

Concerns Over Daylight Savings: A Utilitarian Analysis

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Introduction

Daylight saving time (DST) is the practice of advancing clocks by one hour during the spring through summer months so the sun sets at a later “clock” time. In contrast, standard time is the practice of setting clocks an hour back during the rest of the year: fall through winter months. For both to be used, a set of two different transitions must exist: one in the spring to move from standard time to daylight savings time and another during the fall to return clocks back to standard time. These are known as daylight savings transitions. The idea most similar to what is currently used originated in 1784 with Benjamin Franklin¹ (Cook, 2016). Despite the idea existing for hundreds of years, time standard switching was not implemented in the United States until World War I in order to save fuel. Daylight savings was removed soon after the war ended, but was reinstated during World War II. After World War II, most states decided to retain the system (Cook, 2016). However, an increasing amount of new research shows daylight savings as currently exists in America is harmful. Modern research shows that daylight savings has an increase in suicide rates (Popoli et. al., 2020) and the transitions to and from daylight savings time increase chances for heart attacks (Toro et. al., 2015). Therefore, a reevaluation of the evidence surrounding the purpose of daylight savings is necessary, and if applicable, a change in policy. However, as each state has its own separate laws surrounding daylight savings time, the focus of this paper will only consider California.

Controversy surrounds daylight savings in California: some argue to keep it as is or to eradicate the transitions completely — keeping either standard time or daylight savings time year-round. California has its daylight savings transitions on two days every year: March 14 to

¹ Some sources claim he meant this as a joke to the French (Livingston, 2019)

enter daylight savings and November 7 to return to standard time (timeanddate, n.d.)². Those who do not support daylight savings claim that it harms people by lowering their life satisfaction, citing “[a]dditional opposition to daylight savings time originates from the general public objecting to the disruption the annual introduction of summer time causes to their daily routine” (Kountouris & Remoundou, 2014). On the other hand, those who support it claim that it saves energy by lowering the need for artificial lighting (Kuehnle & Wunder, 2016). With such differing opinions, a decision must be reached on what option is best for the state of California and what policies, if any, must be changed.

In order to maintain political neutrality throughout this paper and address the issue as objectively as possible, this paper will focus only on a utilitarian perspective based on the ideas of the famous 19th century English philosopher, John Stuart Mill. In his essay, *Utilitarianism*, Mill states, “[t]he utilitarian doctrine is, that happiness is desirable, and the only thing desirable, as an end; all other things being only desirable as means to that end” (Mill, 1863). Utilitarianism, therefore, is the philosophy that an action’s merit should be decided based on its effect on happiness. Namely, it specifies that “actions are right in proportion as they tend to promote happiness, wrong as they tend to produce the reverse of happiness. By happiness is intended pleasure, and the absence of pain; by unhappiness, pain, and the privation of pleasure” (Mill, 1863). To examine a policy using a utilitarian lens, we must first analyze how it affects the happiness of the whole population in question. If it causes pain, sickness, or death, without benefiting others, one could make a general judgment that it is a bad policy. Similarly, if the policy promotes happiness, joy, or health, then it is good. In more concrete terms, to determine if a policy is harmful or beneficial, one must find the total amount of happiness it provides and to whom and then compare it to the harm it causes. To use this simple metric to determine policy

² A Norwegian website dedicated to providing accurate information about time and different time zones

regarding daylight savings, we must first find what effects daylight savings transitions have on the population and what effect each standard has; only then is it possible to make an informed utilitarian decision about daylight savings.

Daylight Savings Transition Effects

Arguably, the most impactful and contentious part of daylight savings is the need for two, one-hour transitions between the two time standards. A special committee in Israel to study implementing daylight savings determined the main factors when considering whether to implement daylight savings were transportation and work accidents along with effects on health (Barak, 2020). The factors they found there are similar to ones that California must consider. Firstly, the transitions to daylight savings have been shown to lower individual happiness and have the potential to harm health (Barak, 2020). While general health is not necessarily happiness, Mill believes that it is a means to happiness and therefore is something that should be strived for (Mill, 1863). Daylight savings transitions are shown to have a considerable increase, of around 7.4-8.5%, in the number of heart attacks following the transitions (Toro et. al., 2015). Other than heart issues, daylight savings time transitions disrupt circadian rhythms, the processes in the body that regulate biological time according to the amount of light. Research from Yiannis Kountouris, part of the Centre for Environmental Policy at Imperial College London, and Kyriaki Remoundou from Aberystwyth University show that “summertime is found to affect exposure to sunlight and upset circadian rhythms. This causes the transitions to daylight savings time (spring transitions) to cause anxiety and loss of attention...” (Kountouris & Remoundou, 2014). This is already a problem according to the utilitarian doctrine as policies that cause large-scale decreases in happiness are judged as harmful (Mill, 1863). Circadian rhythm

disruptions are a cause of high concern, “[f]rom a public policy and health perspective, such disruptions may induce enormous societal costs, particularly in societies that suffer from chronic sleep-deprivations” (Kuehnle & Wunder, 2016). These societal costs are caused by “mood disorders, attention deficits, and errors in judgment” (Kuehnle & Wunder, 2016) from circadian rhythm disruptions. Once again, these have a negative impact on the utility of daylight savings as they detract from the happiness of the general population. The attention deficits caused by these transitions are of significant concern as many dangerous industries will have higher accident rates. The sleep issues caused by daylight savings transitions are a cause of concern as estimates from a 1988 study show that “sleep insufficiencies represent a major public health issue as the sleep-related costs of accidents have been estimated to exceed \$56 billion in 1988 alone” (Kuehnle & Wunder, 2016). This is especially a concern for truck drivers and other industries that require people to drive for long hours as daylight savings transitions increase traffic accidents after the spring shift to daylight savings time (Coren, 1996). While these accidents do not directly affect the happiness of the entire community, this can be plugged into the utility function as Mill believes that health is the greater good (Mill, 1863). Hansen concludes that the transitions also have “[d]istress associated with the sudden advancement of sunset, marking the coming of a long period of short days” (Hansen et. al., 2017). This suggests getting rid of the transition and only using one time standard as daylight savings transitions are the main extreme drawback of our current system and keeping one consistent time standard, either daylight savings time or standard time, will be of the largest benefit to Californians’ happiness. The general consensus of the research in this field seems to agree with this statement (Popoli et. al., 2020). After deciding to keep only one time standard, the question changes to which time standard is best to choose.

Daylight Savings Time vs. Standard Time

After deciding to remove the transitions between daylight savings time and standard time, only one of the two standards can exist. To decide which to adopt, looking at the effects on happiness of both overall is necessary. New research by Garry Popoli, an Adjunct Professor of Psychology at Johns Hopkins University, studying suicide rates in relation to daylight savings time and standard time claims that, while there are many different confounding variables, there is an undeniable difference in the suicides between the two standards with daylight savings time having the greater amount (Popoli et. al., 2020). It is also found that “DST is negatively related to individual well-being” and “is related to a decrease of stated life satisfaction” (Kountouris & Remoundou, 2014). Life satisfaction, which approximately means “happiness” according to Jan-Emmanuel De Neve, part of the University College London and Centre for Economic Performance (De Neve et. al., 2012). They find that because of this research, if “[g]iven the choice of making daylight savings time permanent or eliminating the time shifts altogether, this investigation would certainly recommend the total elimination of daylight savings time and a return to standard time permanently” (Popoli et. al., 2020). While this increase could be caused by many sources “since utility includes not solely the pursuit of happiness, but the prevention or mitigation of unhappiness,” (Mill, 1863) removing daylight savings would prevent the most unhappiness. Furthermore, the majority of the harmful effects happen during the transition to daylight savings time in the spring, not the fall transition (Popoli et. al., 2020). For instance, “[a]n inspection of the literature finds that there are more accidental deaths after the spring transition but not autumn one” (Kuehnle et. al., 2016). This does not determine that daylight savings time is harmful overall as this is simply after the transition, however, it still leans on the

side of keeping year-round standard time, making the proposed policy change highly plausible. This suggests that daylight savings time should be removed and instead, year-round standard time to be kept perpetually as it increases the happiness in the most people and reduces unhappiness.

Not all research agrees with this. A minority of papers argue the exact opposite: daylight savings time offers more benefits than standard time. One study finds that daylight savings time decreases the amount of fatal car crashes when compared to standard time (Ferguson et. al., 1995). Further analysis of their findings discovers that there is only a difference of around 727 in the entire United States. While this would be a reason to reconsider switching to permanent standard time, under utilitarianism, sacrificing the happiness of a few for the increase of many is considered noble (Mill, 1863). Apart from this, the harm caused by the transitions far outweighs this and this increase in car accidents does not counterweight the benefits provided by keeping permanent standard time. As such, the evidence stands that the change in policy that will increase the most amount of people's happiness is changing to a permanent standard time.

Legal Challenges

Given the decision to change to year-round standard time in California, some changes in laws and policies must be made. Most of the laws needed to make this change have already been passed. California Proposition 7 was made to change daylight savings time laws in California. It repeals the Daylight Savings Time Act of 1949 which makes California follow the current model. This proposition allows California to ask the federal government, specifically the Department of Transportation (DOT) for permission to switch time standards (Steimer & Thomas, 2018). This ballot was approved with 59.75% voter approval (Ballotpedia, 2018)³. This

³ Ballotpedia is an online political encyclopedia

ballot keeps California as is but allows for change to one of the two time standards in the future. For this, the governor or state legislature has to create a formal request for the respective state to the Department of Transportation which decides to allow the change depending on the convenience for businesses and trade (Steimer & Thomas, 2018). In terms of popularity needed for such a change, this is not an issue as a recent poll found that 40% of people want to keep year-round standard time compared to 31% who wish for permanent daylight savings time and only 28% who wish to keep the system as is (Davies, 2019).

Conclusion

Thus, if following a utilitarian viewpoint, switching to permanent standard time and removing daylight savings is best due to its positive impact on happiness compared to the alternatives. The limitations of such a change are caused by elements that do not directly affect happiness by much and thus do not have as strong of an impact under utilitarianism. The benefits of standard time under other approaches such as principlism are not within the scope of this paper and as such, people who do not believe in utilitarianism might not be convinced that this paper does not address their primary ethic system. Despite this, given the relative support of our proposed solution, it is feasible to implement it. As such, the final recommendation of this paper is to have the California legislature ask the Department of Transportation to allow California to change to a permanent standard time system and for California voters to support bills that ask for this.

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