

CHANGING TIMES: REVISITING SPRING FORWARD, FALL BACK

HYBRID HEARING

BEFORE THE

SUBCOMMITTEE ON CONSUMER PROTECTION AND COMMERCE

OF THE

COMMITTEE ON ENERGY AND COMMERCE

HOUSE OF REPRESENTATIVES

ONE HUNDRED SEVENTEENTH CONGRESS

SECOND SESSION

MARCH 9, 2022

Serial No. 117-73



Published for the use of the Committee on Energy and Commerce
govinfo.gov/committee/house-energy
energycommerce.house.gov

U.S. GOVERNMENT PUBLISHING OFFICE

59-696 PDF

WASHINGTON : 2025

COMMITTEE ON ENERGY AND COMMERCE

FRANK PALLONE, JR., New Jersey
Chairman

BOBBY L. RUSH, Illinois	CATHY Mc MORRIS RODGERS, Washington
ANNA G. ESHOO, California	<i>Ranking Member</i>
DIANA De GETTE, Colorado	FRED UPTON, Michigan
MIKE DOYLE, Pennsylvania	MICHAEL C. BURGESS, Texas
JAN SCHAKOWSKY, Illinois	STEVE SCALISE, Louisiana
G. K. BUTTERFIELD, North Carolina	ROBERT E. LATTA, Ohio
DORIS O. MATSUI, California	BRETT GUTHRIE, Kentucky
KATHY CASTOR, Florida	DAVID B. Mc KINLEY, West Virginia
JOHN P. SARBANES, Maryland	ADAM KINZINGER, Illinois
JERRY Mc NERNEY, California	H. MORGAN GRIFFITH, Virginia
PETER WELCH, Vermont	GUS M. BILIRAKIS, Florida
PAUL TONKO, New York	BILL JOHNSON, Ohio
YVETTE D. CLARKE, New York	BILLY LONG, Missouri
KURT SCHRADER, Oregon	LARRY BUCSHON, Indiana
TONY CARDENAS, California	MARKWAYNE MULLIN, Oklahoma
RAUL RUIZ, California	RICHARD HUDSON, North Carolina
SCOTT H. PETERS, California	TIM WALBERG, Michigan
DEBBIE DINGELL, Michigan	EARL L. "BUDDY" CARTER, Georgia
MARC A. VEASEY, Texas	JEFF DUNCAN, South Carolina
ANN M. KUSTER, New Hampshire	GARY J. PALMER, Alabama
ROBIN L. KELLY, Illinois, <i>Vice Chair</i>	NEAL P. DUNN, Florida
NANETTE DIAZ BARRAGÁN, California	JOHN R. CURTIS, Utah
A. DONALD Mc EACHIN, Virginia	DEBBIE LESKO, Arizona
LISA BLUNT ROCHESTER, Delaware	GREG PENCE, Indiana
DARREN SOTO, Florida	DAN CRENSHAW, Texas
TOM O'HALLERAN, Arizona	JOHN JOYCE, Pennsylvania
KATHLEEN M. RICE, New York	KELLY ARMSTRONG, North Dakota
ANGIE CRAIG, Minnesota	
KIM SCHRIER, Washington	
LORI TRAHAN, Massachusetts	
LIZZIE FLETCHER, Texas	

PROFESSIONAL STAFF

TIFFANY GUARASCIO, *Staff Director*
WAVERLY GORDON, *Deputy Staff Director*
NATE HODSON, *Minority Staff Director*

SUBCOMMITTEE ON CONSUMER PROTECTION AND COMMERCE

JAN SCHAKOWSKY, Illinois

Chair

BOBBY L. RUSH, Illinois
KATHY CASTOR, Florida
LORI TRAHAN, Massachusetts
JERRY Mc NERNEY, California
YVETTE D. CLARKE, New York
TONY CARDENAS, California, *Vice Chair*
DEBBIE DINGELL, Michigan
ROBIN L. KELLY, Illinois
DARREN SOTO, Florida
KATHLEEN M. RICE, New York
ANGIE CRAIG, Minnesota
LIZZIE FLETCHER, Texas
FRANK PALLONE, Jr., New Jersey (*ex officio*)

GUS M. BILIRAKIS, Florida
Ranking Member
FRED UPTON, Michigan
ROBERT E. LATTA, Ohio
BRETT GUTHRIE, Kentucky
LARRY BUCSHON, Indiana
NEAL P. DUNN, Florida
GREG PENCE, Indiana
DEBBIE LESKO, Arizona
KELLY ARMSTRONG, North Dakota
CATHY Mc MORRIS RODGERS, Washington
(*ex officio*)

C O N T E N T S

	Page
Hon. Jan Schakowsky, a Representative in Congress from the State of Illinois, opening statement	2
Prepared statement	4
Hon. Gus Bilirakis, a Representative in Congress from the State of Florida, opening statement	9
Prepared statement	11
Hon. Frank Pallone, a Representative in Congress from the State of New Jersey, opening statement	14
Prepared statement	16
Hon. Cathy McMorris Rodgers, a Representative in Congress from the State of Washington, opening statement	22
Prepared statement	23
WITNESSES	
Steve Calandrillo, Professor of Law, University of Washington School of Law ..	27
Prepared statement	29
Lyle Beckwith, Senior Vice President, Government Relations, National Association Of Convenience Stores	33
Prepared Statement	35
Beth A. Malow, M.D., Professor of Neurology and Pediatrics, Director, Vanderbilt Sleep Division, Vanderbilt University Medical Center	39
Prepared statement	41
SUBMITTED MATERIAL	
Letter Of March 9, 2022, from Raman K. Malhotra, M.D., President the American Academy of Sleep Medicine, to Ms. Schakowsky and Mr. Bilirakis, submitted by Mr. Cárdenas	71
Letter of March 8, 2022, from Jay Pea President, Save Standard Time, to Subcommittee on Consumer Protection and Commerce and the Committee of Energy and Commerce, submitted by Mr. Cárdenas	75

CHANGING TIMES: REVISITING SPRING FORWARD, FALL BACK

WEDNESDAY, MARCH 9, 2022

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON CONSUMER PROTECTION AND
COMMERCE,
COMMITTEE ON ENERGY AND COMMERCE,
Washington, DC.

The subcommittee met, pursuant to notice, at 9:35 a.m., in the John D. Dingell Room 2123, Rayburn House Office Building, and remotely via Cisco Webex online video conferencing, Hon. Jan Schakowsky, (chairwoman of the subcommittee) presiding.

Members present: Representatives Schakowsky, Rush, Trahan, McNerney, Cárdenas, Dingell, Kelly, Soto, Rice, Craig, Fletcher, Pallone (ex officio); Bilirakis (subcommittee ranking member), Upton, Latta, Guthrie, Dunn, Pence, Lesko, and Rodgers (ex officio).

Staff present: Katherine Durkin, Policy Coordinator; Waverly Gordon, Deputy Staff Director and General Counsel; Tiffany Guarascio, Staff Director; Ed Kaczmarek, Policy Analyst; Zach Kahan, Deputy Director Outreach and Member Service; Jerry Leverich, Chief Counsel, Communications and Technology; Chloe Rodriguez, Clerk; Kylea Rogers, Staff Assistant; Andrew Souvall, Director of Communications, Outreach, and Member Services; Caroline Wood, Staff Assistant; Michael Cameron, Minority Policy Analyst, Consumer Protection and Commerce; Energy, Environment; Olivia Hnat, Minority Communications Director; Peter Kielty, Minority General Counsel; Emily King, Minority Member Services Director; Bijan Koohmaraie, Minority Chief Counsel; Tim Kurth, Minority Chief Counsel, Consumer Protection and Commerce; and Brannon Rains, Minority Professional Staff Member, Consumer Protection and Commerce.

Ms. SCHAKOWSKY. The Subcommittee on Consumer Protection and Commerce will now come to order.

Today we will be holding a hearing entitled, “Changing Time: Revisiting Spring Forward, Fall Backward.”

Due to COVID-19 public health emergency, members can participate today in today’s hearing either in person or remotely, via online video conferencing.

In accordance with the updated guidelines issued by the attending physician, members, staff, and members of the press that are in the room are not required to wear masks.

For members participating remotely, your microphones will be set on mute for the purpose of eliminating inadvertent background noise. Members participating remotely will need to unmute yourself, your microphones, each time that you wish to speak. Please note that, once you are unmuted, the microphone—your—once you unmute your microphone, anything that you say in Webex will be heard over loudspeakers in the committee room, and subject to being heard by the livestreaming and C-SPAN.

Since members are participating from different locations at today's hearing, recording—we will recognize members for questions according to subcommittee seniority.

Documents for the record shall be sent to Ed Kaczmariski at the email address that has been provided to staff, and all documents will be entered into the record at the conclusion of the hearing.

The Chair now recognizes herself for 5 minutes.

Let me just note that we are expecting votes this morning. It looks like between 9:45 and 10. Let's try and get through opening statements, and maybe even our witnesses' testimony.

So I will begin with myself for 5 minutes.

OPENING STATEMENT OF HON. JAN SCHAKOWSKY, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ILLINOIS

When I was a new Member of Congress, there was a vote to change how we observe Daylight Savings Time, and I was pretty surprised that we have the power to change time itself. So today we exercise that power as we discuss Daylight Saving. We—some people say Daylight Savings; it is Daylight Saving Time—the period from spring to fall, when we all set our clocks ahead one hour.

Standardizing time across the country has its roots in the growth of railroads across America in the late 19th century. When—because—when it became imperative to regulate timekeeping to avoid confusion with trade and travel.

In 1918 Congress established five time zones to provide a standard time, and create—and created Daylight Saving Time for daylight—OK. Oh, following its adoption by Europe during World War II. After World War II, however, Daylight Savings Time was actually abolished at the Federal level, though localities have the option of continuing to observe, and so this resulted in confusion. So the InterState Commerce Committee—Commission recommended that Congress re-examine the issue.

The Uniform Time Act of 1966 set up the basic system that we are using as of today when we spring forward and fall back to observe Daylight Saving Time, as we will this upcoming Sunday. Don't forget. History shows that Daylight Saving Time has benefits and costs.

The growing public interest in this topic and action on the State level brings us here today. Some argue that when we spring forward and lose an hour of sunshine in the morning, that this impacts our health, school children commuting to school, and potentially even traffic safety. On the other hand, there are those who contend that the extra hour of sunshine in the evening can be beneficial, a real boon to restaurants and commercial—commerce and tourism.

Supporters of Daylight Saving Time claim that it is an energy saving and—energy saver, and point to a 2008 report by the Department of Energy, which found that Daylight Saving Time saves 1.2 terawatts of energy per year, though other studies have rather mixed results.

Studies all—studies have found that the transition itself from Standard Time to Daylight Savings and back again has health impacts. These recent studies found that the transition causes cumulative sleep loss, and may result in more heart attacks and mood disorders.

So today we hear from experts who can illuminate these issues. I look forward to our discussion as we learn more about the benefits and costs of Daylight Saving Time. And I want to thank you—and I want to give my thanks to the witnesses for joining us today.

[The prepared statement of Ms. Schakowsky follows:]

PREPARED STATEMENT OF HON. JAN SCHAKOWSKY

Chair Schakowsky Opening for
“Changing Times: Revisiting Spring
Forward, Fall Back” on March 9, 2022

When I was a new Member, Congress voted on changes to how we observe Daylight Saving Time.

I was surprised: we have the power to change time itself.

Today, we exercise that power as we discuss Daylight Saving Time, the period from the spring to the fall when we all set our clocks ahead one hour.

Standardizing time across the country has its roots in the growth of railroads across America in the late 19th century when it

became imperative to regulate timekeeping to avoid confusion with trade and travel.

In 1918, Congress established five time zones to provide a standard time and created Daylight Saving Time following its adoption by Europe in World War II.

After the war, Daylight Saving Time was abolished at the federal level, though localities had the option to continue to observe it.

This resulted in confusion, so the Interstate Commerce Commission recommending that Congress reexamine the issue.

The Uniform Time Act of 1966 set up the basic system we use today when we spring forward and fall back to observe Daylight Saving Time, as we will this upcoming Sunday.

History shows that Daylight Saving Time has benefits and costs. The growing public interest in this topic, and action on the state level, bring us here today to examine the issue.

Some argue that when we spring forward and lose an hour of sunlight in the morning this impacts our health, school children's commutes to school, and, potentially, traffic safety.

On the other hand, there are those who contend that the extra hour of sunlight in the evening can be a boon to restaurants, commerce, and tourism.

Supporters of Daylight Saving Time claim it is an energy saver and point to a 2008 report by the Department of Energy which found that Daylight Saving Time saves 1.2 terraWatts of energy per year, though other studies have had more mixed results.

Studies have found that the transition itself from Standard Time to Daylight Saving Time and back again has health impacts. These recent studies found that the transition causes cumulative sleep

loss and may result in more heart attacks and mood disorders.

Today, we hear from experts who can illuminate these issues. I look forward to our discussion as we learn more about the benefits and costs of Daylight Saving Time.

Thank you to the witnesses for joining us today.

Ms. SCHAKOWSKY. Now yields to my distinguished ranking member of the subcommittee, Dr.—Mr. Bilirakis. Doctor.

Mr. BILIRAKIS. Thanks.

Ms. SCHAKOWSKY. I just promoted him to Dr. Bilirakis, member of the subcommittee.

I yield to you.

OPENING STATEMENT OF HON. GUS BILIRAKIS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF FLORIDA

Mr. BILIRAKIS. Thank you very much. I appreciate it. Good morning, Madam Chair. Good morning to everyone. Thank you, Madam Chair, for holding this hearing, and examining the issue of Daylight Saving Time and our spring forward coming on Sunday, this upcoming weekend. And thank you to our witnesses for testifying and providing your expertise on this matter. I look forward to hearing and, again, getting your perspectives on this particular issue.

My constituents are—I did a survey recently, and they feel strongly about this issue. So I am glad we are having the hearing. Of course, we have other issues we have to deal with, as well.

Since 1918, when Daylight Saving Time was first enacted, it has received many praises and criticisms, as well as many attempted revisions from this body of Congress. I know that almost 40 years ago this committee held a hearing on legislation to extend Daylight Saving Time, a hearing which my father, Congressman Mike Bilirakis, participated in when he served on the subcommittee of—on Energy Conservation. So back then, the legislation would have extended this practice with the aim to decrease energy consumption during the spring and summer, a continuation of its original purpose to reduce usage of oil during the First World War.

While I have heard the original desired outcome of this practice may have diminished over the course of the last 100 years, a topic I hope to discuss today, I know that Americans' opinions of Daylight Saving Time have not. This is a topic that I continue to hear about back home from my constituents. So hopefully, this hearing serves to educate the members here today so we can make informed decisions moving forward. And while there are certainly many topics that deserve our attention in this subcommittee, today's topic comes just a few days before we once again go through a ritual many of us don't understand or care for.

This Sunday, as the chairman said, we will likely experience an almost seamless change, as our phones now have the ability to reset the time on their own. I say almost seamlessly (sic), because, while this transition may be easy for our devices, it is not so much for our bodies. Humans are not as simple as winding a watch back or forward, or resetting the time on our microwave. The toll the time change has on your bodies—on our bodies and our mind can be severe, even when it may not be apparent, and can cause health effects, as the chairwoman said, like increased depression and greater risk of heart attack and strokes.

I am glad to have the perspective of Dr. Malow on this panel, so we can further examine the impacts changing the clocks have on our bodies and our mental State, our mental health, especially during this pandemic.

We also need to examine the effects Daylight Saving Time has on the economy. In my home State of Florida, the Sunshine State, we take our daylight very seriously. In fact, Florida's legislature passed a State bill that would make Daylight Saving Time permanent, year round. But the policy requires congressional approval to take effect. That is another reason why I am glad that we are holding this bipartisan hearing to learn more about the impacts of Daylight Saving Time, and have—and how Congress can consider time changes nationwide. We have to be very careful and deliberative on this issue.

A lot of our industries, like travel and tourism, rely on daylight—of course, daylight and, of course, in my State of Florida—later to provide Floridians and tourists with good services all around the country. Simply put, the longer the sun is out in the afternoon and evening, the more consumers will be outside participating in local economies.

That is why I am pleased we will hear from Lyle Beckwith, the senior vice president at the National Association of Convenience Stores, so we can learn more about how the change in time impacts businesses in our great economy.

So again, thank you, Madam Chair, for holding this hearing, and I look forward to engaging on this particular discussion and this particular subject.

[The prepared statement of Mr. Bilirakis follows:]

PREPARED STATEMENT OF HON. GUS BILIRAKIS

**Opening Statement for Republican Leader Gus Bilirakis
Subcommittee on Consumer Protection and Commerce
Hearing on “Changing Times: Revisiting Spring Forward, Fall Back”
March 9, 2022**

As Prepared for Delivery

Good morning, everyone.

Thank you, madam chair, for holding this hearing and examining the issue of Daylight Savings Time and our “spring forward” coming on Sunday this upcoming weekend. And thank you to our witnesses for testifying and providing your expertise on this matter, I look forward to hearing each of your perspectives.

Since 1918, when Daylight Savings Time was first enacted, it has received many praises and criticisms, as well as many attempted revisions from this body of Congress.

I know that almost 40 years ago, this Committee held a hearing on legislation to extend Daylight Savings Time, a hearing which my Dad sat on this dais when he served on the Subcommittee on Energy Conservation.

Back then, the legislation would have extended this practice with the aim to decrease energy consumption during the spring and summer – a continuation of its original purpose, to reduce the usage of oil during the first World War.

While I have heard the original desired outcome of this practice may have diminished over the course of the last 100 years, a topic I hope to discuss today, I know that American's opinions of Daylight Savings Time have not.

This is a topic that I continue to hear about back home from my constituents, so hopefully this hearing serves to educate the members here today so we can make informed decisions moving forward.

And while there are certainly many topics that deserve our attention in this subcommittee, today's topic comes just a few days before we once again go through a ritual many of us don't understand or care for.

This Sunday, we will likely experience an almost seamless change as our phones now have the ability to reset the time on their own. I say "almost" seamless, because while this transition may be easy for our devices, it is not so much for our bodies. Humans are not as simple as winding a watch back or forward or resetting the time on our microwave. The toll the time change has on our bodies and our minds can be severe, even when it may not be apparent and can cause health effects like increased depression and greater risk of heart attack and strokes. I'm glad to have the perspective of Dr. Malow on the panel, so we can further examine the impacts changing the clocks has on our bodies and on our mental health.

We also need to examine the effects Daylight Savings Time has on the economy. In my home state of Florida, the Sunshine State, we take our daylight very seriously. In fact, Florida's legislature passed a state bill that would make daylight savings time permanent year-round. But the policy requires Congressional approval to take effect. That's another reason why I am glad that we're holding this bipartisan hearing to learn more about the impacts of Daylight Savings and how Congress can consider time changes nationwide.

A lot of our industries, like travel and tourism, rely on daylight later to provide Floridians and tourists with goods and services. Simply put, the longer the sun is out in the afternoon and evening, the more consumers will be outside participating in local economies. That's why I'm pleased we will hear from Lyle Beckwith, Senior Vice President at the National Association of Convenience Stores, so we can learn more about how the change in time impacts the businesses in our great economy.

So again, thank you madam chair for holding this hearing. And I look forward to an engaging discussion. I yield back

Mr. BILIRAKIS. And I yield back the balance of my time. I appreciate it.

Ms. SCHAKOWSKY. The gentleman yields back, and now I recognize Mr. Pallone, the chairman of the full committee, for 5 minutes for his opening statement.

OPENING STATEMENT OF HON. FRANK PALLONE, JR., A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW JERSEY

Mr. PALLONE. Thank you, Chairwoman Schakowsky. This weekend we will once again spring forward, changing our clocks forward one hour. It is a weekend that makes a lot of us unhappy. The loss of that one hour of sleep seems to impact us for days afterwards. It also can cause havoc on the sleeping patterns of our kids and our pets. This is all an inconvenience.

But unfortunately, the changing of our clocks has impacts on our health and our economy, which begs the question: Do we still need to spring forward or fall back in the first place? And it is a question that many of us ask every time we have to do it, and it is getting harder and harder to justify, considering that, in a 2019 poll, 71 percent of Americans said they preferred to no longer switch their clocks twice a year. Today we will examine the impacts of this time change, and whether it still makes sense or is obsolete.

Historians have long debated who first came up with the idea of Daylight Savings Time, but it was first adopted nationwide in Germany during World War I in an effort to save energy. During World War II the United States adopted year-round Daylight Savings Time, known as the War Time, in an effort to save energy and increase productivity.

And over the years, numerous justifications were made for changing our clocks twice a year—most commonly and notably, energy conservation. It was believed that extending light into the evening hours would help consumers pay less for electricity, because they would not have to turn on the lights until later in the night. However, modern luxuries such as heating, air conditioning, and other appliances have changed that calculation.

Furthermore, advancements in LED lighting and other energy-efficient appliances are not only saving consumers money, but they are virtually making the energy conservation justification moot and outdated.

And it becomes harder to justify when you consider the health and economic impacts associated with changing our clocks. Studies have shown an increase in the rate of heart attacks and strokes in the 2-days immediately following the time change. Disturbingly, these stroke rates are even higher for some of our most vulnerable populations. Cancer patients' stroke rates increased by 25 percent, and people over the age of 65 are 20 percent more likely to have a stroke in the days following the time change.

Our children also suffer. Study after study shows the importance of a consistent full night's sleep for our kids.

The time change impacts our economy. Employers reported an almost six percent increase in workplace injuries in the days following the time change, and those injuries resulted in 67 percent more workdays lost. So studies have also shown that people simply

are not as productive at work in the days following the time change, spending more time on their computer, on—or on non-work related activities. And all of these side effects hurt our economy.

So I have highlighted a couple of studies, but the committee would like to know more. That is why Ranking Member Rodgers and I intend to request an evaluation and analysis from the Department of Transportation about the effects of Daylight Savings Time. This review, as well as this hearing, will help our committee as we examine this important issue.

I have yet to decide whether I support, Madam Chair, a permanent switch to Standard or Daylight Time, but I do think it is time to stop changing the clocks. I believe that any justification for springing forward and falling back are either outdated or outweighed by the serious health and economic impacts we now know are associated with the time changes.

So I thank the witnesses, and I look forward to hearing their perspectives on the issue.

[The prepared statement of Mr. Pallone follows:]

PREPARED STATEMENT OF HON. FRANK PALLONE, JR.

**Statement of Chairman Frank Pallone, Jr.
Committee on Energy and Commerce
Subcommittee on Consumer Protection and Commerce
Hearing on “Changing Times: Revisiting Spring Forward,
Fall Back”**

March 9, 2022

This weekend, we will once again spring forward – changing our clocks forward one hour. It’s a weekend a lot of us dread. The loss of that one hour of sleep seems to impact us for days afterwards – making it more difficult to get out of bed in the morning. It also can cause havoc on the sleeping patterns of our kids and our pets. This is all an inconvenience, but unfortunately the changing of our clocks can have serious impacts on our health and our economy.

Which begs the question – why do we still spring forward and fall back in the first place? It’s a question that many of us

ask every time we have to do it. And it's getting harder and harder to justify considering that in a 2019 poll, 71 percent of Americans said they prefer to no longer switch their clocks twice a year.

Today, we will examine the impacts of this time change, and whether it still makes sense or is obsolete.

Historians have long debated who first came up with the idea of Daylight Saving Time, but it was first adopted nationwide in Germany during World War I in an effort to save energy. During World War II, the United States adopted year-round Daylight Saving Time, known as "War Time," in an effort to save energy and increase productivity.

Over the years numerous justifications were made for changing our clocks twice a year, most commonly and notably energy conservation. It was believed that extending light into the evening hours would help consumers pay less for electricity because they would not have to turn on the lights until later in the evening. However, modern luxuries, such as heating, air conditioning, and other appliances have changed that calculation. Furthermore, advancements in LED lighting and other energy efficient appliances are not only saving consumers money but they are virtually making the energy conservation justification moot and outdated.

And it becomes harder to justify when you consider the health and economic impacts associated with changing our clocks.

Studies have shown an increase in the rate of heart attacks and strokes in the two days immediately following the time change. Disturbingly, these stroke rates are even higher for some of our most vulnerable populations – cancer patients stroke rates increase by 25 percent, and people over the age of 65 are 20 percent more likely to have a stroke in the days following the time change.

Our children also suffer. Study after study shows the importance of a consistent full night sleep for our kids. In the days following the time change, SAT scores fell by an average of 16 or 17 points. Just imagine the impact that the loss of sleep is having on their other activities.

The time change also impacts our economy. Employers report an almost six percent increase in workplace injuries in the days following the time change, and those injuries resulted in 67 percent more workdays lost.

Studies have also shown that people simply are not as productive at work in the days following the time change – spending more time on their computer on nonwork related activities. All of these side effects hurt our economy.

I've highlighted a couple of studies, but the Committee would like to know more. That's why Ranking Member Rodgers and I intend to request an evaluation and analysis from the Department of Transportation (DOT) about the effects of Daylight Saving Time. This review, as well as this hearing, will help our Committee as we examine this important issue.

While I have yet to decide whether I support a permanent switch to Standard or Daylight Saving Time, it's time we stop changing our clocks. I believe that any justifications for springing forward and falling back are either outdated or are outweighed by the serious health and economic impacts we now know are associated with the time changes.

I thank the witnesses for being with us today, and I look forward to hearing your perspectives on this issue.

Mr. PALLONE. And I yield back, Madam Chair.

Ms. SCHAKOWSKY. Thank you. The gentleman yields back, and now the Chair recognizes Mrs. Rodgers, our ranking member of the full committee, for 5 minutes.

**OPENING STATEMENT OF HON. CATHY McMORRIS RODGERS,
A REPRESENTATIVE IN CONGRESS FROM THE STATE OF
WASHINGTON**

Mrs. RODGERS. Good morning. Thank you, Madam Chair. Good morning to our witnesses, especially Steve Calandrillo from the University of Washington, my alma mater. I know Steve has done a lot of work on Daylight Savings. I look forward to hearing his insights.

I would also like to give a special shout out to State senators Joe Schmidt and Jim Honeyford from back home. They have both been leaders on this issue in Washington State.

On Sunday most of the country will once again go through the ritual of moving our clocks ahead one hour. Statistics show that Daylight Savings coincides with worse student test scores, and spikes in the number of car accidents, and heart attacks. As the chairman mentioned, together we are going to refresh the record on this topic, with a renewed inquiry with the Secretary of Transportation as to his Department and the enforcement mechanism for the Uniform Time Act.

That said, there remains many issues that this committee should be prioritizing before Daylight Savings, like unleashing American energy to help Ukraine and counter Russian aggression. My thoughts and prayers continue to be with the people of Ukraine, who are fighting for their freedom, their lives. We could do more, and we must do more. This committee needs to lead to ensure economic and national security.

I am pleased we have witnesses here today representing the convenience stores. I know my friends back home, Tammy Hedrick and Dan Alsaker, work closely with Mr. Beckwith.

[The prepared statement of Mrs. Rodgers follows:]

PREPARED STATEMENT OF HON. CATHY McMORRIS RODGERS

**Opening Statement for Republican Leader Cathy McMorris
Rodgers
Subcommittee on Consumer Protection and Commerce
Hearing on “Changing Times: Revisiting Spring Forward, Fall
Back”
March 9, 2022
*As Prepared for Delivery***

Good morning, and welcome to our witnesses, especially Steve Calandrillo from the University of Washington – my alma mater.

I know Steve has done a lot of interesting work on Daylight Savings Time and I look forward to hearing his insights, as well as those of our other two witnesses. I'd also like to give a special shout out to State Senators Joe Schmick and Jim Honeyford back home who have both been leaders on this issue in Washington state.

On Sunday, most of the country will once again go through the ritual of moving our clocks ahead one hour. Statistics show that daylight savings coincides with worse student test scores and spikes in the number of car accidents, and heart attacks.

As the Chairman mentioned, together we are going to refresh the record on this topic with a renewed inquiry with the Secretary of Transportation, as his department is the enforcement mechanism for the Uniform Time Act.

Now, speaking as a mom, this ordeal is often a disruption of routine for our family, my kids are crankier because they have lost an hour of sleep, dinner time changes which makes us a little more irritable, and when we're off to work and school, drivers on our streets are in a rush as they adjust their own schedules. This

all adds up to a lot of more stress no matter who we are or what we do.

That said, there remain many issues that this committee should be prioritizing before daylight savings like unleashing American energy to help Ukraine and counter Russian aggression. My thoughts and prayers continue to be with the people of Ukraine who are fighting for their freedom and their lives.

This committee also continues to disregard many issues that are critical to our economic and national security like establishing a national privacy standard and securing American leadership in emerging technologies like AVs.

Americans deserve more robust discussion and action when it comes to public policy. As lawmakers, it is our responsibility to ensure this by enacting solutions that preserves our work over key aspects of our economy, from our energy supply to our leadership in technological innovation and entrepreneurship, as well as the supply chains that we rely on as a global leader. This committee can and must do more to address these issues.

I am pleased that we have a witness here today representing convenience store owners. I know my friends back home Tammie Hetrick and Dan Alsaker work closely with Mr. Beckwith. I wish we had witnesses at every hearing who conduct business in our communities, they know best how our action—or inaction—impacts hard-working Americans.

We need to make sure we are working for these communities and creating policies that improve their lives rather than complicate them.

Fred Upton, the Republican Leader on our Energy Subcommittee, has been a leader on the DST issue. I would like to yield to him to hear his insights as well today.

Mrs. RODGERS. And with that I am going to yield to the Republican leader on the Energy Subcommittee, Fred Upton, for his comments.

Mr. UPTON. Well, I thank my leader, and I just want to say, as I look at the picture, a portrait of John Dingell, he said this committee was really—our jurisdiction was really two words. You can do it in charades. The first word is little, “the.” The second word, “world,” “the world.” That is what we have jurisdiction over, including time.

So back in 2005, it was this committee that actually changed the times, the periods when Daylight Savings would be in effect. And we did a lot of research. I was the Republican lead back there, Ed Markey was my counterpart. We actually sought advice from the Naval Observatory to find out when was the best time to change time, knowing that we had done that for some 50 years.

The Naval Observatory made a couple of suggestions which we took up, so we started it a little bit earlier, in October, and we went a little bit—or we went a little later, actually, the first Sunday in November, and we went a little bit earlier, which is the second weekend in March. One of the reasons why we did November was because Halloween. Sometimes it changed on Halloween. And you take that extra hour away of trick-or-treaters, that is the number-one death day for kids running between parked cars. You take that hour of sunlight away, and that tragically is a bad day, which is why we moved it to November, instead of October.

Now there is a lot of myths about Daylight Savings Time. I can’t dispel them all. I am not even going to go after the Arkansas Gazette, which ran a story blaming a tree disease spread by beetles on Daylight Savings Time because they had that extra hour—a little bit off the wall. I won’t touch that one.

But Richard Burr, then on the committee, demanded a study by the Department of Energy to make sure that, in fact, we did save energy. In fact, a year or two later the Department of Energy confirmed that we actually do save energy, something important in today’s world.

We talked to law enforcement. It does actually reduce crime. Why is that? Because most crime happens at dusk. And so if you extend that hour, folks are able to get home. And I can remember—well, we know those stories.

It saves lives, not only at Halloween, but I believe it was AAA that said it actually saved a number of lives because most accidents occur with people tired coming home from work, kids, they drive more than ever before now, coming home from school. It used to be you took the bus. Now it seems like a lot of kids take the car. So again, those after-school activities, you have that extra hour, so it extends dusk, so you don’t have as many accidents, and you actually save lives.

We are going to hear today about benefiting the economy. I mean, just think about the barbecues, think about outdoor recreation. Maybe you can play 18 holes of golf instead of 9. I am not a golfer, but maybe someday. Think about garden work, coming home and working in your garden, all those different things. You have that extra hour that is nice. Usually, of course, spring starts with this.

A couple of things. I support states' rights. So one of the things that we did—now, Arizona and Hawaii, they both don't acknowledge Daylight Saving Time, which is fine. Indiana, we worked very closely with Mitch Daniels. That was a divided State, and we actually had a provision to save that. I support states having the rights to decide whether they want to be in or out. I know that has been an issue in the Sunshine State. So I think that would be worthy of changing.

I also, if I had to do it all over again, I might have said, you know, it ought to start Saturday morning instead of Sunday, so you have that extra day to get ready for the beginning of the week. Whether you lose an hour or not, it might help some of the outdoor recreation folks, as well. So I think that might be important.

But at the end of the day, we changed the world. The rest of the world changed their time to comply with us. So this is a big thing. If you change it, it is a big thing.

The airlines, the cruise industry, the tourists—and often you got confusion. Our State was next to Michigan. We always had, you know, which time zone. You know, as one that flies out of South Bend, which time are you on?

So there is a lot of questions. I appreciate the hearing.

Mr. UPTON. And with that I yield back.

Ms. SCHAKOWSKY. The gentleman who remembers the earlier debate is an expert on this.

And I would now like to introduce our witnesses. I assume all of them are somewhere remotely.

I wanted to first introduce Steve Calandrillo—or is a Calandrillo? Calandrillo, I have been told, who is Jeffrey and Susan—what is it, Brothman?

VOICE. Brotman.

Ms. SCHAKOWSKY. Brotman professor of law at the University of Washington School of Law.

Then we have Lyle—oh, yes, Lyle Beckwith, who is the senior vice president of government relations at the National Association for Convenience Stores.

Dr. Beth Malow, the professor of neurology and pediatrics, and director of the Vanderbilt Sleep Division at the Vanderbilt University Medical Center.

So at this time the chairman will recognize each witness for 5 minutes to provide opening statements.

Before we begin, I would like to explain—well, we don't have anyone here in person, so the issue of the lights—there is a timer, however, on the screen that will count down your remaining time. As the timer reaches the 1-minute mark, please begin to wrap up your testimony.

So Professor Calandrillo, you are now recognized for 5 minutes.

STATEMENT OF STEVE CALANDRILLO, JEFFREY AND SUSAN BROTMAN PROFESSOR OF LAW, UNIVERSITY OF WASHINGTON SCHOOL OF LAW; LYLE BECKWITH, SENIOR VICE PRESIDENT, GOVERNMENT RELATIONS, NATIONAL ASSOCIATION OF CONVENIENCE STORES; AND BETH A. MALOW, M.D., PROFESSOR OF NEUROLOGY AND PEDIATRICS, DIRECTOR, VANDERBILT SLEEP DIVISION, VANDERBILT UNIVERSITY MEDICAL CENTER

STATEMENT OF STEVE CALANDRILLO

Mr. CALANDRILLO. Thank you, Chairwoman Schakowsky, Ranking Member Bilirakis, and Chair Pallone, and Ranking Member Rodgers, as well as distinguished members of the Subcommittee on Consumer Protection and Commerce. My name is Steve Calandrillo.

I am a professor at the University of Washington School of Law, all the way out on the west edge of our country, in Seattle. And I teach contract law, advanced tort law, law in medicine, as well as law in economics. And in that latter course we study the cost benefit analysis of various laws and public policies, including Daylight Saving Time.

I started researching this issue 15 or 20 years ago, and published a paper in a law review, and since then I have actually started publishing in mainstream publications that get read by more than just my parents and my best friends, so avenues like the New York Times and CNN and Businessweek and Fox News and ABC and CBS, as well as NPR.

And I am here today to urge Congress to permanently extend Daylight Saving Time to make it all year round for five important reasons.

No. 1, the most important reason: permanent Daylight Saving Time would save lives. Darkness kills and sunshine saves.

No. 2, we are going to talk about the crime reduction that various representatives have already referenced. Daylight Saving Time prevents crime by as much as 20 percent.

No. 3, we are going to talk about the energy savings created by Daylight Saving Time. This was the original justification for Daylight Saving Time. It is no longer as strong as it used to be, but it still does save energy.

No. 4, we are going to—I want to discuss avoiding switching the clocks twice a year. As many representatives have alluded to, people don't like changing their clocks twice a year, and it is more than just dislike. It messes up circadian rhythms, disrupts your sleep cycles, and has all kinds of health and economic effects. But permanent Daylight Saving Time can stop that.

And last, the fifth reason for going to permanent Daylight Saving Time is that business and recreational interest will flourish in the evening sunshine.

So I will take all five of those in turn.

First, lives saved. Darkness kills. Sunshine saves. That is what I like to say to my students. And darkness is twice as deadly in the evening hours as it is in the early morning hours before sun-

rise. The evening rush hour is much more fatal than the morning rush hour for various reasons. There is more people on the road. There is more alcohol in drivers' bloodstreams. People are tired and rushing to get home, and that is when they make mistakes.

More children are outdoors, enjoying unsupervised play, and it leads to lots of accidents. In fact, fatal vehicle-on-pedestrian crashes skyrocket threefold once we hit the twilight hour, once the sun goes down. Susan Ferguson's research showed a 300 percent increase in fatalities. Obviously, it is a lot harder to see that kid running across the street once it is dark outside, once there is sunset.

And the idea of Daylight Saving Time is it pushes, it moves one hour from the morning into the late afternoon/evening, making it safer for drivers, making it safer for pedestrians. In fact, a meta study by Rutgers researchers Coate and Markowitz demonstrated that 343 lives per year could be saved, on net, if we move to permanent Daylight Saving Time. Obviously, the morning would be more dangerous, but the afternoon would be much, much more safer than the morning was.

Crime would decrease if we had Daylight Saving Time year round. Darkness is a friend of crime. Criminals like to do their work in the evening darkness, not the morning darkness. So it is the evening hours where crime spikes, between 6 p.m. to midnight. That is the most dangerous time of year, and Daylight Saving Time has the effect of taking one hour out of their workday, right? Criminals are late to bed and late to rise. They don't tend to commit crimes at 6 a.m., but 6 p.m. is a different story.

Third, energy savings. As Representative Upton noted, this was the justification for Daylight Saving Time. In World War I, in World War II, in the 1973/1974 OPEC oil embargo, we wanted to save barrels of oil. Same thing with 2007, when Daylight Saving Time got extended. And the reason is that if the sun is still out later in the afternoon, when 99 percent of the population is awake, right, the sun can help heat your house, heat your business, and also light your house and light your business. Now that argument has diminished somewhat over time, as he mentioned, but it is still true. The studies on—the majority still show an energy savings from Daylight Saving Time.

Fourth, let's avoid the biannual clock switch. That is what most Americans are objecting to. It is not Daylight Saving Time so much, right? We are on Daylight Saving Time eight months out of the year. In fact, Standard Time is a little bit of a misnomer, because it is only four months out of the year. But if we went to permanent Daylight Saving Time, we would no longer have the clock switch. That would protect circadian rhythms.

And then finally, recreation and commerce interests flourish in the sun. I know other witnesses will testify as to that. But obviously, it is a lot easier to get off your screens and go outside and enjoy a walk, a jog, play with your kids in the backyard. It is a lot easier to go out shopping if there is still sunlight out.

With that, I see my time is up. I apologize for going over, but I thank you very much for listening to me today.

[The prepared statement of Mr. Calandrillo follows:]

TESTIMONY BEFORE THE CONGRESS OF THE UNITED STATES
 COMMITTEE ON ENERGY & COMMERCE, MARCH 9, 2022
 SUBCOMMITTEE ON CONSUMER PROTECTION & COMMERCE

5 WAYS LIFE WOULD BE BETTER WITH YEAR-ROUND DAYLIGHT SAVING TIME

see [5 ways life would be better if it were always daylight saving time \(theconversation.com\)](https://theconversation.com/5-ways-life-would-be-better-if-it-were-always-daylight-saving-time)

By [Steve P. Calandrillo](#), Brotman Professor of Law, University of Washington

In [my research](#) on daylight saving time (DST), I have found that Americans don't like it when Congress messes with their clocks. In an effort to avoid the biannual clock switch in spring and fall, some well-intended critics of DST have made the mistake of suggesting that the abolition of DST (and a return to permanent standard time) would benefit society. They are wrong. DST saves lives and energy, and prevents crime. Congress should move the country to year-round DST, and if it did so, here are five ways our lives would immediately improve:

1. Lives Would Be Saved. Simply put, darkness kills – and darkness in the evening is far deadlier than darkness in the morning. The evening rush hour is twice as fatal as the morning for various reasons – far more people are on the road, more alcohol is in drivers' bloodstream, people are hurrying to get home, and more children are enjoying [outdoor, unsupervised play](#). Fatal vehicle on pedestrian crashes [skyrocket threefold](#) when the sun goes down. DST brings an extra hour of sunlight into the evening to mitigate those risks, whereas Standard Time has precisely the opposite impact by moving sunlight into the morning. A meta-study by Rutgers researchers Coate and Markowitz demonstrated that [343 lives per year](#) could be saved by moving to year-round DST; the opposite effect would occur if we imposed year-round standard time.

2. Crime Would Decrease. Darkness is also a friend of crime. Moving sunlight into the evening hours has a far greater impact on the prevention of crime (especially juvenile crime that peaks in the after-school and early evening hours) than it does in the morning. Criminals strongly prefer to do their work in the darkness of evening and night; [crime rates are dramatically lower](#) in the early morning hours, even before sunrise when it's still dark. A recent British study found that improved lighting in the evening hours could [reduce the crime rate by up to 20 percent](#). Whatever reason that criminals are late to bed and late to rise, let's take advantage of it by removing an extra (dark) evening hour from their workday.

3. Energy Would Be Saved. Energy use is reduced when the sun is out later in the evening. Many people don't know that the [original justification for the creation of DST](#) was to save energy, initially during World War I and II (when it was prioritized for our troops) and then later during the 1973 OPEC oil crisis. When the sun is out later in the evening, peak energy loads are reduced. Virtually everyone in our society is awake and using energy in the early evening hours when the sun sets, whereas a considerable portion of the population is still asleep at sunrise (and hence has significantly less demand for energy then). Having more sun in the evening requires not just less electricity to provide lighting, but [reduces the amount of oil and gas required to heat our homes and businesses](#) when people need that energy most. Under standard time, the sun rises earlier (reducing morning energy consumption), but only half of Americans are awake to be able to use it.

It was this energy-savings rationale that motivated some in California to recommend permanent DST a decade ago, when the state experienced recurrent electricity shortages and rolling brown-outs. Officials at the California Energy Commission estimated that [3.4 percent of California's winter energy usage](#) could be saved by moving to year-round DST. Similarly, DST resulted in 150,000 barrels of oil saved by the U.S. in 1973, which helped us combat the effect of OPEC's oil embargo.

4. Avoiding Clock-Switches Improves Our Health And The Economy. Critics of DST are correct about one thing: The bi-annual clock switch is bad for our health and welfare. It wreaks havoc with our sleep cycles, notably causing a [24 percent increase in heart attacks](#) in the week after we "spring forward" in March, and even an uptick during the week we "fall back" and "gain" an hour of sleep in November. If that's not bad enough, the major financial market indexes NYSE, AMEX, and NASDAQ average [negative returns](#) on the Monday trading day following both clock switches. Clearly, messing with sleep cycles twice per year has perverse second-order consequences.

But the critics of biannual clock-switching ignore one crucial, simple point: the benefits of avoiding clock-switching are also available under year-round DST. They act as if the benefits of preserving sleep cycles are available only under permanent standard time, when that proposition is of course false, and particularly when the option of standard time doesn't offer the energy or life-saving or crime-prevention effects of DST.

5. Recreation And Commerce Flourish In The Sun. Finally, recreation and commerce flourish in daylight and are hampered by evening darkness. Americans are less willing to go out and shop in the dark, and it's not very easy to catch a baseball in darkness either. These activities are far more prevalent in the early evening than they are in the early morning hours (so sunlight is not nearly as helpful then). Not surprisingly, the U.S. Chamber of Commerce as well as most outdoor recreational interests [favor extended DST](#).

6. A Counterpoint to Recent Research regarding Eastern vs. Western Portions of Time Zones. Finally, in the interests of balance and full disclosure, I wish to address the recent research purporting to show an increase in [cancer risk in western portions of time zones relative to eastern portions](#) (western portions have longer evening sun, as year-round DST would also create). This research is relatively new and may be better explained by lifestyle choices in different parts of time zones than by the proponents' theory that evening sunshine increases cancer risk by disrupting circadian rhythms. For instance, personal lifestyle choices (like diet and exercise) might be healthier in Washington, D.C. and New York City (eastern parts of the eastern time zone) than they are in Chattanooga, TN or Lexington, KY (western parts of the eastern time zone).

But even if that is not the case, [it is crucial to realize that the net benefits of evening sunshine far outweigh their costs](#). Americans make decisions all the time that increase our cancer risk (e.g., drinking soda or alcohol, smoking, or eating steak instead of broccoli), because the utility from these activities outweigh their risks. The same is true of afternoon/evening sunshine: any small, increased risk that evening sunshine creates is dwarfed by the benefits of living life during the early evening in more sunshine. "Primetime" is 8 p.m., not 5 a.m., for a reason – it is futile to ask us to "just wake up earlier" to take advantage of the morning sun. It is true that we could all wake up at sunrise (which would be a jolting 4:24 a.m.(!) in New York City during summer if standard time were imposed year round), but very few Americans are going to do that. Please don't fight human nature; instead recognize that by transferring an hour of sunlight into the portion of day when ~99% of Americans are awake and moving about, we are creating far greater benefit than an extra hour of sunshine would offer in the early morning (when ~50% of Americans are still in bed). [As Ben Franklin implored centuries ago, please don't "waste an hour of sunlight"](#) by imposing year-round standard time – half of Americans will just sleep through it.

Again and again, research has shown that sunlight is far more important to Americans' health, efficiency and safety in the early evening than it is in the early morning. That's not to say there aren't downsides to DST (notably an extra hour of morning darkness). But on net, when all of the costs and benefits are balanced, the advantages of extended DST far outweigh those of standard time. It is past time that we set our clocks forward forever, and never have to switch them again.

Ms. SCHAKOWSKY. I thank the gentleman.

And now Ms. Beckwith—Mr. Beckwith, you are now recognized for 5 minutes.

[Pause.]

Ms. SCHAKOWSKY. Are you there, Mr. Beckwith?

Mr. BECKWITH. I apologize, I thought I had hit the unmute button. Can you hear me now?

Ms. SCHAKOWSKY. We can hear you. We can't see you.

Mr. BECKWITH. OK.

Ms. SCHAKOWSKY. There you go.

Mr. BECKWITH. OK, can you—all right.

STATEMENT OF LYLE BECKWITH

Mr. BECKWITH. Thank you, Madam Chair and members of the committee. My name is Lyle Beckwith. I am senior vice president of government relations for the National Association of Convenience Stores or NACS, as we like to call it. I appreciate the opportunity to come here today to discuss this issue.

I actually started working for NACS in the mid-eighties, and this issue was the first issue I worked on. So I am looking forward to sharing my historic perspective on this, but more so, I am looking forward to the conversation we will have afterwards. And I will do my best to answer your questions to the best of my ability.

As I will explain—I am going to read a brief statement. As I will explain, the bottom line is that Daylight Savings Time is good for business and commerce across the United States, and our industry urges you to keep it in place.

By way of background, NACS is an international trade association representing the convenience store industry, with more than 1,500 retail and 1,600 supplier companies as members, the majority of whom are based in the United States. NACS represents over 150,000 domestic stores, and that represents approximately 80 percent of the retail motor fuel sales in the United States. The convenience industry employs about 2.34 million workers, and generated more than \$548 billion in total sales in 2020, representing more than three percent of the U.S. gross domestic product. Of those sales, approximately 292 billion come from fuel sales alone. We conduct more than 160 million transactions every day. That equates to about half the U.S. population on a daily basis.

Ninety-three percent of Americans live within ten minutes of one of our store's locations. These businesses are particularly important in rural and urban areas of the country that might not have as many large businesses available. In these locations the convenience store not only serves as the place to get fuel, but is often the grocery store and center of the community.

Daylight Saving Time was employed at different points during the twentieth century, as we have all heard, you know, previously, the history of this. As I said, NACS has been involved in previous discussions of this.

Switching between Daylight Saving Time and Standard Time is, of course, a balancing act. None of us can change how much sunlight there is in a given day. As much as it appears, Congress does

not have the power to change time. Congress has the power to balance time. But the day is going to be the same length, regardless of what we do here today.

There are many benefits to having more time when it is light in the afternoon, early evening, and we have heard these, as well. They include increasing economic activity, as well as reduced motor vehicle accidents. But the benefits have always been weighed against the concerns that we should not have kids going to school in the dark in the morning. So this is balancing between the various interests that led us to the longstanding policy of switching our clocks in the spring and fall to take the most advantage of the daylight that we can every year.

As I said, NACS testified in favor of extending Daylight Savings Time before an Energy and Commerce Subcommittee as early as 1983, and has supported extensions of the policy. While there are questions about how much, if any, energy is saved with Daylight Saving, the majority of studies show that reduced use of electricity for lighting does decrease overall energy demand. That has been one of the overriding points of public discussion regarding the use of Daylight Saving Time, but there are other reasons that moving from Standard Time to Daylight Savings Time in the spring is good policy.

Our industry has consistently found that commerce increases when the Nation moves to Daylight Saving Time. When the clocks change in the spring, people feel as though they have more time after work to engage in a range of activities that increase commerce, from eating out to shopping to participating in or taking kids to a variety of outdoor activities. They consistently show increased spending when daylight hours are shifted later in the day throughout Daylight Saving.

One study compared spending changes when Daylight Savings started and stopped in Los Angeles with spending in Phoenix, which does not observe Daylight Saving Time, and the result was clear increases in spending in Los Angeles when Daylight Savings started, and losses of spending when it ended.

For the convenience industry specifically, 76.5 percent of sales come during the part of the year when we are on Daylight Savings Time, yet a significantly higher percentage than the 65 percent of the year we spend—where we spend using Daylight Saving Time (sic). Overall, this means about \$5 billion in incremental sales for the industry attributable to the change. Those are big numbers.

The legislative record of past debates of these policies showed consistent statements regarding the benefit to the economy of Daylight Saving Time.

Everyone understands the change in the clocks can be annoying. We all lose that hour of sleep in the spring, and can feel tired adjusting to the change. But my personal experience and the evidence of our behavior shows that we are all pretty happy to have that extra hour of daylight later in the day when we go home. It matters more than you think when you look at the shopping, as well as the data behavior.

I know I am running out of time, so I am going to suspend the rest of my written testimony, and I look forward to having a dialog with you on this issue. Thank you.

[The prepared statement of Mr. Beckwith follows:]

TESTIMONY OF LYLE BECKWITH
SENIOR VICE PRESIDENT, GOVERNMENT RELATIONS
NATIONAL ASSOCIATION OF CONVENIENCE STORES (NACS)
BEFORE THE
HOUSE SUBCOMMITTEE ON CONSUMER
PROTECTION AND COMMERCE OF THE
COMMITTEE ON ENERGY AND COMMERCE
MARCH 9, 2022
HEARING ON “CHANGING TIMES: REVISITING SPRING FORWARD, FALL
BACK”

Thank you for providing me with the opportunity to testify today on U.S. law regarding changing between standard and daylight saving time each year. NACS has been active in policy decisions relating to daylight saving time for decades and I'm pleased to share the industry's views with you. As I will explain, the bottom line is that daylight saving time is good for business and commerce across the United States and our industry urges you to keep it in place.

By way of background, the National Association of Convenience Stores (NACS) is an international trade association representing the convenience store industry with more than 1,500 retail and 1,600 supplier companies as members, the majority of whom are based in the United States.

The industry as a whole represents approximately 80 percent of retail sales of motor fuel in the United States. The convenience industry employed about 2.34 million workers and generated more than \$548.2 billion in total sales in 2020, representing more than 3 percent of U.S. gross domestic product. Of those sales, approximately \$292.6 billion came from fuel sales alone.

Members of the industry process more than 160 million transactions every single day.

That equates to about half the U.S. population on a daily basis. In fact, ninety-three percent of Americans live within 10 minutes of one of our industry's locations. These businesses are particularly important in rural and urban areas of the country that might not have as many large businesses. In these locations, the convenience store not only serves as the place to get fuel but is often the grocery store and center of a community.

Background on Daylight Saving Time

Daylight saving time was employed at different points during the twentieth century, principally as an energy-saving measure. This occurred, for example, during World War II. The Uniform Time Act of 1966 moved the nation to the basic system we have today of switching from standard time during the winter to daylight saving time during the summer. During the energy crisis of the early 1970s we moved to year-round daylight saving time. Since then, the portion of the year we spend using daylight saving time has been extended multiple times with Congress passing legislation to do so in 1986 and 2005.

Switching between daylight saving time and standard time is, of course, a balancing act. None of us can change how much sunlight there is in a given day - not even in the winter when the days get shorter - and it can negatively impact our plans and state of mind. There are many benefits to having more time when it is light in the afternoon and early evening. These include increasing economic activity as well as reducing motor vehicle accidents, as I will explain. But these benefits have always been weighed against concerns that we should not have kids going to school in the dark. It is the balancing between those various interests that led us to the longstanding policy of switching our clocks in the spring and fall to take the most advantage we can of the daylight we have at different times of year.

NACS testified in favor of extending daylight saving time before an Energy & Commerce Subcommittee as early as 1983 and has supported extensions of the policy. While there are questions about how much (if any) energy is saved with daylight saving time, the majority of studies show that

reduced use of electricity for lighting does decrease overall energy demand.¹ That has been one of the overriding points of public discussion regarding the use of daylight saving time, but there are other reasons that moving from standard time to daylight saving time in the spring is good policy.

Business and Daylight Saving Time

Our industry has consistently found that commerce increases when the nation moves to daylight saving time. When the clocks change in the spring, people feel as though they have more time after work to engage in a range of activities that increase commerce from eating out to shopping to participating, in or taking kids to, a variety of outdoor activities. The increases in economic activity that result can be dramatic. They consistently show increased spending when daylight hours are shifted later in the day through daylight saving. One study compared spending changes when daylight saving started and stopped in Los Angeles with spending in Phoenix, which does not observe daylight saving time. The result was clear increases in spending in Los Angeles when daylight saving started and losses of spending when it ended.²

The golf industry is one specific example. That industry estimated as early as the 1980s that an additional month of daylight saving time would mean hundreds of millions of dollars in revenue to the industry.³ For the convenience industry specifically, 76.5% of sales come during the part of the year when we are on daylight saving time. That is a significantly higher percentage than the 65% of the year we spend using daylight saving time. Overall, this means about \$5 billion of incremental sales for the industry attributable to the change to daylight saving time. Those are big numbers – particularly in an industry dominated by small businesses that operate with tight profit margins.

The legislative record of past debates of these policies shows consistent statements regarding the benefits to the economy from daylight saving.⁴

Everyone understands that changing clocks can be annoying. We all lose that hour of sleep in the spring and can feel tired adjusting to the change. But my personal experience and the evidence of our behavior shows that we are pretty happy to have that extra hour of daylight later in the day. It matters more than you might think when you look at shopping as well as the data on behavior.

Other Benefits of Daylight Saving Time

For example, studies have found that daylight saving time reduces motor vehicle accidents.⁵ Darkness increases the danger of accidents and fatalities – and the studies have shown that drivers are less safe in the evening than in the morning. The evidence also shows that there are additional vehicles on the

¹ “Does Daylight Saving Save Electricity? A Meta-Analysis,” by Tomas Havranek, Dominik Herman, and Zuzana Irsova (June 1, 2018), *The Energy Journal*.

² “Why daylight saving means more light and more spending,” by Courtney Jespersen, *Christian Science Monitor* (March 12, 2017) at [Why daylight saving means more light and more spending - CSMonitor.com](http://www.csmonitor.com/US/Daylight-Saving-Time/2017/0312/Why-daylight-saving-means-more-light-and-more-spending).

³ “How golf plays a role in the battle for ‘locking the clock’ on Daylight Time,” by Henry Greenstein, *Golf Week* (June 5, 2021) at [How golf plays a role in the battle for Daylight Time \(usatoday.com\)](http://www.usatoday.com/story/sports/golf/2021/06/05/daylight-saving-time-golf/7711110002/).

⁴ See Daylight Saving Time: Hearings on S. 385, S. 1260, S. 2568 and S. 2602 Before the S. Comm. on Commerce, 93d Cong. 26 (1974) (statement of Rep. Craig Hosmer) (“People do not shop between 6 and 9 in the morning, but in the evening. Year-round Daylight Saving Time... would also make after work shopping more attractive because of the added hour of daylight.”).

⁵ Susan A. Ferguson et al., Daylight Saving Time and Motor Vehicle Crashes: The Reduction in Pedestrian and Vehicle Occupant Fatalities, 85 Am. J. Pub. Health 92, 95 (1995); Douglas Coate & Sara Markowitz, Pedestrian Fatalities, Motor Vehicle Occupant Fatalities, and Daylight Saving Time 7 (2002), <http://www.cornwall.nutgers.edu/pdf/Daylight%20Saving%20Time-Report.pdf>.

road during the evening commute. The morning rush hour is also generally shorter than the evening rush hour. The result is that increasing light hours into the evening helps reduce accidents.

Conclusion

The bottom line is that there are many benefits to daylight saving time. In fact, it would be more appropriately referred to as “daylight optimization time.” The idea of switching our clocks is that we need to maximize the light we have at all times of year. And, of course, the changes from one season to the next can be pretty dramatic. Just like we set different time zones across the country so that each region can make the best use of the daylight it has, we need to deal with seasonal changes affecting those time zones. While the impacts are much larger the farther north you go within the United States, ignoring those impacts would be difficult in the same way that erasing different time zones would be. All we can do with policy is make the best use of what we have – seasonally and regionally.

NACS has long supported the current system and the increases in the part of the year subject to daylight saving because of the positive effects it has on commerce. While we recognize the concerns about losing an hour of sleep one day a year, we do not think that should override the benefits of daylight saving. The current system of daylight saving is good for business, energy efficiency, and the prevention of vehicle accidents. Preserving or extending these benefits are the only policy choices that make sense from our perspective.

Thank you again for this opportunity to testify and we look forward to working with you on these issues as well as answering any questions you may have.

Ms. SCHAKOWSKY. Thank you.
And now I recognize Dr. Malow for your 5 minutes.

STATEMENT OF BETH MALOW

Dr. MALOW. Thank you, Chairwoman Schakowsky, Ranking Member Bilirakis, and other members of the committee. I really appreciate being able to participate in this important hearing today. My name is Dr. Beth Malow.

I am a practicing neurologist and sleep medicine specialist at Vanderbilt University Medical Center in Nashville, Tennessee. I am here today in my personal capacity as a sleep clinician and researcher, and in coordination with my colleagues at the American Academy of Sleep Medicine, the National Sleep Foundation, the Society for Research on Biological Rhythms, and the Sleep Research Society, all of whom support permanent Standard Time as the healthy choice.

I commend the subcommittee for thoughtfully considering changes to Daylight Saving Time, which I will refer to as DST, including consequences related to the health and the well-being of the American people.

I strongly recommend both eliminating the transition back and forth to DST, as others have mentioned, and adopting permanent Standard Time. In my opinion, and in the opinion of other sleep medicine experts, doing so would have multiple positive health benefits.

Most Americans favor those abrupt transitions between Standard Time and DST (sic). And as we have heard, there is a lot of inconvenience. But there are clear adverse health effects attributed to this abrupt transition every March, as well. And in a 2020 commentary published in JAMA Neurology, my coworkers and I reviewed the evidence linking the annual transition to DST to increased strokes, heart attacks, and adolescent sleep deprivation, and I have included those details in my written testimony. I would be happy to elaborate on any of those studies in the Q&A portion of this hearing.

Now, if there is general agreement that transitioning back and forth between Standard Time and DST is not only unpopular, but detrimental to health, then we are faced with the question: Where do we land? And this morning my goal is to talk with you about clock changes and how they affect health, address your questions about the science of sleep and circadian rhythms, and present the accumulating evidence for why permanent Standard Time is the healthy choice.

I will be talking a lot about sunshine today, and sunlight, and permanent Standard Time maximizes sunlight in the winter mornings when we need abundant light to wake up and become alert, and minimizes sunlight late into the summer evenings when too much light can work against our sleep. It is called Standard Time because Standard Time lines up with our natural biological rhythms.

Some Americans, including our essential workers who need to report by 7 a.m. or earlier, really stand to benefit from permanent

Standard Time. And roughly half of our K through 12 students need to be in school before 8 a.m., with many school districts starting in the 7 to 7:30 a.m. time range. Our students and many American workers are at risk for chronic sleep loss, and also what is called circadian misalignment. It basically refers to a mismatch in the timing between our work, our school, our sleep routines, and the sun, that all-important light signal from the outside world.

Chronic sleep loss, circadian misalignment, or both make us more prone to a whole host of detrimental health effects throughout the lifespan, including obesity, diabetes, ADHD, depression, cardiovascular disease, cancer, and Alzheimer's disease.

People with disabilities are also more susceptible to clock changes. I work on how to help children with autism sleep better, and I have cared for multiple children whose sleep worsens after this change to DST with more meltdowns, more hyperactivity, with the changes lasting weeks, very stressful to their parents. And effective interventions for sleep problems and autism include limiting evening light, maximizing morning light. Permanent Standard Time would optimize both of those interventions.

In summary, my colleagues and I strongly recommend eliminating the transition back and forth to DST, and adopting permanent Standard Time, the natural and healthy choice. I am looking forward to answering your questions. Thank you.

[The prepared statement of Dr. Malow follows:]

Testimony of Beth A. Malow, MD, MS

Professor of Neurology and Pediatrics

Director, Vanderbilt Sleep Division

Vanderbilt University Medical Center

Before the

US. House of Representatives Committee on Energy and Commerce

Subcommittee on Consumer Protection and Commerce

On

"CHANGING TIMES: REVISITING SPRING FORWARD, FALL BACK"

March 9, 2022

Chairwoman Schakowsky, Ranking Member Bilirakis, and distinguished members of the Subcommittee on Consumer Protection and Commerce:

My name is Dr. Beth Malow. I am a practicing neurologist and sleep medicine researcher at Vanderbilt University Medical Center. I received my undergraduate and medical degrees from Northwestern University. My research focuses on how sleep and circadian neurobiology affects health and wellbeing across the lifespan-- in children, adolescents, and adults. I have been fortunate to have grant support from the National Institutes of Health, the Department of Defense, and the Patient-Centered Outcomes Research Institute. Today I am here in my personal capacity as a sleep researcher and in coordination with my sleep medicine and sleep research colleagues of the American Academy of Sleep Medicine (AASM), the National Sleep Foundation, the Society for Research on Biological Rhythms, and the Sleep Research Society. Views expressed do not necessarily reflect those of my employer.

Thank you for inviting me to participate in this important hearing today. I commend this subcommittee for thoughtfully considering changes to Daylight Saving Time (DST), including consequences related to the health and wellbeing of the American people. I strongly recommend both eliminating the transition back and forth to Daylight Saving Time and adopting Permanent Standard Time. In my opinion, and in the opinion of other sleep medicine experts, doing so would have multiple positive health benefits.

My testimony will focus on:

1. The adverse health effects of transitioning from Standard Time to DST on the second Sunday in March;
2. The biological case for staying on Standard Time year round;
3. The support of national organizations for permanent Standard Time; and
4. A review of other aspects important to this discussion, including energy consumption and economic effects.

Adverse health effects of abruptly transitioning from Standard Time to DST in March

An American Academy of Sleep Medicine (AASM) survey from July 2020 of more than 2,000 U.S. adults found that 63 percent support the elimination of seasonal time changes in favor of a national, fixed, year-round time, and only 11 percent oppose it.¹

In addition to inconvenience, there are clear adverse health effects attributed to the Standard Time to DST transition. In a 2020 commentary published in *JAMA Neurology*,² coauthors and I reviewed the evidence linking the annual transition to DST to increased strokes, heart attacks, and teen sleep deprivation. Below I summarize the findings of several studies cited in that paper as well as my experience caring for children, including those with autism and sleep problems.

¹<https://sleepeducation.org/wp-content/uploads/2021/04/sleep-prioritization-survey-2020-elimination-seasonal-time-changes-results.pdf>

² Malow BA, Veatch OJ, Bagai K. (2020). Are daylight saving time changes bad for the brain? *JAMA Neurol.*, 77(1):9–10. <https://pubmed.ncbi.nlm.nih.gov/31682684/>

- Increased strokes³

A Finnish study compared hospitalizations for stroke (in 3,033 patients) during the week following the transitions to DST/Standard Time to expected hospitalizations for stroke (based on 11,801 patients who had strokes at other times of the year). Hospitalizations for stroke were significantly increased during the first two days after the transitions, with a relative risk of 1.08, a 95% confidence interval of 1.01-1.15, and a p value of 0.020. Compared to the fall transition, the spring transition to DST had a 24% increased risk for in-hospital mortality.

This means that a patient's risk of having a stroke was 1.08 times more likely (risk of stroke is increased by 8%) in the two days after the transitions to and from DST. The confidence interval provides the range of values that we can be 95% confident contains the true relative risk. The p value is less than 0.050, connotating that the results are significant from a statistical standpoint. While 1.08 may appear to be a small relative risk, it helps to consider this risk in terms of the entire US population (estimated at 332,403,650 people in 2022).⁴ A relative risk of 1.08 means that 26,592,292 people will be more likely to have strokes in the days after the transitions (332,403,650 x 0.08).

Women, older adults (> 65 years) and those with cancer were more likely to have strokes after the DST transitions. For example, the relative risk in people with cancer was 1.25, or 25% more likely to have a stroke in that time period.

- Increased heart attacks⁵

Meta-analysis of seven studies of more than 115,000 patients documenting a higher risk of acute myocardial infarction (i.e., heart attacks) during the spring transition to DST (odds ratio of 1.05; 95% confidence interval of 1.02-1.07).

- Adolescent sleep deprivation⁶

Adolescents slept, on average, 30 minutes less in the week after the spring DST transition, going from 7 hours and 51 minutes before the transition to 7 hours and 19 minutes afterward (recorded by actigraphy, an objective measure of sleep patterns). They also had longer reaction times, increased lapses in vigilance, and increased daytime sleepiness.

An AASM consensus statement⁷, which I co-authored, recommended 8-10 hours of sleep for adolescents on a regular basis, based on a detailed literature review

³ Sipilä JO, Ruuskanen JO, Rautava P, Kytö V. (2016) Changes in ischemic stroke occurrence following daylight saving time transitions. *Sleep Med.*, 27-28:20-24. <https://pubmed.ncbi.nlm.nih.gov/27938913/>

⁴ <https://www.commerce.gov/news/blog/2022/01/us-population-estimated-332403650-jan-1-2022>

⁵ Manfredini, R., Fabbian, F., Cappadona, R., De Giorgi, A., Bravi, F., Carradori, T., Flacco, M. E., & Manzoli, L. (2019). Daylight saving time and acute myocardial infarction: A meta-analysis. *Journal of Clinical Medicine*, 8(3), 404. <https://doi.org/10.3390/jcm8030404>

⁶ Medina, D., Ebben, M., Milrad, S., Atkinson, B., & Krieger, A. C. (2015). Adverse effects of daylight saving time on adolescents' sleep and vigilance. *J Clin Sleep Med.*, 11(8), 879–884. <https://doi.org/10.5664/jcsm.4938>

⁷ Paruthi S, Brooks LJ, D'Ambrosio C, Hall WA, Kotagal S, Lloyd RM, Malow BA, Maski K, Nichols C, Quan SF, Rosen CL, Troester MM, Wise MS. (2016). Consensus statement of the American Academy of Sleep Medicine on the recommended amount of sleep for healthy children: methodology and discussion. *J Clin Sleep Med.*, 12(11):1549–1561. <https://doi.org/10.5664/jcsm.6288>

documenting adverse effects of chronic sleep loss on attention, behavior, learning problems, depression, and self-harm.

- Adult fatigue

An AASM 2019 survey of more than 2,000 adults in the US found that more than half of Americans (55%) typically feel tired after the clocks move forward an hour for DST.⁸

- Sleep disorders and autism

One of my areas of expertise is sleep and autism. Children on the autism spectrum are already susceptible to poor sleep, which affects 50-80% of this population, and is characterized by delays in falling asleep, staying asleep, or both.⁹ These children struggle with changes in routines, including the transition to DST. Parents have related that their child's sleep patterns are worsened for several weeks after transitioning to DST in the spring when they lose an hour of sleep. I have cared for several children whose sleep worsened after the change to DST, accompanied by more meltdowns and hyperactivity, with the behavioral effects lasting several weeks. This was very stressful to the families. Effective interventions for sleep problems in this population include limiting evening light and maximizing morning light. Permanent Standard Time would optimize both of these interventions.

- Other effects and mechanisms:

Additional studies citing negative effects of the DST transition are summarized in a position statement published by the AASM¹⁰ and include an increase in missed medical appointments, increased emergency department visits, and an increase in return visits to the hospital (only seen in spring transition to DST).

Mechanisms (see reference 11 for details) include sleep loss (during the spring transition to DST when an hour of sleep is lost) and circadian misalignment (mismatch in timing between our biological clocks and the outside world), with a variety of cellular derangements, including altered myocyte gene expression, altered epigenetic and transcriptional profile of core clock genes, increased production of inflammatory markers, and lower vagal tone resulting in higher heart rate and blood pressure.

With general agreement that transitioning back and forth between Standard Time and DST is detrimental, the question becomes: which is healthier, permanent DST or permanent Standard Time?

⁸ <https://aasm.org/about/newsroom/attachment/sleep-prioritization-survey-2019-spring-daylight-saving-time-results/>

⁹ Maxwell-Horn A, Malow BA. (2017) Sleep in Autism. *Semin Neurol.*, 37(4), 413-418.

<https://pubmed.ncbi.nlm.nih.gov/28837988/>

¹⁰ Rishi MA, Ahmed O, Barrantes Perez JH, et al. (2020). Daylight saving time: an American Academy of Sleep Medicine position statement. *J Clin Sleep Med.*, 16(10), 1781–1784. <https://doi.org/10.5664/jcsm.8780>

The biological case for staying on Standard Time year round

Changing clocks from Standard Time to DST is different than flying from Chicago in the central time zone to Washington, DC in the eastern time zone—because in flying from one time zone to another, we are changing our clocks AND our environment. The environmental time cues, such as sunrise and sunset, help our bodies adjust. When we change the clocks in March, and stay on DST until November, it is an artificial clock change. We change the clocks, but the environmental time cues remain the same. Therefore, we are one hour off for nearly eight months of the year.

Light is shifted one hour from the morning to the evening when we go from Standard Time to DST in March. In the winter, depending on where we live and what time we need to leave our homes for work or school, it may be pitch black. In the summer, it may be bright into the late evening hours. I recall when I lived in Ann Arbor, Michigan, and I needed to drive to the hospital in the cold and dark winter mornings. It was hard! In the summer, we needed to wait until 10 pm at night for the sky to darken to see fireworks. Western parts of Michigan, such as Kalamazoo, are dark even earlier in the winter mornings and light even later in the summer evenings.

DST Darkens Mornings



Average US school start time is 8:03 AM. Median US work arrival time is 7:55 AM.

Wheaton et al. (2015). "School Start Times for Middle School and High School Students". CDC Morbidity and Mortality Weekly Report.
Silver (2014). "Which Cities Sleep In, and Which Get to Work Early", *FiveThirtyEight*.

Therefore, DST is like living in the wrong time zone for almost eight months out of the year. Our biological clocks are in one time zone (i.e., Central) while the clocks governing our school and work times are one time zone to the east (i.e., Eastern).

How does that morning dark and evening light affect us? We need light in the morning to help us awaken and be fully alert. While the exact mechanisms of this alerting response of light are not yet known, this may be due to light's effects on levels of cortisol,¹¹ a hormone that modulates the stress response.¹² Morning light also keeps our sleep/wake cycles in check—light in the morning synchronizes our circadian rhythms (24-hour biological clock) and promotes our going to bed at night at a healthy hour.

On the other end, we need it to be dark outside for our brains to release natural melatonin, which is a key promoter of sleep. Melatonin is suppressed by blue light—that's why we are advised to stay off our screens before bed. Sunlight is the major source of blue light and is tens of thousands times brighter than our computer screens.

Standard Time is the healthy choice because it maximizes light in the winter mornings, when we need it to wake up and become alert, and minimizes light in the summer evenings, when it can work against our sleep. Permanent, year-round Standard Time is the best match for our biological sleep-wake cycle.

Health effects made worse by DST

When we are chronically sleep deprived, we are more prone to obesity, diabetes, cardiovascular disease, hypertension, anxiety, and depression.¹³

In addition to chronic sleep deprivation, another neurobiological factor made worse by DST is "circadian misalignment"¹⁴ - a mismatch in the timing between our work, school, and sleep routines and what is going on in the outside world. This misalignment happens when we are waking up in the dark or getting light when we should be sleeping, such as in shift workers.¹⁵ Circadian misalignment has been correlated with detrimental health effects, including cancer, cardiovascular disease, Type 2 diabetes, and neurodegenerative disease (including Parkinson's disease and Alzheimer's disease).¹⁶

¹¹ Petrowski K, Buehrer S, Niedling M, Schmalbach B (2021). The effects of light exposure on the cortisol stress response in human males, *Stress*, 24:1, 29-35 <https://doi.org/10.1080/10253890.2020.1741543>

¹² Russell G, Lightman S. (2019). The human stress response. *Nat Rev Endocrinol* 15, 525–534. <https://doi.org/10.1038/s41574-019-0228-0>

¹³ Sleep Disorders and Sleep Deprivation: An Unmet Public Health Problem (2006). <https://www.ncbi.nlm.nih.gov/books/NBK19961/>

¹⁴ Baron KG, Reid KJ. Circadian misalignment and health (2014). *Int Rev Psychiatry*, 26(2):139-54. <https://doi.org/10.3109/09540261.2014.911149>

¹⁵ Boivin DB, Boudreau P, Kosmadopoulos A. (2022). Disturbance of the circadian system in shift work and its health impact. *Journal of Biological Rhythms*, 37(1), 3–28. <https://doi.org/10.1177/07487304211064218>

¹⁶ Steele TA, St Louis EK, Videnovic A, Auger, RR. (2021). Circadian rhythm sleep-wake disorders: A contemporary review of neurobiology, treatment, and dysregulation in neurodegenerative disease. *Neurotherapeutics*, 18(1), 53–74. <https://doi.org/10.1007/s13311-021-01031-8>

Individual susceptibility

DST affects people differently. Some people are fortunate to be able to sleep in or can work from home. Due to adoption of at-home or hybrid work schedules accelerated by COVID-19, many people now have the luxury of being able to roll out of bed at 6:45 am and be on a 7 am zoom call. But not everyone enjoys that flexibility—some people need to be physically at work by 7 am. Roughly half of US students need to be in school for in-person learning before 8 am, with many school districts starting in the 7-7:30 am time range. Workers of some racial/ethnic backgrounds and of lower socioeconomic status are more likely to very early morning work hours. These early risers are going to be more at risk for losing sleep and experiencing the associated negative consequences of chronic sleep deprivation and circadian misalignment.

Geography plays an important role, also. People who live on the western edge of a time zone have even earlier sunrises and later sunsets than those on the eastern edge of a time zone or somewhere in the middle. They have been documented to get less sleep and are also more likely to be overweight and more susceptible to diabetes, heart disease, and breast and other types of cancer,¹⁷ with an estimated loss of 4.4 million days of work (1.3 hours per capita) per year, and 3% lower wages.¹⁸ People who live in the northern parts of the US encounter less sunlight in the winter and more sunlight in the summer.

Multiple organizations endorse the elimination of DST and the adoption of permanent Standard Time

The AASM supports the elimination of seasonal time changes in favor of a fixed, national, year-round time, and current evidence best supports the adoption of year-round Standard Time. Multiple national and international organizations have endorsed an AASM statement on this topic, including the Society for Research on Biological Rhythms, the National PTA, the National Safety Council, and others.¹⁹

Other aspects to consider

- Many people assume that the latest sunrise and earliest sunset occur on December 21, the day of the winter solstice (shortest day). But in fact, the earliest sunsets occur around December 1 with the latest sunrises occurring around January 1. This phenomenon, related to the earth's tilt, is referred to as the analemma.²⁰ **Being on Standard Time in the winter months is giving us light when we need it most, in the dark morning hours.** Northern states on the Western edge of time zones are most susceptible to dark mornings, which would be exacerbated by permanent DST.

¹⁷ Gu F, Xu S, Devesa SS, Zhang F, Klerman EB, Graubard BI, Caporaso NE (2017). Longitude position in a time zone and cancer risk in the United States. *Cancer Epidemiol Biomarkers Prev.*, 26(8):1306-1311.

<https://pubmed.ncbi.nlm.nih.gov/28450580/>

¹⁸ Giuntella O, Mazzonna F (2019). Sunset time and the economic effects of social jetlag: evidence from US time zone borders. *Journal of Health Economics*, 65. <https://doi.org/10.1016/j.jhealeco.2019.03.007>

¹⁹ <https://aasm.org/american-academy-of-sleep-medicine-calls-for-elimination-of-daylight-saving-time/>

²⁰ Analemma: <https://www.analemma.com/phenomena.html>

- Permanent DST has been tried previously in the US, most recently in 1974 during the energy crisis (Middle East oil embargo). **The dark mornings were very unpopular and permanent DST was repealed by Congress.**²¹ The idea was that having extra light later into the afternoon would save energy by decreasing the need for electric lighting. However, energy savings from DST appear negligible.²² Air conditioning needs often increase in the late afternoon in the summer and heating needs often increase in the morning in the winter.²³ A natural experiment in Indiana, when DST was instituted statewide in 2006, found that **DST increased residential electricity demand.**²⁴

In summary, along with American Academy of Sleep Medicine, the National Sleep Foundation, the Society for Research on Biological Rhythms, the Sleep Research Society, and multiple other sleep and circadian rhythm physicians and researchers, I would strongly recommend eliminating the transition back and forth to DST and adopting permanent Standard Time. Thank you, again, for the opportunity to provide testimony before the committee. I look forward to answering your questions.

²¹ <https://www.mercurynews.com/2016/10/30/the-year-daylight-saving-time-went-too-far/>

²² Congressional Research Service, Daylight Saving Time, Updated Sept. 30, 2020
<https://crsreports.congress.gov/product/pdf/R/R45208/8>

²³ Sexton AL, Beatty TKM (2014). Behavioral responses to daylight savings time, *Journal of Economic Behavior and Organization*, 107, part A, 290-307. <https://doi.org/10.1016/j.jebo.2014.03.012>

²⁴ Kotchen M, Grant L. (2011). Does Daylight Saving Time Save Energy? Evidence from a Natural Experiment in Indiana. *The Review of Economics and Statistics*, 93 (4), 1172-1185. https://doi.org/10.1162/REST_a_00131

Ms. SCHAKOWSKY. I neglected to mention that any members who want to put an opening statement into the record, it will be part of that—part of the record.

So we have concluded with the witnesses' opening statements at this time. We will move to member questions. Each member will have 5 minutes to ask questions of the witnesses.

Since we have witnesses that are presenting remotely, I need to ask my colleagues in this hearing room to mute themselves whenever you are asking a question, but after you ask your question and not speaking, and it definitely helps to more clearly hear the witnesses when they speak if you are muted at that time.

I will start with—by recognizing myself for 5 minutes. And we know that this issue of Daylight Saving Time has been gaining traction and becoming more widely talked about. This Sunday we will move our clocks up an hour, one hour forward.

To each of you, if you could, very briefly just say whether or not you think we need to end the practice of changing our clocks, or do you think that there is a benefit to keeping the status quo that is going forward and backward?

So if I could begin with Professor Calandrillo, what is your preference? We can go into more detail later, but what do you think?

Mr. CALANDRILLO. Yes, certainly, I would like to see us stop the biannual clock switch and move to permanent DST.

Ms. SCHAKOWSKY. Mr.—Dr. Malow?

Dr. MALOW. Yes, I would agree there are both health impacts, as well as a lot of inconvenience to people. So I would say it is time to stop going back and forth.

Ms. SCHAKOWSKY. OK, and Mr. Beckwith?

Mr. BECKWITH. Yes, we support the current system as it is, because we think there has been a lot of thought into balancing the needs of commerce on one end and, as I said, having kids being able to walk to school when it is light out in the—during the winter time. So we support keeping the status quo.

Ms. SCHAKOWSKY. Got it. The American people actually believe that it is time to end the clock changing. A recent study showed that over 70 percent of Americans are in favor of a systematic—of a system where we no longer switch our clocks.

Again, this question is for each of you: if you had then—and I think, you know, we heard a bit more, but you may want to elaborate—if you had to choose between the status quo of changing our clocks permanently—permanent Daylight Savings Time—Saving Time or permanent Standard Time, which would you choose, or is there a—someplace in the middle, in your view?

So again, Professor Calandrillo.

Mr. CALANDRILLO. Yes. Of course, I have given away my punch line already. Permanent Daylight Saving Time has enormous net economic and health benefits.

Ms. SCHAKOWSKY. OK, and Dr. Malow?

Dr. MALOW. Yes, I am on the opposite side. I think that permanent Standard Time is the way to go, would be my first choice.

Ms. SCHAKOWSKY. And Mr. Beckwith, I guess you said that. You might want to reiterate a reason why you think it is important to maintain the status quo.

Mr. BECKWITH. Well, I think it is a balancing act, and we are taking into account both of the discussions in doing so. If there were to be a change, however, we would support permanent Daylight Savings Time.

Ms. SCHAKOWSKY. OK, thank you. So there is a vote that has been called. What we are going to do right now, then, is recess, if that is all right with my co-chair. The—not co-chair. My ranking member. I do that all the time. My ranking member. And then we will come back and finish the questioning, and hopefully then conclude our hearing.

I appreciate the cooperation of our witnesses and members. So let's recess right now, and we will come back after.

[Recess.]

Mr. CÁRDENAS [presiding]. This meeting is now out of recess, and we are back in order.

The first order of business is I will recognize Congressman Bilirakis for his 5 minutes.

Mr. BILIRAKIS. Thank you, Mr. Chairman, I appreciate it very much.

And I want to thank the witnesses again for your valuable insights to this discussion.

Mr. Calandrillo—I hope I pronounced it right—in your testimony you speak to several reasons why daylight in the evening will make our roads safer. Numbers from NHTSA were recently released on the number of deaths that occur on our roads each year. They are staggering and, frankly, unacceptable, as far as I am concerned.

We have to do better, and it starts with this subcommittee acting on legislation that my friend, Representative Bob Latta, has led on for the last 5 years for advanced driving systems and autonomous vehicles to ensure America leads in these new technologies.

So, Mr. Calandrillo, again, a question: can you elaborate on the dangers both our children and senior citizens face in the evening when it gets dark sooner during Standard Time? Obviously, that is a big issue for my district in Florida—

Mr. CALANDRILLO. Thank you—

Mr. BILIRAKIS. Yes.

Mr. CALANDRILLO. Yes, yes, thank you so much, Ranking Member Bilirakis—another Greek-American, who is wonderful, like my wife, Chryssa.

I am excited to hear your question because, you know, I care a lot about traffic fatalities. And the evening rush hour, as I mentioned in my opening, is twice as dangerous as the morning rush hour, right? Many more people on the road, much more output systems and many more car accidents, a 300 percent increase in vehicle-on-pedestrian fatalities once twilight hits, according to Susan Ferguson.

You know, it is—we need to push sunlight into the evening. That is when people can benefit from it. That is the most dangerous time to drive, compared to the morning.

Now, I am sensitive to childhood fatalities, especially. I got four young school kids myself, and you don't want to be sending them to school in the early morning darkness, right? It is a tradeoff, and I get that, and I am very sensitive to that.

One of the ways you can deal with that problem is by starting school times later. Certainly in Florida, I know this was experimented with. We need to be pushing back school times, especially for teenagers. My teenager, I don't think, has seen the sunrise in a year or two. They don't like to wake up early. We should be having school at 7 or 7 p.m.—or a.m. for them. And if we pushed it back, we could deal with some of the danger of early morning darkness that would be created by Daylight Saving Time.

Mr. BILIRAKIS. I happen to agree, 7:20 is when my kids started high school, and I thought that was always too early. Actually, I started at 7:20, as well, so—but that is a great reason to start a little later.

So, Dr. Malow, I want to ask you a similar question, because in your testimony you include a graphic comparing the difference in Daylight Savings—or daylight in different cities during Daylight Saving Time. I agree, there are stark differences in the pictures. But I am curious about the flip side.

If children are playing in the streets at 4 p.m., or if they are playing in their driveways, what have you, at 4 p.m., and all of a sudden it gets dark—and that is true in some parts of the country—this may impact their ability to get enough exercise during the day, which I think is crucial, which, as we know, again, is critical for the health and safety of our kids. This is especially true in the past few years, as our kids are increasingly addicted to social media, unfortunately, and screen time.

Do you have any concerns about the level of childhood activity that may be impacted by a potential shift to Standard Time permanently?

Again, the question is for Dr. Malow.

Dr. MALOW. Yes, that is a great question. And I think that physical activity in kids is really important, and it is a complicated issue because it is not just light, it is also how tired they are, what is going on in their schools.

I do want to commend Dr.—witness Calandrillo for his emphasis on later school start times. I think that is a really important piece of the puzzle. But it is not the only puzzle.

I think if our kids are waking up, getting that bright light in the morning, it resets their clock for the night, as well, and they can get much more sleep. Sleep deprivation is improved when you expose people to bright light in the morning because it synchronizes your clock, and I can talk more about that later.

So I would say it is a complex issue, and bright light in the morning is a piece of the puzzle that will help our kids get more sleep.

Mr. BILIRAKIS. I yield back the balance of my time.

Mr. CÁRDENAS. The gentleman yields back the balance of his time. Next I will recognize the chairman of the full committee, Chairman Pallone, for his 5 minutes.

Mr. PALLONE. Thank you, Chairman. We heard today, of course, that changing our clocks twice a year severely impacts our health. And over the years the science continues to get clearer, that sleep is vital for our health and well-being. So let me start with Dr. Malow.

In your testimony you speak to how sleep loss and changing sleep patterns can have a major effect on our health. Can you elaborate on those concerns, and how stopping spring forward/fall back time changes could help alleviate some of those negative health impacts?

Dr. MALOW. Yes. I just want to make sure I understand the question. So——

Mr. PALLONE. Well, you know, actually, I can combine two questions, if you don't mind, Doctor.

First, I am trying to find out——

Dr. MALOW. OK, sure.

Mr. PALLONE [continuing]. You know, how we can—how, if you got rid of the changing it twice a year, and just either had it all Daylight or all Standard Time, that that would alleviate some of the health impacts, and then more about how we should be thinking about kids in the context of that.

I am an advocate for getting rid of the changing it. I haven't decided yet whether I want Daylight or Standard, but I don't think we should go back and forth.

Dr. MALOW. Right. So starting with that issue, the going back and forth, really briefly, and then I will get to the other one, where should we go with that.

I think that there are—there is clear evidence that going back and forth not only affects adults with the heart attacks and strokes, but also affects our kids, particularly with teen sleep deprivation. Teens are really susceptible because, as we go through puberty, our melatonin, our natural melatonin levels are pushed later, and we just have a really hard time going to sleep, particularly as teens. And then you throw in everything else that is going on with teens, in terms of school and all, and it really could create a lot of sleep deprivation—the school start times that were mentioned that are often times very early.

So I do think there is a big argument for child health, teen health by getting rid of this transition back and forth. Now, the reason I think permanent Standard Time is the healthy choice is because we need light in the morning to become alert, to get ourselves going. The kids need to be alert to go to school to learn. They are also often times on the road driving in the dark, and there have been multiple studies that have shown that motor vehicle crashes are more common when kids are driving to school in really early morning hours, like the seven hour versus the eight hour. So that is one area where kids are really affected, and the permanent Standard Time would make a huge difference.

And then we also see the impacts of sleep loss in these kids on depression, ADHD, self-harm, obesity, which is a huge issue right now in our kids. So there is a lot of health aspects where getting more sleep, which would happen when you get that daylight in the morning to wake you up, get you go, makes it easier to go to sleep at night, and having less of that late evening light, which can really mess up our sleep patterns.

All of that, the early morning light, less light in the evening would be promoted by having permanent Standard Time adopted.

Mr. PALLONE. Thank you.

Now let me just ask—we know that the economy is hurt by changing our clocks. Workers lose productivity, workplace injuries rise. So let me just ask Mr. Calandrillo. I only have a minute.

In your testimony you mentioned the stock market averages a negative return on the Monday following when we switch our clocks. What other parts of the economy see a swing when we change our clocks?

Mr. CALANDRILLO. Thank you so much, Chair Pallone, I really appreciate that from my great home State of New Jersey, where I was born and raised.

I really appreciate the emphasis on not just the health effects, but also the economic effects. As Dr. Malow says, right, you know, it is the changing of the clocks that is most responsible for health impacts.

And as far as the economic impacts, right, you know, commerce flourishes in the sunshine, right? People feel a lot safer going out to the store to go shopping in the evening sunshine. They don't do a lot of that at 6 a.m. but they do a lot of that at 6 p.m., in the after school hours or after work hours. That is when people go out and engage in economic commerce. And so that is why putting our sunlight there helps aid that process.

Mr. PALLONE. All right. Thank you so much.

Thank you, Mr. Chairman.

Mr. CÁRDENAS. The gentleman yields back. Mrs. Rodgers?

VOICE. Not here. Mr. Upton is not here. Latta.

Mr. CÁRDENAS. OK, next we will go to Congressman Latta for his 5 minutes.

Mr. LATTI. Well, thank you very much, Mr. Chairman. And today we are in committee examining Daylight Savings Time.

The question is, is this the topic on the top of our constituents' mind right now? I haven't had a constituent write to my office since October 2020 about Daylight Savings Time. What they are contacting about is the invasion of the Ukraine, rising gas prices, and inflation.

The other things we should be talking about is American energy independence. Last year the United States purchased approximately \$17.3 billion in crude oil and petroleum products from Russia. That money is being pumped into Putin's economy, and turned into the usage of war against Ukraine.

Examining on how we can keep our communities safe and stopping the spread of illegal substances such as fentanyl—and the emergency fentanyl scheduling expires on the 11th.

You might say, well, this is the Consumer Protection Subcommittee. We don't have jurisdiction over those issues. In that case, let's talk about the important issues that we could be examining in a hearing today: autonomous vehicles, as our ranker mentioned a little bit earlier; the national privacy standard; holding Big Tech accountable. While we have had a few hearings, we need to have more because of the attention it needs.

Cybersecurity, especially how it relates to securing our systems against bad actors like Russia.

Ongoing issues with WHOIS availability, so that our law enforcement can track down bad actors online.

Oversight of the FTC. The Commission has been pretty busy, and we should have them before us so we can perform our oversight role.

The question surrounding artificial intelligence has counterparts in Europe set down their own standards, leaving us to catch up.

It is my sincere hope that we move forward this Congress. We can have hearings in this committee and subcommittee aimed to address the issues that are affecting the day-to-day lives of Americans.

But moving on to today's topic, one of the—you know, it has been talked about a little bit earlier, but I would like to maybe go back and examine it again and ask a few questions. Dr. Malow, if I could ask you, you know, when you look at the question about kids going to school earlier in the morning—and again, I live on the—more on the western side of the Eastern Time zone—but you had some photos in your testimony about showing what 8 a.m. looks like across the different areas and different times.

And so I am just kind of curious. In your research—again, if I could bring it up again—the safety factors of kids, I know it was mentioned a little bit earlier, maybe that the—starting schools later, but a lot of that can't—you know, you can't start schools, because they are set to a certain time.

But the safety issues for children going to school, especially in the dark, have you done any research on accidents and things like that?

Dr. MALOW. Thank you so much for asking that. There are quite a few studies that have been done, and some of them are in my testimony, and I can send others. I will just quote one, which was done in Virginia and looked at—it was published in the last few years, but it looked at 2009 to 2011 and the teen drivers who were driving at—let's say they had school starting at 7:20 in the morning. They had much higher crash rates than those with start times at 8:45 a.m., and it was attributed to driving to school in the dark, and being sleep deprived.

And what—the issue there is, when we are sleepy, we not only have that tendency to want to fall asleep and drift off at the wheel, but we are also more likely to take risks. We are more likely to text while driving, or not wear our seatbelt.

So those are really important issues, and permanent Standard Time, by maximizing light in the morning, particularly in those areas you mentioned, those western edge time zones, where it is even darker in the morning—or I should say it doesn't become light at the same time as the rest of the country as easily—those are specific areas that would benefit from permanent Standard Time.

Mr. LATTA. Thank you. Well, you know, my work with working on autonomous vehicles, one of the things we know is that, you know, unfortunately, traffic accidents are up across the country. When you look at 94 percent of automobile accidents are caused by driver error, and unfortunately, in the last—you know, when you look at the statistics from 2020, we see that pedestrian deaths have gone up.

And an interesting—you know, unfortunately, when you look at this going up five percent from the year before, and seven states in particular have more than half of the deaths, and that is Ari-

zona, California, Florida, Georgia, New York, North Carolina, and Texas. And so, you know, I worry about not only the kids going to school in the dark, but also when you think about our morning runners, walkers, and bike riders out there.

So, you know, as we proceed, you know, we have to look at all these factors because, again, we want to make sure that the roads are safe out there, the roads are safe for our kids, and for the people that use them, either the motorists or the people walking, riding, or running beside them.

And so, Mr. Chairman, I have a couple of seconds left, but I will yield back the balance of my time. Thank you very much.

Mr. CÁRDENAS. The gentleman yields back the balance of his time. Next I will recognize Congressman Rush for his 5 minutes.

Mr. RUSH. I want to thank you, Mr. Chairman, for this outstanding and critical hearing.

Dr. Malow, in your testimony you discuss the “adverse health effects” that comes from changing our clocks twice a year. And, as we have seen time and time again, it is a factor that—across multiple sectors, when White America gets a cold, Black America gets pneumonia. That stated, is there any evidence that this trend holds here in this particular topic that we are discussing?

More simply, are the—are there—are these negative consequences felt more acutely or more permanently in low-income or minority communities? If so, can you please discuss why this exists?

Dr. MALOW. Thank you for that question very much. Yes, I do feel that people of low income, regardless of color, are susceptible to these effects, even more of sleep loss. And the reason I say that is some of us are able to wake up and roll out of bed and join a Zoom meeting, but some of us can’t. Some of us have to be at work—essential workers, for example—at 6 a.m., 6:30, 7 a.m., when it is pitch dark outside. And that really puts a burden on people who can’t control their hours.

And that is, to me, the—that and the students are the two groups that are most vulnerable to it being dark in the morning, because they get—they don’t get as much sleep at night because, as I said, you need that light to synchronize your rhythms.

And there is also this concept I mentioned in my statement called circadian misalignment, where, when you are trying to go somewhere in pitch black, and you are turning on artificial lights, and you are trying to drive somewhere to get to your job, that is where we start seeing obesity, cancer, all these co-hosts of detrimental effects. And people who can’t control their hours, like those who have lower socioeconomic, potentially some racial differences as well, are going to be more susceptible to those health effects. So they are quite vulnerable.

Mr. RUSH. So would you elaborate on the changing time, and the negative effects on the mental health conditions of our—citizens of our Nation, specifically?

And is changing time responsible for producing or exaggerating any mental health symptoms or illnesses?

Dr. MALOW. Yes. And again, I want to say mental health is a complicated thing. It is not just one thing. But I do—there is lit-

erature to support that depression and other mental health issues, ADHD are affected by not having proper sleep.

And we know that the idea of permanent Standard Time would maximize sleep. It is the right choice for sleep. And everything else, all those health benefits, would then follow from adapting the permanent Standard Time.

Mr. RUSH. So the lack of sleep, does that in any way hamper your ability to cope with the—what one might consider stress, or does that exacerbate stress in one's life?

Dr. MALOW. Yes. Yes, I mean, I know—we all know how we feel when we are sleep deprived. We are more apt to send that email we will regret later.

I just experienced sleep deprivation the last few days because I have been working to get this brief done and testify today. And it reminded me how, when I don't get my seven to eight hours of sleep, how I just don't feel like I am fully on my game, and that affects mood, that affects irritability, that affects how we talk to each other as American citizens.

So I am a huge advocate—that is why I am a sleep specialist—in getting enough sleep. And again, that permanent Standard Time would promote more sleep for everyone—well, for most of us.

Mr. RUSH. And my last question—I only have a few seconds—are you—is your calendar open for about 400 Members of Congress to be your patients?

[Laughter.]

Dr. MALOW. Absolutely, well [inaudible].

Mr. RUSH. Thank you. I yield back, Mr. Chairman.

Mr. CÁRDENAS. The gentleman yields back the balance of his time. Next I will recognize Congresswoman Rodgers, the ranking member of the full committee.

Mrs. RODGERS. Thank you, Mr. Chairman.

Mr. Beckwith, today is the National Association of Convenience Stores fly in day. I am looking forward to meeting with a couple of your colleagues from my home district, Dan Alsaker and Tammy Hedrick. I know you are busy with the fly in, and so I really appreciate you joining us.

In your testimony you reference a study that compared the spending changes in LA, which observes Daylight Savings Time, and Phoenix, which does not. While the results of this study found that spending in LA increased during Daylight Savings Time and decreased in Standard Time, I believe it is important to highlight two bordering states that use different practices for determining the time.

Currently, the patchwork of State privacy and data security laws continues to increase, and that will lead to greater confusion for businesses and consumers. I fear that the same may occur with the fragmented Daylight Savings Time practices. Can you speak to any potential burdens your members may face in each State when they are choosing whether to recognize the permanent Standard Time, permanent Daylight Time, or remain status quo?

Mr. BECKWITH. Thank you for the question. Absolutely. First of all, we completely agree with you on data security, that that needs to be standardized.

When we look at Daylight Savings Time, it is far less clear. I put in my testimony, written testimony, that I think it is a misnomer to call it Daylight Saving Time. It is really daylight optimization time. It recognizes the fact that the days get shorter in the winter and get longer in the summer, and that is exacerbated the further away from the equator you get. So the northern states have a far greater effect of that.

I think it is really helpful in this discussion to also utilize time zones as a point of reference. So we all acknowledge that the sun rises differently in Washington, DC, than it does in a different time in Los Angeles. And so we have different time zones. And yet it is an imperfect system, because you have to draw the line somewhere, and eventually you are going to have that weird situation somewhere in America, where it is 7 on one side of the street and 8 on the other side of the street. And yet we understand the value of having different time zones.

So certainly, there are situations where communities or states are less affected by the time change. You know, either they are close to a time zone change, or they are farther south, and the days—the difference between day length isn't that significant between winter and summer. And so certainly there is room for flexibility, and that flexibility exists right now in certain communities where it just doesn't work for them.

But as a general rule, having the same type of time change around the country makes sense, so everyone is working off the same clock. So yes, there is room for exceptions because it is an imperfect system. But in general, it is good for everyone to adhere by basically the same rules.

Mrs. RODGERS. Thank you. I appreciate that insight.

Mr. Calandrillo, it is great having a Washington Husky with us today. Thank you for participating, and you have done a lot of work around this. Would you comment on the potential patchwork of State bills from a broader economic and industry perspective, and specifically some of the industries like airlines?

Mr. CALANDRILLO. Yes, thank you so much, Ranking Member Rodgers. I really appreciate the U-dub shout-out, too.

Right, we want to have uniformity, generally. I mean, that is why we—Congress—passed the Uniform Time Act back in 1966, because at the time, you know, different states and different cities were observing different clocks. And so Minneapolis, Minnesota was on a different clock than St. Paul, Minnesota, which is right across the river. And that creates confusion. So that is why we passed the Uniform Time Act, which is, if you are going to spring forward, it has got to be on the same day as everybody else. If you are going to fall back, it has got to be on the same day as everybody else, and that helps. That uniformity certainly does help commerce. So I am in favor of that.

But I want to make it clear I favor the permanent Daylight Saving Time. You know, we talked about the safety issues just a few minutes ago. The National Safety Council found that pedestrians would be safer with Daylight Saving Time than with Standard Time. We don't want sunlight at 4:30 a.m. in the morning for economic and health reasons. I assure you, if we had Standard Time that was the sunrise time, 4:24 a.m., New York City in the start

of summer, nobody is going to be out as a pedestrian at that time observing it, and nobody is out engaging in commerce at 4:30 a.m., right? We need to put the hour of the sunlight into the day, part of the day, where it matters most. That is what Ben Franklin talked about centuries ago in his satirical discussion of the waste of daylight.

Certainly, you know, in terms of economics, all the Chambers of Commerce—I shouldn't say all, but the great majority, including the U.S. Chamber of Commerce, says the economic effects of Daylight Saving Times are dramatically positive.

Mrs. RODGERS. Great. I appreciate the inspiration of Ben Franklin.

I yield back.

Mr. CÁRDENAS. The gentlewoman yields back the balance of her time, and I will now recognize Congresswoman Trahan for her 5 minutes.

Mrs. TRAHAN. Well, thank you, Mr. Chair.

Last Tuesday, during his first State of the Union address, the President highlighted an issue I know my colleagues care deeply about, and that is youth mental health. The issue has been one of the centerpieces of my legislative agenda.

In fact, in March I joined the chair, Congressman Cárdenas, to introduce Youth Mental Health and Suicide Prevention Act, legislation to support positive mental health promotion and suicide prevention programs in high schools. The bill would authorize HHS to establish a grant program for school districts to strengthen behavioral health services, awareness, and address mental health and suicide prevention needs.

Additionally, I have worked with Congresswoman Castor to continually advocate for kids' safety online, aiming to create online spaces that have a positive impact on youth mental health through the Kids Internet Design and Safety Act, or KIDS.

And most recently, my office has been investigating online suicide forums and the ways they encourage and provide instruction to struggling youth.

These are big issues. They require new regulations, new funding streams, and agency resources. Today we are talking about something that may feel simple to a lot of folks: changing clocks. But changing clocks can impact teen mental health, and that is what I want to explore today.

Dr. Malow, can you speak as to why a consistent sleep pattern is important for teen brain development and mental health?

Dr. MALOW. Yes, thank you so much for that question, and I referenced in my written testimony a consensus statement of the American Academy of Sleep Medicine on health and the consequences for our kids.

I was fortunate enough to be one of the authors on this. It was published in 2016, but I think things are even more grim these days with teen mental health. And we basically talked about what are the consequences when kids are not getting the sleep they need, and we specifically talked about mental health, including risk of self-harm, suicide thoughts, and suicide attempts. So I really appreciate your bringing this forward.

When kids are sleeping better, they are less apt to take a role in risk-taking activity, in suicide issues. And the best way—I think there are a few simple things our country could do, either at the State level, with the later school start times—that has been brought up by others today—and then, of course, having more light in the morning to promote sleep, which would be the permanent Standard Time.

And I so commend you for bringing that up, because I think that the mental health of our children is critical right now.

Mrs. TRAHAN. Thank you, Doctor. And Professor Calandrillo, how could extra sunlight in the evening encourage outdoor play?

Have you seen any data regarding an increase in outdoor play correlating with less screen time for children?

Mr. CALANDRILLO. I really appreciate that question, and I agree with everything that Dr. Malow and you just said, but I actually think that the mental health issue—and certainly, the screen time issue—these are all bettered by permanent Daylight Saving Time, not permanent Standard Time. No kid is going off to play at 4:30 a.m. or 5:30 a.m. or 6:30 a.m. in the morning. They do that at 4:30 or 5:30 or 6:30 p.m., and that is what gets kids outside, like my kids, enjoying outdoor unsupervised play.

And by the way, you know, in terms of the mental health goals, right, you know, there is a big problem with SAD, Seasonal Affective Disorder, and depression if you don't have sunlight in the part of the day when you are awake to use it, which is the afternoon and evening. Ninety-nine percent of the public is awake, kids are awake. They are not—you know, only half of them are awake in the morning.

We need to—I think both—you know, I think the depression statistic, health outcome measures, the other economic measures all would be served by moving that hour into the part where more people can use it.

Mrs. TRAHAN. Well, thank you for that.

Mr. Beckwith, do you have anything to add?

Mr. BECKWITH. I am not a doctor, so I don't really have anything to comment about mental health.

I will comment briefly, though. The comment that moving the clock ahead one hour once a year is dangerous really begs the common sense question: If that is true, we have bigger problems.

If you look at your colleagues, every Sunday or Monday the majority of your colleagues are returning from their districts. They are returning with one, two, three hours of sleep deprivation. And let's not even talk about the ones from Hawaii and Alaska. So if setting the clocks ahead one hour is dangerous, flying east is deadly.

Mrs. TRAHAN. Yes, thank you for that.

Look, mental health challenges have become a national crisis. And as a mother of five, this issue hits home, and it is worth thinking about a variety of legislative approaches that could address the problem, including putting an end to changing the clocks.

Thank you, Mr. Chair. I yield back.

Mr. CÁRDENAS. The gentlewoman yields back the balance of her time. Next I will recognize Congressman Dunn for his 5 minutes.

Mr. DUNN. Thank you, Mr. Chairman. You know, I am keenly aware of the arguments regarding Daylight Savings Time for Flor-

ida, where any average day is so enjoyable, so healthy, so full of beauty that it seems only logical that many of our residents and our over 100 million tourists a year are longing to extend every day.

I confess, however, that I was surprised—shocked, even—that this subject took central stage in the deliberations of this committee at this particular moment in history. Like all of us gathered here, my days, nights, weeks, and weekends have been consumed for months with our efforts to avoid war, save our brave Ukrainian friends, and unify our NATO allies so that this barbaric invasion does not spill over into even more of Europe, thus precipitating the most dangerous possibility of thermonuclear war that we have seen since the Cuban Missile Crisis.

We also need to restore our energy independence, gone now for just one year. It seems so long ago. January 2021, American independence was real. I was paying \$2 a gallon for gas. Energy independence for the free world is a vitally important goal for international security, for life, and for liberty.

And crime—my God, the crime wave we face with our defunded and demoralized police, still heroic law enforcement officers at all levels. Surely this subject commands our attention.

I know that our sheriffs and police would be grateful if we focused some of our attention and time on the massive human trafficking operations on our southern border that pour billions of dollars into the drug cartels' pockets, and deliver record amounts of deadly drugs to America at the same time. Sadly, this leads to record numbers of death among our young Americans by overdose, and a surge in associated crime.

Or we might have devoted this time to examining ways to reverse the highest inflation we have seen in 40 years, inflation that is rapidly eroding the life savings of many Americans, and decreasing real wages for all of us daily.

All of these problems have roots in areas that this committee has jurisdiction over. And I know all of our members on both sides of the aisle have ideas about how to help our fellow Americans. However, we have chosen to turn the talents and time of this committee to review the benefits and costs of permanent Daylight Savings Time.

Well, for the record, I favor permanent Daylight Savings Time that does not move the current boundaries of time zones. But I don't believe that doing that will improve any of the problems that I just mentioned, all of which still await our urgent attention.

With that, Mr. Chair, I yield back.

Ms. SCHAKOWSKY. The gentleman yields back the balance of his time. Next I will recognize Congressman McNerney for his 5 minutes.

Mr. MCNERNEY. I thank the chairman, I thank the witness. It is an interesting discussion, for sure, one that affects all of us every year. So I am going to get it out on the table here.

Dr. Malow, I believe the science surrounding this issue must inform our policy decisions. So how do you view the health benefits of utilizing sunlight versus the health benefits of a proper circadian alignment?

Dr. MALOW. Yes. So I think what you are asking is how does sunlight fit into this whole circadian misalignment issue, is that correct?

Mr. MCNERNEY. Right.

Dr. MALOW. Yes. I am really glad you asked that question, just so I could clear it up a little bit.

So basically, when it is light in the morning, I have explained that that gets us going, gets us alert. It actually resets our clock, so that it is easier to fall asleep at night. And that is important, because we need to get proper sleep so that we can feel good and do all the things that are important for our health.

And when we get light too late in the day and in the evening—so—basically, in the winter we want to get our light in the mornings, and that is what the permanent Standard Time would help promote.

Now, in the evening we want to get less light. I am not talking about five, six at night. I am talking about ten at night. When I lived in Michigan, we would have to postpone fireworks on July 4th until after ten, because it wasn't dark yet. And that light is what interferes with our falling asleep, because we need it to be dark to produce our natural melatonin and help us fall asleep.

So as an example, people who are on those western edges of those time zones tend to get less sleep. People have actually documented they get less sleep, they have more health issues like obesity. Even cancer has been linked to those western edges because they are not getting enough light in the morning, and they are getting too much light in the evening. And that is what contributes to not just sleep deprivation, but that whole mismatch that we refer to as circadian misalignment.

And what the permanent Daylight Time would do is exacerbate that effect, because you would be getting even less light in the morning in the winter, and more light in the evening, while permanent Standard Time, which is more healthy, would promote more sleep, promote more circadian alignment. It is called Standard Time because it is more natural. It fits our regular sleep/wake patterns—

Mr. MCNERNEY. So—

Dr. MALOW [continuing]. And promotes sleep.

Mr. MCNERNEY. I don't want you to filibuster my whole three to 5 minutes.

How does the impact of changing a clock by one hour compare with jet lag for one hour difference, or—

Dr. MALOW. Yes, yes—

Mr. MCNERNEY [continuing]. For more than one hour?

Dr. MALOW. Yes, and I will try to be brief, but I just had wanted to make sure I got the basic facts in.

So it is very different when we go, let's say, from Chicago to D.C., because what is happening is we are changing our clock, but we are also changing our environment, and we are following the sun. So everything changes. And it is—we—the sun actually helps us reset our circadian rhythms.

But when we—next weekend, when we turn the clock forward, we are not changing our environment. So it is a very artificial thing, and we are actually on—we are off kilter. We are off sync

by an hour for eight months during the year, when we are on this—the permanent—you know, when we make the change to Daylight Saving Time.

Mr. MCNERNEY. OK.

Dr. MALOW. So that is the difference.

Mr. MCNERNEY. Professor Calandrillo, in 2011 Russia switched to a permanent Daylight Savings Time, but it was widely unpopular, and the decision was reversed in 3 years. The same thing happened in the UK in 1971, and the U.S. in 1974, after complaints about children going to school in the dark, and so on.

How do proponents of Daylight Savings Time address that sort of issue, that sort of challenge?

Mr. CALANDRILLO. Yes, thank you, Representative. It is a good question.

Certainly, we don't want to increase harm to schoolchildren in the early morning darkness. And certainly, in the 1974 year-round Daylight Saving Time experiment, some of the headlines were schoolkids were at greater risk in the morning, certainly in Florida and maybe California.

But it is important to not just look at anecdotes, but to look at studies, right? The National Safety Council, you know, looked at the 1974 data, and concluded in 42 states plus Washington, DC, there was no increase in danger to schoolchildren. Because even though there was more morning darkness, there was much more afternoon sunlight, and those kids saved in the afternoon. But they never made headlines, right?

Obviously, the accidents in the mornings do make headlines, and it breaks my heart, right? That is a tragedy, when that happens. But we have to understand that we need to put the sunlight into the portion of the day when all kids are up and moving around the town, not just the portion of the day when only half are awake.

Like I say, 4:30, 5:30, 6:30 a.m., a lot of people are still asleep at that time, and no one benefits from sunlight at that time. Whereas, if you look at sunset times, 99 percent of the population is awake, and benefits in terms of their health and in terms of the economy.

Mr. MCNERNEY. All right. Well, my time has expired, more than expired, so I am going to have to yield. Thank you.

Mr. CÁRDENAS. The gentleman yields back. Next I will recognize Congresswoman Lesko for her 5 minutes.

Mrs. LESKO. Thank you, Mr. Chair, and thank you to the people testifying today.

I am from the great State of Arizona. Dr. Malow, in your testimony you spoke about the health benefits of permanent Standard Time. Arizona has observed permanent Standard Time for 40 years now. Has there been any medical studies done or medical data to demonstrate that Arizonans are less likely to experience the negative health outcomes you described if we went to permanent Daylight Time?

Dr. MALOW. That is a great question, and I have not been able to find that. I think most of the work has been done more on these edge effects and all, and trying to look at health issues. So no. I am going to continue to look for that, and if I find anything I will let you know.

Mrs. LESKO. Thank you. And I am just—I said the same thing to the chairwoman—is—don't—please don't mess with Arizona. We have been doing this for 40 years. There is differences in the states. In Arizona it is very hot in the summer. In fact, a lot of our workers that work on rooftops, doing new roofs, or on the highways, they actually work in the middle of the night, because it is just too hot. And so any time you change anything to Arizona, Arizonans are going to be upset, and it will have consequences that may—that people from the East Coast may not think about.

And with that, I yield back.

Mr. CÁRDENAS. The gentlewoman yields back the balance of her time. I will recognize myself for 5 minutes.

I would like to thank the witnesses for coming today, and for your testimony and your opinions, and conveying your research to us, as well. Also to the Chairwoman, thank you so much for having this important issue discussed before the people of our country. And also, Ranking Member Bilirakis, thank you so much, as well.

As was mentioned earlier, there are many, many issues that we could be discussing in this committee. And believe it or not, this committee is a very prolific committee, covering probably more issues than any other policy committee in the House or the U.S. Senate. So with that I would like to once again thank all the Chairs and Ranking Members of all the committees for all the important issues that we cover.

And we can walk and chew gum at the same time in the U.S. Congress, and we can talk about time zones, and what it does to people, especially our children. So with that, Dr. Malow, in your testimony you touch on the effects on—transitioning from Standard Time to Daylight Savings Time every year in March, and the negative effects that are associated with—sleep loss has on adolescent attention span and mental health.

You mentioned depression, specifically. Can you expand on how losing even as little as 30 minutes of sleep can affect adolescent mental health?

Dr. MALOW. Yes, thank you so much for that question.

I have been impressed in the work I did with the consensus panel of the American Academy of Sleep Medicine. We reviewed many, many studies. And even a small amount of sleep loss can make a huge difference in how our adolescents feel, and how they—how alert they are in school, their mental health.

You know, I know things have been said about the screen time, and I—in the afternoons, and I certainly see that it is a complex picture. It is a lot of different things. But I, as a sleep specialist, feel like the root cause of so much of what is the adolescence is the poor sleep and the fact that they are just really sleep deprived. A lot of them aren't even getting six hours of sleep a night. And light in the morning would help tremendously, along with, as was mentioned, making school start times later, which would help promote sleep.

Mr. CÁRDENAS. I would like to ask you a question, Dr. Malow, in your expert opinion.

Let's just say a child is playing video games for four or five and six and eight hours a day, and—what kind of effect could that have on a child's sleep pattern, if they are doing something like that in

a chronic way, where they are actually doing it daily, they are doing it very consistently, and something that perhaps is—a question mark for me is, could that have an effect on a child's sleep?

Dr. MALOW. Yes, for sure. When people are—when kids are on their phones, it can affect their sleep patterns. The way I look at it is there is blue light from our phones. You probably have heard about that. Well, sunlight is the most potent source of blue light.

So getting those phones out of the bedroom, and being turned off at night, and also trying to get rid of some of that excessive light—again, we are not talking about light at five or six, we are talking about light at nine, ten that really interferes with sleep. And sunlight is one of the most potent sources of blue light there is, so—it is the key source.

So I think we need to do both. We can't say it is just the times. I think we have to look comprehensively at what is going on with our kids.

Mr. CÁRDENAS. Well, Doctor, speaking of comprehensively, it just occurred to me that perhaps at least twice a year, maybe we—whether it is State governments, local governments, and Federal Governments—when people are finally thinking about daylight or darkness, and having to change their clocks, maybe that is a great opportunity to remind the American people about maybe some better practices, like how to help people to ask their kids or get their kids to get outside, and get some of that sunlight. Do you think it would be a good practice for us to try to do something like that?

Dr. MALOW. I do. I mean, I take advantage of what I call and my colleagues call the twice-yearly media blitz related to Daylight Saving Time, going back and forth, to really educate the American public on sleep and its importance, and getting off your phones, getting more exercise, getting more morning light. All of that is super important. I think that is a great point you made.

Mr. CÁRDENAS. OK. Well, thank you. I know that some of the testimony has to do with the economy and things of that nature, but I think well-educated school kids, if we focus on them, that will definitely contribute to a stronger economy when they are actually better educated and better prepared to enter into the workforce.

So whether it is Daylight Savings Time or anything like that, I think it is important for us to recognize that we have opportunities to go ahead and enlist other policies and other activities when people are paying attention to these kinds of things.

Next—my time is expired, and I will recognize Congresswoman Dingell.

Mrs. DINGELL. Thank you, Mr. Chairman. This hearing could not be more timely, as we prepare to spring forward this weekend and witness the resulting impacts to our small businesses, economy, and public health.

It is our responsibility to weigh the benefits of any potential changes to Federal policy regarding Standard and Daylight Savings Time. As a member representing Michigan, as you cite in your testimony, Dr. Malow, this hearing is incredibly impactful for my constituents, and I look forward to the discussion and listening to everybody this morning.

This is a question for the entire panel. Do you believe that switching between Standard and Daylight Savings Time twice a

year ultimately has set—has had negative health impacts on Americans, yes or no?

Professor Calandrillo?

Mr. CALANDRILLO. Yes, and I certainly agree the biannual switch is bad. But permanent Daylight Savings Time is the way to solve those health problems.

Mrs. DINGELL. Thank you. Dr. Malow?

Dr. MALOW. I would say I am on the flip side. I agree with Dr. Calandrillo, we shouldn't go back and forth. I think, from a health perspective at least, the permanent Standard Time is the best healthy choice.

Mrs. DINGELL. And Mr. Beckwith?

Mr. BECKWITH. Thank you. I am not a health expert, so I will abstain from answering that aspect. But I will point out that I fall in the middle between the other two panelists in saying that what we have created in our optimization of daylight really does take into account both of their opinions, and tries to find the happy medium.

Mrs. DINGELL. Which is why we are always back having hearings on this subject.

As you all know, this issue hits very close to home, especially for those who have children, but have had to deal with cranky babies or, worse yet, cranky teens who haven't gotten enough sleep.

Dr. Malow, can you expand on the impact sleep deprivation has on our overall health, on our minds, our moods, and especially in young children for whom we know sleep is vital?

Dr. MALOW. Yes, thank you for that question. When we are not sleeping well it has a whole host of ramifications. A lot of them we have talked about already, but just to hit the high points again: obesity, diabetes, heart disease. Even cancer and Alzheimer's disease have been linked to either sleep loss or that circadian misalignment, getting our sleep at the wrong time, getting our light at the wrong time.

And then children are not exempt. Children are also super-affected by these conditions, by depression. We heard earlier about the self-harm, the suicide risks, and by obesity and ADHD. And I think it is just really important to recognize that it is a piece of the puzzle.

But sleep is a super-important piece of the puzzle toward promoting health. And that light in the morning really sets us up for healthy sleep.

Mrs. DINGELL. So can you tell us, though, why it is harder for the body to adapt to Daylight Savings Time than it is for the body to adapt to a new time zone when traveling?

Dr. MALOW. Yes. When we travel, let's say, from Michigan in the Eastern Time zone—well, let's take the Central Time zone—Chicago, in the Central Time zone to D.C. in the Eastern Time zone, we are changing our clocks, but also our environment. So the sun cues are there to help us adapt and adjust. When we change our clocks this weekend, we are changing our clocks. But the sun isn't changing. The sun is still in the same place. And because of that we are off. We are not able to adjust the way we naturally would if we had those environmental cues as well. So it is more detrimental.

And then what people forget, they think it is just an hour, right? But it is actually almost eight months of the year that we are off sync, that we are getting that sunshine when we shouldn't be. You know, we are one hour off, so we are not getting as much in the morning, and we are getting too much in the evening.

Mrs. DINGELL. So Dr. Malow, you mentioned the increased risk of heart attacks and stroke during the springtime change to Daylight Savings Time. What exactly about the loss of sleep causes this?

And is this more prevalent among shift workers and those of lower socioeconomic status?

Dr. MALOW. Yes. In a nutshell—because I know we are getting short on time—I would say it is a combination. It is hard to sort out the change in the sleep, the loss of sleep, as well as, as I mentioned, the circadian misalignment and being off schedule and off cycle. But we do see it more in vulnerable populations, as you mentioned.

I mentioned the cancer was brought up in the article, and the elderly, and then people like shift workers, who can't control their schedules as much.

Mrs. DINGELL. Thank you, Mr. Chairman, I yield back.

Mr. CÁRDENAS. The gentlewoman yields back. Next I will recognize Congresswoman Kelly for her 5 minutes.

Ms. KELLY. Thank you, Mr. Chairman.

Mr. Calandrillo, I would like to start with you on this topic. You have said stopping the time switch is important. And in your testimony, you have stated that switching to permanent Daylight Savings Time will reduce crime. Can you elaborate more on how that works, and what the connection is between time change and crime?

Mr. CALANDRILLO. Thank you so much for that question. Darkness is a friend of crime, sunshine is a great disinfectant.

Crime goes dramatically upwards at the 5 p.m., 6 p.m., after school/after work hours, all the way through midnight. People don't like to commit bad acts in the sunlight. They want—they would like the cover of darkness. British studies have estimated as much as a 20 percent reduction in street crime, juvenile crime, vandalism, graffiti.

If we take an hour out of criminals' work day by pushing sunlight into the evening, that has that effect, right? As I like to say, criminals are late to bed and late to rise. They don't wake up with the sunrise, but they do stay up late.

And it is important in all of our discussion to not fight human nature. I mean, it would be awesome if we all woke up with the sunrise, but we are not going to wake up at 4:30 or 5:30 in the morning. We have to recognize human nature. My son, who is in college, has never done that.

We have to put those hours of sunlight into the part of the day where kids can use that, and enjoy outdoor, unsupervised play. And that will help their sleep cycles, and certainly help crime, and certainly help the economy.

Ms. KELLY. We tend to think of criminals as opportunistic. Given that, wouldn't they simply take advantage of a different opportunity?

Mr. CALANDRILLO. Well, again, like, you are taking one hour out of their workday. It is true that they could just stay up later, right? They do try to stay up later. But they don't work in evening—sorry, in morning darkness. So Standard Time creates morning darkness, right, and at 5 a.m., 6 a.m. crime rates are exceptionally low. That is the lowest hour of crime rate in the day.

So it is not like criminals are switching their work to that point of the day. They engage in afternoon and evening criminal activity, and Daylight Saving Time helps prevent that.

Ms. KELLY. Mr. Beckwith, do you agree? Have your member companies raised this issue previously?

Mr. BECKWITH. Obviously, crime is a huge concern to us, Congresswoman.

I take a little different approach than my other witness here that—it reminds me of the discussions many years ago, when farmers were concerned about Daylight Savings Time, that their cows—it wouldn't know when to be milked. And the response is the cows know when to be milked. You just have to adjust to when they are ready. And I look at crime the same way, is—I don't think criminals care what time it is. They just want to rob you when it is dark out.

And so, you know, that, you know, I think certainly is an issue for us, but I would put less emphasis on it for our industry for that reason.

Ms. KELLY. OK, thank you. Did you want to make a point, I think, Mr. Calandrillo?

Mr. CALANDRILLO. Yes, crime—

Ms. KELLY. A quick point?

Mr. CALANDRILLO. Yes, yes. Crime rates are super low in the morning darkness, 5 a.m., 6 a.m. If you look at crime data, it shows that that is the lowest crime rate of the day. So the criminals are not taking advantage of morning darkness.

Ms. KELLY. OK, thank you.

Dr. Malow, could you elaborate on how changing the clocks and loss of sleep, or sleep misalignment could affect young children and juveniles when it comes to crime and their ability to make smart decisions?

Dr. MALOW. Yes, I think that we are all affected by sleep, and some folks or some kids who are struggling may, when their emotional systems are not in sync and they are depressed, might turn to crime. I don't know, I am not a crime expert, so I don't want to go down that path very far.

I will say as a woman, though, that when I have slept, when I am fully awake, and I have gotten a good night's sleep, I think my wits are about—around me more, and I think that is an important point that, at least for personal crimes, when we are more awake and more alert, we are less apt to be the target of crimes, because we have more situational awareness.

But I am not going to say anything more about crime. I am going to leave that to my other witnesses, because I think they are far more expert in that area than me.

Ms. KELLY. And Mr. Calandrillo, would you care to comment?

Mr. CALANDRILLO. Yes. Certainly, I agree, sleep helps. But like I said, the crime studies have shown that the crime rates are

much, much lower in morning darkness than they are in evening darkness. So it is important we take away that evening darkness. That is what Daylight Saving Time does.

Ms. KELLY. My grandparents and my dad, we owned—it was—we don't—we didn't call it a convenience store, but we called it a mom-and-pop grocery store many, many, many years ago. So I know, you know, that it is a big concern, when—and when—I tried to think about—we were robbed a couple of times, and it was, you know, in the evening. But still concerned, because we need our convenience stores, and we need you to feel safe.

So thank you so much, and I yield back.

Mr. CÁRDENAS. The gentlewoman yields back the balance of her time. Next I will recognize Congressman Soto for 5 minutes.

Mr. SOTO. Thank you, Chairman.

Coming from the Sunshine State, we value sunshine for our quality of life, recreation, and our tourism economy. Over the years I have heard countless complaints from constituents who hate going back to Standard Time in the winter months, losing hours of sunshine.

In 2013 I drafted a bill called the Sunshine Protection Act during my first year in the Florida Senate. It would keep Florida on Daylight Savings Time all year round, Chairman. I filed the bill on a Friday. No press release, little fanfare. By Saturday morning, the Orlando Sentinel called me and wrote a story. Well, the rest became history. It became a statewide story. It became a huge debate covered by just about every news station in Florida, and constituents and Floridians debated this for many years. Each of the 4-years I filed the bill while in the Florida Senate. It was the most popularly viewed bill in the State legislature.

Sadly, serving in the minority there, the Republicans never gave me a hearing on my bill. And after I got to the Congress in 2017, they gave the bill to my dear friend and colleague, Senator Steube at the time, now a Member of Congress, a Republican, and it was promptly passed into law. So I suppose it is sweet justice that I am here today, reviewing this issue again with a Democratic majority and our Republican colleagues.

We found out a few revelations, as I heard from various constituents about the bill.

First, we were going to give schools flexibility in their start times, so no student would have to go to school in the dark. Our schools know how to run transportation, and we can give them the flexibility to do that.

Second, we found our local farmers really didn't need the government to tell them what time to wake up in the morning. They would rise at dawn, either way.

Third, we found local tourism businesses and restaurants love the idea, from our major theme parks to our beaches and other local businesses in that area. Daylight in the afternoons led to more businesses getting more business from residents and tourists.

Our constituents also loved it because they would no longer be in the dark for several months after they got out of a long day of work.

It also encouraged more exercise in outdoor activities for Floridians, something that we care deeply about.

As we complement ending the time change, don't send Florida and other states back to the Dark Ages, please. If we are going to set up one time, let's make it a Daylight Savings Time permanently. So I think the legislation we are looking at to at least start the ball rolling would be really helpful.

Mr. Calandrillo, do you want to briefly go through the economics of how important this is for small businesses and mid-sized businesses, particularly in tourism and in restaurants and others?

Mr. CALANDRILLO. Thank you so much, Representative Soto. I really appreciate your work on the Sunshine Protection Act.

By the way, it is one of the last bipartisan issues in America, right? You had Senator Patty Murray from my State and Senator Rubio from your State helping you along with those bills, although they haven't gone anywhere, right?

You want to talk—you want to think about the economic benefits of having that sunlight out in the afternoon and evening. That is when people shop, right? That is when people engage in outdoor activity. Again, putting that sunlight in the morning hours isn't going to have nearly the same effect. All the Chambers of Commerce that I have spoken to have supported the economic activity created by Daylight Saving Time, and it is important we recognize that.

And it is a net issue for me. I do cost benefit analyses. Obviously, we are trading it off against morning darkness, and I am sensitive to the sleep concerns; as you mentioned, that Florida allowed for schools to start later. But we have to recognize the net benefit of pushing sunlight into the afternoon. There are costs to any proposal and there are benefits to any proposal.

We call it prime time for a reason, not 5 or 6 a.m. That is when people want to get out in the evening, and they are much more willing to go out if there is sunlight. In fact, a lot of people don't even like to drive once sunset hits, right? They are nervous about the safety, and with good reason, because the traffic accidents go up dramatically, and it is way more fatal.

So again, the economic impact—you know, tourism industry, the restaurant industry, all of these industries prefer having sunlight in the part of the day when we can use it.

Mr. SOTO. Thank you. And I am also worried about our seniors and our kids, which is why the flexibility is going to be critical for school start times and for our seniors to have more consistent life rhythm to make sure we are avoiding strokes and heart attacks and some of these other conditions.

Thank you, Chairman, and I yield back.

Mr. CARDENAS. The gentleman yields back. With that I would like to thank our witnesses for their participation in today's hearing.

I remind Members that, pursuant to committee rules, they have ten business days to submit additional questions for the record to be answered by the witnesses who have appeared. I ask each witness to respond promptly to any questions that you may receive.

At this time I will read, before we adjourn, the letters to be submitted for the record: a letter from the American Academy of Sleep Medicine; a letter from Save Standard Time; a letter from—updated witness testimony from Dr. Beth Malow.

[The information appears at the conclusion of the hearing.]

Mr. CÁRDENAS. And with that, this committee is now adjourned.
[Whereupon, at 12:03 p.m., the subcommittee was adjourned.]
[Material submitted for inclusion in the record follows:]

**OFFICERS**

Raman Malhotra, MD
President

Jennifer L. Martin, PhD
President-Elect

Kannan Ramar, MD
Past President

James A. Rowley, MD
Secretary/Treasurer

DIRECTORS

Fariha Abbasi-Feinberg, MD

R. Nisha Aurora, MD, MHS

Vishesh K. Kapur, MD, MPH

David Kuhlmann, MD

Eric Olson, MD

Carol L. Rosen, MD

Anita Shelgikar, MD, MHPE

Lynn Marie Trotti, MD, MSc

Steve Van Hout
Executive Director

March 9, 2022

The Honorable Jan Schakowsky
Chairwoman, Subcommittee on Consumer Protection and Commerce
House Energy and Commerce Committee
2125 Rayburn House Office Building
Washington D.C. 20515

The Honorable Gus Bilirakis
Ranking Member, Subcommittee on Consumer Protection and Commerce
House Energy and Commerce Committee
2322 Rayburn House Office Building
Washington D.C. 20515

Dear Chairwoman Schakowsky and Ranking Member Bilirakis:

The American Academy of Sleep Medicine (AASM), on behalf of our membership, submits this letter for the record to the House of Representatives Subcommittee on Consumer Protection and Commerce of the Committee on Energy and Commerce hearing, "Changing Times: Revisiting Spring Forward, Fall Back." We thank the subcommittee for holding this important hearing and appreciate the opportunity to comment on the impact of daylight saving time on sleep health.

Based in Darien, Illinois, the AASM is a professional society dedicated exclusively to the medical subspecialty of sleep medicine. As the leading voice in the sleep field, the AASM sets standards and promotes excellence in sleep medicine health care, education, and research. The AASM has a combined membership of 11,000 accredited member sleep centers and individual members, including physicians, scientists, and other health care professionals. Sleep is a biological necessity, and insufficient sleep and untreated sleep disorders are detrimental for health, well-being and public safety. The AASM advocates for policies that recognize that sleep is essential to health.

In the United States, the annual advance to daylight saving time in spring, and fall back to standard time in autumn, is required by law (although some exceptions are allowed under the statute). However, a survey commissioned by the AASM in 2020 found that [63% of respondents](#) said that they support the elimination of these seasonal time changes, and only 11% opposed it.

It is the position of the AASM that seasonal time changes should be eliminated in favor of a national, fixed, year-round time. Current evidence supports the adoption of year-round standard time, which aligns best with human circadian biology and provides distinct benefits for public health and safety.

Daylight saving time can cause misalignment between the biological clock and environmental clock, resulting in significant health and public safety-related consequences, especially in the days immediately following the annual change to daylight saving time. Accordingly, the AASM supports a switch to permanent standard time, which more closely aligns with the daily rhythms of the body's internal clock, as detailed in our published [daylight saving time position statement](#).

Shifting from standard time to daylight saving time each spring has been associated with increased cardiovascular morbidity, including risk of myocardial infarction,^{1,2} stroke,³ and hospital admissions due to the occurrence of acute atrial fibrillation.⁴ An increase in missed medical appointments and increased emergency room visits and return visits to the hospital are also seen only during the spring transition from standard time to daylight saving time.^{5,6} In addition, a study published in 2021 by Mayo Clinic researchers found an 18.7% increase in adverse medical events related to human error in the week after switching to daylight saving time.⁷

The one-hour time shift in the spring results in less exposure to light in the morning and greater exposure to evening light. In the presence of continuing social or occupational demands in early morning hours, this delay results in sleep loss and resultant sleep debt,⁸ in addition to circadian misalignment. The end result is a variety of cellular derangements, including altered myocyte gene expression,⁹ altered epigenetic and transcriptional profile of core clock genes,¹⁰ increased production of inflammatory markers,¹¹ lower vagal tone resulting in higher heart rate and blood pressure, and reduced sleep.¹²

Although most acute health-related effects are noted only when transitioning from standard time to daylight saving time, transitions both into and out of daylight saving time have been associated with sleep disruption, mood disturbances and suicide.¹³ Traffic accidents increase in the first few days after the change from standard time to daylight saving time,¹⁴ with an increase in fatal crashes of up to 6% in the United States.¹⁵

The long-term effects of permanent daylight saving time are less clear. Daylight saving time results in more darkness in the morning hours, and more light in the evening hours. Both early morning darkness and light in the evening have a similar effect on circadian phase, causing the endogenous rhythm to shift to later in the day. There is evidence that the body clock does not adjust to daylight saving time even after several months.¹⁶

Permanent daylight saving time could therefore result in permanent phase delay, a condition that can also lead to a perpetual discrepancy between the innate biological clock and the extrinsic environmental clock, as well as chronic sleep loss due to early morning social demands that truncate the opportunity to sleep. The chronic misalignment between the timing of demands of work, school, or other obligations against the innate circadian rhythm is called "social jet lag."¹⁷ Studies show that social jet lag is associated with an increased risk of obesity,¹⁸ metabolic syndrome,¹⁹ cardiovascular disease,²⁰ and depression.²¹

We appreciate the committee's attention to this issue, as we believe the evidence clearly demonstrates the need to eliminate seasonal time changes. We also consider the evidence to best support the establishment of permanent standard time. Seasonal time changes negatively affect the health of Americans, and standard time more closely aligns with the body's natural circadian rhythm. Accordingly, the AASM urges Congress to pass legislation eliminating daylight saving time and making standard time permanent for the entire year. Please contact Eric Albrecht, AASM advocacy program manager, at (630) 737-9700 or ealbrecht@aasm.org with any questions. Thank you for your time and consideration.

Sincerely,

Raman K. Malhotra, MD, FAASM
President

References

- ¹ Manfredini R, Fabbian F, De Giorgi A, et al.. Daylight saving time and myocardial infarction: should we be worried? A review of the evidence. *Eur Rev Med Pharmacol Sci*. 2018;22(3):750–755.
- ² Janszky I, Ljung R. Shifts to and from daylight saving time and incidence of myocardial infarction. *N Engl J Med*. 2008;359(18):1966–1968. <https://doi.org/10.1056/NEJMc0807104>
- ³ Sipilä JO, Ruuskanen JO, Rautava P, Kytö V. Changes in ischemic stroke occurrence following daylight saving time transitions. *Sleep Med*. 2016;27–28:20–24. <https://doi.org/10.1016/j.sleep.2016.10.009>
- ⁴ Chudow JJ, Dreyfus I, Zaremski L, et al.. Changes in atrial fibrillation admissions following daylight saving time transitions. *Sleep Med*. 2020;69:155–158. <https://doi.org/10.1016/j.sleep.2020.01.018>
- ⁵ Ellis DA, Luther K, Jenkins R. Missed medical appointments during shifts to and from daylight saving time. *Chronobiol Int*. 2018;35(4):584–588. <https://doi.org/10.1080/07420528.2017.1417313>
- ⁶ Ferrazzi E, Romualdi C, Ocello M, et al.. Changes in accident & emergency visits and return visits in relation to the enforcement of daylight saving time and photoperiod. *J Biol Rhythms*. 2018;33(5):555–564. <https://doi.org/10.1177/0748730418791097>
- ⁷ Kolla BP, Coombes BJ, Morgenthaler TI, Mansukhani MP. Increased patient safety-related incidents following the transition into daylight savings time. *J Gen Intern Med*. 2021 Jan;36(1):51–54. <https://doi.org/10.1007/s11606-020-06090-9>
- ⁸ Lahti TA, Leppämäki S, Lönnqvist J, Partonen T. Transitions into and out of daylight saving time compromise sleep and the rest-activity cycles. *BMC Physiol*. 2008;8(1):3. <https://doi.org/10.1186/1472-6793-8-3>
- ⁹ Martino TA, Tata N, Belsham DD, et al.. Disturbed diurnal rhythm alters gene expression and exacerbates cardiovascular disease with rescue by resynchronization. *Hypertension*. 2007;49(5):1104–1113. <https://doi.org/10.1161/HYPERTENSIONAHA.106.083568>
- ¹⁰ Malow BA, Veatch OJ, Bagai K. Are daylight saving time changes bad for the brain? *JAMA Neurol*. 2020;77(1):9–10. <https://doi.org/10.1001/jamaneurol.2019.3780>
- ¹¹ Wright KP, Drake AL, Frey DJ, et al.. Influence of sleep deprivation and circadian misalignment on cortisol, inflammatory markers, and cytokine balance. *Brain Behav Immun*. 2015;47:24–34. <https://doi.org/10.1016/j.bbi.2015.01.004>
- ¹² Grimaldi D, Carter JR, Van Cauter E, Leproult R. Adverse impact of sleep restriction and circadian misalignment on autonomic function in healthy young adults. *Hypertension*. 2016;68(1):243–250. <https://doi.org/10.1161/HYPERTENSIONAHA.115.06847>

-
- ¹³ Berk M, Dodd S, Hallam K, Berk L, Gleeson J, Henry M. Small shifts in diurnal rhythms are associated with an increase in suicide: The effect of daylight saving. *Sleep Biol Rhythms*. 2008;6(1):22–25. <https://doi.org/10.1111/j.1479-8425.2007.00331.x>
- ¹⁴ Robb D, Barnes T. Accident rates and the impact of daylight saving time transitions. *Accid Anal Prev*. 2018;111:193–201. <https://doi.org/10.1016/j.aap.2017.11.029>
- ¹⁵ Fritz J, VoPham T, Wright KP, Vetter C. A chronobiological evaluation of the acute effects of daylight saving time on traffic accident risk. *Curr Biol*. 2020;30(4):729–735.e2. <https://doi.org/10.1016/j.cub.2019.12.045>
- ¹⁶ Hadlow NC, Brown S, Wardrop R, Henley D. The effects of season, daylight saving and time of sunrise on serum cortisol in a large population. *Chronobiol Int*. 2014;31(2):243–251. <https://doi.org/10.3109/07420528.2013.844162>
- ¹⁷ Roenneberg T, Kantermann T, Juda M, Vetter C, Allebrandt KV. Light and the human circadian clock. *Handb Exp Pharmacol*. 2013;217(217):311–331. https://doi.org/10.1007/978-3-642-25950-0_13
- ¹⁸ Roenneberg T, Allebrandt KV, Merrow M, Vetter C. Social jetlag and obesity. *Curr Biol*. 2012;22(10):939–943. <https://doi.org/10.1016/j.cub.2012.03.038>
- ¹⁹ Koopman ADM, Rauh SP, van 't Riet E, et al.. The association between social jetlag, the metabolic syndrome, and type 2 diabetes mellitus in the general population: The New Hoorn Study. *J Biol Rhythms*. 2017;32(4):359–368. <https://doi.org/10.1177/0748730417713572>
- ²⁰ Wong PM, Hasler BP, Kamarck TW, Muldoon MF, Manuck SB. Social jetlag, chronotype, and cardiometabolic risk. *J Clin Endocrinol Metab*. 2015;100(12):4612–4620. <https://doi.org/10.1210/jc.2015-2923>
- ²¹ Levandovski R, Dantas G, Fernandes LC, et al.. Depression scores associate with chronotype and social jetlag in a rural population. *Chronobiol Int*. 2011;28(9):771–778. <https://doi.org/10.3109/07420528.2011.602445>



SAVE STANDARD TIME

The best clock for health, safety, education, economy, environment, civil liberties, and lasting public support.

2022 March 8

Subcommittee on Consumer Protection & Commerce
Committee on Energy & Commerce
United States House of Representatives
Washington, District of Columbia

Re: Reject Permanent DST, Restore Permanent Standard Time

Dear Honorable Representatives,

Please reject calls to retry permanent Daylight Saving Time, a policy that has repeatedly failed with loss of money and lives. Please instead restore permanent Standard Time, for lasting health, safety, education, and prosperity.

Professional polling shows strong public support to end clock change, with preference for Standard Time.^[AP] Permanent Standard Time can be restored by striking just one paragraph from the Uniform Time Act (15 USC §260a). Standard Time preserves the morning sunlight needed daily by human biology. Its benefits to circadian health improve immunity, longevity, mood, alertness, and performance at school and work. They prevent traffic deaths, lower crime, and reduce chronic illnesses.^{[AASM][Juda][SRBR]} Standard Time protects start times for schoolchildren, farmers, and most working adults, by letting citizens sleep naturally past sunrise year-round.^{[Borisenkov][Cell][Schlanger][Skeldon]}

Scores of organizations, representing millions of researchers, doctors, teachers, parents, and community leaders worldwide, oppose DST and endorse permanent Standard Time. Among these are the American College of Chest Physicians, National Safety Council, American Academy of Sleep Medicine, National Sleep Foundation, National PTA, American College of Occupational & Environmental Medicine, Start School Later, Society for Research on Biological Rhythms, and many more state, national, and international groups.^{[AASM][CSS][NSF][SRBR]}

Permanent DST would require rewriting nearly the entire Uniform Time Act. It would also force constituents to wake an hour early relative to sunrise, every workday from November through March. It would artificially delay sunrises past 8:45am in most states, and past 8am up to 3.9 months in most states. Historically, support for permanent DST reverses into opposition when experienced. Permanent DST has failed several times; it cost American children's lives in 1974.^{[BBC][Ripley][Yorkshire]} No law can make winter feel like summer.

Moving clocks to DST acutely deprives sleep. Leaving clocks on DST chronically deprives sleep (estimated average 19 minutes nightly).^{[Giuntella][Roenneberg]} Artificial delay of sunrise by

1 / 2

SAVESTANDARDTIME.COM • INFO@SAVESTANDARDTIME.COM • 415-484-3458 • PO BOX 40238, SAN FRANCISCO, CA 94140
501(C)(4) NONPROFIT • EIN 86-3372799

one hour continually manifests as significant increases in accidents, disease (certain cancers up 12–36%), and healthcare costs, and as significant decreases in learning, productivity, and earnings (individual wages down 3–5%).^{[Gibson][Giuntella][Gu][Roenneberg]} It's not just clock change that harms, but also DST's forced early waking. Permanent Standard Time instead lets people sleep longer.^{[AASM][Juda][SRBR]} It's the natural time, defined by the sun.

Please hear the consensus of doctors, teachers, polling, and history. Save time, money, and lives. End clock change, yes—but only with permanent Standard Time.

Sincerely,



Jay Pea

President

jay@savestandardtime.com

American Academy of Sleep Medicine (2020). "Call for Elimination of Daylight Saving Time". *Journal of Clinical Sleep Medicine*. <https://aasm.org/american-academy-of-sleep-medicine-calls-for-elimination-of-daylight-saving-time/>

AP-NORC (2021). "Dislike for Changing the Clocks Persists". *Center for Public Affairs Research*. <https://apnorc.org/projects/dislike-for-changing-the-clocks-persists/>

BBC (2014). "Russia: Putin Abolishes 'Daylight Savings' Time Change". *BBC News*. <https://www.bbc.com/news/blogs-news-from-elsewhere-28423647>

Borisenkov et al (2016). "Seven-Year Survey of Sleep Timing in Russian Children and Adolescents". *Biological Rhythm Research*. https://www.researchgate.net/publication/307547013_Seven-year_survey_of_sleep_timing_in_Russian_children_and_adolescents_chronic_1_h_forward_transition_of_social_clock_is_associated_with_increased_social_jetlag_and_winter_pattern_of_mood_seasonality

Canadian Sleep Society (2021). "Position Statement of the Canadian Sleep Society on the Practice of Daylight Saving Time". *Canadian Sleep Society News*. <https://css-scs.ca/position-statement-of-the-canadian-sleep-society-on-the-practice-of-daylight-saving-time-dst/>

Cell Press (2019). "Permanent Daylight Savings May Cancel Out Changes to School Start Times". *EurekAlert!*. https://www.eurekalert.org/pub_releases/2019-04/cp-pds041819.php

Gibson & Shrader (2015). "Time Use and Productivity: The Wage Returns to Sleep". *Williams College Department of Economics Working Papers*. <https://econpapers.repec.org/paper/wilwileco/2015-17.htm>

Giuntella & Mazzonna (2017). "Sunset Time and the Economic Effects of Social Jetlag Evidence from US Time Zone Borders". *Journal of Health Economics*. <https://www.sciencedirect.com/science/article/abs/pii/S0167629618309718>

Gu et al (2017). "Longitude Position in a Time Zone and Cancer Risk in the United States". *Cancer Epidemiology, Biomarkers & Prevention*. <https://cebp.aacrjournals.org/content/26/8/1306>

Jin & Ziebarth (2019). "Sleep, Health, and Human Capital: Evidence from Daylight Saving Time". *The National Bureau of Economic Research*. <https://ideas.repec.org/p/yor/hectdg/15-27.html>

Juda et al (2019). "An Open Letter to the BC Government in Support of Permanent Standard Time". *Simon Fraser University*. <https://vault.sfu.ca/index.php/s/sAny3Z4bcSwY4Gm>

National Sleep Foundation (2021). "Permanent Standard Time: A Position Statement from the National Sleep Foundation". *NSF Issues*. <https://www.thensf.org/wp-content/uploads/2021/03/NSF-Position-on-Permanent-Standard-Time.pdf>

Ripley (1974). "Senate Votes Return to Standard Time for Four Months and Sends Bill to Ford". *The New York Times*. <https://www.nytimes.com/1974/10/01/archives/senate-votes-return-to-standard-time-for-four-months-and-sends-bill.html>

Roenneberg et al (2019). "Daylight Saving Time and Artificial Time Zones – A Battle Between Biological and Social Times". *Frontiers in Physiology*. <https://www.frontiersin.org/articles/10.3389/fphys.2019.00944/full>

Schlanger (2017). "Daylight Saving Time as Americans Know It Was Instituted by Corporate Lobbies, Not Farmers". *Quartz*. <https://qz.com/1120488/daylight-saving-time-as-americans-know-it-was-instituted-by-corporate-lobbies-not-farmers/>

Skeldon & Dijk (2019). "School Start Times and Daylight Saving Time Confuse California Lawmakers". *Current Biology*. [https://www.cell.com/current-biology/fulltext/S0960-9822\(19\)30312-4](https://www.cell.com/current-biology/fulltext/S0960-9822(19)30312-4)

Society for Research on Biological Rhythms (2019). "Why Should We Abolish Daylight Saving Time?". *Journal of Biological Rhythms*. <https://srbr.org/advocacy/daylight-saving-time-presskit/>

Yorkshire (2018). "British Summer Time: Why Do We Change the Clocks?". *Yorkshire Evening Post*. <https://www.yorkshireeveningpost.co.uk/news/uk-news/british-summer-time-why-do-we-change-clocks-313791>

REJECT PERMANENT DAYLIGHT SAVING TIME RESTORE PERMANENT STANDARD TIME



Permanent Standard Time is the safest, healthiest, quickest end to clock change.

SAVE STANDARD TIME

8:03am average sunset start in the US. CIOG US 05, 050, 2013. <https://www.cio.gov/committees/committees/standard430a1.htm>
7:55am median work arrival in the US. S3B, ACS, USCB, 2014. <https://www.bright.com/features/school-clocks-deep-in-and-which-get-to-work-early/>

Permanent Standard Time is the safest, healthiest, quickest end to clock change.

SAVE STANDARD TIME

8:03am average sunset start in the US. CIOG US 05, 050, 2013. <https://www.cio.gov/committees/committees/standard430a1.htm>
7:55am median work arrival in the US. S3B, ACS, USCB, 2014. <https://www.bright.com/features/school-clocks-deep-in-and-which-get-to-work-early/>

REJECT PERMANENT DAYLIGHT SAVING TIME RESTORE PERMANENT STANDARD TIME

"The human circadian system does not adjust to Daylight Saving Time.

Sleep becomes disrupted, less efficient, and shortened... Permanent Standard Time is the healthier, more natural choice."

Nathaniel F Watson MD MSc
Neurology Professor, University of Washington, Seattle
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6557642/>

 **SAVE STANDARD TIME**

"Permanent Standard Time is the best choice to match our sleep-wake cycle.

Daylight Saving Time results in more darkness in the morning and more light in the evening, disrupting the body's natural rhythm."

Muhammad Adeel Rishi MD
Mayo Clinic & American Academy of Sleep Medicine
<https://aasm.org/american-academy-of-sleep-medicine-calls-for-elimination-of-daylight-saving-time/>

 **SAVE STANDARD TIME**

"An extra hour of natural light in the evening reduces sleep duration by an average of 19 minutes.

"...Discontinuity in the timing of natural light has significant effects on health outcomes typically associated with circadian rhythms disruptions (eg obesity, diabetes, cardiovascular diseases, and breast cancer) and economic performance (per capita income)."

Osea Giuntella PhD, University of Pittsburgh
Fabrizio Mazzonna PhD, University of Southern Indiana
<https://www.sciencedirect.com/science/article/abs/pii/S0167629618000718>

 **SAVE STANDARD TIME**

"Our bodies are much more in tune with Standard Time than they are Daylight Saving Time."

Andrew Stiehm MD
Sleep Specialist, United Lung & Sleep Clinic
<https://kstp.com/news/new-bills-aim-to-make-daylight-saving-time-permanent-in-minnesota-february-12-2020/564302/>

 **SAVE STANDARD TIME**

"Cancer rates significantly increase when sunrise is later.

Permanent DST would make sunrise later, while permanent Standard Time would make sunrise closer to body time."

Nicolas Cermakian PhD
President, Canadian Society for Chronobiology
<https://www.theglobeandmail.com/opinion/article-kim-bach-the-clock-on-daylight-savings-why-standard-time-all-year/>

 **SAVE STANDARD TIME**

"[Standard Time's] light in the morning not only makes you feel more alert, but helps you go to bed at the right time at night."

Beth Ann Malow MD MS
Sleep Neurologist, Vanderbilt University
<https://kbs.org/news/daylight-saving-time-debate-changing-clocks-is-bad-for-your-health-but-which-time-to-choose/>

 **SAVE STANDARD TIME**

"Permanent Daylight Saving will undermine any benefits of shifting school start time later.

"...A required wake time of 7am during Daylight Saving leads to the same degree of misalignment as a required wake time of 6am during Standard Time. With permanent Daylight Saving, schools would need to delay start times by one hour during winter just to maintain the status quo!"

Anne Skeldon PhD
Professor of Biology, University of Surrey
<https://www.surrey.ac.uk/news-releases/771715>

 **SAVE STANDARD TIME**

"Permanent Standard Time is the only fair, viable option.

"...Permanent Daylight Saving could create real health/safety issues. Humans require adequate morning light so that our internal biological rhythms synchronize properly to local time. Lack leads to metabolic disorders, depression, cardiovascular disease..."

Chancellor Gene Block PhD, UCLA
Prof Johanna Meijer PhD, Leiden University
<https://newsroom.ucl.ac.uk/stories/who-wants-to-go-to-work-in-the-dark>

 **SAVE STANDARD TIME**



SAVE STANDARD TIME

The best clock for health, safety, education, economy, environment, civil liberties, and lasting public support.

Endorsements of Permanent Standard Time as the Better Year-Round Clock

The following parties reject permanent Daylight Saving Time and endorse permanent Standard Time as the better year-round clock. These are not implied to be endorsements of the Save Standard Time entity.

Organizations (non-comprehensive list)

American College of Chest Physicians	National Safety Council
American Academy of Sleep Medicine	National Sleep Foundation
National PTA	American College of Occupational Medicine
American Academy of Dental Sleep Medicine	Start School Later
American Academy of Cardiovascular Sleep Medicine	National Education Association
American Federation of Teachers	National School Boards Association
Rabbinical Council of America	Agudath Israel of America
Indiana State Medical Association	Florida PTA
Northwest Noggin Neuroscience	California Sleep Society
Wisconsin Sleep Society	Kentucky Sleep Society
Missouri Sleep Society	Hampden District Medical Society
Tennessee Sleep Society	Maryland Sleep Society
Regional Adolescent Sleep Needs Coalition	Southern Sleep Society
Capitol Neurology	Michigan Academy of Sleep Medicine
Dakota Sleep Society	Rabbinical Council of California
Agudath Israel of California	California Islamic University
Agudath Israel of Florida	Cuyahoga Astronomical Association
Ohio Bicycle Federation	Adath Israel San Francisco
Stephens Memorial Observatory	Campaign to Opt Out of DST in Texas
Agudath Israel of Chicago	Canadian Sleep Society
Association of Canadian Ergonomists	Canadian Society for Chronobiology
Solaris Fatigue Management	World Sleep Society
Society for Research on Biological Rhythms	Society of Anesthesia & Sleep Medicine
Society of Behavioral Sleep Medicine	Society for Light Treatment & Biological Rhythms
Daylight Academy	B-Society
Good Light Group	International Alliance for Natural Time
European Biological Rhythms Society	European Sleep Research Society
Australasian Chronobiology Society	

Individuals (non-comprehensive list)

Elizabeth B Klerman MD PhD, Professor, Harvard Medical School, Boston, Massachusetts
 Michael T Lam MD PhD, San Diego, California
 Michael McCarthy MD PhD, Center for Circadian Biology, University of California, San Diego
 Thomas E Nordahl MD PhD, Professor Emeritus, University of California, Davis
 David K Welsh MD PhD, Professor Emeritus, University of California, San Diego
 Amir Zarrinpar MD PhD, Assistant Professor, San Diego, California
 Salman Ahsan PhD, San Jose, California
 Shimon Amir PhD, Professor, Concordia University, Montreal, Quebec
 Sonia Ancoli Israel PhD, Professor Emeritus, University of California, San Diego

Michael Antle PhD, Professor, Hotchkiss Brain Institute & University of Calgary, Alberta
 Susanna Barry PhD, College Mental Health Counselor & Sleep Coach, Cambridge, Massachusetts
 William Bechtel PhD, Distinguished Professor, University of California, San Diego
 Joseph Boyd PhD, Research Scientist, MilliporeSigma, Temecula, California
 Hugo Calligaro PhD, San Diego, California
 Oscar Castanon-Cervantes PhD, Assistant Professor, Morehouse School of Medicine, Atlanta, Georgia
 Joanna C Chiu PhD, Vice Chair, Department of Entomology & Nematology, University of California, Davis
 Scott Cookson PhD, Quantitative BioSciences, San Diego, California
 Jason DeBruyne, PhD, Associate Professor, Morehouse School of Medicine, Atlanta, Georgia
 Grant Denn PhD, Physics Department Chair, Metropolitan State University of Denver, Colorado
 Heinz Freisling MSc PhD, Epidemiologist, International Agency for Research on Cancer, Lyon, France
 Frederic Gachon PhD, Group Leader, Physiology of Circadian Rhythms, Institute for Molecular Bioscience
 Karen L Gamble PhD, Professor, The University of Alabama, Birmingham
 Susan S Golden PhD, Director, Center for Circadian Biology, University of California, San Diego
 Marijke CM Gordijn MS PhD, Chrono@Work, University of Groningen, Netherlands
 Bill Grieser PhD, Northwest Nodgin Neuroscience Outreach Group, Portland, Oregon
 Liz Harrison PhD, Center for Circadian Biology, University of California, San Diego
 Dietrich Henckel PhD, Professor, Technical University of Berlin, Germany
 Erik Herzog PhD, Professor of Biology, Washington University, St Louis, Missouri
 Myriam Juda PhD, Researcher, Simon Fraser University, Vancouver, British Columbia
 Thomas Kantermann PhD, Institute for Labour & Personnel, FOM University of Applied Science, Essen, Germany
 Achim Kramer PhD, Professor of Chronobiology, Charité – Universitätsmedizin Berlin, Germany
 Camilla Kring PhD, Speaker, Author, & Entrepreneur, Copenhagen, Denmark
 Katja Lamia PhD, Associate Professor of Molecular Medicine, Center for Circadian Biology, UC San Diego
 Andy LiWang PhD, University of California, Merced
 Travis Longcore PhD, Institute of the Environment & Sustainability, University of California, Los Angeles
 Emily Manocgian PhD, Postdoctoral Fellow, San Diego, California
 Peter Mansbach PhD, Bethesda, Maryland
 Erik Maronde PhD, Scientist, Frankfurt, Germany
 Girish Melkani MS PhD, Associated Research Professor, San Diego, California
 Martha Merrow PhD, Professor of Chronobiology, Ludwig Maximilian University of Munich, Germany
 Matt Metzgar PhD, Clinical Professor of Economics, University of North Carolina, Charlotte
 Ralph Mittleberger PhD, Professor, Simon Fraser University, Vancouver, British Columbia
 João Nunes PhD, Biochemistry Researcher, Dresden, Germany
 Marie Parillaud PhD, Postdoctoral Associate, Scripps Research, La Jolla, California
 Ketema Paul, PhD, University of California, Los Angeles
 Linda Petzold PhD, Professor, University of California, Santa Barbara
 Frank Powell PhD, Professor of Medicine, University of California, San Diego
 Kendall Satterfield PhD, San Diego, California
 Dorothy D Sears PhD, San Diego, California
 Lori L Shemek PhD, Health Expert & Bestselling Author, Dallas-Fort Worth, Texas
 Benjamin Smarr PhD, Professor of Bioengineering & Data Science, University of California, San Diego
 Andrea Smit PhD, Researcher, Simon Fraser University, Vancouver, British Columbia
 Barbara Sorg PhD, Legacy Research Institute, Portland, Oregon
 Melissa A St Hilaire PhD, Instructor, Harvard Medical School, Boston, Massachusetts
 Andrew Steele PhD, Associate Professor of Biological Sciences, California State Polytechnic University
 Jennifer Thomas PhD, Professor, San Diego, California
 Gianluca Tosini PhD, Chief Scientific Research Officer, Morehouse School of Medicine, Atlanta, Georgia
 Roger Tseng PhD, Biological Scientist, USDA, Ames, Iowa
 Judy Village PhD CCCPE, President, Association of Canadian Ergonomists, British Columbia
 Daniel S Whittaker PhD, Los Angeles, California
 Anna Wirz-Justice PhD, Professor Emeritus, Centre for Chronobiology, University of Basel, Switzerland
 Irving Zucker PhD, University of California, Berkeley
 Mariah Baughn MD, San Diego, California
 Steven M Croft MD FAAN, Neurologist, Houston, Texas
 Richard E Cytowic MD, Washington, DC
 Mona Ezzat MD, San Diego, California
 John F Gottlieb MD, Clinical Assistant Professor of Psychiatry & Behavioral Sciences, Chicago, Illinois
 Royan Kanyar MD, Physician, La Mesa, California
 Jack Kruse DMD MD, Neurosurgeon, New Orleans, Louisiana
 Beth Malow MD MS, Medical Doctor & Researcher, Brentwood, Tennessee
 Melody T McCloud MD, Obstetrician-Gynecologist, Atlanta, Georgia
 Tessa Sugarbaker MD MFT, San Francisco, California
 Nathaniel F Watson MD MSc, Bainbridge Island, Washington
 Dr Archana G Chavan, University of California, Merced
 Dr Chelsea Gustafson, Assistant Professor, Portland, Oregon
 Dr Paul Kelley, Milton Keynes, United Kingdom

