Lost Decade (and a Half)

The 1980s in Perú have been described as the "lost decade" by Starn (2020, p. 3). According to Ross and Peschiera (2015, p. 37) the 1980s to mid-1990s were in fact a "lost decade and a half", but thereafter was the "Peruvian growth miracle". The internal conflict in Perú, which lasted from 1980 to about 1995, was initially an extremely violent, armed conflict between the government of Perú and the Maoist guerrilla group Shining Path or Sendero Luminoso (Stern, 2020; Walker, 2020), but from 1982 to 1997 also included the Túpac Amaru Revolutionary Movement (Walker, 2014, 2019), which waged its own insurgency as a Marxist–Leninist rival to Shining Path.

The lost decade and a half in fact grew out of earlier longer-term struggles against the Morales Bermúdez military regime of 1975 to 1980, a repeating pattern observed in many Latin American countries during this era where 'leftist' resistance to military rule was followed by crackdowns on civil liberties, the rule of law and human rights,

only to be followed by further armed insurrections to protect worker rights and other basic freedoms. However, after a return to democracy in 1980 with the election of Fernando Belaúnde Terry, guerrilla fighters still dreamed of a revolution and set about implementing a brutal program of change not by respecting human rights or the will of the people but by fighting for 'freedom', thus beginning a period of violence against the government and the people of Perú during which Shining Path and Túpac Amaru deemed anyone not part of their respective Maoist or Marxist-Leninist projects an enemy.

Newspaper reports of the 1980s, similar to those shown in Figure 1, carried headlines such as: "Mysterious terror of the Shining Path" (24 March 1985, *The Washington Post*); "260 die in Peru prison revolts: Troops crush Maoist uprising at 3 facilities" (20 June 1986, *Los Angeles Times*); "Governor is slain by Perúvian rebels" (5 August 1986, *The New York Times*); "Peru crackdowns again on rebels of the Shining Path" (16 November 1986, *The New York Times*); "Peru—Pushing its economy to the edge" (3 November, 1987, *The Christian Science Monitor*); and "Terrorism and Tupac Amaru rebels in Peru" (5 January 1997, *Los Angeles Times*).

Figure 1. Example Newspaper Articles from Perú during the 'lost decade and a half': "Curfew in Lima: all sectors support measures to control violence" (*Diario La República*, 9 February 1986, left); and "They used dynamite in elevator car-bomb at the Sheraton" (*Hoy*, 28 August 1987, right).

Under the headline "The rebels and the cause: 12 years of Peru's turmoil", *The New York Times* reported on 19 December 1996 that the "Tupac Amaru Revolutionary Movement first burst into Peru's largest news media market, Lima, in 1984 with a spray of machine-gun fire against the United States Embassy, then the most important foreign mission. Twelve years later the same guerrilla group is holding hundreds of hostages—and the attention of the world's press—at the Embassy of Japan, arguably the most important foreign mission in the era of President Alberto Fujimori". According to Cameron (2020, p. 172),

> by the end of the 1980s, the economy entered into the deepest crisis in the nation's republican history and, unable to make its debt payments, Peru became estranged from the international community. Inflation accelerated into hyperinflation. Terror and counterterror spread from Ayacucho, site of the emergence of Shining Path, to the margins of Lima. Almost all the country's formal institutions lost what little prestige or legitimacy they had held in the eyes of a public weary of corruption and inefficiency.

By the 2000s, evidence of Shining Path's brutality and the equally brutal response to it by government forces was still emerging, with a Truth and Reconciliation Commission reporting nearly 70,000 people died or disappeared during the 'lost decade and a half', 54% due to the Shining Path and the remainder due to the military government which opposed them (Amnesty International, 2004). Three out of every four victims of violence during that

period—killed in massacres, kidnappings, and assassinations, but many classified as 'disappeared'—were indigenous Perúvians, such as the Quechua or Aymara, according to Wilson (2003). Gomez (2005) described the lost decade and a half between 1980 and 1995 as "Peru's tragic history". But he also went on to say that this period "appears to be coming to an end with increase[d] economic and political stability".

1.2 Transcendental Meditation in Perú

Against this backdrop of social unrest, violence and civil war, at the invitation of President Fernando Belaúnde Terry (personal communication from Dr Oscar Maurtua de Romańa, Secretary General to the President of the Republic of Perú, March 11, 1983), Maharishi Mahesh Yogi, founder of the Transcendental Meditation program, visited Lima in 1983 with a clearly stated purpose: to help bring about an end to the dangerously unstable and hostile situation created by the country's civil war.

To achieve this goal, in his meeting with President Belaúnde in the Government Palace, Maharishi stated that the ancient Vedic culture of India and the Andean culture of Perú were interdependent and that Perú could become a lighthouse to the entire world if it implemented a program to teach his Transcendental Meditation technique to as many people as possible. Such a social welfare program, Maharishi declared, would end the civil war, change the collective consciousness of the country, and thereby fundamentally alter the destiny of Perú by setting it on a path to health, harmony and prosperity.

At the time of Maharishi's meeting with President Belaúnde there were only two teachers of Transcendental Meditation in Perú, but as a result of it more people heeded Maharishi's message and in November 1986, at the direction of the General Director of Social Rehabilitation, the government's own Programa Integral Nacional para el Bienestar Familiar (INABIF) or Comprehensive National Program for Family Welfare—through its Unidad de Servicios de Protección de Niños, Niñas y Adolescente (USPNNA) or Unit of Services for the Protection of Children and Adolescents—implemented the first course in Transcendental Meditation at INABIF's Institute No. 2 of Maranga in San Miguel, Lima.

One hundred and eighteen adolescent boys 'with strong anti-social behavior problems' and 18 psychologists, psychiatrists, educators, and social workers learned Transcendental Meditation. At the time, Director Edmundo Delgado (1987) reported to INABIF that

> experience from our personnel during many years has shown that the standard methods of rehabilitation for young offenders are almost ineffective…and psychologists, social assistants, educators, psychiatrists, and tutors from the rehabilitation centers of the country generally lack success in the positive reintegration of young offenders to society. [For this reason, we decided to] check the effectiveness of the Transcendental Meditation technique. After the teaching, we measured [standardized] variables of self-actualization, anxiety, personal relationships and social behavior, as well as self-evaluation questionnaires.
>
> Through the subjective description of 28 youngsters and analysis of these tests we were able to determine that the Transcendental Meditation program is effective in the rehabilitation of youngsters. The changes started with more emotional stability, more sensibility, more personal control, and a better capacity to interact with their companions and teachers; anxiety was reduced as well as depression and [mental] instability. (pp. 2−3)

After learning Transcendental Meditation, INABIF psychologist Carmen Herrera Lama reported 65.5% of young offenders said they had fewer worries and more focused attention, 89.7% experienced more happiness and a 'playful mood', and 58.6% felt more relaxed and had 'better thoughts'. Director Delgado (1987) concluded that while

> the environment in Maranga is fully charged with stress, anxiety, lack of sleep, aggressive behavior, and the presence of police, and is worse in the months of July and December during national festivities and Christmas when young offenders create a very difficult situation trying to escape, often with physical aggression, these situations have finished and are not a problem anymore since we applied the Transcendental Meditation program. (p. 4)

Despite this affirmative report, and despite its implications for reducing violent behaviour in the wider society, no other programs of significance were introduced until 1991 when several larger-scale teaching initiatives at Universidad Callao (National University of Callao in Bellavista, Callao) and Universidad Nacional Federico Villareal (Federico Villareal National University in San Miguel, Lima) were undertaken with a total of about 700 university students instructed in Transcendental Meditation. By the end of 1994, 1,236 people had been taught the technique. However, 1995 and the following one or two years represented the most significant turning point in the history of Perú because a number of private and government-run primary and secondary schools initiated large-scale programs for Transcendental Meditation to be incorporated into their curricula. The first two of these were

Institución Educativa Privada Prescott and then Glorioso Colegio Nacional de San Carlos.

Institución Educativa Privada Prescott (Prescott Private School) is a private primary and secondary school located in the city of Puno on the banks of Lake Titicaca in the southeast of the country. Puno is home to the Aymara people, a continuous pre-Incan civilisation living at 3,800m on the Altiplano in the Andean highlands. With a total population of about 3.0 million people, the Aymara are distributed across eastern Bolivia, southern Perú and northern Chile, with the largest group concentrated in the Lake Titicaca region. Prescott Private School, established to develop the values of honesty, social sensitivity, responsibility towards the community, and respect for family, the homeland and the world, has approximately 300 students. Beginning in 1996 with 90–100 students per year thereafter, about 2,000 students have been instructed in Transcendental Meditation at this school.

Glorioso Colegio Nacional de San Carlos (Glorious National School of Saint Carlos) is famous throughout Perú because it was founded in 1825 by Simón José Antonio de la Santísima Trinidad Bolívar y Palacios, the military and political leader who led Bolivia, Colombia, Ecuador, Panama, Perú and Venezuela to independence from the Spanish. Simón Bolívar is therefore known as 'El Libertador' (the Liberator of America). Glorious National School of Saint Carlos, with approximately 1,500 students across all primary and secondary grade levels, is a government-run school located in Puno. Beginning in 1997 with 600 students, about 5,000 students have been instructed in Transcendental Meditation at this school.

News of these and subsequent initiatives (some with the support of the David Lynch Foundation), with explanations of their features and benefits, were publicly announced in most major newspapers throughout the country (see for example Figure 2). An article on 25 October 1998 in *Diario Expreso*, headlined "Transcendental Meditation—The deepest state: In Puno, the experience had very good results; now the second stage of the project wants to achieve a group of 1,200 to create coherence" (pp. 8−9) introduced the notion of creating coherence in the brain physiology of school children to change the fortunes of Perúvian society. The article said

> the [Transcendental Meditation] technique has nothing to do with one's beliefs but with the development of the mind and with stress release that is blocking the development of an individual's full potential. The practice allows the conscious mind to go to deeper levels of consciousness until it arrives at Transcendental Consciousness, the unified field of natural law, a field of infinite order, energy, intelligence, and creativity.
>
> The technique has been thoroughly researched scientifically and these [studies] have repeatedly shown that it can develop intelligence. It has also been found when Transcendental Meditation is practiced by 1% of the population it creates coherence [in society], positively influences the environment, decreases stress in collective consciousness, and can even reduce the levels of criminality. Several studies in different countries have demonstrated these results.

On 8 May 2008, *El Peruano*, the official daily newspaper of Perú, asked rhetorically "Meditation: the key to better school performance?" (p. 20). The full-page article, including sub-headlines such as "Benefits of Transcendental Meditation" and "Wealth is in the brain", stated that daily practice of meditation controls violent behaviour and students experience a state of rest twice as deep as during sleep, resulting in improved physical health and intellectual performance.

By 14 January 2014, *El Peruano*, under the headline "Recommend meditation for school performance" (Figure 2, left), announced 30,000 students had been taught Transcendental Meditation in schools throughout the country (p. 22). The focus of the article was the observed benefit of Transcendental Meditation to reduce bullying, but also commented that "Transcendental Meditation fills the students with energy and mental clarity, and prepares them for action through inner silence" and "there are agreements with various regional government and regional educational units to teach 150,000 students". According to *El Peruano*,

> at 3.00 pm the students from César Vallejo school [in Lima] know it's their time to meditate for ten minutes. Everything becomes silent. For two months they have been practicing Transcendental Meditation. The school's principal says the students come from violent homes, and in the school there is a bullying problem. But she says 'we feel the change. Now with meditation children are quieter, there is more order and we can work better in the classroom'. The teachers, who originally were skeptical, are now convinced and the parents encourage their children to meditate at home, too.

El Peruano

DIARIO OFICIAL

Recomiendan meditación para el rendimiento escolar

Meditación Trascendental llega a 50 mil alumnos de 50 colegios

TÉCNICA DE MEDITACIÓN es eficaz contra el estrés y mejora el rendimiento escolar, señala presidente del Instituto Maharishi de Ciencia y Tecnología del Perú.

Meditación Trascendental es fácil de aprender

Figure 2. Example Newspaper Articles on the Teaching of Transcendental Meditation in Schools: "Recommend meditation for school performance" (*El Peruano*, 14 January 2011, left) and "Transcendental Meditation reaches 50,000 students from 50 schools" (*Diario Uno*, 6 March 2017, right).

On 26 June 2014, *El Peruano* again published an article headlined "They teach meditation to 30,000 students", including a photograph of meditating students captioned "Sacred silence: Primary students practicing meditation".

Then on 6 March 2017, *Diario UNO*, under the headline "Transcendental Meditation reaches 50,000 students from 50 schools" (Figure 2, right), published an article on how the reduction of stress in students through the practice improves school performance (p. 18). The article said

> teaching without cost for the school, the Transcendental Meditation technique of Maharishi Mahesh Yoga has been taught to more than 50,000 students in 50 government schools of Puno, Cusco, La Libertad, Lima, and Callao. The results have been an improvement of school performance, development of creativity and intelligence, more speed in learning, more attention in the classroom, better understanding of what teachers teach, better behavior, better concentration [in class], and better relationships with their parents.

Examples of some of the meditating students and schools represented by these news announcements can be seen in Figures 2 and 3, and include group practice of Transcendental Meditation at Colegio Particular Nuestra Senora de la Merced in Arequipa, Colegio Clorinda Matto de Turner in Cusco, Institucion Educativa Emblematica César Vallejo in Lima, and Nuestro Señora de Loreto in Loreto Province.

Colegio Particular Nuestra Senora de la Merced (Our Lady of Mercy Private School) are private primary and secondary schools located in Arequipa and Puno. Lutarga Mas Mateu founded the Institute of Religious Mercedarian Missionaries in 1860, and during subsequent expansion Mercedarian missionaries founded the school in Arequipa in 1951 to serve the children and youth of the region. Through educational training, the school seeks to promote harmonious development of Mercedarian spirituality by integrating the family and the community to strengthen identity and respect. Transcendental Meditation was introduced into the La Merced curriculum of Puno in 2006 beginning with 600 students and the La Merced curriculum in Arequipa in 2017; approximately 3,000 primary and secondary students have been instructed in Transcendental Meditation at the two schools.

San Carlos School, Puno (n = 4,200)

La Merced School, Arequipa (n = 3,000)

Clorinda Matto School, Cusco (n = 4,000)

Tomasa Tito Condemayta School, Cusco (n = 1,500)

Cesar Vallejos School, Lima (n = 4,200)

Pomalaza Rixe School, Huay-Huay (n = 1,000)

Nuestro Señora School, Loreto Province (n = 1,000)

San Vincente de Paul School, Cusco (n = 2,500)

Figure 3. Examples of Schools and Number of Children and Adolescents Practicing Transcendental Meditation Together in Groups in Perú

Colegio Clorinda Matto de Turner (Clorinda Matto de Turner School) located in Cusco, is a primary and secondary school named after one of Cusco's most famous women writers and poets, Clorinda Matto de Turner, who lived during the early years of Latin American independence. Transcendental Meditation was introduced into the curriculum in 2011 beginning with 2,000 students; approximately 4,000 primary and secondary students have been instructed in the practice since then.

Institucion Educativa Emblematica César Vallejo (Emblematic Educational Institution of César Vallejo) is a government-run primary and secondary school located in the La Victoria district of central Lima. La Victoria is one of the most densely populated and dangerous areas of Lima and is home to about 185,000 people within its 8.7 km^2 area. It is mainly a residential community, with 'slums 'in the north, *pueblos jóvenes* (or 'squatter settlements') in the east, and middle-income housing in the south, but with high levels of crime and unemployment throughout the district. César Vallejo school has an enrolment of about 1,400 mostly disadvantaged students across all primary and secondary grade levels. Transcendental Meditation was introduced into the curriculum in 2014; approximately 3,000 upper primary and secondary students have been instructed in the practice since then.

Nuestro Señora de Loreto (Our Lady of Loreto) in the historic city of Nauta, capital of the district of Nauta in Loreto Province (one of eight provinces in the Loreto administrative region) in north-eastern Perú, is a unique example. The school, one of several associated with the Order of Saint Augustine, is located on the north bank of the Marañón River, a major tributary of the Upper Amazon. Loreto Province is home to many indigenous people, including the Cocama, Omagua, Iquito, Urarina, and others who live off the land and aquatically rich rivers in what is considered one of the most biologically and culturally diverse regions of the world. Transcendental Meditation was introduced into the curriculum in 2017; approximately 1,000 upper primary school students were instructed in the practice between 2017 and 2018.

The fact that Transcendental Meditation has been so widely embraced by children, parents, teachers, school administrators, and the Ministry of Education, and by indigenous and non-indigenous people in a predominantly Catholic country is particularly important because participants and government officials clearly do not see any conflict between the practice of meditation—which is described as a natural process requiring no change in belief or lifestyle—and the practice of their religion.

1.3 Creating Coherence in Collective Consciousness

The Transcendental Meditation technique was derived by Maharishi from the ancient Vedic tradition of knowledge in India and introduced to the West in the late 1950s. In Perú, it is practiced by children and adolescents in a group (i.e., in a classroom or school assembly) for 10–15 minutes at the beginning and end of the school day with no other changes made to the standard primary or secondary curriculum.

Transcendental Meditation is described as an easy, simple and natural way to achieve deep rest for body and mind, with metabolic levels decreasing by about 16% or more during the practice, double that of a night's deep sleep. Accompanying this physiologically deep state of rest is a refreshing of the mind, with increased levels of wakefulness, mental orderliness, intelligence, creativity, and mental energy (Orme-Johnson & Haynes, 1981). Practice of Transcendental Meditation has been shown to not only produce deep rest but also increase brainwave coherence (e.g., Farrow & Hebert, 1982).

In addition to a range of physical and mental health benefits for adults, research has shown that such practice increases emotional intelligence in 12–14 year-old school children after one year (Rosaen & Benn, 2006), curtails anxiety and stress, leading to reduced symptoms of attention deficit hyperactivity disorder (ADHD) in 11–14 year-old school children (Grosswald et al., 2008), reduces the number of headaches, and the symptoms of depression and anxiety in children and adolescents between the ages of nine and 18 years (Jong et al., 2019), and increases well-being—measured by elevated happiness, resilience, and self-confidence—in 14 year-old school children (Wendt et al., 2015). Dillbeck et al. (2020) have elaborated on these and other findings. Of most importance for the present study are findings associated with increased brainwave coherence (Hebert et al., 2005; Travis & Arenander, 2006; Travis et al., 2010), beginning with the pioneering work on electroencephalographic (EEG) brainwave coherence by Banquet and his colleagues (e.g., 1973, 1974, 1980), and subsequent research which shows the coherence experienced by one individual can also be measured in other, unrelated and at-a-distance, individuals (Travis & Orme-Johnson, 1989).

In the Vedic tradition, Transcendental Meditation is associated with the field of *Yoga* because it establishes 'Yoga' or a unified state of mind, described by Maharishi as the state of pure consciousness (or *Turiya Chetna*, तुरिय चेतन, in the language of Vedic Science). According to the *Yoga Sūtra*, "the power of [this level of] consciousness is infinite"

(*Chiti Shaktiriti,* चितिशक्तिरिति, 4.34). Of most importance to the present study in Perú, the Vedic literature also maintains that in the vicinity of coherence, i.e., in the vicinity of the coherence created by the experience of pure consciousness during group practice of Transcendental Meditation, hostile tendencies are eliminated (*Tat sannidhau vairātyagaḥ*, तत्सन्निधौ वैरत्यागः, *Yoga Sūtra*, 2.35). In other words, as more people practice Transcendental Meditation in a group, adverse tendencies in society decrease, the principle upon which this present study in Perú is based.

In the mid-1970s, these effects were observed in groups, and the influence of coherence in collective consciousness and its beneficial effect at the city (Dillbeck et al., 1988), state, regional, national (Assimakis & Dillbeck, 1995; Cavanaugh & Dillbeck, 2017; Dai, 2011; Davies & Alexander, 2005; Dillbeck & Cavanaugh, 2016, 2017; Fergusson, 2016a, 2016b; Fergusson & Cavanaugh, 2019; Orme-Johnson et al., 2022), and international levels has subsequently been well documented. Measures used to document this influence on society of increased individual brainwave coherence have included examples of decreased crime, accidents, and homicides, to name but a few. Moreover, the studies on this phenomenon have included a range of rigorous research methodologies, including interrupted time series (ITS) regression analysis, independent assessment analysis and transfer functions, and principal component factor analysis.

At the collective level, three types of group effect have been observed. First, the effect of coherence created when 1% of the population practices Transcendental Meditation separately, i.e., in isolation from one another but within a discrete population. This phenomenon has been referred to as the *Maharishi Effect*. Second, the effect has also been observed when the √1% of a population practices Transcendental Meditation and the more advanced TM-Sidhi program together in a group in the same place and at the same time, referred to as the *Super Radiance Effect*. And third, groups of people practicing Transcendental Meditation together have also been observed to generate an effect of coherence and orderliness on hostile and adverse tendencies (e.g., Fergusson, 2016a, 2016b; Fergusson & Cavanaugh, 2019). It is this third phenomenon of creating coherence in collective consciousness by the group practice of Transcendental Meditation that is explored in this study.

1.4 Research Objectives and Questions

Our objective is to isolate and model the cumulative number of children and adolescents who were taught the Transcendental Meditation technique in Perú between 1980 and 2020 and to examine whether standardised annual measures of living standards are related to this cumulative number. Of further interest to us will be whether any recurring patterns in these data can be observed.

To guide these objectives, we asked the following three research questions: RQ_1—how many children and adolescent students were taught the Transcendental Meditation technique between 1980 and 2020 in Perú; RQ_2—as a pre-empirical basis to further research, is there any evidence in the public record, using standardised measures of social and economic living standards between 1980 and 2020, to indicate that changes in the number of children and adolescent students taught Transcendental Meditation are in any way related to these measures; and RQ_3—by 2020, how do Peru's social and economic living standards compare to other countries in Latin America and elsewhere in the world? We define 'living standards' to mean the aggregate of various standardised and quantifiable social and economic measures associated with the health, progress, availability of services, and well-being of Perúvian citizens. These measures collectively contribute to an individual's quality of life. Such an encompassing definition is consistent with the one advanced for living standards by Corlett and Try (2022) and described earlier as 'external' quality of life and well-being indicators by Veenhoven (2015).

2. Methodology

This qualitative, descriptive study uses the same *prima facie* methodology as the one adopted by Fergusson (2016a, 2016b) for an investigation of the same phenomenon in Cambodia, and by Glewwe and Hall (1994) for their examination of economic decline in the late 1980s on the quality of life in Lima. In the Cambodian study, one group of university students generated coherence in the collective consciousness of society from Maharishi Vedic University by practicing the Transcendental Meditation and TM-Sidhi program together in a group as part of a government-approved curriculum. Interestingly, that study investigated roughly the same years as the present study (1980–2015 in Cambodia versus 1980–2020 in Perú), and shared many of the same variables to measure changes in living standards. Similarly, the Cambodian study compared living standards with neighboring countries as does the present study of Perú.

Of interest are the parallel observations that Cambodia's social and economic recovery from civil war, genocide, and its other reversals of fortune was described as 'remarkable', with the World Bank (2014) asking 'where have all the

poor gone?' just as the phenomenon in Perú was described as the 'Perúvian miracle' with the IMF stating poverty declined by 65% in 14 years.

2.1 Research Design

Although not an experimental design, in this study the number of people who were taught Transcendental Meditation can be considered an independent variable and social and economic indicators the dependent variables. Measures associated with comparisons to other countries are called summative variables.

In order to compare the period before large groups of school children were taught the Transcendental Meditation technique and the period after the initiative to teach them, publicly available data on different aspects of Perúvian society have been organised in the following two ways: 1) a 15-year Baseline period of 1980–1994 (i.e., coinciding with the 'lost decade and a half'); and 2) a 26-year Impact Assessment period of 1995–2020 (i.e., coinciding with the 'Perúvian miracle'). Periods 1) and 2) were then divided into eight, five-year time segments and averaged. Thus, the Baseline period contains segments 1 (1980–1984), 2 (1984–1989), and 3 (1990–1994), and the Impact Assessment period contains segments 4 (1995–1999), 5 (2000–2004), 6 (2005–2009), 7 (2010–2014), and 8 (a six-year period, 2015–2020). Data for each year of the 41 years in the study range have also been included.

Such organisation of data allows for a before (Baseline) and after (Impact Assessment) comparison of possible differences between independent and dependent variables across time. The year 2020 has been used as the cut-off date for the Impact Assessment period for two reasons: first, most data on the dependent variables have not yet been compiled or released for 2021–2022; and second, the COVID-19 pandemic, beginning in 2020, was a once-in-a-lifetime disruptive factor and its impact on Perúvian social and economic well-being has yet to be fully understood for most dependent variables used in this study. However, according to Lopez (2023, para 2), "the pandemic-induced downturn hit [Perúvian] GDP hard, down 10.95% in 2020, but the recovery was even sharper, with growth in 2021 at 13.35%. In 2022, growth stood at 2.7%".

2.2 Data Sources

Data on the number of people taught Transcendental Meditation have been obtained from Instituto Maharishi de Ciencia y Tecnología del Perú, to answer RQ_1. Twenty social and economic dependent variables (V) were identified from a variety of public sources and grouped into four main categories: society (six variables); health (two variables); education (three variables); and economy (nine variables), to answer RQ_2. These 20 variables have been named accordingly, Society: V1—poverty, V2—undernourishment, V3—deaths and disappeared people, V4—violence against civilians, V5—access to electricity, and V6—patent applications; Health: V7—pregnant women receiving prenatal care, and V8—yellow fever deaths; Education: V9—adolescents out of secondary school, V10—outward mobility tertiary education students, and V11—scientific and technical journals; and Economy: V12—gross domestic product (GDP), V13—per capita GDP, V14—GDP per person employed, V15—short-term national debt, V16—unemployment, V17—inflation, V18—cereal production, V19—number of products exported, and V20—high-tech exports. Yearly data for all dependent variables, except V5, V7, V9, V10, V11, and V20, across both periods were available from published public or academic sources. For comparative purposes, some yearly estimates have been made for missing data, but in all cases fair (and conservative) estimates based on existing published data have been used. For example, 1980 to 1989 data for V5 were unavailable and therefore average data for 1990 to 1995, which were available, have been used to calculate the missing years.

In addition to the 20 dependent variables listed above for Perú, comparison data to other countries in Latin America and to the world at the end of the Impact Assessment period using eight summative variables (SV) have also been used to assess the overall welfare of Perú in 2020, to answer RQ_3. These comparison data include measures of: SV1—extreme poverty; SV2—students completing upper secondary school; SV3—women graduating from university; SV4—per capita GDP; SV5—per capita earnings, income, GDP, and their average; SV6—inflation; SV7—perceptions of crime and harm; and SV8—future optimism. Where possible, only standardised measures for each summative variable have been used, such as the Future Optimism Index for SV8.

2.3 Ethical Considerations

Ethics approval to conduct research on the secondary, publicly available variable data used in this study was not required. Data on schools and the number of children and adolescents taught Transcendental Meditation have been obtained from Instituto Maharishi de Ciencia y Tecnología del Perú, and approvals to cite school names and use student photos have been obtained in writing by Instituto Maharishi de Ciencia y Tecnología del Perú from school administrators and government agencies in Perú.

3. Results

3.1 Transcendental Meditation Taught in Perú

To help answer RQ_1, Figure 4 shows the cumulative number of children and adolescents taught Transcendental Meditation between 1980 and 2020. In the Baseline period, zero people were taught in segment 1, 336 were taught in segment 2, and 900 were taught in segment 3, for a segment average of 412 and a cumulative total by 1994 of 1,236.

In the Impact Assessment period, 2,686 people were taught in segment 4, 583 were taught in segment 5, 15,900 were taught in segment 6, 18,602 were taught in segment 7, and 14,613 were taught in segment 8, for a segment average of 10,476 and a cumulative total by 2020 of 53,620. The steepest sections of the data curve are within segments 6 and 7 when the cumulative number of children and adolescents who learned Transcendental Meditation increased from 4,595 to 25,595 and from 25,595 to 41,321, respectively. Thus, the average change in cumulative number between segments 5 and 6, segments 6 and 7, and between segments 7 and 8 are most obvious. When analyzing changes in variable trends, particular focus will be given to these segments.

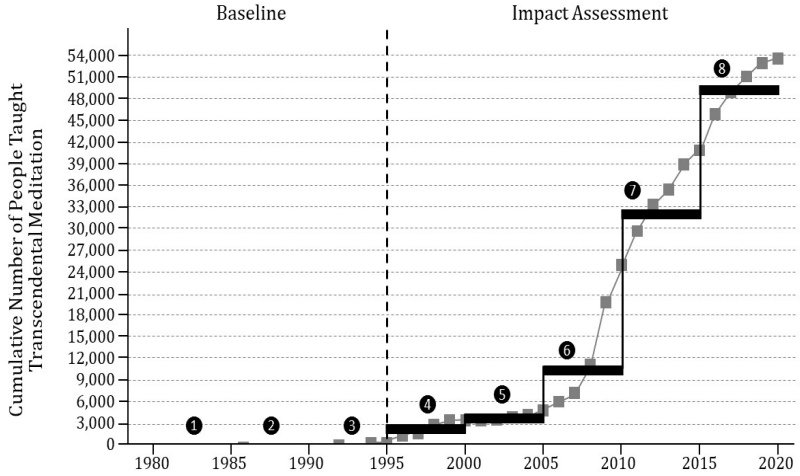


Figure 4. Cumulative Number of Children and Adolescents Taught the Transcendental Meditation Technique between 1980 and 1994 (the Baseline period) and between 1995 and 2020 (the Impact Assessment period) by Year and Five-Year Segment

3.2 Findings for Perú

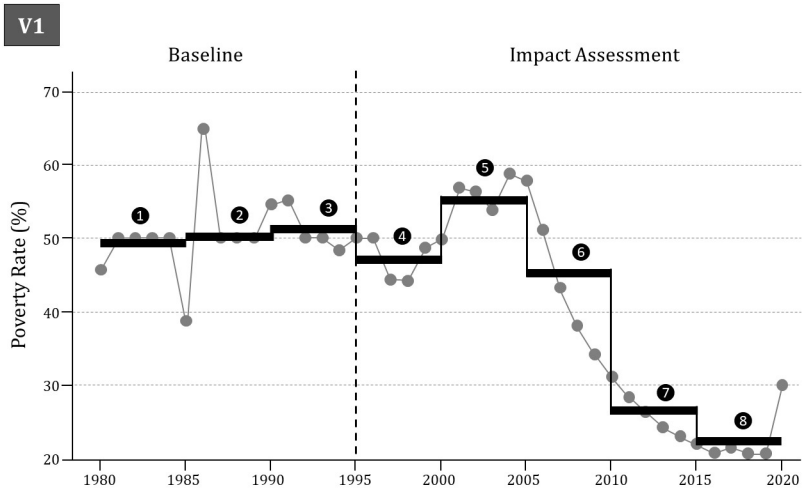
To help answer RQ_2, the presentation of findings for Perú have been organised into the following four categories: 3.2.1) society; 3.2.2) health; 3.2.3) education; and 3.2.4) economy.

3.2.1 Society

Six variables represent social living standards: V1—poverty, V2—undernourishment, V3—deaths and disappeared people, V4—violence against civilians, V5—access to electricity, and V6—patent applications.

Poverty is defined by the World Bank (2023a) as a person living on or less than $2.15 per day using 2017 prices; anyone living on less than this amount is said to be living in 'poverty'. As shown in Figure 5, during the Baseline period poverty in Perú (V1) remained unchanged with an average of 50% of the population living in poverty for segments 1, 2, and 3, and hovered around that level until 2005 when it began declining sharply. However, Glewwe and Hall (1994, p. 703) provided a different perspective on this phenomenon when they reported poverty rates, as measured by an ability to meet "basic needs" in Lima, rose from 12.7% in 1985-86 to 54.7% in 1990.

As noted above by the IMF (2023), poverty decreased from its peak in the Impact Assessment period of 60% in 2004 to 21% by 2016 and remained at that level through segment 8, until 2020 when it rose to 30% during the COVID-19 pandemic. The average level of poverty during the Impact Assessment period was approximately 24%. Normalised z-scores for poverty were $z = .24$ in 1980 and $z = -1.03$ in 2020. The most noticeable declines occurred between 2005 and 2015, between segments 5, 6, and 7. The sharp decline between these segments, beginning in 2005, corresponds to the sharp increase in number of children and adolescent students taught Transcendental Meditation during these same years.

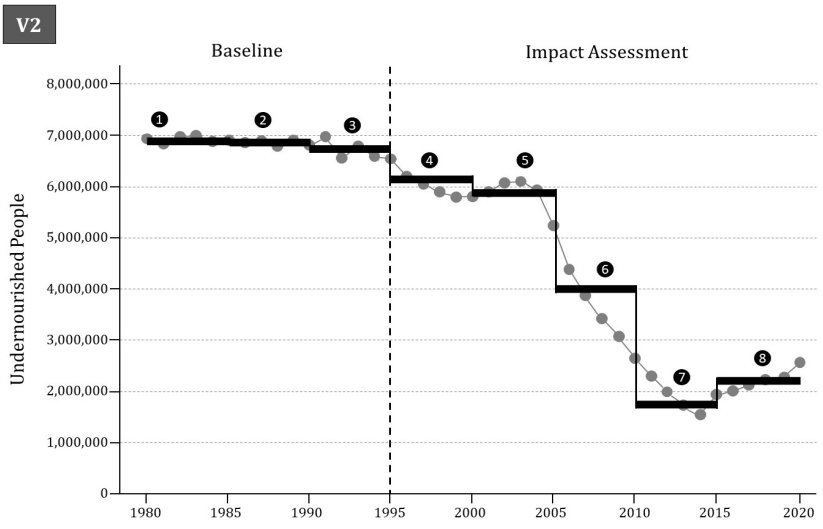


Source: World Bank (2022, 2023a); estimate averages for 1981–1984, 1986–1989, 1992–1993, and 1995–1996 based on average of 1980, 1985, 1986, 1990, and 1991, Hudson (1992) for 1980 and 1990, and Rousseau (2006) for 1985, 1991, and 1994.

Figure 5. V1—Poverty Rate between 1980 and 2020 by Year and Five-Year Segment

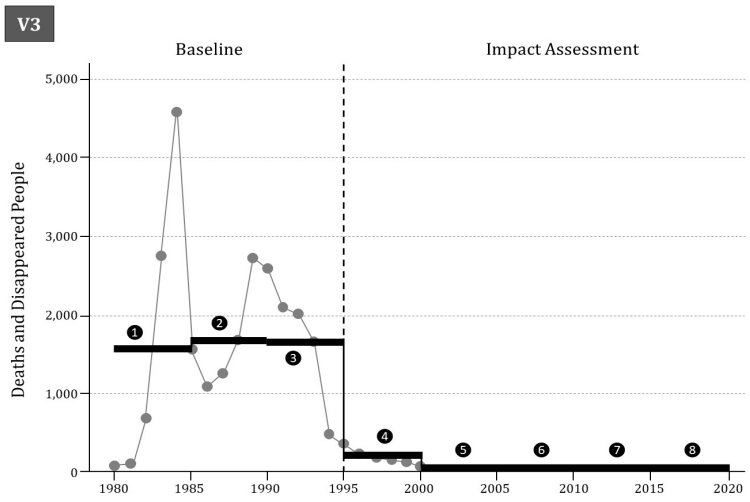
Undernourishment is defined as the percentage of a population whose regular food consumption is insufficient to provide the dietary energy levels required to maintain a normally active and healthy life. The prevalence of undernourishment in Perú (V2) remained unchanged during the Baseline period at approximately 680,000 people.

However, the average level of undernourishment during the Impact Assessment period was approximately 400,000. At the inception of segment 4, undernourishment dropped to about 580,000 (or 15%) and remained roughly stable in segment 5, but the steepest declines in undernourishment occurred between 2005 and 2010 (between segments 5 and 6) and between 2010 and 2015 (between segments 6 and 7), corresponding again to the sharp increase in number of children and adolescent students taught Transcendental Meditation during these same years. By the end of the Impact Assessment period, about 210,000 people were classified as undernourished in Perú, a 66% decline from the beginning of the period, a percentage reduction consistent with declines in poverty. Normalised *z*-scores for undernourishment were $z = .92$ in 1980 and $z = -1.05$ in 2020.



Source: World Bank (2022, 2023a).

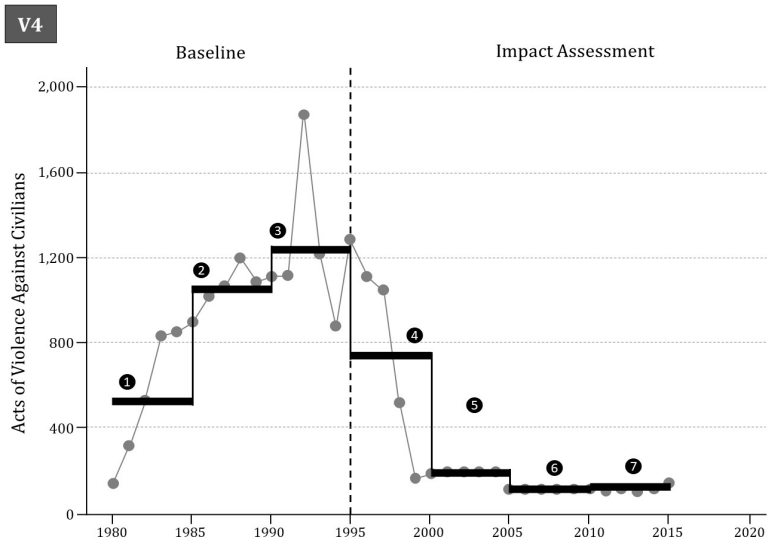
Figure 6. V2—Number of People Who Were Undernourished between 1980 and 2020 by Year and Five-Year Segment



Source: Walker (2020); The New York Times (1991).

Figure 7. V3—Number of Deaths and Disappeared People due to Political Violence between 1980 and 2020 by Year and Five-Year Segment

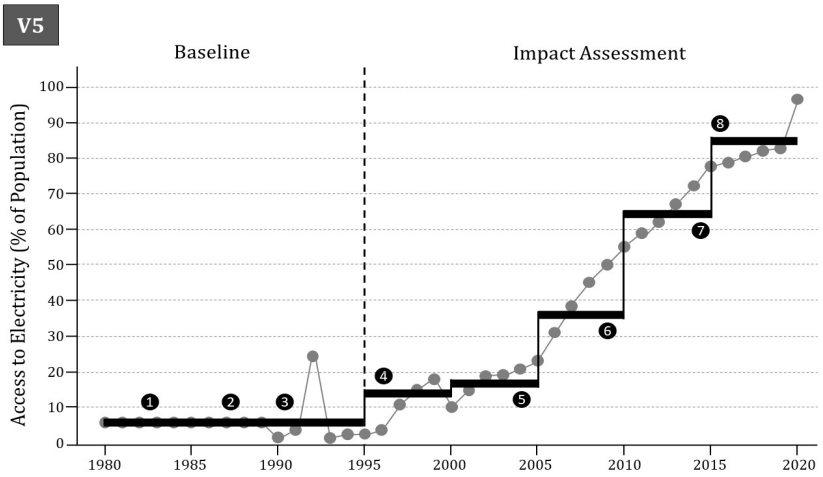
Figure 7 shows the impact of the 'lost decade and a half' on deaths associated with political violence (also called 'state violence' by a Schubiger [2121]) and missing persons. However, data for the number of deaths and disappeared (V3) show a significantly different trend than poverty and undernourishment. In the Baseline period, an average of about 1,600 people died or disappeared each year, although the number was decreasing from 1989 and continued to fall in segment 4. This number appears too low when compared to the findings of the Truth and Reconciliation Commission which suggested the number would have been closer to an average of 4,500 each year (Amnesty International, 2004) during the Baseline period. Nevertheless, these projected numbers for the Baseline period are dramatically different to the Impact Assessment period when deaths and disappeared persons related to civil war and political violence dropped to zero by segment 5 and continued at zero through segment 8. The average segment difference between the Baseline period and the Impact Assessment period is about –97% (i.e., 1,600 deaths and disappeared per segment average to 40 per segment average during the Impact Assessment period). Normalised z-scores for deaths and disappeared people were $z = -.57$ in 1980 and $z = -.57$ in 2020 but reached $z = 3.65$ at its peak in 1984 and $z = 2.0$ again in 1989.



Source: World Bank (2022, 2023a); estimates for 2001 to 2008 based on 2000 data point for period 5 and 2009–2015 data points for period 6.

Figure 8. V4—Number of Acts of Violence against Civilians between 1980 and 2020 by Year and Five-Year Segment

Violence against civilians includes violence and discrimination against people with disabilities and older adults as well as family violence. As shown in Figure 8, the number of violent acts against civilians (V4) somewhat follows the same trends as deaths and disappeared persons in the Impact Assessment period. The major difference is that violence against civilians was actually increasing significantly prior to the beginning of the Impact Assessment period, with average violent events of 500 per year in segment 1, 1,500 per year in segment 2, and more than 1,200 per year in segment 3, reaching a peak of 1,850 in 1992. The largest changes in these data are between segments 4 and 5, immediately following the increased number of meditating students and the formation of groups meditating together in schools beginning in 1996, when this increasing trend dramatically reversed coincidentally with the introduction of Transcendental Meditation and then stabilised after 2000. No data are available from 2016 to 2020. The average segment difference between the Baseline period and the Impact Assessment period is about –73% (i.e., 1,066 acts of violence against civilians per segment average to 287 per segment average during the Impact Assessment period to 2015). Normalised *z*-scores for violence against civilians were $z = -.84$ in 1980 and $z = -.94$ in 2020 but reached $z = 2.57$ at its peak in 1992.



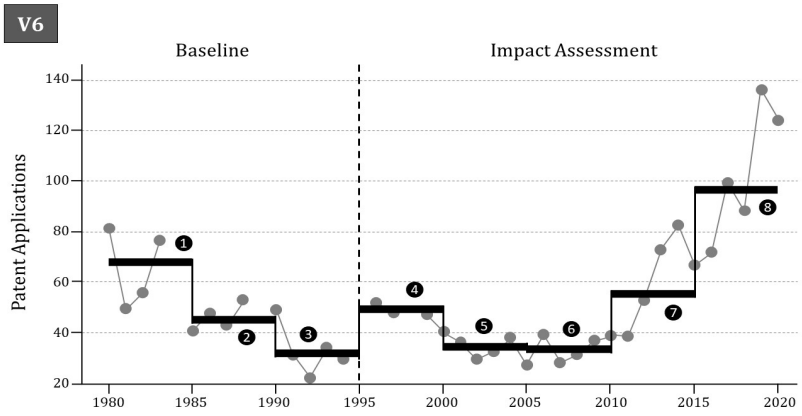
Source: World Bank (2022, 2023a); 1980–1989 figures based on average of 1990-1995.

Figure 9. V5—Percentage of the Population with Access to Electricity between 1980 and 2020 by Year and Five-Year Segment

Prior to 1995, about 94% of Perúvians lived without access to electricity (V5). This percentage decreased to 86% after 1995 in segment 4, remained roughly stable in segment 5, but then dramatically improved in segments 6, 7, and 8, resulting by 2020 in 4% of the population living without access to electricity. The estimated data for 1980 to 1989 is probably high and was likely closer to 97–98% without electricity based on 1990 to 1995 data. Thus, in the 41 years covered by Figure 9, the percentage of people with access to electricity reversed from about 5% of the population having access and 95% not having access to electricity in 1980, to 95% having access to 5% of the population not having access electricity in 2020, a 190% improvement in access. Again, segments with the fastest improvement in access to electricity are between segments 5 and 6, segments 6 and 7, and segments 7 and 8. The curve of V5 is an almost perfect match for the curve of Figure 4. Normalised *z*-scores for percentage of the population with access to electricity were $z = -.81$ in 1980 and $z = 2.22$ in 2020.

The number of patent applications each year (V6) is one measure of a country's innovation, creativity, and right to manufacture an invention on agreed terms. In these ways, the annual number of patent applications in a country reflects expanding ranges of new products, new methods, and new services, all signs of a healthy society. As shown in Figure 10, patent applications by residents were decreasing steadily in the Baseline period, from an average of 68 in segment 1, 45 in segment 2, and 32 in segment 3. However, immediately after the formation of the groups of meditating students the annual number of patent applications rose in segment 4, fell to the same low levels in segments 5 and 6, but then rose sharply in 2012 and kept rising to 137 in 2019, with an average of 56 patents per year in segment 7 and 96 per year in segment 8. The fastest years of increase in patent applications occurred between segments 6 and 7 and segments 7 and 8. The Economic Commission for Latin America and the Caribbean (2011, p.

23) suggest higher levels of patent applications between 2000 and 2009 than those shown in Figure 10 from the World Bank, however the general trend of patent applications is the same for these years in both cases. Normalised *z*-scores for patent applications were $z = 1.06$ in 1980 and $z = 2.79$ in 2020 but declined to $z = -1.15$ in 1992 at its lowest point in the data series.



Source: World Bank (2022, 2023a), missing data for 1984, 1989, 1995, and 1998.

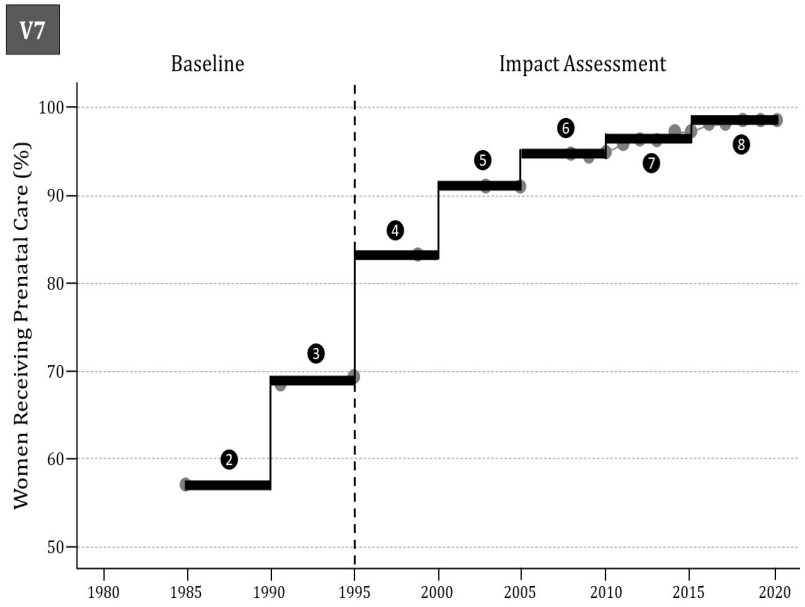
Figure 10. V6—Number of Patent Applications by Residents between 1990 and 2020 by Year and Five-Year Segment.

3.2.2 Health

Two variables represent living standards associated with health: V7—pregnant women receiving prenatal care, and V8—yellow fever deaths.

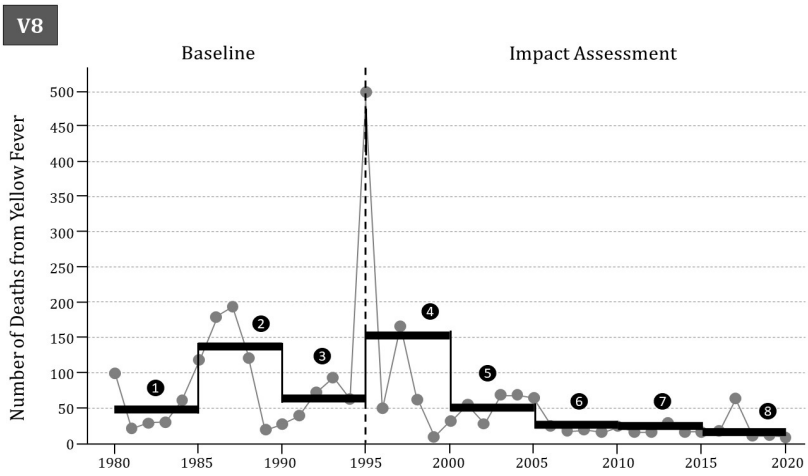
According to Carillo-Larco et al. (2021), Peru has "experienced major changes [to] its epidemiological and population health profile. Major advancements in maternal and child health as well as in communicable diseases have been achieved in recent decades", i.e., during the Impact Assessment period. However, Carillo-Larco et al. also point out the Perúvian health system remains "fragmented and segmented in terms of its organisation and structure, thus severely constraining the state's capacity to deliver high quality health care for all". The cholera outbreak of 1991 and 1992 and the examination of inadequate water supplies in much of the country during the Baseline period (Reiff, 1992) are examples of these constraints. By the late 1980s and early 1990s, government expenditure on health had declined precipitously, from 11% of gross capital formation (GCF) in 1980 to just 3% of GCF in 1990, according to Glewwe and Hall (1994, p. 694), and this was reflected in elevated levels of reportable tuberculosis (TB), respiratory infections, and gastrointestinal diseases between 1980 and 1991 in Lima. Deaths from TB also increased marginally in the early 1980s and then more rapidly from 1986. According to Glewwe and Hall, the percentage of infant mortality, low birth weights, and wasting all increased in Lima during the Baseline period.

Limited data exist on the percentage of pregnant women receiving prenatal care (V7) during the Baseline period through 2008, but the trend appears upward, as shown in Figure 11. While it is implausible to attribute any relationship between this increasing percentage and the number of children and adolescents taught Transcendental Meditation, it is notable that the trend continued to improve throughout the Impact Assessment period with the sharpest improvement in percentage appearing between segments 3 and 4 as the groups of meditating students were beginning to form. By segments 5 and 6 a 'ceiling effect' had been mostly reached and high levels of care were maintained throughout the remainder of the period. Normalised *z*-scores for percentage of women receiving prenatal care were $z = -1.88$ in 1980 and $z = .81$ in 2020.



Source: World Bank (2022, 2023a); given the limited data for years until 2008, the average of data available was used for periods 2, 3, 4, 5, and part of 6.

Figure 11. V7—Percentage of Pregnant Women Receiving Prenatal Care between 1980 and 2020 by Year and Five-Year Segment



Source: Pan American Health Organization (2023, p. 3).

Figure 12. V8—Yellow Fever Deaths between 1980 and 2020 by Year and Five-Year Segment.

According to the Pan American Health Organization (2023, p. 2),

> since the control of the last [major] outbreak in 1922, only sylvatic-acquired yellow fever occurs in remote endemic areas of the Amazon. These are cyclical with outbreaks at 7- to 10-year intervals. Cases occur throughout the year, with peaks between December and September related to the seasonality of agricultural activities. All patients follow a traditional epidemiological pattern: more than 80% are male, 64% between 15 and 40 years, and up to 10% of cases are children under 15 years. Most cases are persons engaged in agricultural work (mainly coffee and cocoa farming) or forestry. Many are unvaccinated migrant workers coming from the non-endemic highlands (the Andes or the Sierra) or coastal areas (desert).

Figure 12 shows that yellow fever deaths have been steadily declining since 1997, reaching close to zero by 2020.

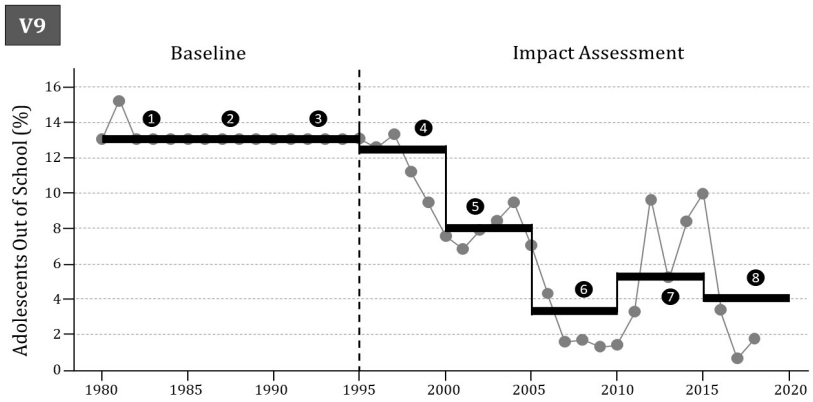
Segment 4 shows an increase over segment 3, but this observation is skewed by the outbreak of 1995, without which the average for segment 4 was 55 deaths, lower than segment 3, coincidental to the increased number of people taught Transcendental Meditation. Normalised *z*-scores for yellow fever deaths were $z = .45$ in 1980 and $z = -.69$ in 2020.

3.2.3 Education

Three variables represent living standards associated with education: V9—adolescents out of secondary school, V10—outward mobility tertiary education students, and V11—scientific and technical journals.

Glewwe and Hall (1994, p. 708) had earlier pointed out that education in Perú is a "major contributor to economic development" and "households headed by highly educated individuals fared relatively well during Peru's economic decline", i.e., during the Baseline period. The number of teachers at all levels rose during both the Baseline and Impact Assessment periods (World Bank, 2023a), but these levels appear mostly due to population growth rather than a shift in the ways education were reformed or changed because of increased coherence in society.

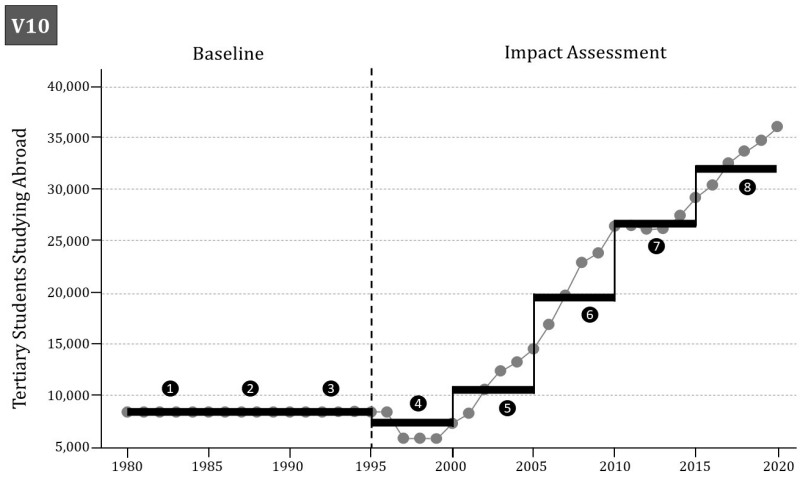
Glewwe and Hall (1994) presented data on primary and secondary school repetitions and dropout rates in Lima for the Baseline period, indicating moderate declines in all categories. However, minimal data on national education are available for the Baseline period. In Figure 13, evidence for the percentage of adolescents out of secondary school (V9) show data points for 1980 and 1981, and then consistently from 1995, but estimates for other years in the Baseline period and for 2019 and 2020 are missing from the public record. Nevertheless, indications are that the percentage of adolescents out of secondary school declined steadily from the beginning of the Impact Assessment period with the greatest reductions occurring between segments 4, 5, and 6, with a leveling off at about 4% absenteeism in segments 6, 7, and 8 down from about 13% in the Baseline period. Normalised *z*-scores for percentage of adolescents out of secondary school were $z = .88$ in 1980 and $z = -1.83$ in 2020.



Source: World Bank (2022, 2023a); before 1995, excluding 1980 and 1981, estimates were based on average of 1980, 1981, and 1995.

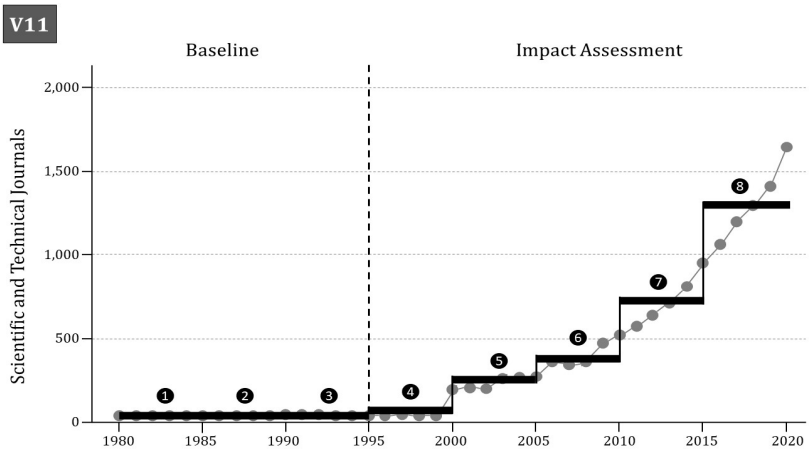
Figure 13. V9—Percentage of Adolescents out of Secondary School between 1980 and 2020 by Year and Five-Year Segment

'Outward mobility' refers to the number of students studying abroad and is a measure of a country's affluence and a population's desire to get better qualifications and jobs. Data are missing in the Baseline period for the number of outward mobility tertiary education students (V10), but a conservative estimate has been based on published data for the years 1995 and 1996; in reality, the number was probably lower than the 8,000 student estimates for these years. Figure 14 shows that outward mobility increased steadily throughout the Impact Assessment period, with the greatest gains between segments 5 and 6 and between segments 6 and 7. The curve of V10 is an almost perfect match for the curve of Figure 4 and represents an approximate 350% increase in outbound students. According to Monroe and Mackie (2020), "driven by its rapidly expanding middle class, Peru over the past two decades [i.e., between 2000 and 2020] has grown into a significant source of international students. Just the 72nd-largest source [in the world] in 1998, when the country sent 5,900 international degree-seeking students abroad, by 2019 it was the 38th-largest, with 33,837 Peruvian students studying overseas". Normalised *z*-scores for outward mobility tertiary education students were $z = -.74$ in 1980 and $z = 2.07$ in 2020.



Source: 1980-1994 are estimates based on El-Khawas (1998, p. 59) for 1995 and 1996; UNESCO (2022) for 1997-2020; confirmed by World Bank (2023a) for 1997–2016 and Monroe & Mackie (2020).

Figure 14. V10—Number of Outward Mobility Tertiary Education Students between 1980 and 2020 by Year and Five-Year Segment



Source: World Bank (2022, 2023a); data for 1980–1985 are estimates based on an average of World Bank data between 1986 and 1999.

Figure 15. V11—Number of Scientific and Technical Journals Published between 1980 and 2020 by Year and Five-Year Segment

According to the World Bank (2023a), scientific and technical journal articles refer to the number of scientific and engineering articles published in physics, biology, chemistry, mathematics, clinical medicine, biomedical research, engineering and technology, and earth and space sciences. The number of scientific and technical journals (V11) is a measure of the research and scholarly output of a country. No change in the number of journals (approximately 50 journals per year) can be observed prior to 1999 when the number steadily increases to 1,650 by 2020, an approximate 3,000% increase, with the greatest increase in publications during segments 7 and 8. Normalised *z*-scores for the number of scientific and technical journals were $z = -.68$ in 1980 and $z = 2.53$ in 2020. The curve of V11 is an almost perfect match for the curve of Figure 4.

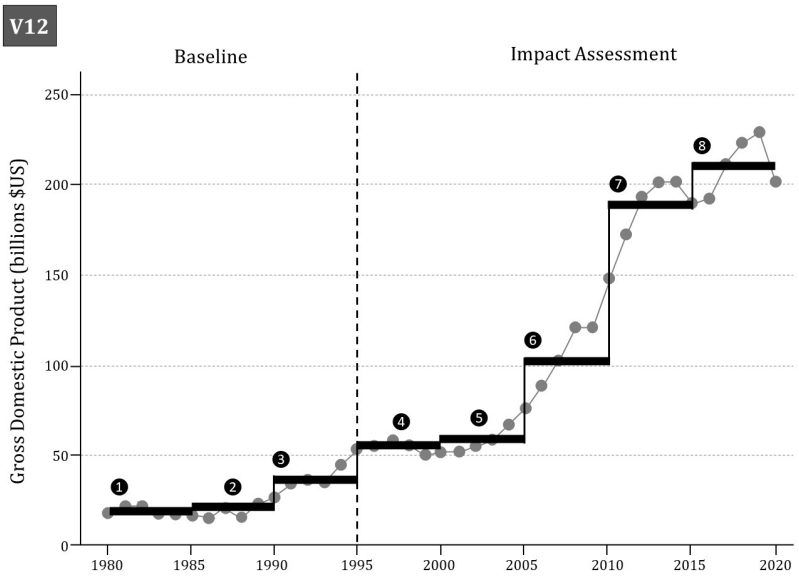
3.2.4 Economy

Nine variables represent living standards associated with the economy: V12—gross domestic product (GDP), V13—per capita GDP, V14—GDP per person employed, V15—short-term national debt, V16—unemployment,

V17—inflation, V18—cereal production, V19—number of products exported, and V20—high-tech exports.

We do not propose these economic measures represent the entire story of Perú's economic or fiscal situation during either the Baseline or Impact Assessment periods. Indeed, the relationship of economic indicators and living standards is a complex one, as explained by Glewwe and Hall (1994) and Bilan et al. (2020). The authors also accept that not everyone will agree these economic variables, many derived from the World Bank, are valid markers of a country's standard of living. For example, GDP as a measure of productivity is directly linked to consumerism (i.e., the encouragement to acquire and consume goods and services) and is therefore not always considered an appropriate measure of human welfare given its link to the non-sustainable destruction and depletion of limited natural resources.

The early work of Senbel, McDaniels and Dowlatabadi (2003) on ecological footprint analysis as a potential non-monetary metric of ecological productivity, human consumption, and sustainability is a case where financial productivity and consumerism have been replaced by other more sensitive and holistic measures of social well-being because of this criticism. The more recent work of Lin et al. (2018) on the National Footprint Accounts furthers this argument. Nevertheless, the markers used in this study are still commonly accepted as valid measures of social well-being (e.g., Ivanic & Martin, 2018) and are often the only publicly available data to measure economic living standards in social science research.



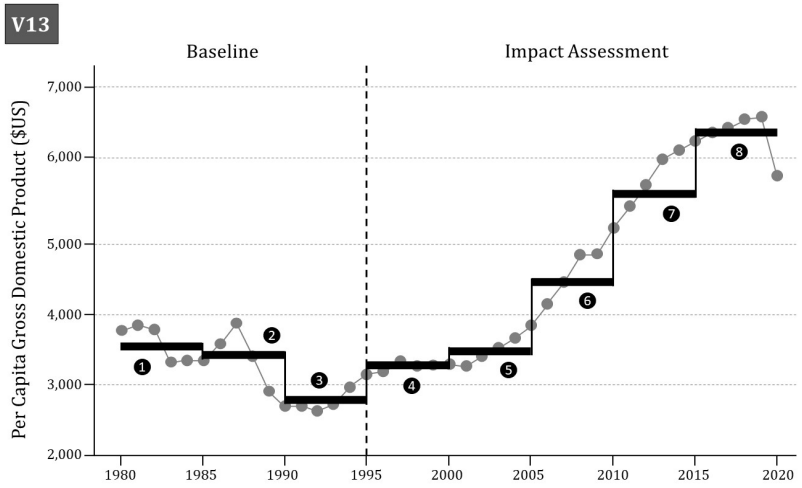
Source: World Bank (2022, 2023a).

Figure 16. V12—Gross Domestic Product in Billions $US between 1980 and 2020 by Year and Five-Year Segment

Gross domestic product (GDP) is the monetary measure of a nation's total market value of final goods and services produced and sold at specific time; GDP is often used by to measure a country's 'economic health'. GDP growth rate for all Latin American and Caribbean countries (i.e., the annual percentage change of GDP) between 2004 and 2020 was 0.14%, but for Perú it was 1.7% for the same period (IMF, 2023, p. 130). As shown in Figure 16, GDP (V12) was increasing slowly during the Baseline period, but increased dramatically in 2002 and continued its increase through 2019, when it declined in 2020 due to the COVID-19 pandemic.

Nevertheless, Cruces et al. (2017, p. 377) said "the Perúvian economy performed exceptionally well between 2000 and 2012, with a growth performance that placed the country well above the regional average and an improvement in all labour market indicators".

The most noticeable increase in GDP occurred between segments 5 and 6 and between segments 6 and 7 when it increased from $50 billion to $200 billion per year in under 15 years, again coinciding with the period of most accelerated teaching of Transcendental Meditation in schools. The average segment difference between the Baseline period and the Impact Assessment period is about +250% (i.e., $35 billion GDP per segment average to $123 billion per segment average during the Impact Assessment period) but GDP increase by approximately 900% from 1980 to 2020. Normalised *z*-scores for GDP were $z = -.97$ in 1980 and $z = 1.54$ in 2020.

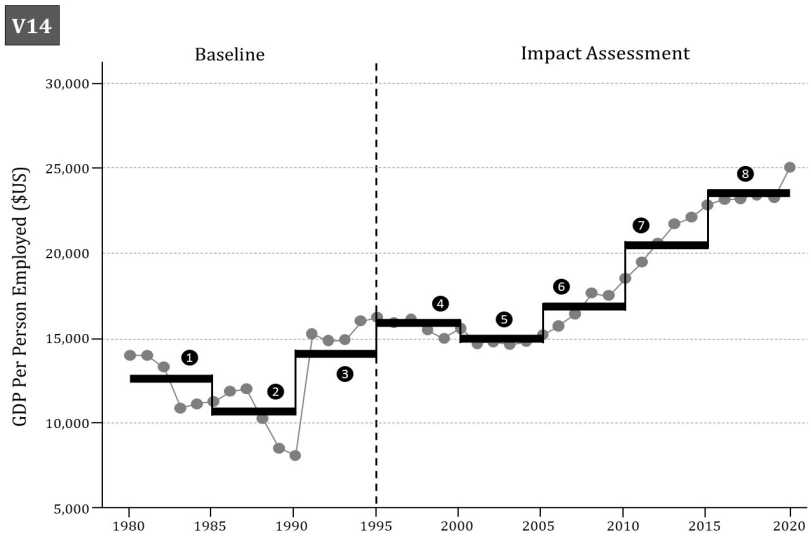


Source: Gomez (2005) and World Bank (2022, 2023a), some data points prior to 1992 confirmed by Gomez (2005).

Figure 17. V13—Per Capita Gross Domestic Product in $US between 1980 and 2020 by Year and Five-Year Segment

Per capita gross domestic product (V13) is the total annual value added to the economy divided by the mid-year population. As per capita GDP declines, household consumption declines—as was the case in Lima between 1985 and 1990, particularly for the city's poorest members (Glewwe & Hall, 1994, p. 690)—and thus (by some measures) living standards subsequently also decline. As shown in Figure 17, per capita GDP (using 2017 prices) was declining steadily during the Baseline period to about $2,800 per person.

Glewwe and Hall (1994, p. 693) addressed what they called the "severe deterioration" of the country's economic situation during this period and further discussed the economic situation during the Baseline period with other data on per capita GDP, wages, consumer prices, and exports. Gomez (2005) cited somewhat lower, but nevertheless declining, per capita GDP numbers of $2,683 in 1981, $2,244 in 1983, $2,643 in 1987, and $1,908 in 1991. However, between segment 3 and segment 4 per capita GDP rose and continued rising for every segment thereafter, reaching about $6,600 per person by 2019. The most significant increases in per capital GDP were in segments 6, 7, and 8.



Source: World Bank (2022, 2023a).

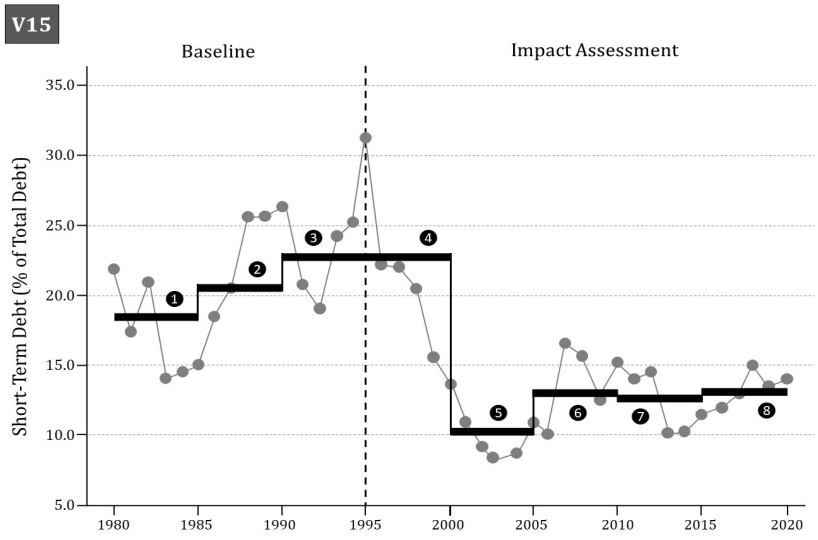
Figure 18. V14—Gross Domestic Product per Person Employed (constant in 1990's $US) between 1980 and 2020 by Year and Five-Year Segment

The average segment difference between the Baseline period and the Impact Assessment period is about +40% (i.e., $3,300 per capita GDP per segment average to $4,600 per capita GDP per segment average during the Impact Assessment period), an increase of approximately 80% between 1980 and 2020. Normalised *z*-scores for per capita GDP were $z = -.27$ in 1980 and $z = 1.31$ in 2020.

The GDP per person employed (V14) is the total value added to the economy from goods and services divided by the number of resident producers (i.e., by those employed in the country). Figure 18 shows that GDP per person employed (using 2017 prices) was approximately $12,000 throughout the Baseline period, rose to about $15,500 during segments 4 and 5, but then increased steadily after 2005, rising to $25,000 by 2020, an increase of about 60% from 1995.

The average segment difference between the Baseline period and the Impact Assessment period is about +35% (i.e., $13,666 GDP per person per segment average to $18,400 GDP per person per segment average during the Impact Assessment period). Normalised *z*-scores for GDP per person employed were $z = -.48$ in 1980 and $z = 2.05$ in 2020.

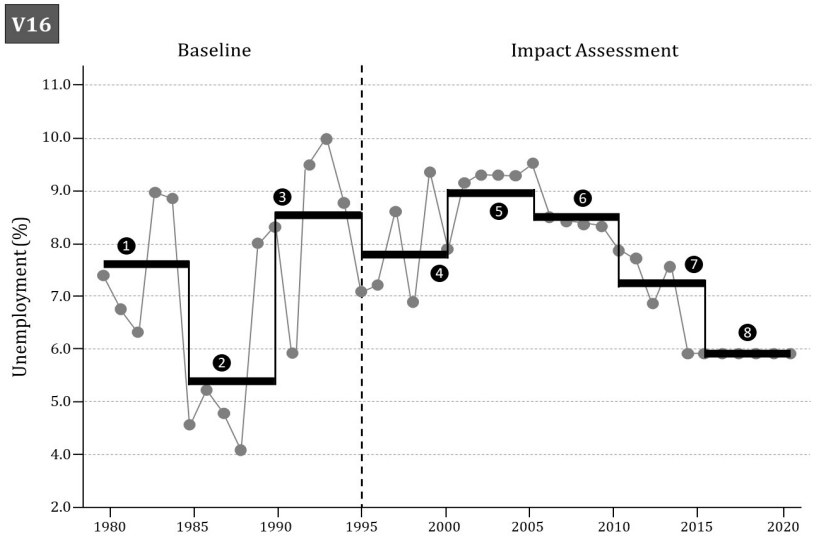
'National debt' refers to the outstanding financial obligations of a country, and thus represents what a federal government owes to its creditors. Short-term national debt as a percentage of national debt (V15) represents the percentage of this financial obligation expected to be paid off within a year. Perú's short-term debt was increasing steadily in the Baseline period, reaching 32% of national debt by 1995. Immediately the number of children and adolescents taught Transcendental Meditation began increasing short-term debt began decreasing significantly, from 32% to 8% by 2003 and then settling to an average of about 13% thereafter through 2020. The single most dramatic decrease occurred between segment 4 and segment 5, when short-term debt decreased by 55% in ten years from an average of 23% to 10% of national debt.



Source: World Bank (2022, 2023a).

Figure 19. V15—Short-term National Debt as a Percentage of Total National Debt between 1980 and 2020 by Year and Five-Year Segment

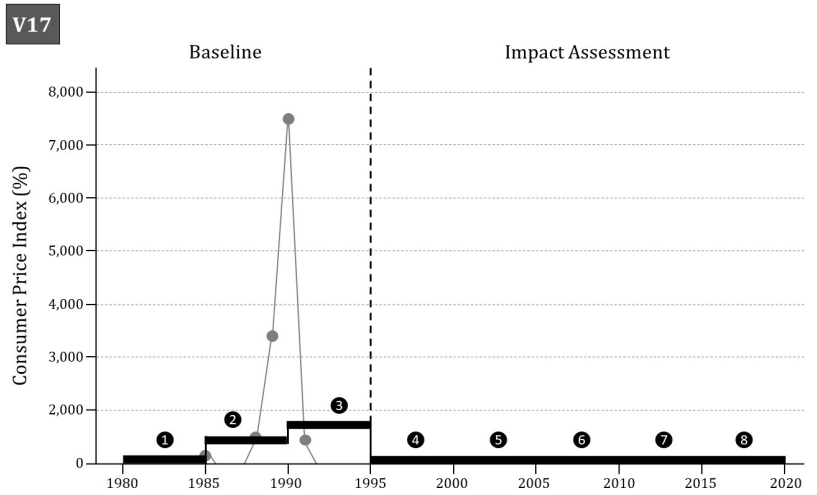
The average segment difference between the Baseline period and the Impact Assessment period is about −30% (i.e., 20.5% short-term debt per segment average to 14.4% short-term debt per segment average during the Impact Assessment period). Normalised *z*-scores for short-term national debt were $z = .96$ in 1980 and $z = -.45$ in 2020.



Source: World Bank (2022, 2023a) and confirmed by Hudson (1992) for the Baseline period.

Figure 20. V16—Unemployment Rate between 1980 and 2020 by Year and Five-Year Segment.

Immediately prior to the Impact Assessment period, the unemployment rate in Perú was trending upward, from 7.4% in 1980 to 8.9% in 1994, although it fluctuated wildly from a low of 4% in 1988 to a high of 10% in 1993 during the Baseline Period. Nevertheless, this trend reversed during the Impact Assessment period, with an average of 7.9% at the beginning of the period to 6.0% at the end, with that level maintained throughout segment 8. Normalised *z*-scores for unemployment were $z = -.12$ in 1980 and $z = -1.0$ in 2020 but peaked at $z = 1.55$ in 1993 and again at $z = 1.25$ in 2005 before its steady decline.

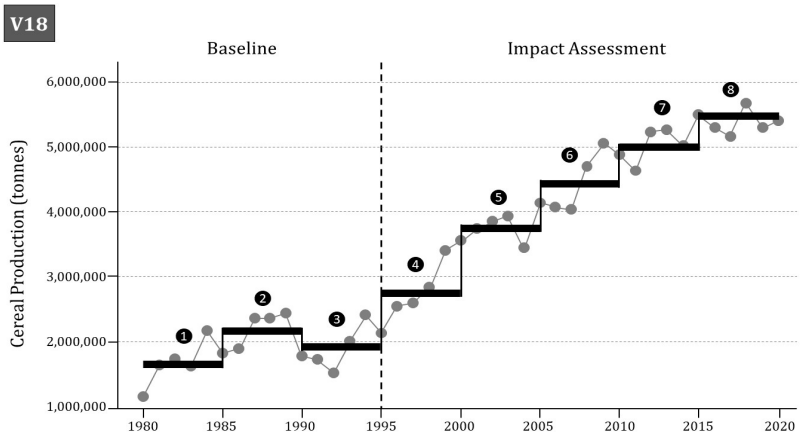


Source: World Bank (2022, 2023a); 1980 to 1992 confirmed by Glewwe and Hall (1994); 1990 and 1991 confirmed by Gomez (2005); all data confirmed by Fitch Ratings (2023).

Figure 21. V17—Consumer Price Index between 1980 and 2020 by Year and Five-Year Segment.

Data on inflation, as measured by the consumer price index (CPI), tell a remarkable story, given the hyperinflation of 1989 and 1990, when the CPI rose to 7,500% before falling in 1991. According to Gomez (2005), "living standards for Perúvian people were unbearable in the late 1980s due to unmanageable debt and hyper-inflation". However, the increasing averages of CPI (V17) during the Baseline period were reversed beginning in 1991, and these have remained at about 2% thereafter throughout the Impact Assessment period.

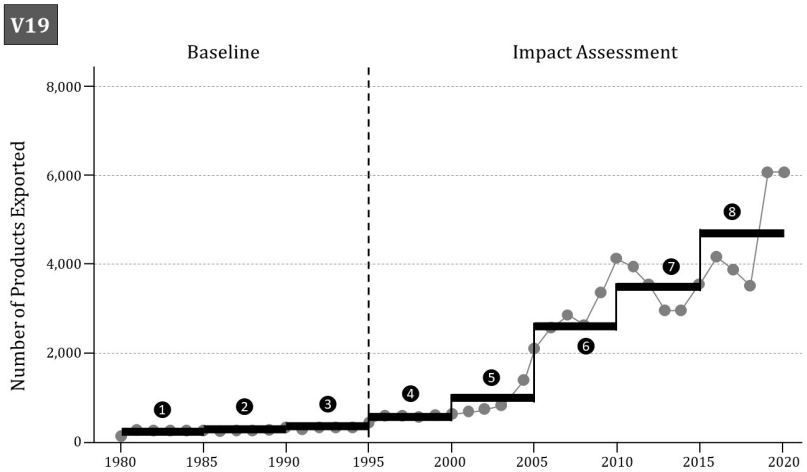
Perú produces significantly large crops of corn and quinoa, with wheat a minor contributing crop; corn alone accounted for about 3.3 million tonnes grown on 550,000 ha in 2015. Data from the World Bank (2023a) show hectares under cereal production in Perú largely match the tonnage production data shown in Figure 22. Hectares under production were flat throughout the Baseline period, with 639,839 ha under production in 1980, 785,823 ha in 1985, 683,214 ha in 1990, and 807,244 ha in 1995. These levels increased to 1.1−1.2 million ha between 1995 and 20015, rising to 1.8 million ha by 2020. As shown in Figure 22, cereal production (V18) was flat at 2.0 million tonnes between 1980 and 1995, but began rising significantly in 1995 and continued rising throughout segments 4−8, finally reaching 5.4 million tonnes by 2020.



Source: World Bank (2022, 2023a); confirmed by the World Data Atlas (Knoema, 2023).

Figure 22. V18—Cereal Production in Tonnes between 1980 and 2020 by Year and Five-Year Segment.

The average segment difference between the Baseline period and the Impact Assessment period is about +90% (i.e., 2.25 million tonnes per segment average to 4.3 million tonnes per segment average during the Impact Assessment period). Normalised *z*-scores for cereal production were $z = -1.55$ in 1980 and $z = 1.39$ in 2020.



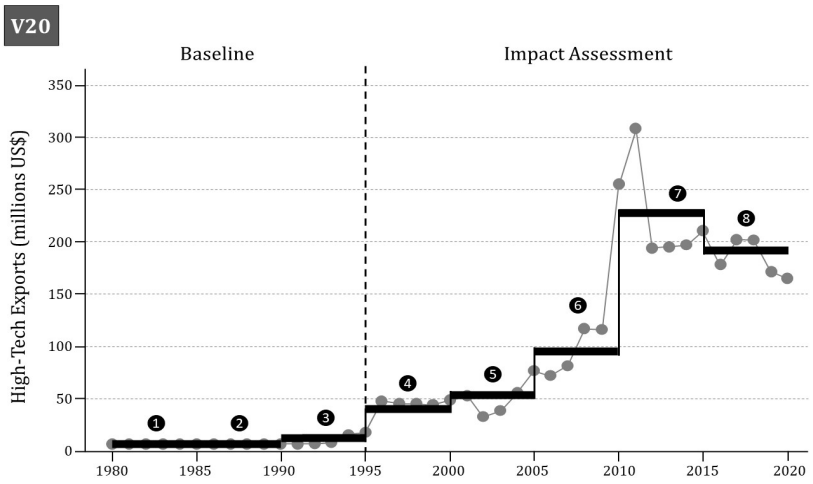
Source: World Bank (2022, 2023a).

Figure 23. V19—Number of Products Exported between 1980 and 2020 by Year and Five-Year Segment

Perú's major trading partners are Brazil, Chile, China, European Union, and the United States, with a total of 160 trading partners. Thirty-one percent of exports go to China (valued at $17.7 billion) and 13% to the United States (valued at $6.8 billion) being the largest two partners. Between 1995 and 2009, exports increased from just under $5.0 billion to $15.8 billion (Economic Commission for Latin America and the Caribbean, 2011, p. 6). Main exports include copper ore (27%, valued at $18 billion), gold (14%), iron ore (3%), and zinc ore (3%), tropical fruits (3%),

and grapes (2%). Figure 23 shows the number of products exported (V19) between 1980 and 1994, which was flat in the Baseline period at about 200 per year. Beginning in 1995, this number began slowly increasing until 2003 when the number increased from 900 to 4,000 in 2010 and 6,000 by 2020. The greatest increases can be seen between segments 5 and 6 when the largest increases in the number of children and adolescents were taught Transcendental Meditation. Normalised *z*-scores for products exported were $z = -.93$ in 1980 and $z = 2.45$ in 2020. The curve of V19 is an almost perfect match for the curve of Figure 4.

The average segment difference between the Baseline period and the Impact Assessment period is about +1,100% (i.e., 200 products exported per segment average to 2,500 products per segment average during the Impact Assessment period).



Source: World Bank (2022, 2023a).

Figure 24. V20—Value of High-Tech Exports between 1980 and 2020 by Year and Five-Year Segment

The overall trend in value of Perú's export market is not dissimilar to the rising segment averages in Figure 24. The value of high-tech exports (V20) is particularly notable. During the Baseline period, exports of high-tech goods and services was negligible at around $10 million until 1995. In 1995 it increased to about $50 million, and after a period of consolidation began steadily increasing in 2005, reaching more than $300 million in 2011 before settling to an average of $220 million per year thereafter. Investment in science, technology, and innovation between 2008 ($1.4 million) and 2010 ($2.2 million) suggests the increase in exports observed in Figure 24 may be accurate (Economic Commission for Latin America and the Caribbean, 2011, p. 40). Similarly, the people trained for, and companies serving, this sector increased significantly between 2003 and 2009 (Economic Commission for Latin America and the Caribbean, 2011, p. 44). However, Perú's export of high-tech products and services was just 4.8% of total exports in 2020, according to Knoema (2023).

The average segment difference between the Baseline period and the Impact Assessment period for high-tech exports was about +900% (i.e., $10 million high-tech exports per segment average to $104 million high-tech exports per segment average during the Impact Assessment period). Normalised *z*-scores for the value of high-tech exports were $z = -.85$ in 1980 and $z = .94$ in 2020.

From the 41-year data of 20 dependent variables, normalised *z*-scores can be calculated for all eight time segments. We use the following formula: $(x–\mu)/\sigma$, where x = average *z*-score for the segment, μ = mean of data set, and σ = standard deviation of data set. The dotted line again shows the point in 1995 when Transcendental Meditation was first taught to increasingly large numbers of children and adolescent students in Perú. Of interest is how the trend slopes of these seven variables were relatively flat during the Baseline period but accelerated in a salutary direction (downward for poverty and undernourishment, and upward for the other five variables) from approximately 2005 when the largest number of students were taught Transcendental Meditation. Of interest also is how the slopes each cross the zero point (i.e., the mean of the normalised values) together between 2005 and 2010, i.e., during segment 6 when the number of students accelerated the fastest.

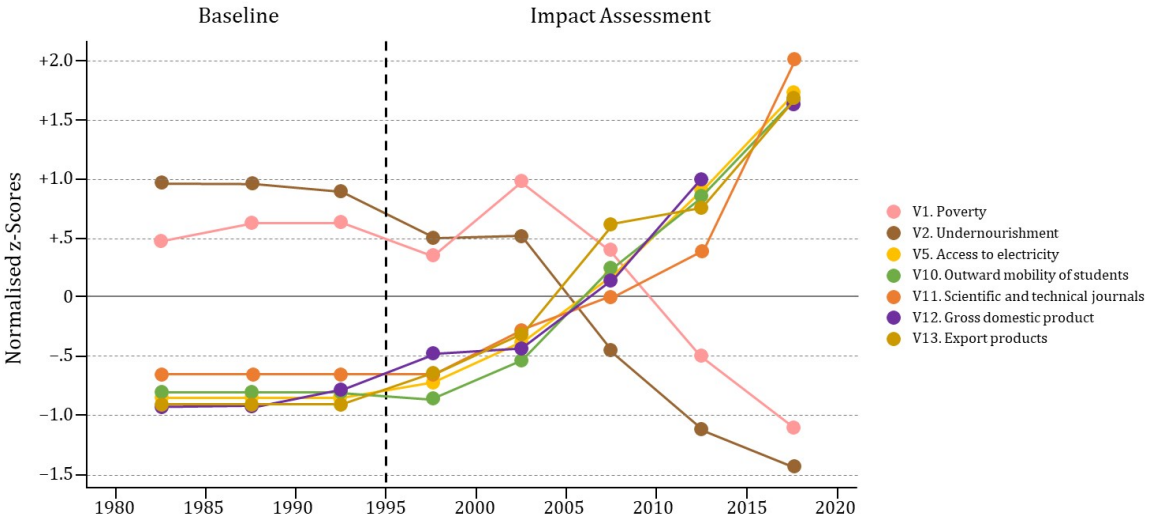


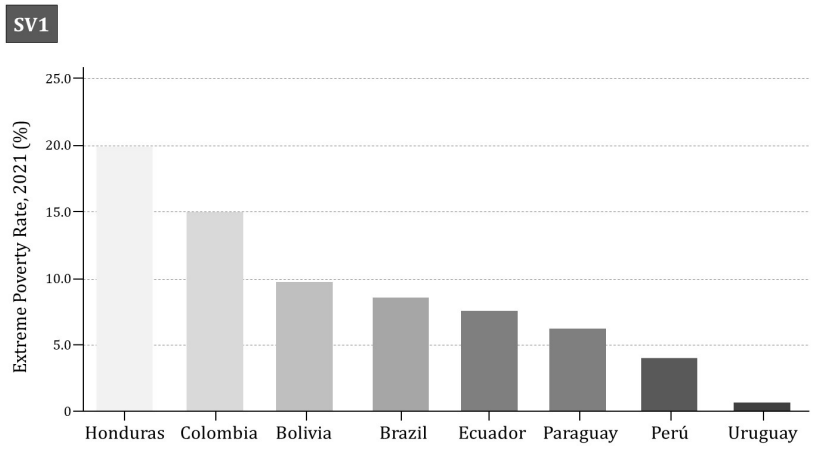
Figure 25. Normalised *z*-scores of Seven Sample Dependent Variables by Five-Year Segment

3.3 Perú and its Neighbors

To help answer RQ_3, the following eight summative variables at (or toward) the end of the Impact Assessment period summarise Perú's regional and international status in 2020 or 2021, the years for which most recent data are available. The purpose of these data is to assess Peru's social and economic living standards compared to other countries in Latin America and elsewhere in the world using both quantitative and qualitative measures. For example, the Social Progress Index (SPI) is a holistic, quantitative, outcome-based measure of a country's 'well-being', independent of economic indicators. The SPI showed that on a scale of 1–100, in 2014 Perú rated 66.3 (Porter, Stern, & Green, 2014, p. 7), by 2015 it was 67.2 (Porter, Stern, & Green, 2015, p. 17), but by 2020 it was 74.2 (Social Progress Imperative, 2020, p. 5), indicative of increasing social well-being.

Nevertheless, quantifying improvements in living standards is generally difficult. Lora (2012) has constructed a Structural Reform Index (SRI) that measures improvements in a country's trade, financial, tax, privatization and labor policies, and approximates overall trends in economic liberalisation. The total SRI (on a scale from 0 to 1) is an average of reforms in these five policy areas. According to Ross and Peschiera (2015), there was a significant improvement in structural policies in Latin America between the mid-1980s and late 1990s (i.e., during the 'lost decade and a half in Perú'), as countries in the region moved away from government intervention and protectionism toward more open market policies. Perú, which had been at the bottom of SRI rankings in the mid-1980s, reduced the gap between itself and Chile, the regional leader in reform, from 0.22 to 0.11, increasing its overall rank on the SRI from 0.28 in 1985 to 0.69 by 2009 (Ross & Peschiera, 2015, p. 40).

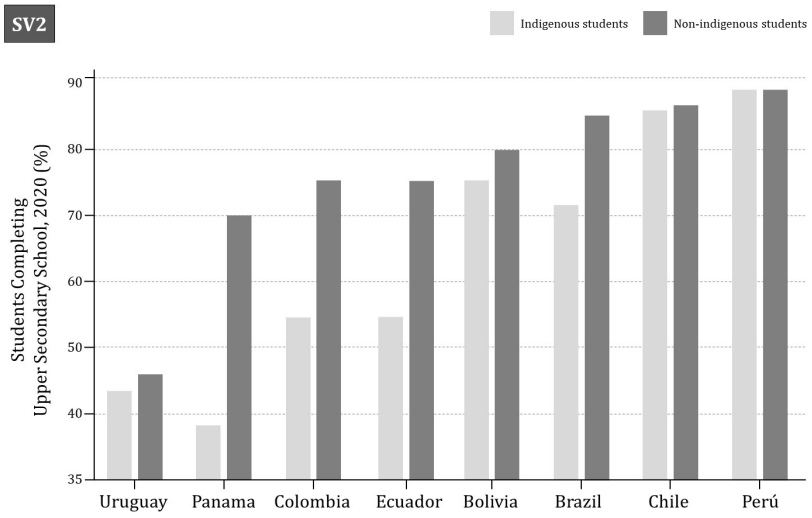
Poverty rates in Perú were also low in comparison to other Latin American countries. However, life expectancy in 2020 was 20 years lower in poor provinces like Huancavelica than in the capital Lima, and 20% of rural families in the Sierra lived on less than $1.90 a day. Nevertheless, as of 2021, besides Chile (3.6:100,000), Peru had the lowest incidence of homicide (4.3:100,00) of any country in Latin America and Caribbean (Sahd, Zovatto, & Rojas, 2023, p. 11).



Source: UNESCO (2022, p. 59).

Figure 26. SV1—Perú's Extreme Poverty Rate in Relation to Other Latin American Countries in 2021

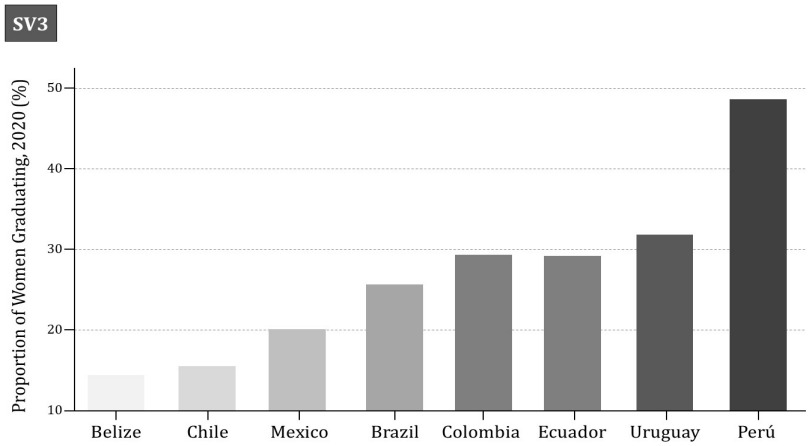
Figure 26 indicates that in eight Latin American countries with an average extreme poverty rate (SV1) of about 9%, Peru had the second lowest level of extreme poverty at 4.0% in 2021, i.e., less than 50% lower extreme poverty than the regional average and above only Uruguay at 1%.



Source: UNESCO (2022, p. 128).

Figure 27. SV2—Perúvian Students Completing upper Secondary Education In 2020 in Relation to Other Latin American Countries

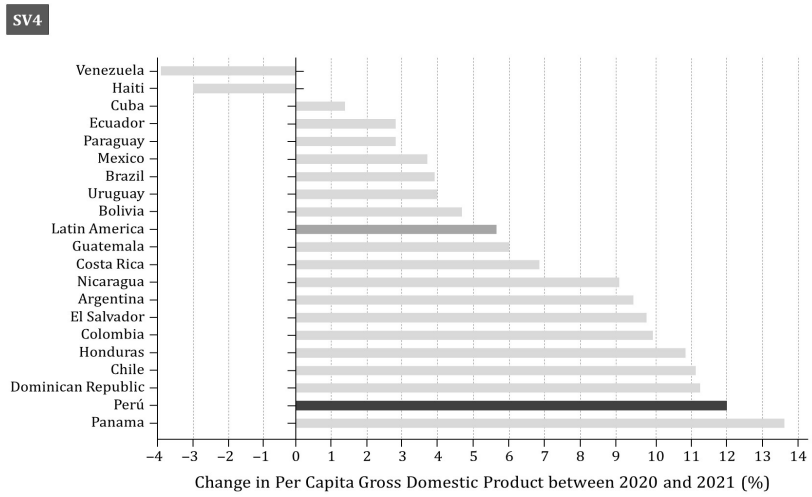
Perú had the highest level of students completing upper secondary school (SV2) of any country in Latin America at 89%, as shown in Figure 27. With an average of 64% for indigenous students and 77% for non-indigenous students in Latin America, Perú was well above the average for both indigenous students at 89% and non-indigenous students at 89%. Of interest is the percentages in Perú for secondary school completions are the same for indigenous and non-indigenous students, unlike most other countries, except Chile and Uruguay, where clear discrepancies exist between completions for indigenous and non-indigenous students. For example, in Panama 70% of non-indigenous students complete upper secondary school but only 39% of indigenous students do so.



Source: UNESCO (2022, p. 27).

Figure 28. SV3—Perú's Proportion of Women Graduating from University in 2020 in relation to other Latin American Countries

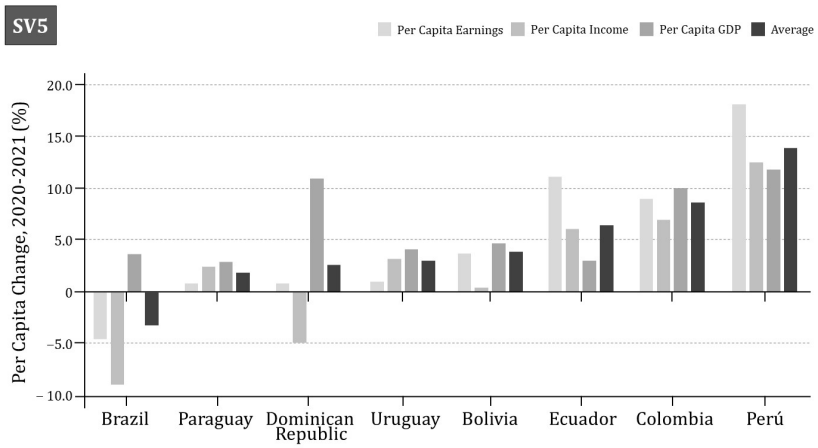
As of 2020 and shown in Figure 28, Perú had the highest proportion of women graduating from university (SV3) of any country in Latin America at 49%. With an average of 24% in Latin America, without Perú's contribution to the average, Perú has double the regional average of women graduating from university. Thus, there is a significantly different status for women in higher education in Perú compared to other Latin American countries. Perú is also close to achieving gender parity in science, technology, engineering, and medicine (STEM) graduates (World Bank, 2023c, p. 1) and has one of the highest percentages in the world of people who believe that "things would work better if more women held positions with responsibilities in government and companies" at 62%, according to the Institut Public de Sondage d'Opinion Secteur (IPSOS, 2016d, p. 40).



Source: UNESCO (2022, p. 43).

Figure 29. SV4—Perú's Change in per capita Gross Domestic Product in relation to other Latin American Countries and the Latin American Average between 2020 and 2021

According to the United Nations Educational, Scientific and Cultural Organization (UNESCO, 2022), Perú's economy continued to expand beyond the Impact Assessment period, as shown in Figure 29, with the second highest change to per capita GDP (SV4) between 2020 and 2021, at 12%, of all Latin American countries, which averaged 5.6% per capita GDP change during the same period.



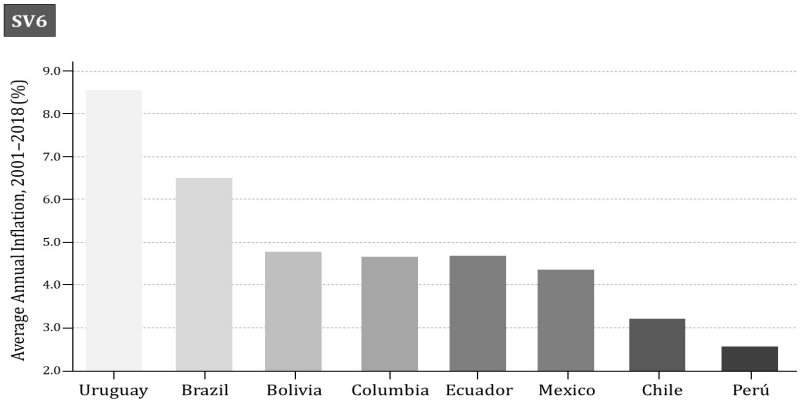
Source: UNESCO (2022, p. 45).

Figure 30. SV5—Changes in per capita Earnings, per capita income, per capita Gross Domestic Product in Perú, and Average of All per capita Changes in relation to other Latin American Countries between 2020 and 2021

Figure 30 puts SV4 into perspective, comparing changes to per capita GDP to changes in both per capita earnings and per capita income (SV5) between 2020 and 2021. By these metrics, per capita earnings in Latin America changed by an average of 5.0%, per capita income by an average of 2.1%, and per capita GDP by an average 6.3% (UNESCO, 2022). The average change between 2020 and 2021 for all measures combined in Latin America was 4.5% compared to Perú's average change which was 14%, three times the regional average.

Moreover, in 2017, Perú ranked among the highest countries in the world to rate the current economic situation in their country as "good" (IPSOS Public Affairs, 2017, p. 17) and its citizens were the fifth highest country in the world to say they thought the economy in their local area would be "stronger" in the next six months (p. 45). Perúvians were also among the lowest in the world to say their country was "in decline" (IPSOS, 2016c, p. 3), and were the "least pessimistic" in the world to say the lives of their then current generation of young people would be worse off than their parents at just 9% (p. 5).

As shown in Figure 31, Perú had the lowest average annual inflation rate (SV6) over the 18-year period between 2001 and 2018 at 2.5% when compared to other Latin American countries, which was 4.9%, or nearly half of the average inflation rate for the region. The average annual inflation rate for all Latin American and Caribbean countries between 2004 and 2020 was 7.9%, but Perú's inflation rate was just 4.2% for the same period (IMF, 2023, p. 135), and was the lowest rate for nearly 20 years compared to other countries in Latin America.

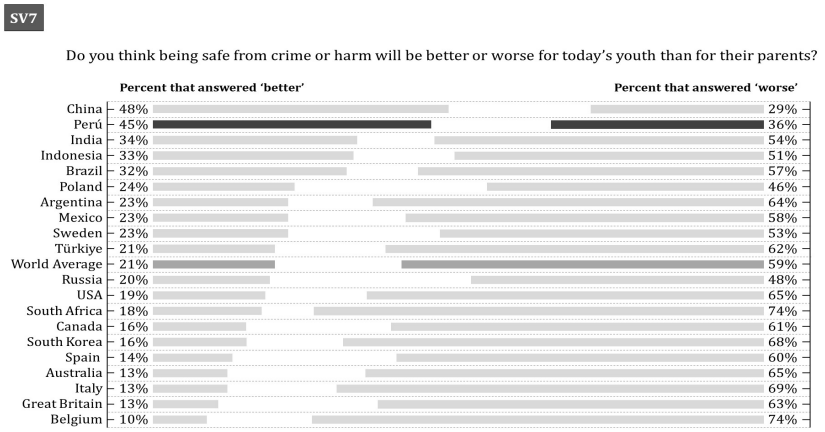


Source: World Bank (2023a).

Figure 31. SV6—Perú's Average Annual Inflation Rate (using the consumer price index) between 2001 and 2018 in Relation to other Latin American Countries

In response to the question: 'Generally speaking, would you say things in your country are heading in the right direction, or are they off on the wrong track?', 61% of Perúvians in 2016, the third highest percentage of any country in the world (after China, Saudi Arabia, and India), thought their country was heading in the right direction (IPSOS, 2016a, 2016b), and 66% of Peruvians in 2017 said that "today's youth will have had a better life than their parents", the second highest percentage of any country in the world (Page, 2017, p. 39).

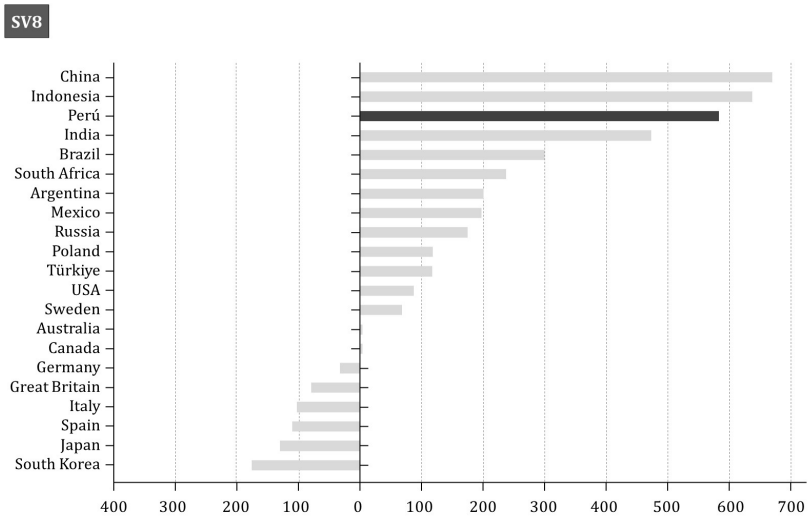
Figure 32 presents qualitative data from the same survey for perceptions of crime and harm (SV7) for representative countries around the world in 2016. In response to the question: 'Do you think being safe from crime or harm will be better or worse for today's youth than for their parents?', 45% of Perúvians, the second highest percentage of any country in the world, thought 'today's youths' would be safer in 2016 than their parents (Routley, 2019). The world average answer to this question was 21%, meaning Perúvians were more than twice as likely to answer in the affirmative compared to the world average, and was significantly higher than Brazil (32%), Argentina (23%), and Mexico (23%).



Source: Routley (2019).

Figure 32. SV7—Perceptions of Crime and Harm in Perú Compared to the Rest of the world in 2016

The positive change in net score for this question in Perú between 2016 and 2020 was 25%; that is, the net difference between the rating of 'better' rather than 'worse' increased by 25% between 2016 and 2020 (IPSOS, 2020a), indicating that the trend toward feeling safer continued to the end of the Impact Assessment period. Perceptions of other measures—such as having a secure job (21% change), having a successful career (23% change), and being able to live comfortably after retirement (16% change)—also indicate an increased sense of more optimism in Perú between 2016 and 2020 (IPSOS, 2020a).



Source: IPSOS (2016d, p. 58).

Figure 33. SV8—Perúvian Optimism Compared to Optimism in Other Countries around the World in 2016.

Figure 33 presents the level of optimism (SV8) in 2016 for countries around the world using the Future Optimism Index (FOI). The Index measures "a range of domains, including employment, access to information and education, safety from crime, opportunities for travel and home-ownership" (IPSOS, 2016d, p. 59). This finding shows Perúvians scored the third highest rating for optimism of any country in the world, after China and Indonesia, in a sample of 21 countries. Moreover, 72% of Peruvians reported they were "happy" in 2022 (up from 32% in 2017), with only four other countries in Latin America—Argentina, Chile, Colombia, and Mexico—scoring marginally higher (IPSOS, 2023, pp. 4−5). Interestingly, in 2020, Perúvians scored among the lowest in the world at 42% to say they would like their country to be "like it used to be" (IPSOS, 2020b, p. 71), and the people of Perú were the third most likely people in the world to say they felt like "citizens of the world", with 60% of the country saying they feel this way (IPSOS, 2020b, p. 55).

4. Discussion and Conclusions

To guide this study, we asked three research questions. We can now answer RQ_1—how many children and adolescent students were taught the Transcendental Meditation technique between 1980 and 2020 in Perú—as a result of data provided in Figure 4. That number is 53,620. We can also answer RQ_2 affirmatively that there is *prima facie* evidence in the public record, using standard measures of social and economic living standards between 1980 and 2020, to indicate that changes in the number of children and adolescents taught Transcendental Meditation appear related to these standard measures. And finally, we can answer RQ_3 affirmatively that Peru's social and economic living standards by 2020, after 26 years of collective practice of Transcendental Meditation by children and adolescent students, compare favorably to other countries in Latin America and elsewhere in the world. Indeed, evidence of a difference between living standards during the Baseline period (coinciding with the so-called 'lost decade and a half') and living standards during the Impact Assessment period (coinciding with the 'Perúvian miracle') is starkly obvious. We therefore tentatively conclude that the number of school children and adolescent students taught and practicing the Transcendental Meditation technique during the Impact Assessment period likely contributed to this difference. We have provided five types of evidence to support this conclusion.

First, we have presented data on 20 dependent variables and eight summative variables which collectively point to this conclusion. Second, we have presented a substantial body of empirical data from reliable, peer-reviewed published sources at some of the world's top research facilities which confirms a measurable effect is created when a significant number of people learn and practice the Transcendental Meditation technique together. Third, Perúvians directly experienced an improvement in their living standards during the Impact Assessment period, as evidenced by the number of people who report optimism for the future (an indexed number higher than the world average and the third highest in the world) and the large percentage of adults in Perú (the second highest in the world) who believe their children will likely face a safer future than they did. Fourth, we have cited evidence from Perú that Maharishi predicted 40 years ago that if more people learned his Transcendental Meditation technique the quality of life in the country would improve. Such predictions by Maharishi and subsequently tested in other settings were similarly found supported by empirical and qualitative evidence (e.g., Hagelin et al., 1999; Maharishi International University, 1983) further supporting our argument.

And finally, we have provided evidence that the ancient Vedic tradition, from which Transcendental Meditation was derived by Maharishi, clearly states that the quality of both individual and social life improve when the brainwave coherence of individuals in a population increases. This means the explanation we have advanced for the observed phenomenon in Perú has been documented and time-tested over millennia and is thus a longstanding one. We also note the improved changes to Perúvian living standards often precisely tracked the increasing number of children and adolescents who were taught the Transcendental Meditation technique during the Impact Assessment period.

However, we also recognise that no one source of evidence, taken in isolation, can completely confirm our conclusion, and even the observed trends of all 28 variables taken together do not provide proof positive that the conclusion we have drawn from these *prima facie* data has been established. But we do suggest the study includes enough diverse sources of evidence to provide reasonable inferential support to advance the proposition that the group practice of Transcendental Meditation by children and adolescent students in Perú appears to be associated with salutary changes to the country's living standards since 1995.

Of further interest is the observation that the findings of this study parallel almost exactly what happened in Cambodia after 1993 at Maharishi Vedic University when a group of students practiced Transcendental Meditation together over a 15-year period. The phenomenon observed in Perú matches the Cambodian event when using both descriptive statistics (Fergusson, 2016a, 2016b) as well as more sophisticated statistical time-series methods

(Fergusson & Cavanaugh, 2019). This study therefore builds on the earlier Cambodia studies and further confirms the published research on the Maharishi Effect in other countries.

Perhaps the most useful comparison to the present research can be seen in Orme-Johnson et al. (2022), a collective consciousness study on the impact of an assembly of people practicing the Transcendental Meditation and TM-Sidhi program in the U.S. In that study, researchers analysed levels of 'national stress' based on data composited from eight dependent variables—homicides, rape, aggravated assault, robbery, infant mortality, drug-related deaths, motor vehicle fatalities, fatalities due to injuries in youths—across a seven-year baseline period (2000−2006) when compared to a five-year demonstration period (2007−2011) and a five-year post-demonstration period (2012−2016). Results indicate that the trend shifts toward more salutary outcomes on national stress during the demonstration period support the following hypotheses:

1) During the years when the size of a group practicing the Transcendental Meditation and TM-Sidhi program together reached or exceeded a threshold of the √1% of the U.S. population (i.e., 1,725 participants between 2007 and 2011), national stress would decrease (determined by a leading-lagging linear regression forecasting analysis model which assessed data between the baseline and demonstration periods); and
2) When the size of the group decreased to below the threshold in 2012, national stress would increase (i.e., between the demonstration and post-demonstration periods), thereby reducing or reversing the positive social benefits observed during the demonstration period.

These hypotheses were supported by evidence. However, most compelling about the Orme-Johnson et al. (2022, p. 25) study was its use of visual inspection of graphically presented normalised *z*-score data, which they point out can illustrate "socially meaningful" results when coupled with interrupted time series analysis and linear regression forecasting. And while our preliminary study in Perú has not yet been coupled with a statistical model, we use the same visual device to inspect (see Figure 25) and summarise (see Figure 34) our data.

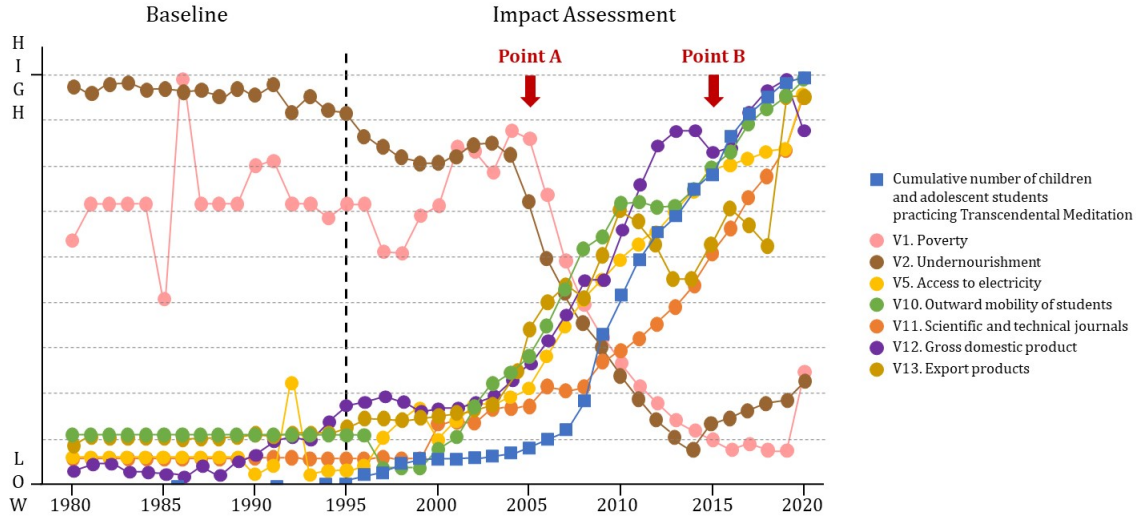


Figure 34. Visual Inspection of Superimposed Independent Variable (blue squares) on Seven Example Annualised Dependent Variables (coloured circles) for Each of the 41-years of the Study

Figure 34 superimposes the cumulative number of children and adolescent students who were taught Transcendental Meditation between 1980 and 2020 onto seven example annualised dependent variables—poverty (% of population), undernourishment (% of population), access to electricity (% of population), number of outward mobility of university students, number of scientific and technical journal publications, gross domestic product (in $billion), per capita gross domestic product (in $US), and number of export products. The *y*-axis is labelled with 'low' scores at the bottom and 'high' scores at the top. Five observations of this summary are of interest.

First, all seven dependent variables remained largely unchanged during the Baseline period. Second, the seven dependent variables changed significantly from the beginning of the Baseline period to the end of the Impact

Assessment period. These included a 50% decrease in poverty, a 66% decrease in undernourishment, a 190% increase in access to electricity, a 250% increase in outward mobility of university students, a 3,000% increase in the number of scientific and technical journals, a 900% increase in gross domestic product, an 80% increase in per capita gross domestic product, and a 2,900% increase in the number of export products.

Third, over the 41-year period, a clear visual relationship between the cumulative number of students who were taught Transcendental Meditation (represented by blue squares in Figure 34) and a decline in trends of poverty and undernourishment on the one hand and an incline in trends of all five other dependent variables can be observed. Note, virtually no students were taught Transcendental Meditation before 1995 and all dependent variables either remained low and flat or fluctuated around relatively stable levels during the same period; none improved noticeably until after 1995 with both poverty and undernourishment improving after 2005 when the number of meditating students increased significantly.

Fourth, the two segments of most rapid accumulation of meditating students, between 2005 (point A, when 4,595 students had been taught Transcendental Meditation) and 2015 (point B, when 41,321 students had been taught the practice, an 800% increase in ten years), were also the periods of most rapid salutary improvement in all seven dependent variables.

And finally fifth, between 2015 and 2020, when the number of meditating students began to slow (from 41,321 students to 53,620, a 29% increase in five years), so too the trends of change in most dependent variables also began to slow or even reverse. For example, in the case of poverty, excluding the reversal between 2019 and 2020 due to the COVID-19 pandemic, poverty only decreased by 8% between 2015 and 2019 after decreasing by 60% between 2005 and 2015.

Together, these five observations lend credibility to our assertion that an association exists between the number of children and adolescent students who were taught Transcendental Meditation between 1995 and 2020 and the living standards of Perúvians during that same time.

4.1 Study Limitations

Publicly available data for the dependent and summative variables used in this study are yearly not monthly. Thus, for the 41-year study period, 41 data points is the maximum number possible for statistical analysis. However, to conduct reliable time series regression analysis, typically 100 or more data points would be preferable, particularly to confidently examine a Baseline period of only 15 years. This study should therefore be seen as a descriptive precusor to more rigourous time-series analyses where many more data points beyond the annualised data used for this study can be investigated. As a consequence, results from this study are not statistically generalisable but are analytically generalisable (Yin, 2018). We have provided five reasons for accepting the analytical generalisability of these findings, with a view to statistically conducting more robust analyses as monthly variable data come to hand.

4.2 Counterfactual Evidence

There are other living standard variables which follow the same trends as the dependent variables cited in this study. These variables could therefore have also been cited to support the argument made in this research, including the number of firms with female top managers, the proportion of women in ministerial level positions, and the proportion of seats held by women in national parliament (World Bank, 2023b). However, three types of counterfactual evidence can also be identified in the public record.

First, some variables, which can be taken as measures of social improvement, do not follow the same upward curve (although they did improve during the Impact Assessment period), such as net emigration and central government debt (World Bank, 2023a, 2023b). Second, some variables do not show significant improvement during the Impact Assessment period compared to the Baseline period, and remained relatively flat or unpredictable, such as foreign investment, wages of salaried workers, and the share of youth (both male and female) not in education, employment or training (World Bank, 2023a, 2023b, 2023c). And third, some variables, mostly related to the environment, indicate a decline in living standards during the Impact Assessment period compared to the Baseline period, such as CO_2 emissions and percent of forested land (World Bank, 2023a). Moreover, Perú ranks relatively poorly for the degree to which co-ordination occurs among public institutions, and perceptions of cooperation are relatively low in comparison to Organisation for Economic Co-operation and Development (OECD) countries and other countries in Latin America. “Peru’s poor performance [in this regard] can be explained”, according to the OECD (2016, p. 140), “by a number of factors, such as weakness in the prioritisation and implementation phases for policies involving several ministries, and the lack of leadership from the centre of government. Peru could improve its skills outcomes by strengthening horizontal collaboration among different ministries, and vertical collaboration across different

levels of government".

But on a variety of other measures, Perú out-ranks and out-performs most Latin American countries (LAC) and other upper middle-income countries (UMC). For example, Perúvian companies with female participation in ownership is 56.6% compared to an average 49.9% for LACs and 35.6% for UMCs, and lower secondary school completion rates in Perú are 99% for girls and boys, compared to an average 87.0% for LACs and 91.1% for UMCs (World Bank, 2023c, pp. 3−4). We therefore acknowledge that while we have not cherry-picked dependent variables and clearly defined living standard trends are obvious in these data, other trends can be observed in the public record which to varying degrees support or deny our claims.

4.3 Alternate Hypotheses

Bellido (2013) posited two explanations for the Perúvian miracle: good luck and good policy. The former (which is harder to test) he thought most likely, while the latter (which is easier to test) may have played a part. These are different, although related, hypotheses to the one advanced by this research. To the question of luck, Gomez (2005) pointed out that President Belaúnde's policies

> were beginning to work when a series of national natural disasters and international events devastated improvements and set the economy back once again. Beginning with a strong earthquake in 1983 and continuing with a series of strong storms, the infrastructure and agriculture of Peru w[ere] devastated. Furthermore the international price for major products Peru exported dropped: the United States, Europe and Australia subsidized their agriculture industries. As a result two of Peru's major exports, potatoes and sugar, were devastated when the price for their world price dropped.

Such circumstances during the Baseline period could be labelled 'bad luck' and thus adversely affected the variables presented in this study, although it is hard to see how these particular setbacks could have simultaneously affected all the dependent variables in this study.

To the question of policy, a great many economists and academics have pondered the micro- and macro-economic policies of subsequent governments between 1995 and 2020 to explain the Perúvian miracle, with varying degrees of articulation and persuasion. For example, Gomez (2005) cites government borrowing from the IMF as a necessary, but unfortunate, policy because such borrowing can be seen as a last resort by other investors. Moreover, the "proceeds of IMF loans went to supporting failing institutions rather than the development of infrastructure, further undermining confidence" (para 6). On the positive side, using a geographic regression discontinuity design, Albertus (2019) found that greater land reform dampened conflict during the Baseline period. According to Albertus, evidence suggests

> land reform [such as converting the landless or those with precarious land tenure into small landholders, as implemented by governments during the Baseline period] mitigated conflict by facilitating counterinsurgency and intelligence gathering, building local organizational capacity later used to deter violence, undercutting the Marxist left [i.e., of Shining Path], and increasing opportunity costs to supporting armed groups. (p. 256)

Thus, Bellido's (2013) suggestion that the Perúvian miracle was 'in part' due to policy seems to be generally supported.

Finally, chance may provide a plausible explanation for the supposed association between practice of Transcendental Meditation and the observed change to living standards in Perú between 1995 and 2020. Without a more robust statistical analysis of autocorrelations and trends in the two sets of data, chance cannot be ruled out. However, enough evidence has been presented to indicate a regressive association may exist but further time series analysis, controlling for lags, would be helpful in ruling out the likelihood of randomness.

4.5 Contribution to Knowledge

The findings presented in this study for Perú are unique and the first to demonstrate the phenomenon in Latin America. Prior experiments associated with testing the Maharishi Effect and the Super Radiance Effect have involved temporarily assembled groups of individuals coming together to demonstrate the effect of increased coherence as a result of the group practice of Transcendental Meditation and the TM-Sidhi program (e.g., Hagelin et al., 1993; Maharishi International University, 1983). In each case, participants came together for this express purpose and collectively had the intention of creating the effect. However, in Perú the phenomenon was different in that the 53,620 children and adolescent students who were taught Transcendental Meditation between 1996 and 2020, and practiced it as part of their school's curriculum, did so for personal gain or for the benefit of their school and community. They had no 'intention' of creating social change or improving living standards; the phenomenon

occurred spontaneously and independently of intention. Therefore, the notion of intention-behaviour can be ruled out as a causative influence or predictive factor in this context.

The personal gains from the program included a desire for improved physical, cognitive, and emotional health and well-being, and improved academic performance, all of which have been documented by this research team. For example, each of these psychophysiological constructs were measured statistically in 91 students at Pomalaza Rixe school in Huay-Huay (Fergusson, Ortiz Cabrejos, & Bonshek, 2021b), and in 520 students at four other schools throughout Perú: Institucion Educativa Emblematica Cesar Vallejo in Lima; Institución Educativa Privada Prescott in Puno; Institución Educativa Colegio Santa María Reyna in Callao; and Colegio Tomasa Ttito Condemayta in Cusco (Fergusson et al., 2022a). Pre- and peri-pandemic studies of students in Perú on other measures such as well-being have also been published (Fergusson et al., 2021a, 2022b, 2023; Fergusson et al., in press), and the long-term salutary impacts of the program on participants, even 15 years after they learned Transcendental Meditation, have also been documented (Fergusson et al., 2020). In this study, we have further shown how the social and economic effects of the group practice of Transcendental Meditation can occur even when no stated or publicly declared expectation was considered by participants.

During the COVID-19 pandemic of 2020 and 2021, instruction in Transcendental Meditation for students in Perúvian schools was paused. Children who had previously learned the practice still meditated as part of their school day, but did so in their home at coordinated times during extended periods of isolation rather than in their classroom at school. Since 2022, implementation of the program to teach new students at more schools throughout the country has resumed with the support of regional governments and school administrators. Based on the findings of this research we would expect to see a resumption of salutary living standard trends in Perú. These will be the subject of future empirical research.

Maharishi stated in 1983 that if many people in Perú were taught his Transcendental Meditation technique the country would become a lighthouse of hope and inspiration for the entire world. The data presented in this study suggest such an outcome has come about, thereby affirming Maharishi's prediction that Perú would become an example of how positive transformation can occur as a result of implementing a program to teach Transcendental Meditation to a large number of children and adolescent students.

References

Albertus, M. (2019). Land reform and civil conflict: Theory and evidence from Peru. *American Journal of Political Science*, *64*(2), 256-274. https://doi.org/10.1111/ajps.12466

Amnesty International. (August 2004). *Peru: The Truth and Reconciliation Commission—A first step towards a country without injustice*. London, UK: Amnesty International.

Andina. (2015). President Obama: Peru the 'envy' of the world due to economic growth and poverty reduction. *Andina: Agencia Peruana de Noticias*, 24 February 2015.

Assimakis P., & Dillbeck, M. C. (1995). Time series analysis of improved quality of life in Canada: Social change, collective consciousness, and the TM-Sidhi program. *Psychological Reports, 76*(3), 1171-1193. https://doi.org/10.2466/pr0.1995.76.3c.1171

Banquet, J. P. (1973). Spectral analysis of the EEG in meditation. *Electroencephalography and Clinical Neurophysiology*, *35*(2), 143-151. https://doi.org/10.1016/0013-4694(73)90170-3

Banquet, J. P., & Lesèvre, N. (1980). Event-related potentials in altered states of consciousness. *Progress in Brain Research*, *54*, 447-453. https://doi.org/10.1016/S0079-6123(08)61659-3

Banquet, J. P., & Sailhan, M. (1974). Analyse E.E.G. d'états de conscience induits et spontanés. *Revue d'Electroencéphalographie et de Neurophysiologie Clinique*, *4*(3), 445-453. https://doi.org/10.1016/S0370-4475(74)80056-0

Bellido, W. M. (2013). The Perúvian miracle: Good luck or good policies? *Economía*, *36*(72), 35-90.

Bilan, Y., Mishchuk, H., Samoliuk, N., & Yurchyk, H. (2020). Impact of income distribution on social and economic well-being of the state. *Sustainability*, *12*(1), 429. https://doi.org/10.3390/su12010429

Cameron, M. A. (2020, Summer). Reviewed work(s): Urban poverty, political participation, and the state—Lima, 1970-1990 by Henry Dietz. *Journal of InterAmerican Studies and World Affairs*, *42*(2), 172-174.

Carillo-Larco, R. M., Guzman-Vilca, W. C., Leon-Velarde, F., Bernabe-Ortiz, A., Jimenez, M. M., Penny, M. A., …

Miranda, J. J. (2021, March). Peru: Progress in health and sciences in 200 years of independence. *The Lancet Regional Health—Americas*, *7*, 100148. https://doi.org/10.1016/j.lana.2021.100148

Cavanaugh, K. L., & Dillbeck, M. C. (2017). The contribution of proposed field effects of consciousness to the prevention of U.S. accidental fatalities: Theory and empirical tests. *Journal of Consciousness Studies, 24*(1-2), 53-86.

Corlett, A., & Try, L. (2022). *The living standards outlook 2022*. London, UK: Resolution Foundation.

Cruces, G., Fields, G. S., Jaume, D., & Viollaz, M. (2017). Peru. In G. Cruces (Ed.), *Growth, employment, and poverty in Latin America* (pp. 377-396). Oxford, UK: Oxford University Press.

Dai, T. (2011). Maharishi's formula for a prevention wing in the military—Applied and found successful in Mozambique: Case study, 1993-1994. In R. Goodman & W. Sands, (Eds.), *Consciousness-based education and government, volume IX* (pp. 447-453). Fairfield, IA, USA: Maharishi University of Management Press.

Davies, J. L., & Alexander, C. N. (2005). Alleviating political violence through reducing collective tension: Impact assessment analysis of the Lebanon war. *Journal of Social Behavior and Personality, 17*(1), 285-338.

Delgado, E. (1987). *A la hojas de recomendacion no. 01-ATM-2: Testimonios de menores tutalados que practican la Meditacion Trascendental* [Recommendation document no. 01-ATM-2: Testimonials from minors in custody who practice Transcendental Meditation]. Report to Programa Integral Nacional para el Bienestar Familiar and Instituto Maharishi de Ciencia y Tecnología del Perú, Lima, Perú.

Dillbeck, M. C., & Cavanaugh K. L. (2016). Societal violence and collective consciousness: Reduction of U.S. homicide and urban violent crime rates. *SAGE Open*, *6*(2), 1-16. https://doi.org/10.1177/2158244016637891

Dillbeck, M. C., & Cavanaugh K. L. (2017). Group practice of the Transcendental Meditation and TM-Sidhi program and reductions in infant mortality and drug-related death: A quasi-experimental analysis. *SAGE Open*, *7*(1), 1-16. https://doi.org/10.1177/2158244017697164

Dillbeck, M. C., Banus, C. B., Polanzi, C., & Landrith, III G. S. (1988). Test of a field model of consciousness and social change: Transcendental Meditation and TM-Sidhi program and decreased urban crime. *The Journal of Mind and Behavior*, *9*(4), 457-486.

Dillbeck, V. A. Barnes, R. H. Schneider, & F. T. Travis (Eds.) (2020). *Scientific research on Maharishi's Transcendental Meditation and TM-Sidhi program: Collected papers* (Vol. 8). Vlodrop, The Netherlands: Maharishi Vedic University Press.

El-Khawas, E. (1998). *World statistical outlook on higher education: 1980–1995*. Paris, France: UNESCO.

Farrow, J. T., & Hebert, J. R. (1982). Breath suspension during the Transcendental Meditation technique. *Psychosomatic Medicine*, *44*(2), 133-153.

Fergusson L. (2016a). Vedic Science-based education, poverty removal and social wellbeing: A case history of Cambodia from 1980-2015. *Journal of Indian Education*, *31*(4), 16-45.

Fergusson, L. (2016b). The impact of Maharishi Vedic University on Cambodian economic and social indicators from 1980 to 2015. *Journal of Maharishi Vedic Research Institute*, *2*, 77-135.

Fergusson, L., & Cavanaugh, K. L. (2019). Socio-political violence in Cambodia between 1990 and 2008: An explanatory mixed methods study of social coherence. *Studies in Asian Social Science*, *6*(2), 1-45. https://doi.org/10.5430/sass.v6n2p1

Fergusson, L., Ortiz Cabrejos, J., & Bonshek, A. (2020). Long-term meditation practice in Puno, Perú: A five-level exploratory model of theory and research. *International Journal of Indian Psychology*, *8*(3), 755-777. https://doi.org/10.25215/0803.086

Fergusson, L., Ortiz Cabrejos, J., & Bonshek, A. (2021a). Aymara childrens' practice of Transcendental Meditation in Perú: A learning history model of parent and teacher perceptions. *Journal of Latinos and Education*, *22*(3), 893-910. https://doi.org/10.1080/15348431.2021.1876695

Fergusson, L., Ortiz Cabrejos, J., & Bonshek, A. (2021b). Health and school performance: A preliminary quantitative study of school children in Huay-Huay, Perú (Salud y desempeño escolar: Un estudio cuantitativo exploratorio de escolares en Huay-Huay, Perú). *Educación, 30*(59), 1-23. https://doi.org/10.18800/educacion.202102.004

Fergusson, L., Ortiz Cabrejos, J., & Bonshek, A. (2022a). Examination of meditation practice by primary and

secondary students in Perú: A confirmatory study of health and school performance (Práctica de meditación por alumnos de primaria y secundaria en Perú: Un estudio confirmatorio de salud y desempeño escolar). *Revista Innova Educación*, *4*(1), 21-38. https://doi.org/10.35622/j.rie.2022.01.002

Fergusson, L., Ortiz Cabrejos, J., & Bonshek, A. (2022b). Health and school performance during home isolation at Institución Educativa Privada Prescott in Puno, Perú (Saúde e desempenho escolar durante o isolamento domiciliar na Institución Educativa Privada Prescott em Puno, Perú). *Tapuya: Latin American Science, Technology & Society*, *5*(1), 2003004. https://doi.org/10.1080/25729861.2021.2003004

Fergusson, L., Ortiz Cabrejos, J., & Bonshek, A. (2023). Accounts of home isolation during the COVID-19 pandemic: A qualitative, type 2 case study of Perúvian indigenous students (Relatos de aislamiento domiciliario durante la pandemia del COVID-19: Caso de estudiantes indígenas peruanos). *Revista, Innova Educación*, *5*(1), 100-109. https://doi.org/10.35622/j.rie.2023.05.007

Fergusson, L., Ortiz Cabrejos, J., Bonshek, A., Datey, A. (in press). Wellbeing and indigenous Aymara orphans in Perú: An empirical study at Hogar de Niñas Virgen de Fatima de Chejoña, Puno. *Journal of Sociology and Social Welfare.*

Fitch Ratings. (2023). *Peru—Country risk report*. London, UK: Fitch Solutions.

Glewwe, P., & Hall, G. (1994). *Poverty, inequality, and living standards during unorthodox adjustment: The case of Peru, 1985-1990*. Chicago, IL: University of Chicago Press.

Gomez, C. A. (2005). *Peru's debt crisis and subsequent shock economy: A political and economic overview of a developing nation*. Los Angeles, CA: International Institute, University of California at Los Angeles.

Grosswald, S. J., Stixrud, W. R., Travis, F. T., & Bateh, M. A. (2008). Use of the Transcendental Meditation technique to reduce symptoms of attention deficit hyperactivity disorder (ADHD) by reducing stress and anxiety: An exploratory study. *Current Issues in Education*, *10*(2).

Hagelin, J. S., Rainforth, M., Cavanaugh, K. L., Alexander, C. N., Shatkin, S. F., Davies, J. L., Hughes, A. O., … Orme-Johnson, D. W. (1999). Effects of the group practice of the Transcendental Meditation program on preventing violent crime in Washington, DC: Results of the national demonstration project, June-July 1993. *Social Indicators Research*, *47*, 153-201.

Hebert, J. R., Lehmann, D., Tan, G., Travis, F. T., & Arenander, A. (2005). Enhanced EEG alpha time-domain phase synchrony during Transcendental Meditation: Implications for cortical integration theory. *Signal Processing*, *85*(11), 2213-2232. https://doi.org/10.1016/j.sigpro.2005.07.009

Hudson, R. E. (Ed.) (1992). *Peru: A country study*. Government Publishing Office for the Library of Congress.

International Monetary Fund (IMF). (2020). *IMF Executive Board concludes 2019 Article IV consultation with Peru.* Washington, DC: Author.

Institut Public de Sondage d'Opinion Secteur (IPSOS). (September, 2016a). *What worries the world, 2016*. Paris, France: IPSOS Group S.A.

Institut Public de Sondage d'Opinion Secteur (IPSOS). (2016b). *Global perceptions of social mobility, 2016*. Paris, France: IPSOS Group S.A.

Institut Public de Sondage d'Opinion Secteur (IPSOS). (December 2016c). *Is the system broken?: International views*. 'Game Changers' presentation, Paris, France: IPSOS Group S.A.

Institut Public de Sondage d'Opinion Secteur (IPSOS). (2016d). *Global trends survey: Fragmentation, cohesion & uncertainty*. Paris, France: IPSOS Group S.A.

Institut Public de Sondage d'Opinion Secteur (IPSOS). (January 2020a). *Global perceptions of social mobility, 2020*. Paris, France: IPSOS Group S.A.

Institut Public de Sondage d'Opinion Secteur (IPSOS). (2020b). *Global trends, 2020: Underlying complexity*. Paris, France: IPSOS Group S.A.

Institut Public de Sondage d'Opinion Secteur (IPSOS). (2023). *Global happiness 2023: Life satisfaction across the world*. Paris, France: IPSOS Group S.A.

IPSOS Public Affairs. (2017). *The economic pulse of the world*. Paris, France: IPSOS Group S.A.

Ivanic, M., & Martin, W. (2018). Sectoral productivity growth and poverty reduction: National and global impacts.

World Development, *109*, 429-439. https://doi.org/10.1016/j.worlddev.2017.07.004

Jong, M. C., Boers, I., van Wietmarschen, H. A., Tromp, E., Busari, J. O., Wennekes, R., ... & Vlieger, A. M. (2019). Hypnotherapy or Transcendental Meditation versus progressive muscle relaxation exercises in the treatment of children with primary headaches: A multi-centre, pragmatic, randomised clinical study. *European Journal of Pediatrics*, *178*, 147-154.

Knoema. (2023). *World data atlas*. New York, NY: Author.

Lin, D., Hanscom, L., Murthy, A., Galli, A., Evans, M., Neill, E., ... & Wackernagel, M. (2018). Ecological footprint accounting for countries: Updates and results of the National Footprint Accounts, 2012-2018. *Resources*, *7*(3), 58. https://doi.org/10.3390/resources7030058

Lopez. J. (23 May 2023). *Key elements of Peru's 'economic miracle' still missing*. London, UK: Independent Commodity Intelligence Services.

Lora, E. (2012). *Structural reform in Latin America: What has been reformed and how it can be quantified*. IDB Working Paper Series, No. IDB-WP-346. New York, NY: Inter-American Development Bank (IDB).

Maharishi International University. (1983). *A press interview with His Holiness Maharishi Mahesh Yogi*. Fairfield, IA: Maharishi International University Press.

Monroe, C., & Mackie, C. (March 12, 2020). *Education in Peru.* New York, NY: World Education News + Reviews.

New York Times, The. (1991). *10 die a day, or disappear, and Peru goes numb*. 14 July 1991, The New York Times.

Organisation for Economic Co-operation and Development (OECD). (2016). *OECD skills strategy diagnostic report: Peru*. Paris, France: OECD Publishing.

Orme-Johnson, D. W., & Fergusson, L. (2018). Global impact of the Maharishi Effect from 1974 to 2017: Theory and research. *Journal of Maharishi Vedic Research Institute*, *8*, 13-79.

Orme-Johnson, D. W., Haynes, C. T. (1981). EEG phase coherence, pure consciousness, creativity, and TM-Sidhi experiences. *International Journal of Neuroscience*, *13*(4), 211-217. https://doi.org/10.3109/00207458108985804

Orme-Johnson, D. W., Cavanaugh, K. L., Dillbeck, M. C., & Goodman, R. (2022). Field-effects of consciousness: A seventeen-year study of the effects of group practice of the Transcendental Meditation and TM-Sidhi programs on reducing national stress in the United States. *World Journal of Social Science*, *9*(2), 1-38. https://doi.org/10.5430/wjss.v9n2p1

Page, B. (2017). *Global trends survey: Fragmentation, cohesion & uncertainty*. Paris, France: IPSOS Group S.A.

Pan American Health Organization. (2023). *Country profile—Yellow fever: Peru*. Washington, DC: Author.

Porter, M. E., Stern, S., & Green, M. (2014). *Social progress index 2014: Executive summary*. Washington, DC: Social Progress Imperative.

Porter, M. E., Stern, S., & Green, M. (2015). *Social progress index 2015*. Washington, DC: Social Progress Imperative.

Reiff, F. M. (1992). Cholera in Peru. *World Health*, July-August 1992, 18-19.

Rosaen, C., & Benn, R. (2006). The experience of Transcendental Meditation in middle school students: A qualitative report. *Explore*, *2*, 442-425. https://doi.org/10.1016/j.explore.2006.06.001

Ross, K., & Peschiera, J. A. (2015). Explaining the Perúvian growth miracle. In *Peru: Selected issues* (chapter 3). IMF Country Report No. 15/134. Washington, DC: International Monetary Fund.

Rousseau, S. (2006). Women's citizenship and neopopulism: Peru under the Fujimori regime. *Latin American Politics and Society*, *48*(1), 117-141. https://doi.org/10.1111/j.1548-2456.2006.tb00340.x

Routley, N. (2019). The crime rate perception gap. *Visual Capitalist*, 5 February 2019.

Sahd, J., Zovatto, D. & Rojas, D. (2023). *Riesgo político América Latina*. Santiago, Chile: Centro UC Estudios Internacionales.

Schubiger, L. I. (2021). State violence and wartime civilian agency: Evidence from Peru. *The Journal of Politics*, *83*(4), 1383-1398.

Senbel, M., McDaniels, T., & Dowlatabadi, H. (2003). The ecological footprint: A non-monetary metric of human consumption applied to North America. *Global Environmental Change*, *13*(2), 83-100. https://doi.org/10.1016/S0959-3780(03)00009-8

Social Progress Imperative. (2020). *2020 social progress index*. Washington, DC: Author.

Starn, O. (2020). *Nightwatch: The politics of protest in the Andes*. Durham, NC: Duke University Press.

Stern, S. J. (Ed.). (2020). *Shining and other paths: War and society in Peru, 1980-1995*. Durham, NC: Duke University Press.

Travis, F. T., & Arenander, A. (2006). Cross-sectional and longitudinal study of effects of Transcendental Meditation practice on inter-hemispheric frontal asymmetry and frontal coherence. *International Journal of Neuroscience*, *116*(12), 1519-1538. https://doi.org/10.1080/00207450600575482

Travis, F. T., & Orme-Johnson, D. W. (1989). Field model of consciousness: EEG coherence changes as indicators of field effects. *International Journal of Neuroscience*, *49*(3-4), 203-211. https://doi.org/10.3109/00207458909084826

Travis, F. T., Haaga, D. H., Hagelin, J. S., Tanner, M., Arenander, A., Nidich, S., Gaylord-King C, … & Schneider, R. H. (2010). A self-referential default brain state: Patterns of coherence, power, and eLORETA sources during eyes-closed rest and the Transcendental Meditation practice. *Cognitive Processing*, *11*(1), 21-30.

Economic Commission for Latin America and the Caribbean. (2011). *Science, technology, and innovation review—Peru*. Geneva, Switzerland: United Nations Conference on Trade and Development.

United Nations Educational, Scientific and Cultural Organization (UNESCO). (2022). *Social panorama of Latin America and the Caribbean: Transforming education as a basis for sustainable development*. New York: Social Development Division of the Economic Commission for Latin America and the Caribbean (ECLAC), United Nations.

Veenhoven, R. (2015). Quality of life (QOL): An overview. In A. C. Michalos (Ed.), *Encyclopedia of quality of life and well-being research* (pp. 5265-5269). Berlin, Germany: Springer.

Vietor, R. H. K., D'Alessio, F. A., & Pino, R. M. (2016). Peru: Economic miracle or just a mirage? *Harvard Business School*, Case 716-028.

Walker, C. (2014). Reflections on Tupac Amaru. *Berkeley Review of Latin American Studies*, Fall 2014, 57-60.

Walker, C. (2019). *La rebelión de Tupac Amaru* (Vol. 6). Lima, Peru: Instituto de Estudios Peruanos.

Walker, C. (2020). The Shining Path and the emergence of the human rights community in Peru. *Berkeley Review of Latin American Studies*, *Fall*, 76-83.

Wendt, S., Hipps, J., Abrams, A., Grant, J., Valosek, L., & Nidich, S. (2015). Practicing Transcendental Meditation in high schools: Relationship to well-being and academic achievement among students. *Contemporary School Psychology*, *19*, 312-319.

Wilson, S. (2003). Peru panel details toll of violent 2 decades. *The Washington Post*, 29 August 2003.

World Bank. (2014). *Cambodia poverty assessment 2013: "Where have all the poor gone?"* Cambodia Socio-Economic Survey, World Bank Country Study ACS4545 (2nd ed.). Washington, DC: World Bank.

World Bank. (2022). *Peru: Systematic country diagnostic update.* Washington, DC: World Bank Group.

World Bank. (2023a). *World development indicators: Peru*. Washington, DC: World Bank Group.

World Bank. (2023b). *Peru: Gender landscape*. Washington, DC: World Bank Group.

World Bank. (2023c). *Peru gender scorecard*. Washington, DC: World Bank Group.

Yin, R. (2018). *Case study research and applications: Design and methods*. Thousand Oaks, CA: SAGE Publications.

Authors' contributions

Dr Lee Fergusson designed the study, conducted the statistical analysis, and drafted the manuscript using publicly available data. Professor Javier Ortiz Cabrejos provided data on students in Perú, including photographs of students and newspaper articles. Dr Anna Bonshek provided conceptual clarity to the study. All authors read, edited and

approved the final manuscript.

Competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have influenced the work reported in this paper.

Ethics approval

The Publication Ethics Committee of the Sciedu Press. The journal's policies adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

Provenance and peer review

Not commissioned; externally double-blind peer reviewed.

Data availability statement

The data that support the findings of this study are publicly available. Data on the number of students and schools in Perú where Transcendental Meditation is taught are available from Instituto Maharishi de Ciencia y Tecnología del Perú.

Data sharing statement

No additional data are applicable.