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The Data Mechanisms of Diagnosis and Intelligence

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Abstract: Diagnosis is a measurement, and so is intelligence. We present a novel visual method to analyze diagnoses. The concept of country health was introduced in a trial to compare the efficiency of two treatments: box plot and pull anti. We found that the pull anti performs better in both accuracy and extent. The box plot is a diagnosis of abnormality using simple up–down symmetry; however, when abnormalities occur in the probability, the symmetry of the structure may be negatively affected. The pull anti checks the asymmetry of the left and right and therefore results in a better analysis. Furthermore, we designed another trial to test the sampling bias and found that an insensible disturbance might lead to statistical self-significance. We thus suggest that extended observations towards certainty are necessary to obtain better diagnoses or intelligence.

Keywords: diagnosis; country health; box plot; pull anti; sampling bias; self-significance

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1. Introduction

With the significant developments in science and technology, people care more deeply about their health. Traditional medicine only focuses on human body health, but some general health types such as planet health have also been presented [1–3]. The IPCC has reported on the fact that a future crisis [4] caused by climate change will occur, along with other problems such as social security [5] and ethics [6], and, while these are notable topics, general healthcare is still in crisis. A new system should combine multidisciplinary health systems to become more holistic, which is a much more difficult problem than artificial intelligence (AI) defeating humans in games, for example [7,8]. The game "Go" was believed to be the last frontier for human intelligence; however, intelligence is not anything special [9]. One paper [10] posited that there is a 50% chance of human-level machine intelligence being achieved by 2060. It might be unnecessary to discuss whether AI will defeat human beings completely, but the necessity to ensure that AI is a being of morality is of significant interest [11]. Whether for morality or health, measurement is the key. Quantum theory [12–14] tells us that measuring allows us to see, so how to measure is the most important aspect for us to observe the world and obtain conclusions. If an illness exists but all the indices appear normal, the only conclusion that can be drawn is that an unsuitable measurement method is being used. Sometimes, the error lies with the instruments, but, in most cases, an improper observing system, i.e., the framework, is being utilized. Frameworks include a time–space structure, a mind–body problem [15–17], and interpretation. This paper focuses on diagnosis; we developed a contrastive diagnosis of prefecture-level deaths in Japan and identified the key points of diagnosis from the point of view of country health.

If we accept the notion that the nature of intelligence is data processing, then the exhaustive data and algorithms will inevitably generate super intelligence. Hence, constructing sufficient big data and algorithms in medicine is likely to lead to AlphaDrs (super doctors) in the medical field. For example, researchers have used AlphaFold to predict the structures of more than 200 million proteins from some 1 million species, covering almost every protein on the planet [7]. The problem for AI doctors is that it is difficult to collect enough correct data. Furthermore, medicine itself has no definite ultimate algorithm, which makes AlphaDr a possible longer route to diagnosis. In the future, human doctors will still have various tasks to perform, one of which is to understand the hidden data mechanisms of diagnosis.

Diagnosing the planet or the country is similar to diagnosing the body. By removing all of the concepts, we can obtain pure numbers. Diagnosis is used to classify numbers and identify those that are abnormal. A common method for detecting outliers is a box plot, but it can be rather vague (when commenting on why 1.5 is used in the box plot, Tukey said, "Because 1 is too small and 2 is too large" [18]), although it is widely effective. Box plots divide the world in a symmetric manner; however, the world is not always symmetrical. Thus, we introduce the expanding algorithm [19] and design a "controlled trial" based on it. The expanding algorithm is based on Weber's Law [20], so it is very similar to the senses of human beings. It perceives information from the point of view of asymmetry and is thought of as an integrated algorithm, as it considers both the detail and the whole. The "expansion" allows it to behave like an elastic net, i.e., there is resistance when it is pulled. For this reason, we named it "pull anti". Pull anti is a diagnosis that can be adjusted adaptively with the change in dimension and purpose. Pull means attraction, and anti indicates an objection. The combination of these meanings in the name implies a symmetry between the details and the whole, while its action is towards asymmetry. We will use this name throughout the following sections.

Any successful cure depends on an accurate diagnosis. Uncertain or unknown factors can lead to a variable cure rate. For a good doctor, 60% vs. 35% with $p < 0.001$ is not the ultimate purpose. The responsibility of a doctor lies in curing patients. If doctors have a bias, the patients will receive biased treatments. The same can be said for the social system. When there are significant social differences, it becomes difficult to determine the most rapid treatment [21]. In order to determine the optimal treatment, we are required to conduct integrated analyses. We cannot stop improving common treatments [22,23] because there are too many individual differences. The current work also explains this.

As people are the living cells of a country, the number of people can be used to measure the health of the country. If there happens to be an exceptional number of deaths in a particular year, we may conclude that the country is in a state of illness and then determine the pathogenic factors (such as COVID-19). Medical studies have brought about many diagnostic criteria and principles of management. However, in a few cases, normal reference values might indicate abnormalities, and vice versa (outliers). The misdiagnoses might be caused by the dimensionality and extent of the measurement.

Disasters are damaging to a country. Natural disasters include events such as floods and earthquakes, while social disasters include wars and economic crises. Epidemics are also important factors that can be detrimental to a country; for instance, the 1918 influenza pandemic infected 500 million people around the world, and the total deaths were estimated to be between 50 and 100 million [24]. All of the disasters experienced by a country are analogous to diseases in a body.

2. Materials and Methods

Nuzzo [25] discussed the statistical problems that occur in scientific studies, showing that many scholars still neglect the issues raised by Ioannidis [23]. Recent studies have appealed to biomedical scientists and clinicians for better metrics [26] and to improve the transparency of trials [27], and more scientists have begun to diagnose statistics [28,29]. In order to understand the certainty of diagnoses, we designed a trial using a mathematical angle. The number of deaths from 1899 to 2012 [30] and the population levels from 1884 to 2009 [31] at the prefecture level in Japan were used as the study data.

The total annual deaths from 46 prefectures between 1899 and 2012 were extracted from the files as indicators. The time series data were treated as spatial data, being ranked in ascending order. Any important events that might have led to an abnormally large number of deaths were regarded as pathogenic factors. We checked the historical records and confirmed four main causes for a large number of deaths, namely, the Spanish Flu outbreak and the rice riots of 1918, the economic crisis of 1920, the Great Kanto earthquake (1923), and World War II (1945). The indicators are correlated to each other in a very complex way, and when the pathogenic factors took place, the related indicators might appear uncommon (depending on individual differences). Whether these abnormalities can be identified or to what degree they can be detected is determined by the diagnostic level. We used a box plot for the control group and the pull anti for the treatment group.

The annual total deaths for the country were used to check the diagnostic consistency. Our case is a randomized trial because the "patients" in the two groups are completely free of bias. We also designed another trial to test the sampling bias.

Matt Motyl's dreams of fame unfortunately disappeared [25]. However, his unpublished paper [32] provides many interesting insights. The participant demographics for the first experiment were as follows: aged from 18 to 73 (M = 36.91, SD = 14.23), 1123 males and 855 females, 443 were extremely liberal, 1055 liberal, 199 moderate, 244 conservative, and 46 extremely conservative. For the second experiment, the participant demographics were: aged from 18 to 82 (M = 28.84, SD = 11.46), 442 males and 858 females, 159 were extremely liberal, 402 liberal, 428 moderate, 250 conservative, and 61 extremely conservative. One explanation for why the two experiments differed so significantly is that there was inconsistency among the participants. In a controlled trial, randomization minimizes the selection bias so that comparisons become possible. False randomization leads to false results, and false randomization can occur easily, so even after "randomization", many significant results are, in fact, false. Because we could not obtain more detailed data from Motyl, we could not make further analyses. However, it is most likely that age and sex were compared rather than extreme and moderate political views.

In our second trial, 46 prefectures were divided into two groups according to the region: Hokkaido, Tohoku, Kanto, Chubu, Kansai, Chugoku, Shikoku, and Kyushu, which ensured that the two groups had approximately equal members from different regions. However, can any combination within and among regions be considered randomization? We used the same box plot to treat the two possible "randomized" groups to show how they differ from each other.

3. Results

Among the four etiological factors, 1945 is the strongest, but the other three also had countrywide or local impacts. Figure 1 shows the deaths for the whole country: Tokyo, Saitama, Shimane, Ishikawa, and Hiroshima. These regions have differing characteristics, which will be discussed later in the paper.

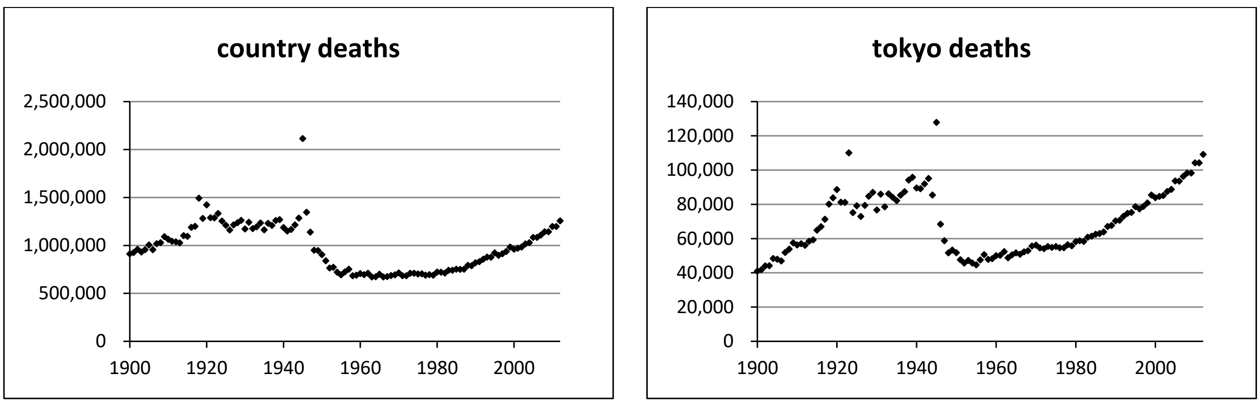

Figure 1. *Cont.*

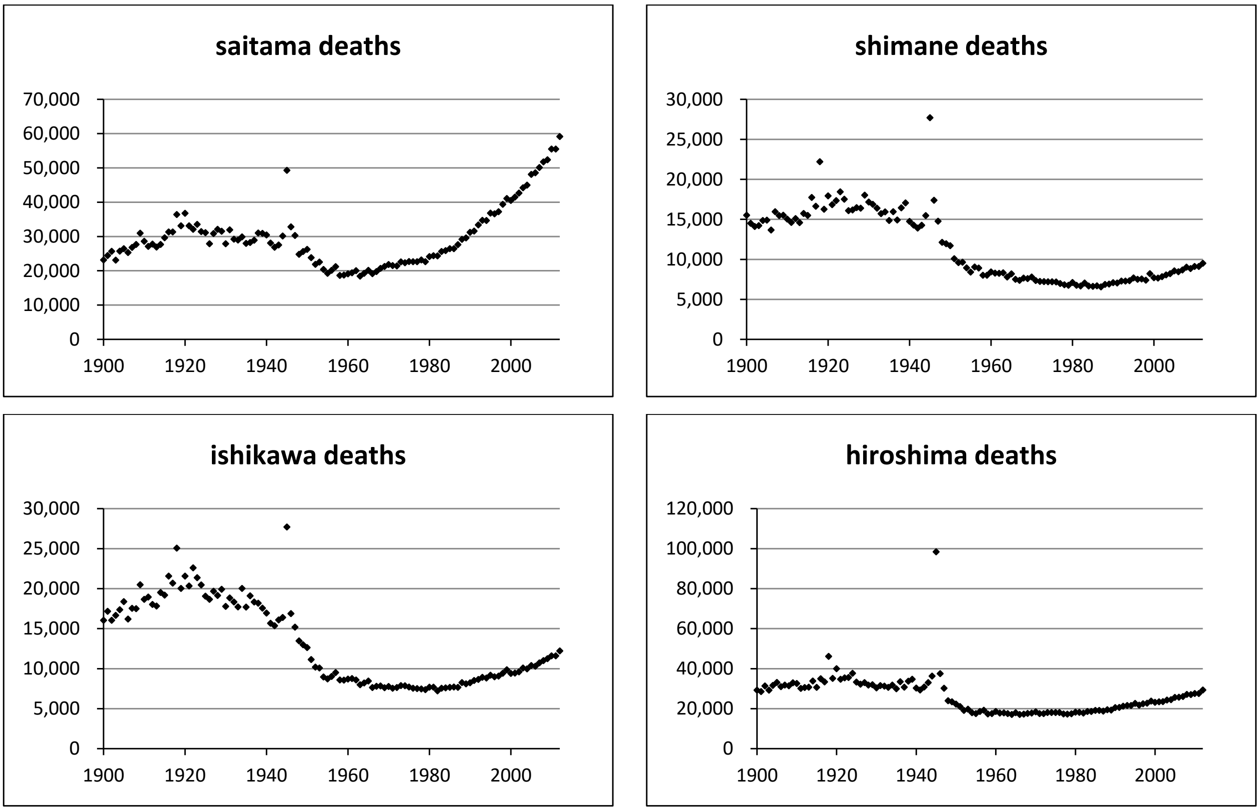

Figure 1. Time series deaths in the country and some representative prefectures.

The box plot suggests that 1945 is the only diseased year from the view of the whole country, and the result is in accordance with most of the prefectures (35 of 46, Table 1). For ten prefectures, including Tokyo and Osaka, the box plot does not detect any disease, and for Saitama, Chiba, and Kanagawa, it reveals a different pattern.

Table 1. Disease year diagnosed by the box plot.

Prefecture	Disease	Prefecture	Disease	Prefecture	Disease
Total	1945	Miyagi	1945	Mie	1945
Tokyo	None	Akita	None	Hyogo	1945
Hokkaido	None	Fukushima	1945	Nara	1945
Kagoshima	1945	Ibaraki	1945	Wakayama	1945
Aomori	None	Tochigi	1945	Tottori	1945
Miyazaki	1945	Gunma	1945	Shimane	1945
Kyoto	1945	Saitama	1945, 2005–2012	Okayama	1945
Osaka	None	Chiba	1945, 2009–2012	Tokushima	1945
Toyama	1945	Kanagawa	2002–2012	Kagawa	1945
Yamaguchi	1945	Niigata	None	Ehime	1945
Nagasaki	1945	Ishikawa	None	Kochi	1945
Hiroshima	1945	Fukui	None	Fukuoka	1945
Shiga	1945	Yamanashi	1945	Saga	1945
Nagano	1945	Gifu	1945	Kumamoto	1945
Yamagata	None	Shizuoka	1945	Oita	1945
Iwate	None	Aichi	1945		

The pull anti approach obtains different results (Table 2). For the whole country, 1945, 1918, and 1920 are all confirmed as disease years (1923 was local, and the main deaths were limited to Tokyo and Kanagawa [33]). Individually, among the 46 prefectures, 1945 is diagnosed 46 times, while 1918 and 1920 are partly diagnosed 33 and 23 times, respectively. The year 1946 is detected 23 times, and 1923 is noted as a fully diseased year in Tokyo and Kanagawa (1923 bound with 1922 is found in Akita, which is located far from the earthquake center; the reason for this may be revealed by deeper study). Furthermore, compared to the box plot, two special types are also discovered here. One is for Tokyo, Saitama, Chiba, Kanagawa, and Aichi, where the later years (close to 2012) are found to be diseased; the other is for Yamagata, Ishikawa, Fukui, Shimane, Tokushima, Kochi, and Saga, where the earlier years (prior to World War II) are found to be diseased. Hokkaido, Kagoshima, Toyama, and Niigata suffer in a mixed way.

Table 2. Diseased years diagnosed by the pull anti.

Prefecture	Disease	Prefecture	Disease
Total	1945, 1918, 1920	Kanagawa	1945, 1923, 1988–2012
Tokyo	1945, 1923, 2010–2012	Niigata	1899–1951, 2010–2012
Hokkaido	1945, 2012, 1899–1907	Ishikawa	1899–1947
Kagoshima	1918–1947, 1914	Fukui	1899–1948
Aomori	1945	Yamanashi	1945, 1920
Miyazaki	1945, 1946, 1918	Gifu	1945, 1918
Kyoto	1945, 1918	Shizuoka	1945, 1946
Osaka	1945	Aichi	1945, 2010–2012
Toyama	1899–1950, 2012	Mie	1945, 1918
Yamaguchi	1945,1918,1946	Hyogo	1945, 1918, 1920, 1944
Nagasaki	1945	Nara	1945, 1918, 1920, 1946, 2012
Hiroshima	1945, 1918	Wakayama	1945, 1918, 1946
Shiga	1945, 1918, 1920	Tottori	1945, 1918, 1946, 1920
Nagano	1945, 1918, 1946, 1920	Shimane	1899–1950
Yamagata	1899–1949	Okayama	1945, 1918, 1946, 1920
Iwate	1945, 1946, 1918	Tokushima	1899–1950
Miyagi	1945, 1918, 1920, 1946	Kagawa	1945, 1918, 1908
Akita	1945, 1918, 1923, 1922	Ehime	1945, 1918, 1920
Fukushima	1945, 1920	Kochi	1899–1947
Ibaraki	1945, 1920, 1918	Fukuoka	1945
Tochigi	1945, 1920, 1946, 1918	Saga	1899–1951
Gunma	1945, 1918, 1920, 1946	Kumamoto	1945, 1946, 1918
Saitama	1945, 2005–2012	Oita	1945, 1918
Chiba	1945, 2005–2012		

Compared with the control group, the treatment group performs very differently. The box plot resembles a sharp razor that eliminates most individual reactions. If it were not for the responses of Saitama, Chiba, and Kanagawa, we could conclude that the box plot effects are steady: regardless of the immunities of ten individuals to the pathogenic factor, the effects of the box plot on the whole and of the individuals present astonishing similarity. The individual differences indicate the insufficiency of the box plot method, while conversely, the pull anti approach exhibits greater sensitivity. To all four main pathogenic factors, the pull anti provides a very good diagnosis. In terms of the Great

Kanto earthquake, the pull anti detected two differences, a much better result than the box plot, which detected none.

In terms of the strongest pathogenic factor, 1945, the two groups differ considerably. If any statistical result is needed to compare the two groups, the most common one, 1945, is the best selection. The box plot identified 35 out of 46, while the pull anti identified all of them, which indicates that the effective rate in the treatment group is significantly higher than that in the control group ($p = 0.00041$).

In the second randomized controlled trial, the 46 prefectures were divided into two groups according to the region: Hokkaido (1), Tohoku (6), Kanto (7), Chubu (9), Kansai (7), Chugoku (5), Shikoku (4), and Kyushu (7), which ensured that the two groups contained an approximately equal number of members from different regions. Hokkaido and Tohoku were combined, and the box plot approach was used for both groups. Because there were 11 members for whom the 1945 factor could not be detected, the randomized combination resulted in a variation of undetected members in the two groups from 5 vs. 6 to 10 vs. 1. Undoubtedly, in the cases of 9 vs. 2 and 10 vs 1, there were positive effects. The "randomized" combination ensured that the same treatment was of significant difference.

4. Discussion

"Philosophy and Science are two fundamentally different attitudes of the human mind. The scientific mind seeks knowledge, i.e., propositions which are true, agree with reality. On a higher level, it ascends to the formation of theories. Through philosophy one can gain increased inner clarity. The result of philosophic reasoning is not propositions, but the clarification of propositions" [34]. Philosophy simply places everything before us, and neither explains nor deduces anything [35]. Philosophy lies in its self-consistency, while science lies in its repeatable measurement. Philosophy tests the invisible universe dynamically, and science rules the dynamic and visible universe. Their unification might be a type of symmetry in a general sense. The best scientific theory that combines both might be the theory of relativity. The philosophic position of light given by Einstein led to the prominence of his theory in that era, yet was not entirely understood or accepted by the contemporaries of the age. At the same time, the philosophic idea of quantum physics that he held significantly hindered his potential contributions. Einstein is undoubtedly the best example of the relationship between philosophy and science. Climate change is another example. Until recently (2009), governments and policy-making scientists had not reached an agreement on this topic, and it was in 2021 that the Nobel Prize in Physics was awarded for research in complex systems (global warming). Diagnosis is a difficult task, especially when you have uncertain interpretations, so more integrative measures are necessary to reach a consensus.

Medicine involves diagnosis, and diagnosis involves measurement. Some diseases are still undetectable, not because there is no phenomenon, but because there is a lack of an observable quality. It is known that unobservability creates symmetry; therefore, supposed symmetry could limit observations or measurement. Current effective AI such as deep learning may just come under this subtle condition. If the inner structure cannot be expressed precisely, the measurement approach would be considered weak as it is difficult to detect any corresponding factors. Although the 1945 factor significantly affected the country, weak measurement methods, such as the box plot, failed to detect the effect in some prefectures. It is commonly believed that measurement itself is an action with certainty; however, this is not always the case, because measuring also inevitably means a loss of information. Thus, in terms of the whole, certainty can be observed and flexibility can be identified, which is also the nature of the probability event. We can consider human intelligence from this point of view—that is, normal incompleteness and abnormal completeness, as well as symmetric uncertainty and asymmetric certainty. Robustness creates a kind of harmony, and good doctors tend to use more robust measurement methods.

The pull anti approach exhibits better objectivity than the box plot method in this case, because the pull anti defines a better framework. In addition to all of the 1945s, the pull anti detected other etiological factors: 33 for 1918, 23 for 1920, 3 for 1923, and 23 for 1946, out of a total of 46. Because of individual differences, the same etiological factors often cause different responses, such as immunity, an inactive state, or disease. Our description is as follows: if the factors had any abnormalities, we could say that the patients are immune. If they had abnormalities, but these were not functional, this would be referred to as an inactive state. Table 3 provides details regarding the different states for the 1918 and 1920 factors with the pull anti.

Table 3. Diagnoses of 1918 flu pandemic and 1920 economic crisis using the pull anti.

Prefecture	1918	1920	Prefecture	1918	1920
Tokyo	*Immunity*	*Immunity*	Chiba	*Immunity*	*Immunity*
Hokkaido	*Immunity*	*Immunity*	Kanagawa	*Immunity*	*Immunity*
Aomori	*Inactive*	*Immunity*	Yamanashi	*Immunity*	*Illness*
Miyazaki	*Illness*	*Immunity*	Gifu	*Illness*	*Inactive*
Kyoto	*Illness*	*Inactive*	Shizuoka	*Immunity*	*Immunity*
Osaka	*Immunity*	*Immunity*	Aichi	*Immunity*	*Immunity*
Yamaguchi	*Illness*	*Inactive*	Mie	*Illness*	*Inactive*
Nagasaki	*Inactive*	*Inactive*	Wakayama	*Illness*	*Inactive*
Hiroshima	*Illness*	*Inactive*	Kagawa	*Illness*	*Inactive*
Iwate	*Illness*	*Immunity*	Fukuoka	*Inactive*	*Inactive*
Akita	*Illness*	*Inactive*	Kumamoto	*Illness*	*Inactive*
Fukushima	*Inactive*	*Illness*	Oita	*Illness*	*Inactive*
Saitama	*Immunity*	*Immunity*			

All the illnesses indicate that the related year was detected as abnormal. The inactive states are those that could not be detected, but the related year is the nearest to the detected one. The immunity states refer to the rest. In order to show the reason for immunity, the development of the population after World War II for the relevant prefectures is listed in Table 4. The prefectures with a rapid population increase, such as Kanagawa, Tokyo, Saitama, Chiba, Osaka, and Aichi, show similar patterns, which could explain the mask effect (immunity) to 1918 or 1920 because of more recent deaths. At the same time, those prefectures with a low population increase (after World War II) and a high mortality rate (before World War II, averaged from 1920 to 1945), such as Ishikawa, Fukui, Toyama, Shimane, and Tokushima, are of another pattern: not only are 1945, 1918, and 1920 detected, but the years before a particular year (1947–1951) are all considered diseased.

From Figure 1, we can check the different expressions of the two diagnoses on the five typical types. For Tokyo, migration after the war led to more deaths very similar to those of 1918 and 1945. When utilizing the box plot, the mask effect takes place, and nothing is identified as abnormal. In Saitama, huge migration levels led to the deaths in 2005–2012 exceeding those of 1945, and it is very interesting that the two diagnoses agree with each other here, both identifying the 2005–2012 and 1945 periods as being abnormal. Shimane and Ishikawa both had high mortality rates before the war, and they increased slowly after the war, so the pull anti defines them as following the normal after-war pattern. As Ishikawa exhibited a much higher mortality rate than Shimane before the war, the 1945 factor was drawn closer than that of Shimane. For this reason, the box plot neglects the illness of Ishikawa but confirms that of Shimane. It is clear that the pull anti provides more information than the box plot. Hiroshima is one of the two cities attacked by an atomic bomb, so the mask effect of the 1945 factor must be very high. The fact that the pull anti not only detected the 1945 factor, but also the 1918 factor, indicates the higher sensitivity of the pull anti than that of the box plot.

Table 4. Prefectures with high increase after World War II and high mortality before World War II.

Prefecture	Population of 1945	Population of 2012 (Rate)	Mortality Rate
Country	71,998,104	127,510,000 (1.77)	2.00
Tokyo	3,488,284	12,868,000 (3.69)	1.65
Hokkaido	3,518,389	5,507,000 (1.57)	1.75
Osaka	2,800,958	8,801,000 (3.14)	1.81
Saitama	2,047,261	7,130,000 (3.48)	2.08
Chiba	1,966,862	6,139,000 (3.12)	2.12
Kanagawa	1,865,667	8,943,000 (4.79)	1.77
Shizuoka	2,220,358	3,792,000 (1.71)	1.85
Aichi	2,857,851	7,418,000 (2.60)	1.92
Tokushima	835,763	789,000(0.94)	2.19
Shimane	860,275	718,000(0.83)	2.26
Toyama	953,834	1,095,000(1.15)	2.40
Fukui	724,856	808,000(1.11)	2.45
Ishikawa	887,510	1,165,000(1.31)	2.50

The pull anti is an integrated diagnosis that considers holism and locality, and is based on mind sensitivity, so it is capable of identifying illnesses more accurately than the box plot. In this study, the box plot could only recognize three types: 1945, none, and a rapid population increase (referring to Saitama, Chiba, and Kanagawa, respectively). The box plots perform worse in both precision and extent. Thus, the box plot, although simple and effective, as a standard method, might lead to considerable misdiagnoses from a medical point of view. Good doctors should carefully select diagnostic methods and attempt to make comprehensive judgments. A phenomenon is the appearance of a noumenon; however, the importance lies in how it is measured.

To diagnose is to identify disease, and treatment depends on the etiopathogenesis. When a disease is confirmed and the cure relates to probability alone, the medicine isimperfect. Doctors should spend more time discovering the truth from an ontological perspective rather than potentially false trials. This includes constructing new frameworks for health and disease, modifying current theories, and conducting transdisciplinary studies. At the same time, clinicians should make use of their ideas for general health and participate more in social research and activities, including politics and economics, because the health of the world's countries and the planet as a whole is greater than that of individual bodies. We also encourage social practitioners to take part in advanced medical training so as to obtain more complete viewpoints regarding social health.

Using a simple mathematical example, we have demonstrated what a measurement is and how to make a better diagnosis. However, just as it is not certain whether symmetry is inherent or not, the unsolved problem is whether we are able to develop an accurate measure if the world is chaotic in essence. If the flap of a butterfly's wings in Brazil could generate a tornado in Texas [36], any measurement method that leads to the arrest of the butterfly to prevent the tornado would be in vain. Considering the entanglement and the relative time–space, it is highly probable that we could not confirm one certain reason for the tornado (historic necessity) in Texas at all (a real probability-related description); we just impute it to the butterfly in Brazil.

Many problems currently exist in medical diagnosis. Sometimes, a disease might be misdiagnosed (e.g., Ménière's disease as cyclic vomiting or migraine [37]); sometimes, we have different diagnoses and cannot cure the illness entirely [38]; and, sometimes, there are uncertain causes and the issue may recur after being cured [39–41]. All of these highlight the complexity of the diagnosis, but, just as AlphaGo was able to defeat the world champion, while most humans could not, the reason lies in the acknowledgement of knowledge limitation. In one case, scholars gave 44 reasonable (scientific) answers to the date of the Zhou conquest include [42], while we could only give the integrative correct one (in writing), which reveals that, for difficult problems, subjective diagnoses are still unavoidable and integrated diagnoses are very scarce. No matter how probabilistic nature functions, we know that we can measure "certainty". In order to reduce errors [23], it is likely that we must seek help from transdisciplinary AI algorithms on big data. On the other hand, in the process of teaching AI to think, we should provide better solutions to ensure consistency and harmony. Neyman called some of Fisher's work mathematically "worse than useless"; Fisher called Neyman's approach "childish" and "horrifying [for] intellectual freedom in the West" [25]. People inevitably have prejudices, which is the reason for most misdiagnoses. Diagnosis ought to lead to a complete cure. In order to realize this, we must perfect our measurement methods by constructing new systems and extending new indices. What you seek is what you find; what you measure is what you know. It is probable that robots, automation, and AI will increasingly replace human jobs, and we already know that the world's diseases caused by emotional decisions will result in more deaths than those caused by nature; thus, physicians who save lives should understand how to make more efficient diagnoses and treatments to cure not only the natural system but also the social system.

5. Conclusions

To diagnose is to measure the abnormal, and such measurement is limited, just like our intelligence. Being generally trustworthy, symmetric algorithms have been widely used in practice. However, symmetric measurement is also limited, and box plots have similar issues. We use facts to judge methods, but do not use methods to create illusions. We have had the illusion of absolute time and space, the illusion of the dice, the illusion of the automatic adjustment (to warming), COVID-19, and the p-value. The system constructed by incomplete knowledge needs to be replaced with one that utilizes the accumulated evidence, which is scientific progress. Current advances lie in big data and multidisciplinary integration. Based on these, we are developing human/high-level machine intelligence, which could provide new knowledge beyond the abilities of human beings alone, making us wiser. This research focused on the mechanism of analysis in diagnosis. We presented a novel visual method to analyze diagnoses. The concept of country health was introduced in a trial to compare the efficiency of two treatments: the box plot and the pull anti approach. The findings indicated that the pull anti performs better in both accuracy and extent. The results provide a direction for future research to identify hidden factors or to achieve robustness. Balancing the symmetry and asymmetry to determine the facts is the key point. Furthermore, we designed a trial to test the sampling bias and found that insensible disturbances might lead to statistical self-significance. Considering the unobservability, we suggest that extended observations towards certainty are necessary to achieve better diagnoses. We also expect a need for extended measurements for more complicated problems. As for the preliminary work, we adopted the simplest method to express the data (sorting), which could be regarded as a kind of preliminary intelligence (relationship neglected). We will gradually add new structures and measurements, such as the time series feature in future work. We believe that more complete expression demonstrates progressive intelligence and will ensure that the results are more consistent with the facts. Considering the misclassification of new applications [43] and the current debate [44] on deep learning, we should work harder on new diagnoses. We expect that the presented mechanism could help to identify more safety boundaries and promote more extensive intelligent expression.

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References

1. Perrings, C. *Biodiversity, Ecosystem Services, and Climate Change: The Economic Problem*; Environmental economics series; The World Bank: Washington, DC, USA, 2010; Volume 120.
2. WHO. *Our Planet, Our Health, Our Future*; Discussing Paper; WHO: Geneva, Switzerland, 2012.
3. Horton, R.; Lo, S. Planetary health: A new science for exceptional action. *Lancet* **2015**, *386*, 10007. [CrossRef] [PubMed]
4. IPCC. *Climate Change 2022: Impacts, Adaptation and Vulnerability*; Working Group II Contribution to the IPCC Sixth Assessment Report; IPCC: Geneva, Switzerland, 2022; p. 3068.
5. Declerck, F. IPBES: Biodiversity central to food security. *Nature* **2016**, *531*, 305. [CrossRef] [PubMed]
6. Goldberg, T.L.; Patz, J.A. The need for a global health ethic. *Lancet* **2015**, *386*, 10007. [CrossRef] [PubMed]
7. Callaway, E. The Entire Protein Universe: AI Predicts Shape of Nearly Every Known Protein. *Nature* **2022**, *608*, 15–16. [CrossRef] [PubMed]
8. Gibney, E. Google AI algorithm masters ancient game of Go: Deep-learning software defeats human professional for first time. *Nature* **2016**, *529*, 445–446. [CrossRef]
9. Hsiao, C.A. *Mind Operator: Zone-Associated Relative Representation. Advances in Computer Science and IT*; Hussain, D.M., Akbar, Eds.; In-Tech: London, UK, 2009; pp. 127–143. ISBN 978-953-7619-51-0.
10. Zhang, B.B.; Noemi, D.; Markus, A.; Lauren, K.; Charlie, G.; Allan, D.; Michael, H. Forecasting AI Progress: Evidence from a Survey of Machine Learning Researchers. *arXiv* **2022**, arXiv:2206.04132. [CrossRef]
11. Bostrom, N.; Yudkowsky, E. The ethics of artificial intelligence. In *The Cambridge Handbook of Artifical Intelligence*; Frankish, K., Ramsey, W.M., Eds.; Cambridge University Press: Cambridge, UK, 2014; pp. 316–334.
12. Dirac, P.A.M. *The Principles of Quantum Mechanics*, 4th ed.; Clarenden Press: Oxford, UK, 1958.
13. Von Neumann, J. *Mathematische Grundlagen der Quantenmechamik*; Springer: Berlin/Heidelberg, Germany, 1932; p. 236.
14. Schirber, M. Nobel Prize: Quantum Entanglement Unveiled. *Physics* **2022**, *15*, 153. [CrossRef]
15. Wozniak, R. Mind and Body: Rene Descartes to William James. Bryn Mawr College, Serendip 1995, originally published in 1992 at Bethesda, MD & Washington, DC by the National Library of Medicine and the American Psychological Association. Available online: https://serendipstudio.org/Mind/ (accessed on 17 December 2022).
16. Churchland, P.S. *Neurophilosophy: Towards a Unified Science of the Mind-Brain*; MIT Press: Cambridge, MA, USA; London, UK, 1989.
17. Fischer, J.M.; Kane, R.; Pereboom, D.; Vargas, M. *Four Views on Free Will*; Wiley-Blackwell: Hoboken, NJ, USA, 2007.
18. Veaus, R.D.; Velleman, P.F. *Into Stats*; Addison Wesley: MA, USA, 2003.
19. Hsiao, C.A.; Chen, H.X. On classification from the view of outliers. *IAENG Int. J. Comput. Sci.* **2010**, *37*, 1–9.
20. Weber, E.H. *The Sense of Touch*; Ross, H.E.; Murray, D.J., Translators; Academic Press: London, UK; New York, NY, USA; San Francisco, CA, USA, 1978.
21. Yip, W.; Hsiao, W. Harnessing the privatisation of China's fragmented health-care delivery. *Lancet* **2014**, *384*, 805–818. [CrossRef]
22. Hsiao, C.A. How does certainty enter into the mind? *arXiv* **2009**, arXiv:0909.1709.
23. Ioannidis, J.P.A. Why most published research findings are false. *PLoS Med.* **2005**, *2*, e124. [CrossRef]
24. Taubenberger, J.K.; Morens, D.M. 1918 influenza: The mother of all pandemics. *Emerg. Infect. Dis.* **2006**, *12*, 69–79. [CrossRef]
25. Nuzzo, R. Scientific method: Statistical errors. *Nature* **2014**, *506*, 150–152. [CrossRef]
26. Chavalarias, D.; Wallach, J.; Li, A.; Ioannidis, J.A. Evolution of Reporting P Values in the Biomedical Literature, 1990–2015. *JAMA* **2016**, *315*, 1141–1148. [CrossRef]
27. Dal-Re, R.; Bracken, M.B.; Ioannidis, J.P.A. Call to improve transparency of trials of non-regulated interventions. *BMJ* **2015**, *350*, h1323. [CrossRef]
28. Benjamin, D.J.; Berger, J.O.; Johannesson, M.; Nosek, B.A.; Wagenmakers, E.J.; Berk, R.; Bollen, K.A.; Brembs, B.; Brown, L.; Camerer, C.; et al. Redefine statistical significance. *Nat. Hum. Behav.* **2018**, *2*, 6–10. [CrossRef]

29. Amrhein, V.; Greenland, S.; McShane, B. Scientists rise up against statistical significance. *Nature* **2019**, *567*, 305–307. [CrossRef]
30. Health, Labour and Welfare Statistics Association, Japan. *Deaths and Vital Statistics of Japan from 1899 to 2012, Time Series Data (DVD)*; Health, Labour and Welfare Statistics Association: Tokyo, Japan, 2014; ISBN 9784875115854.
31. Available online: www.stat.go.jp/data/chouki/index.htm (accessed on 1 March 2022).
32. Nosek, B.A.; Spies, J.R.; Motyl, M. Scientific Utopia: II. Restructuring Incentives and Practices to Promote Truth Over Publishability. *Perspect. Psychol. Sci.* **2012**, *7*, 615–631. [CrossRef]
33. Moroi, T.; Takemura, M. Generation process of casualties during the 1923 Kanto earthquake—Based on comparisons with casualty factors in the 1855 Ansei-Edo earthquake. *Hist. Earthq.* **2006**, *21*, 47–58.
34. Wright, G.H. *The Tree of Knowledge and Other Essays (Philosophy of History and Culture)*; E.J. Brill: Leiden, The Netherlands, 1993.
35. Wittgenstein, L. *Philosophical Investigations*; Anscombe, G.E.M., Translator; Basil Blackwell: Oxford, UK, 1953.
36. Lorenz, E.N. Predictability: Does the flap of a butterfly's wings in Brazil set off a tornado in Texas? In Proceedings of the AAAS 139th Meeting, Washington, DC, USA, 26–31 December 1972.
37. Miyahara, M.; Hirayama, M.; Yuta, A.; Takeuchi, K.; Inoki, T. Too young to talk of vertigo? *Lancet* **2009**, *373*, 516. [CrossRef]
38. Samuels, M.A.; Pomerantz, B.J.; Sadow, P.M. Case 14-2010—A 54-Year-Old Woman with Dizziness and Falls. *N. Engl. J. Med.* **2010**, *362*, 1815–1823. [CrossRef] [PubMed]
39. Kim, J.; Zee, D. Benign Paroxysmal Positional Vertigo. *N. Engl. J. Med.* **2014**, *370*, 1138–1147. [CrossRef] [PubMed]
40. Steven, P.; Michelle, A.W. Confronting Our Next National Health Disaster—Long-Haul Covid. *N. Engl. J. Med.* **2021**, *385*, 577–579.
41. Sisó-Almirall, A.; Brito-Zerón, P.; Conangla Ferrín, L.; Kostov, B.; Moragas Moreno, A.; Mestres, J.; Sellarès, J.; Galindo, G.; Morera, R.; Basora, J.; et al. Long Covid-19: Proposed Primary Care Clinical Guidelines for Diagnosis and Disease Management. *Int. J. Environ. Res. Public Health* **2021**, *18*, 4350. [CrossRef] [PubMed]
42. Shaughnessy, E.L. The "Current" Bamboo Annals and the Date of the Zhou Conquest of Shang. *Early China* **1985**, *11*, 33–60. [CrossRef]
43. Kim, J.; Kim, H.; Jeon, H.; Jeong, S.-H.; Song, J.; Vadivel, S.K.P.; Kim, D.-j. Synergistic Use of Geospatial Data for Water Body Extraction from Sentinel-1 Images for Operational Flood Monitoring across Southeast Asia Using Deep Neural Networks. *Remote Sens.* **2021**, *13*, 4759. [CrossRef]
44. Wu, T.; Jin, R. The Limitations of Deep Learning in Achieving Real Artificial Intelligence. *Proceedings* **2022**, *81*, 12. [CrossRef]