Health Implications of Time Policy

The biannual practice of changing between Standard Time (ST) and Daylight Saving Time (DST) leads to short-term negative population health consequences, compared to permanently staying on ST or DST.[14] The DST transition in spring originated in wartime to boost productivity, conserve energy and extend daylight leisure time. Over decades, provinces aligned DST schedules to minimize confusion in trade and travel. Today, the rationale for DST is more social and economic: providing more daylight in late afternoon and evening when people are off work, which is thought to encourage retail activity, recreation, and safer travel in the evenings.

Currently, Manitoba (as in most of Canada and the U.S.), observes ST in autumn and winter. Clocks are turned ahead by one hour to begin DST on the second Sunday of March and then set back by one hour on the first Sunday of November. Manitoba's time policy is currently legislated under The Official Time Act, which falls under the Minister of Municipal and Northern Relations.[15]

In recent years, there has been increasing interest in moving away from current time policies to adopt permanent DST. Ontario passed legislation in 2020 that will permit changing to permanent DST if neighbouring jurisdictions do the same. Yukon adopted permanent DST in 2020, and British Columbia and Alberta will follow suit in 2026. Saskatchewan has remained on permanent ST since 1966.

Turning clocks forward or back by an hour disrupts sleep and the body's natural daily rhythm. The spring shift to DST may be more problematic, leading to a range of public health effects such as sleep and circadian rhythm disruption,[9,14] increased risk for cardiovascular events,[11,12,14] injury/accidents,[1,3,8,14] and impacts on mental health and wellbeing.[2,5,14]

Sleep and Circadian Rhythm

Loss of sleep is the most immediate consequence of the spring DST transition. Studies show that sleep duration decreases slightly in the week following the change.[14] Adolescents are particularly vulnerable given their natural delayed sleep phase.[9] One small U.S. study of high school students found that sleep duration declined an average of 32 minutes on the weeknights following the DST transition leading to a cumulative sleep loss of over two hours.[9]

Our bodies take cues from the light-dark cycles, and abrupt changes, such as a one-hour time change can misalign our bodies biological clocks, though these effects are usually small. The transition back to ST in the autumn realigns the sleep-wake cycle more closely with the light-dark cycle but can still cause short-term disruptions to sleep. These disruptions, particularly around the spring transition, may be contributing factors to the acute negative health outcomes following DST transitions discussed below.[14]

Manitoba

Cardiovascular Health

Multiple studies across North America and Europe have shown increases in heart attacks following the spring DST transition.[11,14] Notably, one study in Michigan found a 24 per cent increase in hospitalizations for heart attacks on the Monday following DST start, compared to other Mondays.[11] In Manitoba, from 2014 – 2024, the average number of hospitalizations for heart attacks on the Monday following the DST transition was 9 compared to 8.5 for all other Mondays, an increase of 6.3 per cent.[7] A meta-analysis estimated around a 4 per cent relative increase in heart attack risk in the week following the spring change.[14] In Manitoba, data regarding heart attacks over the same period does not show any consistent pattern.[7] The increased risk of heart attacks is one of the more consistently observed effects of the change to DST. Studies have not observed an increased risk in heart attacks in the autumn transition back to ST.[11,14] In Manitoba, on the Monday following the fall transition, there were an average of 10.6 hospital admissions for heart attacks compared to an average of 8.4 on all other Mondays representing a 27.3 per cent increase.[7]

Research from Finland has reported an 8 per cent higher rate of stroke in the first two days after a DST transition, both in spring and fall compared to other time periods.[12] The increased risk for cardiovascular events observed around DST transitions is short-lived and becomes statistically insignificant when looking at the whole week post DST transition. The elevated risk may be from disruption to sleep and circadian rhythm and the stress of switching schedules, which may trigger cardiovascular events in vulnerable people.[14] Manitoba data shows there were 8.5 and 9.5 hospitalizations per day for stroke in the 48 hours following the spring and fall DST transition respectively, a decrease of 10.5 per cent and 3.2 per cent following the spring DST and fall DST transition respectively.[7]

Overall, in Manitoba the rates of heart attacks and strokes have decreased over time.[7] Despite this trend, cardiovascular disease is responsible for one in four deaths (25.3 per cent) and is the second leading cause of premature death in the province.[6] In addition, a growing and aging population means that the overall number of people living with chronic conditions is increasing.[6] In Manitoba, between 2014 and 2024, there were seven years where the number of hospital admissions for stroke in the week following the transition to DST were higher than baseline.[7]

Injury and Accidents

Studies have linked the spring DST transition to increases in traffic collisions and workplace injuries.[14] One U.S. study found a 6 per cent increase in fatal vehicle collisions during the week following the change to DST.[3] Historical data from Manitoba Public Insurance has shown a 20 per cent increase in collisions on Manitoba roadways following the spring change to DST compared to all other Mondays.[8] Loss of sleep and biological clock disruption are contributing factors.[14]

The number and severity of workplace injuries have also been found to increase following a change to DST. One U.S. study found a 5.7 per cent increase in injuries on the Monday following the spring DST change, and the injuries that occurred were more severe, resulting in 67.6 per cent more workdays lost.[1] Regardless of the season, any sudden schedule change can increase the risk of errors and injuries in sectors where alertness is critical, such as transportation, manufacturing and healthcare. Maintaining a permanent time may eliminate these acute increases in traffic collisions and workplace risk.[14]

Mental Health and Wellbeing

The act of changing to DST in the spring can cause sleep disturbances, which can be linked to worse mood and irritability in the short-term; however, large population study research generally does not show a significant jump in depressive episodes immediately following the spring DST transition. Results from two large studies – one from England and one from Denmark – highlight the lack of consensus on time policy and how geography matters.[2,5]

In Denmark, one study did not find an increase in the incidence of unipolar depressive episodes following the spring DST transition but did find an 11 per cent increase following the transition back to ST in the fall, which dissipated over a period of roughly 10 weeks.[5] Researchers in England found a reduction in the number of events recorded for multiple health conditions in the week after the autumn clock change including anxiety (3 per cent reduction) and depression (4 per cent reduction).[2] Little evidence was found that the spring clock changes were associated with a difference in the number of health events recorded in the week after the change. The authors of the English study point to differences in morning light as a potential contributor to the variation in findings compared to the Danish study. The sun generally rises earlier in England than in Denmark, meaning that people in England will benefit from a greater increase in morning sunlight after the autumn clock change than people in Denmark.[2] This reinforces the idea that there is no one size fits all approach.

Manitoba's geography would play an important role in health outcomes related to DST transitions or a change to either permanent ST or DST. Because of our northern latitude, daylight hours in winter are very short, regardless of time. Long winter nights contribute to seasonal affective disorder and winter blues for some people. DST does not create more daylight, but staying on DST in the winter would shift an hour of available light from early morning to late afternoon. For many Manitobans that can mean the difference between leaving work in the daylight versus darkness, which could potentially increase mood and reduce the sense of isolation in the winter. A European study found no overall increase in depression associated with DST and in some cases, measures of life satisfaction increased with more evening daylight. Overall, there is not strong evidence that DST or ST by themselves cause major mental health shifts across the population.[14]

Time Period	Winnipeg			Thompson		
	Status Quo	**DST**	**ST**	**Status Quo**	**DST**	**ST**
Jun 21 Sunrise	5:20 a.m.	5:20 a.m.	4:20 a.m.	4:43 a.m.	4:43 a.m.	3:43 a.m.
Jun 21 Sunset	9:41 p.m.	9:41 p.m.	8:41 p.m.	10:26 p.m.	10:26 p.m.	9:26 p.m.
Hours of Daylight	**16hr 21m**			**17h 43m**		
Dec 21 Sunrise	8:24 a.m.	9:24 a.m.	8:24 a.m.	9:05 a.m.	10:05 a.m.	9:05 a.m.
Dec 21 Sunset	4:30 p.m.	5:30 p.m.	4:30 p.m.	3:57 p.m.	4:57 p.m.	3:57 p.m.
Hours of Daylight	**8h 06m**			**6h 52m**		

Based on the table above, if Manitoba adopted permanent ST, the sun would rise at 4:20 a.m. and 3:43 a.m. and set at 8:41 p.m. and 9:26 p.m. on summer solstice (June 21) in Winnipeg and Thompson respectively. Alternatively, if Manitoba adopted permanent DST the sun would rise at 9:24 a.m. and 10:05 a.m. and set at 5:30 p.m. and 4:57 p.m. on winter solstice (Dec 21) in Winnipeg and Thompson respectively. Adopting a permanent time could shift individual behaviours and impact different populations and sectors differently depending on the scenario.

Lifestyle Behaviours and Chronic Disease

More light in the evenings promotes greater physical activity. A study of children in several countries found that on days with more evening daylight, kids were significantly more active by roughly 20 per cent compared to days with an earlier sunset.[4] In both Australia and the UK, extending daylight into post-school hours has been associated with children spending more time playing outside.[4] In Manitoba, an extra hour of daylight after work, especially in the winter, could encourage people of all ages to be more active in the evening.

The burden of chronic disease in Manitoba is substantial and accounts for the majority of deaths and hospitalizations in the province.[6] In 2022-23, 56.2 per cent of Manitobans age 40 and over had at least one chronic condition.[6] Being physically active reduces the risk of over 25 chronic conditions including cardiovascular disease, diabetes, high blood pressure, stroke, cancer, osteoporosis, and depression. Physical activity also enhances mental health and promotes opportunities for stress relief and social connection.[6] Even a modest increase in the physical activity levels of Manitobans holds great potential to improve overall population health status and reduce the risk of chronic disease.

Conclusion

Overall, eliminating the biannual clock change would be better for population health than maintaining the status quo. The most consistent harms linked to the current system occur around the spring transition to DST, when sleep and circadian disruption are associated with short term increases in cardiovascular events, injuries and traffic collisions, and reduced wellbeing. Adopting a permanent time would remove the acute risks that come from switching time twice each year.

The long-term health impacts of staying on permanent ST or DST are not well studied. A recent modelling study suggests that both permanent ST and DST could lead to a decrease in the prevalence of stroke and obesity, with ST providing the greater benefit; however, health impact patterns are highly dependent on geography.[16] In Saskatchewan, a province that has remained on standard time for decades, obesity has been increasing over time. In 2015, 29.6 per cent of Saskatchewan residents aged 12 years and older were obese, compared to 38.4 per cent in 2022.[13] In 2022, Saskatchewan had one of the highest obesity rates of all Canadian provinces, only Newfoundland and Labrador (41.9 per cent) and New Brunswick (43.2 per cent) had higher rates.[13] The obesity rate in Manitoba was 33.7 per cent in 2022.[13] If ST alone was enough to influence health outcomes, one may expect Saskatchewan to have lower obesity rates than other provinces who have practiced biannual time changes over the same period. This observation highlights that the reduced burden on the circadian system offered by permanent ST may not be enough to improve population health outcomes.

Other potential benefits of DST include decreased all-cause mortality and traffic accidents during the summer months compared to ST. Current evidence suggests that the health effects of permanent DST are neither uniformly harmful or uniformly beneficial as individual baseline health and chronotype, or a person's natural preference for wakefulness and sleep, can play a role.[14]

Manitobans experience long summer days and very short winter days regardless of the clock. In that context, the choice between permanent ST and permanent DST is primarily a trade off in when daylight occurs rather than how much daylight is available. Permanent ST would increase morning light, while permanent DST increases light later in the day potentially supporting after work activity and exposure to daylight in the winter months while maintaining long summer evenings that Manitobans are accustomed to.

**Note: Manitoba data regarding heart attack and stroke hospitalizations should be interpreted with caution given the overall small numbers. Analysis provided is based on crude numbers and has not been tested for statistical significance.*

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