A Review on How Arizona Businesses Can Protect Employee Health from Climate Sensitive Hazards

Bridging Climate Change and Public Health Workgroup

Facilitated by Maricopa County Department of Public Health

Abstract

Purpose: To inform Arizona businesses of sustainable health practices that would be beneficial for environmental, economic, and workers.

Methods: Articles were identified using electronic searches through the Google Scholar database.

Results: The occupational climate hazards most prevalent to Arizona businesses are extreme heat, extreme weather, air quality, and risk of infectious disease. These pose a risk to businesses and the health of workers, especially to those businesses who may be smaller and do not have the same financial backing as larger companies. To mitigate these negative outcomes, businesses can pick from the list of interventions provided that are linked with local resources. This allows businesses to choose which practices to implement since size and financial performance must be considered.

Type: Literature Review.

Introduction

Arizonans face unique extreme weather challenges from extreme heat, flooding, drought, dust storms, wildfires and winter storms. These extreme weather events are expected to become more frequent and severe (CDC). Temperatures are expected to increase, for example in Maricopa County, the City of Phoenix currently experiences about 106 days over 100 degrees and by 2050 is expected to have 122 days over 100 degrees (ADHS). Many parts of Arizona such as: La Paz, Maricopa, Yuma, Pima, and Pinal Counties already experience more than three months of days over 100°F per year. The projected increase in temperature will expand the season for many environmental hazards. Continued exposure to environmental hazards such as extreme heat can have a detrimental impact on physical, mental, and social health. As health deteriorates, people are less likely to show up for work or use their time productively. This creates a unique opportunity for public health professionals to work with businesses to change health behaviors at the workplace (Harris, 2014).

However, this thought poses a challenge because when businesses think about environmental problems and hazards, literature is more focused on environmental impacts

such as waste management, recycling, and emissions rather than health or employee behavior. The few businesses that do look at the health impacts sometimes run into problems with program planning as employee behavior depends on many factors and different motivations (Rae, 2015). As increased temperature projections continue to cause further problems for both productivity and health, more businesses may need to take a more proactive role to maintain a positive financial performance (Andrews, 1999).

It is common for employee health to be overlooked when more and more companies are being pressured to conform to environmental regulations that don't focus on employees outside of their health insurance status (Ginemez, 2012; Okanga, 2017). Many of the regulations businesses follow suggest making changes through organizational models such as sustainable development to improve upon three aspects: people, planet, and profit (FIE, n.d.; Gallagher, 2017). Yet, the concept of sustainability often lacks the 'people' aspect, a challenge for workplaces to invest more in the health of employees (Gallagher, 2017). Similar challenges for businesses to change the attitudes of employees may be the demographic, for example, male dominated industries may have a dismissive, almost negative, attitude toward illness and health prevention (Singh, 2013).

To address such challenges, it may be more beneficial for businesses to focus more on the direct impacts on human health rather than focusing on treatment and healthcare. Employees are stakeholders in their own workplace environment, since the actions taken to mitigate human effect on the environment, and vice versa, benefit them (Gallagher, 2017). Focusing more on health behaviors shifts the focus from sustainable development to a different organizational model, sustainable health (WHO). For the purpose of this document, sustainable

health is defined as the intersection between economic growth, environmental protection, and impacts on and of human health as seen in Figure 1. The following section addresses the link between how sustainable health is linked to climate and health.

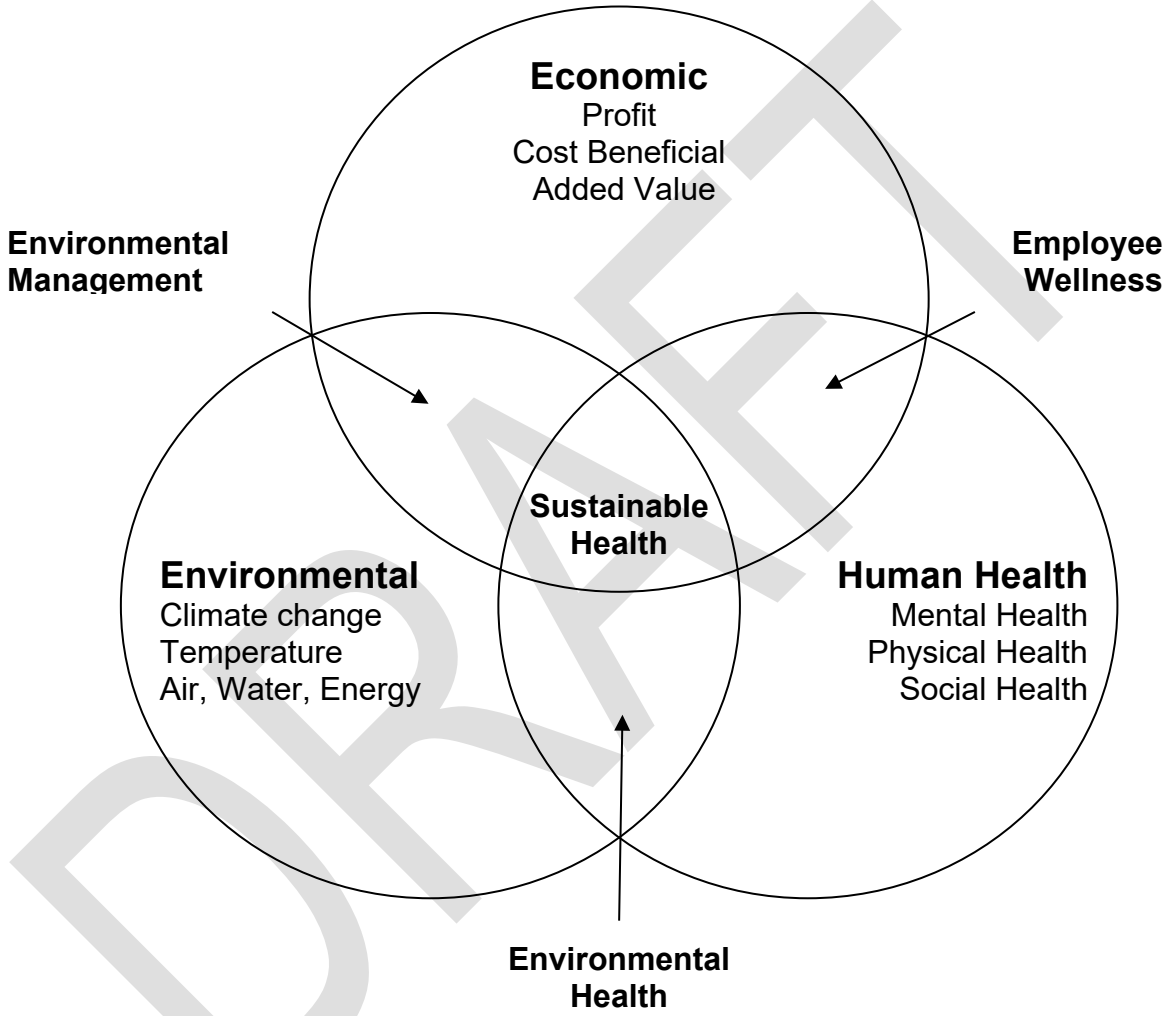


Figure 1: Factors of Sustainable Health

Literature shows that changes in climate have intensified hazards, all which are liable to negatively impact businesses (Schulte, 2016). Such hazards include heat, air pollution, ultraviolet radiation exposure, extreme weather, infectious diseases, and rising sea levels (Adam-Poupart, 2013; Schulte, 2016; Shaw, 2014; Younger, 2008). This document will look

more in detail at recommendations for business reactions to heat, air pollution, extreme weather, and infectious diseases, which are climate-sensitive hazards in Arizona. Arizona is a landlocked state which is why sea level rise is not mentioned in this paper.

The impacts of these hazards on human health cause a variety of problems such as increased illness from infectious disease, high mortality from extreme weather disasters, increased risk of respiratory diseases from air pollution, and many negative physical and psychological effects from extreme heat (Shaw, 2014; Patz, 2014; Page, 2017; Agrawala, 2011; Schulte, 2016). All of these problems can disrupt employee well-being, which can affect the financial presence of a company. More employees becoming sick or incapacitated could lead to higher rates of worker absenteeism and less productivity (Schulte, 2016). Climate can also disrupt resource supplies, displace people in the workforce through climate migration, and increase healthcare costs over time (Allen, 2016).

These three fields overlap to allow businesses to view sustainability more holistically. While this document focuses a lot on the behaviors that affect the direct impacts of the environment on health, financial performance is still a component that many businesses must consider when creating new programs. The cost of interventions may be hard for smaller businesses who struggle with high turnover rates and lack of resources, both human and financial. (Harris, 2014). To compete with larger firms, small businesses may need to partner and work with outside contractors who are subject matter experts to make up for the lack of experience if they are unable to allocate resources towards a 'wellness coach' or wellness committee' (Harris, 2014; Torugsa, 2013).

Using the sustainable health model, businesses may be able to more positively engage their employees and encourage healthier lifestyles. One of the most engaging programs that businesses use are wellness programs. These can range from a variety of activities such as using different forms of active transportation, carpooling, and trainings (Shaw, 2014; Page, 2017; Schulte, 2016). These activities can be low cost with co-benefits for both the environment and human health. By using different forms of active transportation such as walking or biking to work, employees can decrease their risk of chronic diseases like obesity, diabetes, cardiovascular disease, and hypertension (Patz, 2014). Other transportation such as carpooling or using public transportation can decrease the carbon emissions, which also benefits employees by lowering risks of respiratory illnesses (Page, 2017; Patz, 2014; Younger, 2008). By training and educating employees about risks and management of environmental hazards, programs can protect employees and their financial performance by reducing potential healthcare costs (Patz, 2014; Shaw, 2014; Singh, 2015).

These co-benefits can be positively beneficial for companies, since they can save on investment, increase productivity, and reduce worker absenteeism (Shukla, 2016). To promote such benefits, this paper explores nation-wide recommendations and practices that businesses of all sizes can use to protect their employees from the impacts of climate. The results are listed alongside local sources that can be used as a tool in implementing the practice.

Method

Inclusion and Exclusion Criteria for Literature Review

The literature review was focused on identifying relevant articles for businesses. Articles that were included in the synthesis were peer reviewed journal articles, both primary and

secondary sources. International sources were included unless there was no proper English translation available. Grey literature such as articles produced for Occupational Health and Safety Association and the National Oceanic and Atmospheric Administration were also used as resources and sources for recommendations.

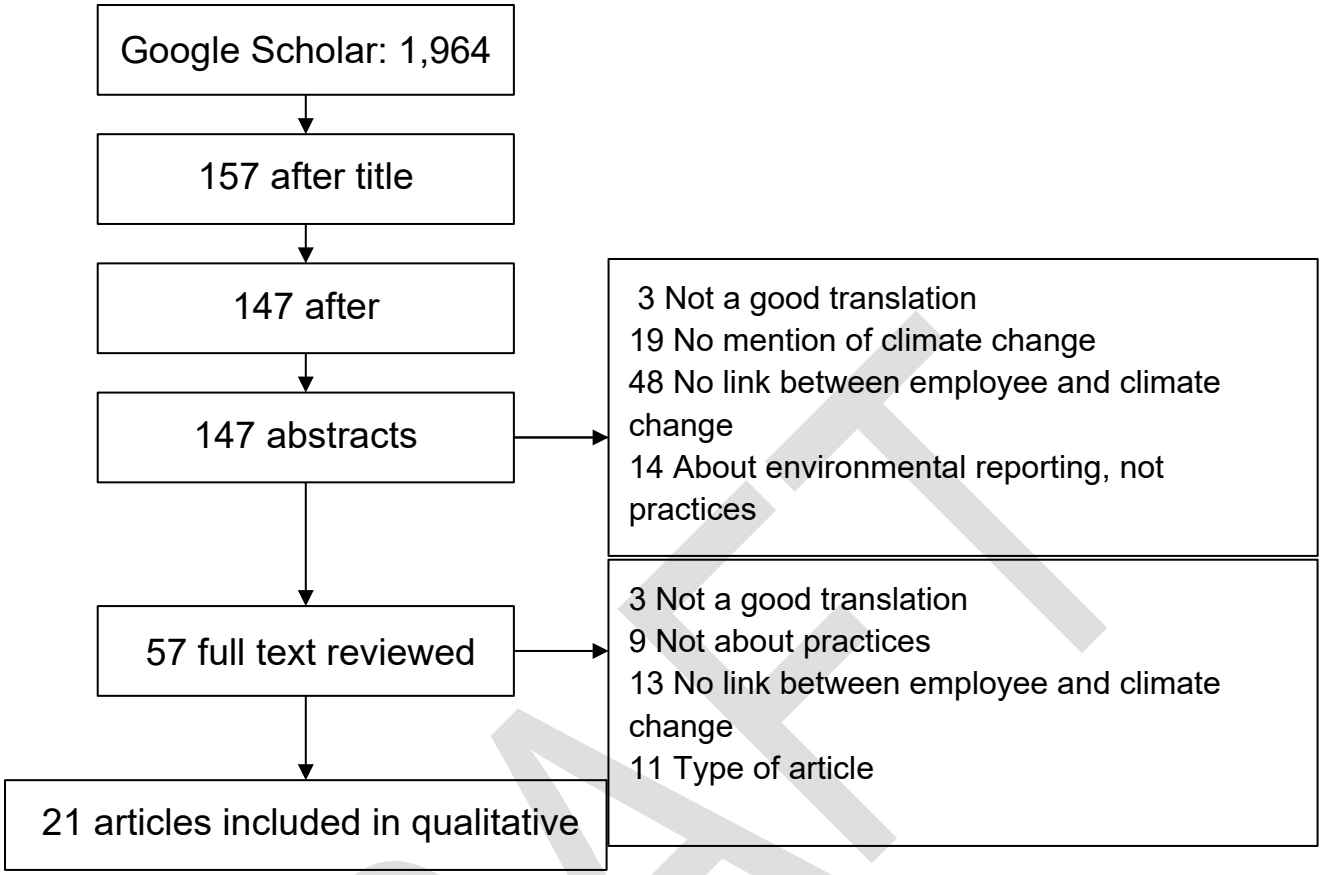
Search Strategy

Terms were categorized into three different topics: Economical, Environmental, & Health. Terms related to these three dimensions were used as follows:

- Economical: financial performance, cost beneficial
- Environmental: adaptation, resilience, climate change, environmental strategy, sustainable development, environmental management, protection from climate change, climate hazards, heat safety trainings
- Health: employee wellness, employee health, sustainable health, occupational safety, wellness program, active commuting

Data Collection

Google Scholar was the main database used as it included international articles and gave a broader number of articles to look at.



Results

These recommendations in Table 1 also come with links to various organizations, companies, and stakeholders who may be helpful resources for implementation of a program or practice. The third column is the source from where the recommendation or practice came from.

Overall Climate Sensitive Hazards		
Location of Company ● Before moving or even starting a business, it may be helpful to look at the population and environmental demographic of the state to find the best location for a certain price	Location Mapping for Businesses (arizonaprospector.com)	Allen, 2016
Stakeholder Integration ● Bring in third party consultants to help with things like risk assessment, technical/economic analysis, climate adaptation solutions, and GIS Mapping/modeling ● May give competitive advantage in lowering future healthcare costs	EPA Public Involvement Tools (epa.gov)	Sharma, 1998 Agrawala, 2011
Extreme Heat		
Heat Trainings ● Address worker dismissiveness towards personal safety	OSHA trainings	Singh, 2015 OSHA
Heat First Aid Program ● Identify symptoms of heat illness and know how to treat them	OSHA trainings	Singh, 2015
Occupational Heat Monitoring ● Temperatures should be monitored so supervisors and managers know when is safe to plan outdoor work activities	OSHA-NIOSH heat safety tool app	OSHA
LEED Certification ● May prevent future utility costs for air conditioning to keep employees cool	LEED Certification Guide	Allen, 2016 & Younger, 2008
Extreme Weather		
Preparation Guidelines ● Have a plan prepared to minimize mortality in an emergency	National Disaster Preparedness Planning for Your Business	Schulte, 2016

Find current, historical, and future projected temperatures • Local-level heat and health data	Heat and Health Tracker	CDC, 2020
Risk Assessments • Collaborate with forecast networks to help with monitoring	Weather Ready Nation Ambassadors	Schulte, 2016
Agricultural and Farmer Education • Contractors and organizations can help educate farmers on using resources wisely • Local workshops and programs can be created	USDA Extension Risk Management Education Program USDA Sustainable Agricultural Systems program	Agrawala, 2011
Air Quality		
Source Locally • Cut down on air pollution • Cut down on transportation costs • Benefit health of transportation workers	Local First Arizona: online database to help businesses find local resources	Shukla, 2016
Active Transportation • Encourage walking or biking to work • Cut down on air pollution • Lower risk of chronic diseases	Infographics at CleanAirMakeMore.com	Page, 2017 Patz, 2014
Carpool • Lower air pollution • Increase social cohesion in the workplace	Infographics at CleanAirMakeMore.com	Shaw, 2014
Public Transit • Lower air pollution • Walking to bus stops encourages physical activity	Infographics at CleanAirMakeMore.com https://www.cdc.gov/coronavirus/2019-ncov/daily-life-coping/using-transportation.html	Gallagher, 2018
Teleworking • Encourage teleworking where appropriate and logistical support	Gaining the air quality and climate benefit from telework	Irwin, 2004

	Telework: Implementing Commuter Benefits as One of the Nation's Best Workplaces for Commuters	EPA, 2005
Infectious Disease		
Monitor Disease ● Educate employees and employers on benefits of sick days ● Don't want to spread disease in the workplace	American Public Health Association Support for Sick Leave	Schulte, 2016
Improved Infrastructure ● Lower amount of stagnant water that could encourage mosquito nesting ● Drain large amounts of standing water to lower risk of waterborne disease	There are not many resources pertaining to architecture, but the Arizona Department of Health does have trainings to educate employees on risks of infectious diseases	Patz, 2014
Employees Wellness		
Evidence-based healthy workplaces ● Statewide program that provides Arizona employers with training, technical assistance, tools, and resources to design, implement, and evaluate worksite wellness initiatives	Healthy Arizona Worksite Program	HAWP, 2020

Table 1: List of Best Practices and Links to Resources

Discussion

While these programs are meant to change habits in the workplace, implementation may be challenged by the location and employee accessibility (Agrawala, 2011). Office spaces and industrial work sites may be easier locations to host and promote a workshop or program; however, for industries like agriculture, it may be more beneficial to have a separate facility where multiple farmers and workers can come together which saves time and money for the

program hosts. (Agrawala, 2011). Teleworking may also be an option for employers/employees to minimize air quality issues related to commuting (EPA, 2005).

The promotion of these programs and getting employee engagement may depend upon the size of the business (cal OSHA). In order to target a certain audience, it is recommended that supervisors and managers identify vulnerable populations of their employees, such as educating immigrants or seasonal outdoor workers who may work more in hot weather because they fear their paycheck may be affected (Schulte, 2016). While direct messaging and announcements can encourage participation, infographics are also a useful marketing tool in promoting a program.

Challenges

Occupational health and safety literature articles environmental reporting and recycling rather than climate mitigation or climate and health related strategies. The regulations for reporting usually require a section about employee health, but narrows in more on the healthcare aspect rather than personal health. Ethics and accountability were the focus of many papers as well, but did not focus on the links between climate and human health which is why they were not used. While there are other programs outside of wellness programs like lunch and learn, these search terms did not yield a lot of information about benefits or return on investment. Other challenges arose when trying to find resources about updating building design. T There are not many resources to help businesses recognize risks or consult them in how to address the problems.

Conclusion

This document offers insight into different actions Arizona businesses can take to adapt to the health problems their employees face from current and future climate-sensitive hazards in Arizona. As temperatures rise, there will be higher risks and loss of productivity from a variety of work-related public health issues. To protect employee health and wellness, the literature suggests a variety of different proactive programs that can be implemented with co-benefits that improve both human health and environmental concerns. These practices are dependent upon business size and financial performance, so future research may consider looking at smaller businesses since they are more likely to need more resources. Other future considerations may be looking at practices that protect and promote employee health outside of healthcare or insurance. More research in these areas may create a more holistic view on employee health and allow small businesses to better address the health of their employees and overall communities.

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Conflict of Interest

The author has no conflict of interest

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