Welcome everyone, I’m Robert Dubrow. I’m a professor of Epidemiology and also the Faculty Director of the Yale Center on Climate Change and Health. And welcome to this Yale Lancet Countdown launch event.

So the Lancet Countdown on Health and Climate Change is an international collaboration that’s been monitoring the health consequences of climate change through an annual report that’s been published in the medical journal, The Lancet since 2015. The collaboration includes researchers from 43 academic institutions and UN agencies. Researchers from Yale have been part of the collaborations since 2019. The 2021 report was published in the Lancet this year on October 20th and that was followed by a Global Launch Event the following day, but subsequently there’ve also been regional launch events around the world. And this is one of those regional events.

Given the COP26, that was just completed, the 2021 report which is organized around five domains and 44 indicators was particularly timely in framing the climate crisis as a public health crisis. So today we’re gonna have five speakers and I’m gonna introduce them now.
and let you know what they’ll talk about.

So the first speaker is, Marina Romanello, who’s the Research Director at the Lancet Countdown and the first author of the 2021 Report.

And she’s gonna give an overview and highlights of the Global Report.

Then Dr. Jodi Sherman, who is a professor here at Yale, of both Anesthesiology and Environmental Health Sciences, and also the director of the Yale Program on Healthcare, Environmental Sustainability.

Dr. Jodi Sherman will talk about one of the indicators which is Healthcare Sector Emissions.

Then I’m gonna talk about another indicator, which is air conditioning, benefits and harms.

Jeremy is a professor in the Department of Environmental and Occupational Health Sciences, Global Health and Emergency Medicine. And he’s also the Director of the Center for Health and the Global Environment at the University of Washington.

And he’s gonna give an overview and highlights of the Lancet Countdown U.S. Policy Brief, which was a very important ancillary report that was done in conjunction with the Global Report.

And then finally, Dr. Laura Bozzi, who’s the Director of Programs at the Yale Center on Climate Change and Health will give an overview and highlights of a report that our center did.
That was not associated with the Lancet Countdown, but nevertheless used it as a model in terms of organizing the report around the indicators. So without further ado, let me turn it over to Marina.

Let’s see (indistinct). Thank you Rob, thank you so much. Let me see if I can share screen. Can you see my performance screen there?

Yes. Awesome, so I’m gonna try to give you a very brief overview of the report and (mumbles) what the Lancet Countdown means. I really wanted to thank Yale for hosting this event. As Rob said, Yale is one of our key partners. (mumbles) says it’s really an honor to be here with you. So we are 43 partners around the world. The Lancet Countdown is patients and UN agencies around the world. And as Rob just said, we produce indicators tracking progress on health and climate change across impacts and what their response to climate change means for health and the data is published every year in a medical journal, The Lancet. The report that you see last year is the latest report that is labeled a code red for health.
So I’m gonna tell you a bit about why that is, but this is just the latest of the series of the Lancet Countdown Reports with our 5th year of iterations of this tracking and monitoring exercise. So I’ll report to say that it’s entitled a code red for a healthy future. And this is because across all of the indicators, we’re tracking the impacts of climate change on health. We’re seeing trends rapidly worsening and affecting particularly the most vulnerable in every society in every country exacerbating in this way, the inequities around the world. When we think about climate change the first thing that comes to mind is increase of heat waves, increased temperatures. And we’re seeing that the very vulnerable population, people over 65 years of age are increasingly being exposed to life-threatening heat waves. (mumbles) silent killers they’re more than just uncomfortable and we’re seeing very vulnerable groups increasingly affected. As you can see here mainly starting the year 2010, really rapid increase in exposure to heat waves. And heat waves not only affect our health directly in terms of morbidity or mortality, but they also affect our health indirectly by undermining our capacity to work.
We also monitor the extent to which heat exposure is reducing our labor capacity, particularly in the agricultural sector. We’re seeing big impacts in terms of hours of labor loss in countries that are very vulnerable, the low Human Development Index country group, and the medium Human Development country group seeing particularly big losses. Especially in the agricultural sector, we estimate that the losses in the low Human Developments Index country group amount to 4-8% of the total GDP of those countries being lost due to heat exposure. So social determinants of health also being put at risk and obviously increase heat-related mortality. We’ve seen the heat waves this year in Canada, and here’s for sure is increasing as is heat-related mortality as well. On increased heat and increased temperatures, our capacity to grow crops is also reducing. So we’re seeing crop area. Reducing across all major staple crops, anywhere from three to 6% of reduction of crop yield potential of the 1950s baseline, which is even getting exacerbated by the increased land area being affected by extreme drought. The percentage of land area affected by extreme drought exposure.
risk about 20% of record in 2019.

And with dry weather, hot weather also coming in with incidents of wildfires in the U.S. who have been suffering a horrendous wildfire seasons as a result of climate change,

much of which we have detection attribution study that bring down the cause to climate change.

As temperatures change, precipitations patterns change and humidity changes.

So to does the environmental suitability for the transmission of infectious diseases.

And we’re seeing particular increases in the suitability for transmission of dengue, of malaria, of vibrio pathogen and vibrio cholerae.

and other vibrio bacteria as well all around the world, particular vibrio bacteria in the Pacific, North Eastern Atlantic, Northeast as well.

So all of our indicators are flashing red, really raising an alarm to the health risks of climate change,

but perhaps the most concerning thing is that not only climate change is exacerbating health impacts, particularly on the most vulnerable,

but our response to climate change is also increasing the inequities camp.

Also we have failed to deliver adjust response to COVID-19,

we’re seeing an unjust response to climate change.

The main thing that we need to do in order to reduce the impacts of climate changes
obviously to quickly adapt and decarbonize.

And when we talk about climate change mitigation, decarbonization, the energy system is the center (indistinct), it is the main contributor to greenhouse gas emissions.

As you can see in this black line, the carbon intensity of the global energy system, that is the amount of carbon dioxide produced per unit of energy generated, has not changed practically since the '70s. And at the pace of slow reduction that we’ve seen from 2014 to 2018, it would take us roughly 150 years to fully decarbonize our energy systems.

The other thing that is notable here is that it is the high Human Development Index countries, the ones that are adopting technologies to decarbonize and to benefit from the health permanently to perverse decarbonization whereas the high Human Development Index and the medium Human Development Index country groups are still growing at a carbon intensive way, not benefiting from a low carbon transition.

And the low Human Development Index country groups still has to do that development and industrialization there. And what this mean for health is that exposure to air pollution is still incredibly high. We have not managed to reduce exposure significantly.
In 2019, we saw roughly 3 million deaths attributed to ambient PM2.5 air pollution. The most harmful form of air pollution and 1/3 that came from fossil fuels. And as we can see here, this is disproportionately affecting the high and medium Human Development Index country groups that are very carbon intensive, but the low Human Development country groups is being particularly affected by indoor exposure to air pollution. To the use of dirty fuels for cooking and for heating. So also big inequities in the transition to a cleaner source of fuels.

However, there is still some hope that comes from our reports and that’s really worthwhile noting. When we talk again about energy system, while we’re still lagging behind, we are seeing a very fast adoption increase in the use of renewable, clean, new, renewable energies for energy production, particularly in the U.S. and in China, the biggest contributors to greenhouse gas emissions, which is really positive. Total energy produced from clean sources has reached 7.2% in 2018, and this is still growing. So we do have the technology. And one other thing that is really worth noting is that the health sector that is crucial in protecting
our health from climate change and we acknowledged that a climate change is a health crisis. They must be at the forefront of the fight against climate change. Health sector is now taking the lead and we’ve seen many commitments made during COVID of national health systems that have committed to reaching net zero by 2050, and over 50 health systems around the world committing to become more sustainable and more resilient to climate change.

So just to finish off, I find a reflection that comes from our report, but also from what happened at COP26, we’re currently exiting the COVID-19 pandemic. And as the world tries to recover around rolling trillions of funds towards economic reactivation and reframing. However, so far we see that only 18% of those trillion, almost $2 trillion allocated to COVID recovery would lead to reduction in greenhouse gas emissions. All the rest will have negative effects on climate change. So we’re here at five or 10 points where we have to decide whether we’re gonna go through a carbon intensive route that will lead us to a new crisis. A crisis of climate change impacts on health, and that will undermine our progress against the targets that we (mumbles) nationally
0:11:57.319 –> 0:11:58.94 determined contributions,
0:11:58.94 –> 0:12:01.24 or whether the world will act together
0:12:01.24 –> 0:12:03.93 to deliver adjust transition and make use of this mo-
0:12:03.93 –> 0:12:08.71 to deliver a world of environmental sustainability,
0:12:08.71 –> 0:12:11.59 economic sustainability and growth,
0:12:11.59 –> 0:12:13.683 better health and reducing inequities.
0:12:14.87 –> 0:12:16.16 And with that, I will just close
0:12:16.16 –> 0:12:18.36 and invite you to visit lancetcountdown.org
0:12:18.36 –> 0:12:20.76 where you can explore a bit more of our indicators
0:12:20.76 –> 0:12:23.253 that I just gave you a very brief overview of.
0:12:25.5 –> 0:12:27.321 <v - >Thanks very much Marina.
0:12:27.321 –> 0:12:28.78 <v - > (mumbles).
0:12:28.78 –> 0:12:33.78 <v - > So next we’ll have Dr. Jodi Sherman talking
about
0:12:33.83 –> 0:12:36.343 the indicator that she took the lead on.
0:12:39 –> 0:12:41.87 <v - > Thanks, can you hear me and see the screen okay?
0:12:41.87 –> 0:12:43.084 Yes.
0:12:43.084 –> 0:12:46.17 <v - > So my talk is going to focus
0:12:46.17 –> 0:12:48.47 on the role of the healthcare sector,
0:12:48.47 –> 0:12:51.01 its contribution to climate change.
0:12:51.01 –> 0:12:53.7 Now, as Dr. Romanello was saying,
0:12:53.7 –> 0:12:56.64 we have increased demands for health services
0:12:56.64 –> 0:12:58.49 because of the problem,
0:12:58.49 –> 0:13:00.78 the myriad of health impacts of climate change,
0:13:00.78 –> 0:13:05.78 health care itself is ironically a significant contributor
0:13:05.81 –> 0:13:08.37 to global greenhouse gas emissions
0:13:08.37 –> 0:13:09.75 and non-greenhouse gas emissions.
0:13:09.75 –> 0:13:14.09 We’ve got a very high resource consumption industry,
0:13:14.09 –> 0:13:15.66 hospitals run 24/7,
0:13:15.66 –> 0:13:18.57 high-tech diagnostic therapeutic equipment,
And health care is a unique risk for unique infection risks and prevention requirements that drive a lot of disposability and utilization of resource both in our energy as well as materials. We also live in a complex regulatory environment designed to protect our patients, patients and also occupational health, but we also have business models and that regulatory compliance and business models drive low volume consumption of resource. We also particularly in high-income nations and especially in the U.S. have the culture of excess and where disposability is normalized. And how can particularly, because we have a social mission to protect individual patients, we’ve really been neglecting about the impact of how care delivery affects public health and we can’t really do that anymore. So the key results of the Lancet Countdown: globally health care emits 4.9% of total global greenhouse gas emissions. This is rising at a rate of five to 6% annually. This is the most recent. There are several international studies. This is the most recent result. U.S. healthcare is an outlier and not in a good way. We spend twice as much...
on health care as any industrialized nation, 18% of our GDP, health care globally is 10% of the economy.

So if we can not want, should health care be leading as an industry and health care and all policies of protecting health, because we intersect with so many areas within the global economy, we have the opportunity to help drive change globally.

Of that 4.9% emissions of health care in the U.S. is responsible for a 1/4 of those emissions globally, despite only having 4% of the global population. And we have the highest per capita health care greenhouse gas emissions.

Now, if we have the best health outcomes for that impact, for those expenditures, there might be some justification, at least till we transition our energy sources and our embodied emissions but that’s not really the case.

So what we did is we associated per capita healthcare greenhouse gas emissions, along with the global burden of diseases, health care access, and quality index. This is from the 2020 paper of 2021.

We did the same association with the Human Development Index and the results are the same.

So we wanna have as low greenhouse gas emissions per health care capita as possible and as high performance in terms of health care, quality and access.
And we can see the highest performers here in Europe particularly France is a notable outlier. So not only do we have the highest per capita greenhouse gas emissions, we do not perform the best in terms of health care access and quality. And we're about 1700 kilograms of CO2 equivalent emissions per capita for health care versus 450 in France. So 450 is around the break-even point. The good news is what that means is we can reduce our emissions without sacrificing quality of care. And in fact 11% of U.S. population is presently uninsured. About 1/3 of U.S. healthcare resources are deemed low value and inappropriate, it's about 1/4 globally. What that means is that we have room to improve our environmental performance without sacrificing quality of care and preserving resources to improve our access to care. I'm gonna shift gears in terms of where this information comes from. In order for us to understand where the levels of influence are, I'm gonna turn to the greenhouse gas protocol. This is from the U.K. National Health Service Net Zero report. The National Health Service in England is leading the world in its commitment.
to net zero emissions in health care.

The virtue of the greenhouse gas protocol is it allows us to group emissions in terms of our influence so we understand the levels for change.

So scope one, direct emissions are coming from a facility from burning fuel to heat the building for example, or release of inhaled anesthetic gases, so direct emissions on our scope one.

Scope two is indirect coming from the supply chain. So whether or not, excuse me, is coming from electricity. So whether or not that is renewable or not affects our calculations.

And scope three is everything else, most notably the supply chain and also travel.

So applying that to the U.S. healthcare system, we see the most recent results are absolute emissions from health care in the U.S., 554 million metric tons of our nation’s greenhouse gases coming just from U.S. healthcare. And emissions are on the rise.

We see a slight difference in 2012 with improvements of renewable energy in our system, but overall we’re rising at a faster rate than other nations globally this far. And as you can see the breakdown by scopes, the vast majority of emissions are coming from scope three, which we’ll come back to in a moment.
The other thing that we did in the U.S. is we associated greenhouse gas and non-greenhouse gas emissions with disease burden and found that harm from health care pollution from U.S. healthcare pollution is equivalent to 388,000 disability adjusted life years annually. Most of that is due to particulate matter or air pollution and both air pollution and greenhouse gas emissions come from combustion of fossil fuels. So cleaning up our energy system is one of the most important things we can do to reduce health care’s impacts. And then this is similar in magnitude to deaths due to medical errors, which were first reported by this (mumbles) in 2000, the 44-98,000 deaths annually were lost due to medical errors, about 10 years of life loss for age so if you multiply by 10, you see we’re in the same order of magnitude. And why that matters is that this harmful medical errors sparked the patient safety movement and that pollution prevention is through the lens of patient safety. And what we’re trying to say is that this problem is just as big and just as serious, and that pollution prevention is a new patient safety movement that needs to be taken seriously.
And so where those emissions come from in terms of levels of impact? About 4/5ths in the U.S. and this is similar in other health, this National Health (mumbles) Forfeits is coming from the supply chain. So notably, pharmaceuticals, chemicals, medical devices, and food. And these are things we have direct influence over as health care administrators and clinicians and regulators, because we determine how resources are consumed, manufacturers and regulators control what’s embedded, what the emissions are that are embedded, what goes to marketplace. So this helps us to understand the different levels of influence. And ultimately the question is what is best practice both for patients and public health? And really there are three direct approaches to try and influence. One is reducing emissions embodied in healthcare service, so electrification of our buildings and our capital equipment, but they must be paired with cleaning up our energy sources. Moving to a circular economy we’re using materials, reducing waste resource stewardship, which could not be more clearly needed as evidenced by the pandemic. Matching supply with the demand
meaning we have to address inappropriate or low value care, care that is unwanted, unneeded, ineffective. All those things need to be addressed, and we can do it.

And then reducing, moving all the way upstream to reducing the need for health care to begin with health promotion, disease prevention, addressing the social determinants of health, and certainly mitigating all those causes of climate change and ultimately value in health care, high values, maximizing the best benefits for patients and populations, minimizing costs as well as environmental and social harms.

Thank you very much.

I think just share the screen.

Yes, everyone see?

Okay, great.

So I’m gonna talk about indicator 2.3.2, which is air conditioning benefits and harms. I’d like to acknowledge my collaborator Lingzhi Chu and also the International Energy Agency for providing essential and published data for this indicator.

Use of air conditioning averted an estimated 195,000 heat-related deaths among people 65 years or older in 2019, that’s globally.
AC however, AC also contributed to greenhouse gas emissions, air pollution, peak electricity demand, and urban heat islands. So we could see that on the one hand indoor cooling, you’re represented by air conditioning provides great benefits. On the other hand there is significant harms. So I’ll elaborate, but first let’s look at this graph on the right-hand side. The blue is proportion of households with air conditioning. This is global. So you can see a steady rise and in 2019, it was about 33%. So a 1/3 of the households in the world have air conditioning. The green up here is carbon dioxide emissions and you can see a steady increase in carbon dioxide emissions as a result of air conditioning using more and more electricity because they’re being more and more air conditioning. And in 2019, it was up to about one gigaton or a billion tons of carbon, which represents carbon dioxide, which represents about 3% of total anthropogenic CO2 emissions. Okay, so now let’s take a deeper dive into some of this. Let’s take a look at the bottom row first, which is world.
So heat-related deaths were about 345,000. This was estimated in one of the other Lancet Countdown Indicators and note that it’s just for people greater or equal to age 65 years. Heat-related deaths averted by air conditioning again was about 195,000.

So what that means is that if there had been no air conditioning in the world, there would have been roughly 540,000 heat-related deaths instead of the 345,000 that actually occurred and of course these are estimates. And that’s with a proportion of house, overall proportion as I said is 33% with air conditioning.

Let’s look at a few of the countries. So first China was estimated to have 72,000 heat-related deaths and roughly the same number of heat-related deaths averted due to the presence of air conditioning.

So without air conditioning, the number of heat-related deaths would have been about double. And you can see that proportion of households with air conditioning in China is fairly substantial. It’s about two thirds.

On the other hand, India is estimated to have 46,500 heat-related deaths, but only 2,400 averted by air conditioning. And that of course is due to the small proportion...
0:25:26.96 –> 0:25:28.95 of households with air conditioning in India
0:25:28.95 –> 0:25:30.353 which is about 6%.
0:25:32.47 –> 0:25:34.27 And then one more example,
0:25:34.27 –> 0:25:38.39 the United States which has a very high proportion
0:25:38.39 –> 0:25:40.23 of households with air conditioning,
0:25:40.23 –> 0:25:45 92% is estimated to have had about
0:25:45 –> 0:25:48.5 20,500 heat-related deaths,
0:25:48.5 –> 0:25:53.45 but almost 48,000 heat-related deaths averted by
0:25:53.45 –> 0:25:56.25 the presence of air conditioning meaning that
0:25:56.25 –> 0:25:58.86 if there had been no air conditioning in the United
States,
0:25:58.86 –> 0:26:02.27 there would have been almost 70,000 heat-related
deaths.
0:26:02.27 –> 0:26:05.083 This is all among people of age 65.
0:26:07.63 –> 0:26:09.27 So you could see that
0:26:09.27 –> 0:26:12.04 one of the points to take out of this is number one,
0:26:12.04 –> 0:26:14.46 indoor cooling is very effective,
0:26:14.46 –> 0:26:16.84 but number two, there’re a lot of inequities right now.
0:26:16.84 –> 0:26:17.73 There are some countries
0:26:17.73 –> 0:26:19.89 with very low prevalence of air conditioning,
0:26:19.89 –> 0:26:21.52 others with very high prevalence
0:26:22.762 –> 0:26:26.363 and you could see how that’s manifested in these
numbers.
0:26:30.49 –> 0:26:33.943 So now let’s go through the harms and a little more
detail.
0:26:35.35 –> 0:26:38.049 Air conditioning represents 8%
0:26:43.08 –> 0:26:46.43 I mentioned the greenhouse gas emissions, the CO2
emissions,
0:26:46.43 –> 0:26:51.43 but we also have the problem that the main refrigerants
0:26:51.43 –> 0:26:54.85 that use an air conditioning is hydrofluorocarbons
0:26:54.85 –> 0:26:57.02 and those are powerful greenhouse gases
it turns out in themselves, and they often leak into the atmosphere and that’s an issue.

We were able to estimate 21,000 premature deaths due to PM2.5 and that’s the fine particulate matter of emissions from fossil fuel powered electricity used for air conditioning in 2019, that’s global.

Air conditioning is a major contributor to peak electricity demand on hot days, often contributing to more than half of the demands and that contributes to power outages.

And finally, it turns out that there’s so much waste heat that goes from the inside to the outside as a result from using air conditioning, that it could actually contribute to the urban heat island effect as much as one degree centigrade at nighttime.

So sustainable indoor cooling is urgently needed. The IEA projects that according to a business-as-usual scenario in 2050, air conditioning use will soar understandably because people in India deserve to have indoor cooling for example and there are a lot of people in India.

16% of air conditioning will represent 16% of global electricity consumption. It will be 2 gigatons of CO2 emissions instead of the current 1 gigaton.

And in addition, we have the hydrofluoro carbon emission problem and that would represent 1-2 gigaton CO2 equivalent.
So the goal we have before us is to make sustainable indoor cooling accessible to everyone in the world who needs it. It needs to be accessible and also sustainable. So this is an outline of a possible way forward. First, we need energy efficient building design through strong, enforced building codes. A key element of that is to utilize lessons from traditional building designs and tropical and subtropical regions. Over the period of centuries, people lived in very hot climates, developed a lot of wisdom about how to build buildings that would remain cool, including by ways to provide shade, thermal mass, insulation and ventilation. That wisdom has largely been ignored for the past few decades. So we need to return to that wisdom. We need strong weatherization programs and that’s actually a justice issue too. We need low-tech solutions. Fans are often useful, also cool roofs. We need continuous strengthening of air conditioning performance standards and mandatory labeling. For example, if through technology, we could make air conditioning several orders of magnitude more efficient, then it’s not really onerous. We solve a lot of the problems.
So air conditioning just because it’s cold air conditioning isn’t there, in its current form that has these major issues.
The electricity that powers air conditioning needs to be zero-carbon electricity.
We need to regulate the use and disposal of the refrigerants.
There’s progressing along those lines,
the Montreal Protocol Kigali Amendment aims to phase out hydrofluorocarbons and so that needs to be actually implemented.
We need to prevent leakage of refrigerants during air conditioning operation and maintenance.
And finally, not finally, but we need to recycle or destroy refrigerants at the end of life often when air conditioners are disposed of improperly.
And then the refrigerants leak out into the atmosphere.
And then we need to expand urban green and blue space to cool down cities.
so that we need less air conditioning in the first place.
So with that I’ll conclude and turn it over to Jeremy.
Great, thanks Robert.
I’m gonna go ahead and try and share my screen.
I think that’s gonna kick yours off.
Okay, good so you have yours on?
Yes.
Okay, great.
Excellent.
So I’m gonna give you a very brief overview of the U.S. policy brief for the Lancet Countdown on health and climate change.
And I’m gonna start out by highlighting the goals. The goals of the global countdown are to influence global processes including the COP and so the report is released every year in advance of the COP. And the goal there is to introduce health into the conversation and it’s been very successful at that over the years. The goals of the U.S. brief are related to that, but also different. And so one of our goals is to highlight trends in data from the global report that are relevant and specific to the U.S. We’re also interested in promoting awareness and understanding of the intersections between climate change and health for a U.S. audience, which sometimes refracts these questions through a different set of considerations and experiences. We also are a very large country with a diverse population, and to highlight the very important, really fundamental considerations related to equity in these impacts for U.S. populations. Next, we are very keen on advancing collaboration within the health sector around this issue in the U.S. and that’s a major goal of our effort to organize that community.
And then lastly, we wanna promote action by policy makers that is informed by the findings from the global report and the U.S. brief. So this year we produced our fifth report. It presented a suite of indicators from the global report specific to the United States, and also brought in some other scientific work that was relevant to the U.S. context. This brief represents the consensus of over 70 institutions domestically. And as I said, it brings in data from the global report. The brief this year brings in emphasis on three climate sensitive hazards that have plagued the United States in recent years; extreme heat, drought, and wildfires, and it calls for policy makers to make three commitments.

One is an urgent investment in research and interventions to protect health and prioritize equity in the process. The second is to account for the health costs of fossil fuel combustion in their decision-making. And the third is to rapidly cut greenhouse gas emissions. I’m gonna go into each of those briefly, and then tell you a little bit about the report and the launch. So as Marina emphasized, we know from global data that health risks from extreme heat are growing and the trend is the same in the United States.
And particularly we wanted to emphasize the impact on groups at different points in the life cycle. And this is the theme we’ve developed at different points in different ways over the years. The data for the U.S. shows that we continue to see a pretty dramatic rise in exposure among people over 65 and among infants to extreme heat relative to this baseline here from 1986-2005. The second point is the droughts harm health. And this is something that a lot of people may not be as well aware of. And so we put some energy this year into clarifying the ways in which drought harms health and those are elaborated here in this infographic. Of course, some of the impacts are mediated through extreme heat exposure, but a number of others go through pathways that are a little more indirect, including changes in water quality, changes in infectious disease exposure and changes in infectious disease ecology associated with drought, impacts on mental health particularly in rural communities and then also respiratory disease impacts. And we also brought out the equity dimension highlighting the wide range in intensity of exposure to drought across the United States and then how drought affects different communities quite differently in its various impacts.
and particularly highlighting the impact on rural and farming communities. And then lastly, we focus this year on wildfires. And of course, as you all know, wildfire seasons have been very intense of late. So we collaborated with some colleagues at Emory who developed this figure showing that we’re seeing earlier onset of the wildfire season, the wildfire season is becoming more intense, and that there’s a clear correlation with temperature anomalies over this 20 year time series. We also emphasize in the report the fact that smoke exposure, it seems like it’s a local issue and of course it is very intense locally when these fires occur mostly in the West, but that the smoke extends all the way over to you all in the Northeast and impacts your air quality quite adversely. And these impacts again are really not equitably distributed. And these communities here, Black, Latino, Latino communities, American Indian communities, and low income groups are all much more highly exposed and more adversely affected the groups. The report also developed some case studies and I don’t have a chance to go into all of the specifics here, but we explored the role of climate change.
increasing risk for dengue in the United States, particularly through increasing vectorial capacity and/or not. And then also throwing some analogies between the COVID pandemic energy issues and infrastructure challenges that we’ve seen, and then interactions with climate sensitive hazards, including extreme heat and wildfires that exacerbated the impacts of those hazards at multiple points. We experienced that definitely here in the Pacific Northwest with our extreme heat event this past summer, which was catastrophic and would have been really difficult on its own, but was that much more difficult to handle because of all of the capacity issues we’re focusing with COVID, and this is likely a glimpse of what we’ll see in the future in terms of strain on the healthcare system driven certainly by climate sensitive hazards, but also interacting with a number of other elements of social destabilization we’re seeing in the U.S. So our policy recommendations are to focus on adaptation through research that really gets down to local levels and thinks through how to reduce exposure, how to implement effective interventions quickly and at scale, focusing on economics and finance,
and do a more comprehensive accounting of the health-related costs of fossil fuels. So taking those externalities and incorporating them into decision-making, policy-making. And then lastly of course, an urgent focus on mitigation and an emphasis there on policies that will advance health equity rather than undermine it. We have a suite of additional resources in addition to our policy brief, we have executive summaries, we have briefs that are aimed at the general public both of those are in English and Spanish. We have a brief that is written specifically for health professionals, and we have a brief that focuses on the novel science that is in this year’s report. We also have regional briefs that emphasize impacts for different areas of the United States. And we have a big launch event every year and it coincides with the launch of the global report and we really work hard with our partner Climate Nexus to bring in a diverse range of voices and perspectives, and to reach a large range of communities with this launch. And so you can see here we had a really nice diverse collection of speakers at this last year’s event which was recorded,
0:41:23.56 –> 0:41:25.81 and you can access the recording
0:41:25.81 –> 0:41:29.357 and all of those other resources at this link here,
0:41:31.67 –> 0:41:35.08 Thanks and I look forward to ongoing conversation
0:41:35.08 –> 0:41:37.58 and answering your questions later in the session.
0:41:38.54 –> 0:41:39.39 Thanks, Jeremy.
0:41:41.34 –> 0:41:45.42 Okay, so last but not least is Laura Bozzi
0:41:45.42 –> 0:41:48.01 who’s gonna talk about the Connecticut Report.
0:41:48.01 –> 0:41:51.013 Thank you, and I also wanna acknowledge
0:41:53.769 –> 0:41:57.575 my (mumbles) about (indistinct)
0:41:57.575 –> 0:41:59.923 on the appointment I wanna talk about today.
0:42:01.91 –> 0:42:03.74 So last September the Yale Center
0:42:03.74 –> 0:42:05.14 on Climate Change and Health released
0:42:05.14 –> 0:42:08.17 the Climate Change and Health 2020 Report.
0:42:08.17 –> 0:42:09.87 I mentioned it during initial inspiration
0:42:12.55 –> 0:42:13.88 It’s one of those with the recognition
0:42:13.88 –> 0:42:16.42 that there was a gap and clear information
0:42:20.533 –> 0:42:22.91 The report is based on 19 Indicators,
0:42:22.91 –> 0:42:23.83 you can see on the right,
0:42:23.83 –> 0:42:25.54 tracking changes to the environment
0:42:25.54 –> 0:42:27.39 and health outcomes.
0:42:27.39 –> 0:42:29.56 It’s purpose is to inform policy makers,
0:42:29.56 –> 0:42:32.19 health professionals, advocates, and residents,
0:42:32.19 –> 0:42:33.53 about the impacts of climate change
0:42:37.22 –> 0:42:38.15 Wherever possible,
0:42:38.15 –> 0:42:40.55 we were printed indicator results for each county.
0:42:40.55 –> 0:42:42.057 There are eight counties in Connecticut.
We talked as far back as the dataset would allow and some cases to the late 1800s. Some of our indicators do already demonstrate a trend consistent with what’s expected under climate change, such as increasing the average temperature or rising number of heavy rainfall events. Other indicators don’t yet show a trend, but scientific studies project such changes.

We also produced an issue for each series, three of what you see here. The issue briefs (mumbles) the 2020 reports for domains, summarizing key indicator findings, and extending the report to include specific policy requisitions. An important theme of the 2020 report and the issue briefs is recognition of climate change as an environmental justice issue. A climate change affects everyone we know but some people are hit much harder. It’s often called a risk amplifier or a threat multiplier. Some people are more vulnerable than others because of where they live or work, their age or race, their health condition, their socioeconomic status. These underlying drivers of vulnerability are often tied to deep among standing inequities which are now made worse by climate change.

Our issue briefs in particular elevate policy solutions that apply a justice or an equity lens in response.
I’ll now turn to some examples of our indicators following that they’re ports for domains beginning with temperature. Annual average temperature has increased over three degrees Fahrenheit across Connecticut and in each county in the last 125 years. Over that time, six of the hottest years in Connecticut have been since 2005 versus has very broad implications for health among other impacts, high heat days causing stress, heat stroke and even death. High heat days often coincide with close and alert days because high temperatures magnify those official levels.

Annual winter temperatures that we’re seeing now in here in Connecticut this year can create conditions for larger tick populations that are active over a greater proportion of the year. A longer season for ragweed pollen, which causes hay fever and exacerbates asthma. And particular in heat-related illness, we tracked reported cases of heat stress in Connecticut and found that from 2007-2016 there were on average 422 emergency department visits and 45 hospitalizations per year for heat stress but this is certainly an underestimate. Young adults were more likely to be admitted to the ED for heat-related illness than other age groups,
but the risk of inpatient admission increases with age and is highest for those 75 and older.

Heat risks can be confounded to do the urban heat island effect.

As you can see on the right that cities are hotter than the surrounding area because of more manmade infrastructure that absorbs heat as well as air conditioning accepted by (mumbles).

This health risk is magnified for those low financial or social resources to adapt.

And importantly vulnerability factors are cumulative.

Some people are associated with a number of the categories that are on the left, which puts them at greater risk.

As we look to the future,

the Governor’s Council on Climate Change reported five projected five degree very high increase in average temperature by 2015 in Connecticut compared to a 1978 and 1999 reference period.

So we can expect more extreme heat events for them to become more common and more severe and to last longer.

Importantly temperature increases after 2050 depends on how quickly we stop emitting greenhouse gases.

And thus the Governor’s Council on Climate Change said, 

"Coordinated mitigation now means it is more likely the temperatures will stabilize after 2050."

“If not, warming is likely to accelerate.”
Moving to extreme events.

We tracked national or really declared weather disasters that were issued for Connecticut and found that from 2010-2019, there were nine such disaster declarations compared to only 13 in the previous 56 years.

In addition to direct health apart from weather disasters, there’re important indirect effects, including disruptions that can occur to critical infrastructure, assessment of electricity, drinking water, food refrigeration, internet service, transportation is one implication of health, losing our electricity can be life-threatening for someone who uses home dialysis.

There are mental health impacts from the trauma of disasters and their long-term community impacts.

And the building staff and lower income communities, the doctrine that increased risk for damage by natural disasters, partly because of historic patterns of development in vulnerable areas, plus a chronic under investment in public infrastructure.

We tracked Lyme disease cases in Connecticut and found that the number of cases in the last decade or so have decreased statewide, which is good news.

However, there are emerging concerns when issues we highlighted at the report.
0:48:14.52 –> 0:48:18.343 is expansion of the lone star tick in Connecticut.
0:48:18.343 –> 0:48:20.32 Once a tick transmit a number of diseases
0:48:20.32 –> 0:48:23.58 and medical conditions that you can see on the slide,
0:48:23.58 –> 0:48:25.42 it’s the most common human biting tick
0:48:25.42 –> 0:48:27.56 in the Southeastern U.S.
0:48:27.56 –> 0:48:30.69 It’s expanding into Connecticut likely due to factors,
0:48:30.69 –> 0:48:33.14 including warming temperatures
0:48:33.14 –> 0:48:35.65 and especially warmer winters.
0:48:35.65 –> 0:48:38.08 Importantly established breeding populations
0:48:38.08 –> 0:48:40.69 were discovered in Fairfield County in 2018
0:48:40.69 –> 0:48:43.613 and New Haven County where we are today in 2019,
0:48:43.613 –> 0:49:01.824 meaning that ticks aren’t transient but established here.
0:49:01.824 –> 0:49:03.95 Finally air quality.
0:49:03.95 –> 0:49:05.623 You may be aware that Connecticut has issues
0:49:05.623 –> 0:49:08.91 with ground-level ozone solutions
0:49:08.91 –> 0:49:10.81 which is a strong long year attempt.
0:49:10.81 –> 0:49:13.024 And back to the American Lung Association gave each county
0:49:13.024 –> 0:49:15.643 thinking that getting an upgrade for ozone solution
0:49:18.24 –> 0:49:20.91 And as you can see from this figure,
0:49:20.91 –> 0:49:22.81 we found that while the number
0:49:22.81 –> 0:49:25.42 of air quality alert days for ozone decreased over time,
0:49:25.42 –> 0:49:28.41 the more still needs to be done.
0:49:28.41 –> 0:49:31.69 Ground-level ozone is largely
0:49:31.69 –> 0:49:34.6 the result of burning fossil fuels,
0:49:34.6 –> 0:49:36.8 whether in our vehicles or power plants or our homes.
0:49:36.8 –> 0:49:40.64 So this is where we can see the strong health benefit
0:49:40.64 –> 0:49:43.61 meaning that ticks aren’t transient but established here.
0:49:34.6 –> 0:49:37.313 also reduces fuse drivers of global air pollution.
0:49:40.04 –> 0:49:41.79 And on that note I'll conclude
0:49:41.79 –> 0:49:44.28 with our systems level recommendations
0:49:44.28 –> 0:49:46.21 that we have in our report.
0:49:46.21 –> 0:49:49.32 I invite you to read the report to learn more about those,
0:49:49.32 –> 0:49:52.83 but I’ll conclude with our overarching recommendation
0:49:54.13 –> 0:49:55.62 for swift action to reduce
0:49:55.62 –> 0:49:58.97 and eliminate greenhouse gas emissions in Connecticut
0:49:58.97 –> 0:50:00.97 for our health today and for the future.
0:50:07.03 –> 0:50:07.94 <v ->Thanks Laura.
0:50:07.94 –> 0:50:10.23 Think we could end it here.
0:50:10.23 –> 0:50:12.29 Thanks to all the speakers
0:50:12.29 –> 0:50:17.29 and thanks to everyone who attended and have a good day.