

Urban Connections Webinar: Urban Forests for Human Health and Wellness  
September 10, 2014

Good morning, my name is Emilio Garza I am with the digital visions enterprise unit, I would like to take a couple minutes to give a review of the live meeting technology. For seven like to point your attention to the upper right corner of the Live Meeting window. To make you aware of the feedback process. You will notice the down arrow you will notice the green square. It's the default default and we have no technical issues. However if you have a technical problem, simply select the down -- down arrow beside the Queen square give you a drop-down menu with additional feedback options. If you have a technical issue, select that need help for the Red Square and I will contact you via that pop chat window.

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If you need a need for closed captioning click the more option to bring up the closed captioning window. At the bottom you will find control buttons that allow you to change how the text appears on the screen. Anytime you have a question, please use the Q&A option. Type your question and click the ask button to submit a question.

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All participants are in a listen only mode. Q&A will be conducted via the live meeting only. Lisa me your question anytime and these will be answered during the Q&A period . The meeting is being recorded. If you have any disagreement, you may disconnect at any time. I will turn it back over to Margie.

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Thank you, Emilio. Information on the urban forest connections webinar series can be found online. Here's an example of the website. Feel free to contact us through the website with questions about the series, suggestions for future topics or to send us feedback on how we are doing. We're also going to be able to see information about future webinars and access to recordings from past webinars. Today's topic is urban forest for human health and wellness. With Kathleen Wolf, research social scientist with the University of Washington and Teresia Hazen, coordinator of therapeutic garden program legacy health Portland, Oregon.

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Before we get started, we would like to get an idea of who has who who -- who is joining us today. We will do a quick poll, there are three different polls click on the category on the screen and we will do it for about 30 seconds. I will let you know when we are closing. The first question is where do you work? Click on the button and give us an idea.

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It looks like we have a fair amount of County, city government, federal government. State government. I think we will close it. Three, two, one.

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And go to the next poll. Where do you work?, what is your profession? It looks like we have a good percentage of urban forestry forestry, arborist, other natural resource professionals, a good variety of background. We will close the poll, three, two, one. In the next one. We would like to know where you are from.

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Looks like we have people from all over the country. It looks like we're getting close to filling this out. Let's close the

poll, three, two, one thanks, everybody for taking the time to do that. It gives us a good idea of our audience.

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That brings us to our webinar today, urban forest for human health and wellness. Kathleen Wolf will be the first percentile and she will -- presenter and she will introduce general ideas about human health followed by Teresia Hazen who will describe the healing gardens and therapy programs and legacy. Kathleen will follow with additional of benefit. There will be times available from questions and answers and then then.

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Margie, thank you very much for the introduction. Thank you to the four service for the opportunity to present this information on the first webinar. In this news. I will talk about an overview of the question or issue of urban forest for human health and wellness. I will start by saying that I am hearing and finding in talking with people about a remarkable opportunity around the topic of human health and possible collaboration with more and nontraditional partners with regard to urban forestry and urban green greening.

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Emilio, I am not able to advance the slides. Are you one full-screen mode ?

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we are back on track. I would like to bring your attention to the website, a tool that may be of help as you talk or work with other collaborators about urban forestry and health. It's the green cities good health website, there is the link and you can simply Google and it will come right up. The sponsors of the project had been the University of Washington for service and a variety of other partners and my thanks to several students who were helpful in preparing this tool. If you go to the website, you will see a collection of sin topics and a summary of the research that has been done to better understand on how urban forestry, parks assist communities in improving general conditions as well as individual health, and values for household as well. On the left of the screen you will see a list of topics that we have collected representing thousands of articles. Often the information is difficult to access, the purpose of the tool is to provide a ready portal to the valuable information as you work within your communities. This figure is an overview of the entire collection of articles. Our publication lists is now over 3000 with most publications being peer review articles. What we are seeing is some material addresses environmental admits. That's the idea we need to -- the most basic environmental conditions that's free of toxins and risk. Within that we can look at the more positive contribution of having trees, gardens and parks and that is wellness support. Things such as mental health, such as active living, being able to go out and be in a walkable community. Within that there are smaller spaces or places that have a direct bearing or influence on our health, wellness and well-being. These are places such as schools, hospitals, workplaces, offices. Finally wrapped around all of this is a sense of the grand or collective benefit the community. Often expressed as aesthetics, but I am hoping we are able to convince and provide background information about this aesthetics is labeled that doesn't capture the depth, the breath and richness of the evidence that we have about the role of nature in everyday health. For instance, I looked at an article today this morning that was sent to me and the survey was done using public health data finding that infants that are born to households live in community and neighborhoods with more green have a healthier birth weight at that very beginning of life. We have extensive evidence about the importance of nearby nature. Not necessarily the grand places that are out beyond the city but does nature niches the small patches parks, gardens even individual trees that have direct and scientific scientifically proven effective our health wellness and well-being.

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As we talk about this with collaborators and again these can be nontraditional partners can be people in school districts, and the people in the medical community, can the planners that are looking at broader issues of community wellness. Often this caution, and that is what we see in the nature and health evidence is a broad representation of nature and the city. What I am starting to call Metro nature. Often the communities of urban forestry and agriculture tend to focus on

trees. The standard analysis a very important analysis for instance, for a tree and assessments, we do urban tree canopy assessment. What we are seeing in the health benefits literature is thunderstorm of the canopy, the understory of the urban canopy is equally important. Those ground-level views the Internet experiences, for instance is pictures represent a variety of situations that one might find on a school campus. Okay to 12 school campus. Overseas the variability of human habitat. As we talk about health, I hope we can be open to the possibility of talking about a comprehensive look at the vegetation in the various benefits that it provides. This is not unlike sort of the history of the four service at one time the four service with its interesting commodity forestry wood products was really focus on sub -- as a programmatic approach. More recently, and in recent decades there's attention to the idea of force as ecosystem. And the additional or expanded functions and benefits that are provided by ecosystem approach that recognizes understory biodiversity and diverse vegetation. In the same way we can think about urban vegetation or Metro nature and health. We are tinkering this method at the University of Washington using point cloud analysis. So in this image blurred the Phil Wood --, but though it may be you can see roughly vegetation building, paved surfaces and whatnot and as you look at the image the brighter color the reds and oranges problem would be -- be picked up by a canopy assessment, urban tree canopy assessment, you -- vacancy other layers and levels of vegetation. Here's another depiction. If we are looking all of this ground-level what we see in in -- are not only the tree tops, canopy that diversity and richness of vegetation below the trees that can also provide health benefits as people experience nature cities. Here's a quick summary, we have nearly 40 years of health evidence and material, the science, the research is represented by the green cities, good health website. We have an amazing array -- array of health benefits, the first health benefits and I can't talk about that in detail now I will come back to that in a little bit later in the webinar. These benefits are associated with diversity of nearby nature in our cities. Maybe reconsider a habitat Outlook in addition to a canopy Outlook as we talk about urban forestry in city trees and this way helped expand the partnership and collaboration.

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I would like to introduce Teresa Teresa -- Teresia Hazen with legacy health and Hospital system. Many of you, some of you perhaps have been working very hard to introduce health well-being and benefits, these benefits to communities. Hospitals, the medical system in our communities are a possible collaborative opportunities. Teresia Hazen is a passionate advocate of the nature in healing and health and therapy. I would like to turn it over to her to share some of her work and her ideas.

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Thank you, Kathy. I am waiting for the slightest,.

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Everyone thinks you put your interest today and help in their the nature. Legacy is set -- the six hospital system in the PortlandPortland, Oregon, Metro area. I have worked in the role as coordinator therapeutic garden since 1991. Our legacy mission statement drives the development and use of nature and gardens in patient care services. This presentation explores research to support nature in the healthcare setting. I will present examples of garden design elements and programming to encourage patient, visitor and employee engagement in these nature places, 24-seven. Dr. Dr. Brown our CEO outlines how gardens are part of the hospital therapeutic space. Patient music gardens during therapies when they have independent time alone and their visitors. Here's a physical therapist works with the patience - - patient to increase endurance and balance. Stress affect patients, families and employees in the healthcare settings. Patient and family centered care respects families and integral " equal parts of the healthcare team. By taking panel family and patient input and concerns into account, the family feels more comfortable working with professionals on the plan of care in the -- the professionals are more on board in terms of what families expect with medical interventions and health outcomes. Here I legacy, B collaborating with their physicians on all aspects of garden development helping to ensure clinical patient care goals drive garden design and programmingprogramming. Well-designed gardens serve as stress coping resources for the patient, this is employees most of us are familiar with Roger Albert long history of resource and teaching in this informs how these well designed gardens to promote opportunities for social support and offer many choices and privacy leading to increased sense of control. Increased opportunities for movement -- movement, mild exercise and rehabilitation all support the recovery process. And the green nature experience provides for distraction and restoration. The following studies are an example of evidence -based that influences our work at

legacy. This is Dr. Albrecht where he outlines how the well-designed hospital nature -- from a rest restoration buffering with the result in improved improved outcomes. This diagram and the theory of support of design and extensive research studies are details in the following text. With chapter two authored by Dr. Dr. Aldrich, where he explains the design, gives examples and %-percent-sign-percent sign X pensive evidence base. If this sample of channels offers some of -- journals offers some of the many research studies in informing nature place work here at legacy health. I will outline each of those now. This ledge literature would be an alleged 113 studies and identify some common design criteria. First we need to create outdoor spaces that are compatible with and encourage human activitiesactivities. We need to construct the setting for sensory stimulationstimulation. I will show you examples of each of these. You must develop for safety and security, and we -- we want to crunch present moment awareness. That nature experience right now for the patient, the family and the visitor. We need to consider the culture we are serving and we always want to promote nature as a metaphor for healing. All six are essential in healthcare garden design and promotion. In this study we can take away several key points. Nurses can participate in forums for employers to present information about the value of natural, restorative environment in the workplace. Employee lounges with plants, aquariums for -- can be encouraged in their workplace. Gardens Gardens, picnic tables and birdfeeders outdoors might allow with workers additional opportunity for restoration work. Nurses can advocate for healthcare environment to promote attentional-restoration by incorporating nature. This attentional health and restoration is all develop further by Rachel -- racial and Stephen Kaplan at the University of -- many years of research about attention restoration. Healthcare administrators can be encouraged to develop healing environment by maintaining accessible gardens. The key point is to remember that nurses are key players in support restoration for patients, families and colleagues both in the healthcare setting and out in the community. Remember to include nurses senior team.

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Nurses and physicians conducted this deadly. It was during a -- the three months after the intensive care unit experience and family members of patients at high risk for dying. This study confirms that family members often experience I levels of stress doing ICU stays and significant as risk risk to posttraumatic stress disorder and borderline anxiety and depression even three months after the intensive care unit experience. Of course the findings are of grave concern for us regarding the health and well-being of these family members and their loved ones. I will outline how we at legacy time studying this family population and we hope to see how the garden contributes to their better health. In addition to stress, you might consider topics of pain management, social support, emotional support, patient centered care, family centered care, health benefits of nature, green exercise and other topics.

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Next level introduce a sample of the garden at legacy and point out example how the design supports patients families and employees healthcare programs, good Samaritan is located in Northwest Portland, the red dot is the entrance to the hospital. This is the garden you going to talk about, the four blocks on the are part of a several block mini block campus and the two blocks on the left are residential, fronted by the tail and in a very major street. Imagine this red circle space and which D think might better support health and well-being? The leftist 1996 before image on the right and an interdisciplinary team completed -- interdisciplinary team completed the design team work in 1996 and took possession of the new garden in June of 1997. Horticultural therapy is one of the treatment modalities using the garden and indoor garden settings as well for patient rehabilitation therapies. Our emergency department physician leaders collaborated with the Portland Department of Transportation and the therapeutic garden program to develop this walking program in 2008. Walking maps are available in the boxes below the map those are for short, moderate in the neighborhood walks the ramp. This is a public garden use by employees and community members 24-seven. The team in each hospital encourages daily walking for employee health. Community members participate in a free garden tour and neighborhood nature walk each month to meet physical and social health needs. Moving east out of Portland to Gresham, Oregon, we celebrated the fifth year of Mount Hood medical center garden. This patient room on the east side of the hospital has a view of Mt. -- Mount Hood from that center window on the clear day and this is a clear day and we are so fortunate to have great nature. On the other side of the building for -- toward the West, you will see the garden. Therapeutic gardens are characterized by a -- rich and lush intriguing botanical collection for four seasons of sensory stimulation. This is your number one on the left and this is your number four on the right. Family members use the garden for respite and restoration in all seasons. At the Meridian Park garden we will celebrate four years this November. Patients, visitors and employees tell us how nature supports their health and well-being. They used to -- use the garden

24-seven. Family members describe how the garden gives them a place which was conversational topics to counter the necessary discussion then focused around the family members stroke or other medical issues. Patients tell us how the garden gives them hope, this summer we celebrated the tenth anniversary of the Oregon burn center garden. Join us for special open garden events each summer and watch the Legacy garden website for those dates and other program information for all the gardens.

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Patient rooms are complex and congested with necessary medical equipment. Engaging nature view out the window provides activities when the patient is in bed and can also motivate the patient to get out of bed and walk more to promote recovery.

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Garden this time needs to support the family and their need to gather for social and emotional support. This seems like a simple concept, but yet other concepts are often missed in the design process. The garden provides a place for caring for one another. Here are father and daughter patient enjoy a watering can for activity. An honors in -- honors in his patient take a tunnel in the garden and stuff to discuss the birdhouses. In the evening horticultural activity for both concern and support group, a young patient directs his nurse and how to make a hanging ask it -- for patient to take home. The boy selected the type and color he wanted and advice owners have done. This is an example of how he is able to direct his care at the hospital. Legacy provide several psychiatric patient programs. This garden serves as adults and adolescent inpatient with potential benefits may include increase in depression and anxiety improve social interactions and increase self-confidence. The garden is a tool that can enhance the counseling process where our care emphasizes recovery and return to full and meaningful lives. These gardens only engage the senses. The children's garden now 17 17-years-old this one of our crown jewels. Theirs is called at -- nurses : at the heart of the hospital. Date daily plate is -- of the child's developmental work under card in provides a normalizing setting for the families. Pediatric -- year-round in the garden or in the hallway overlooking the garden. Siblings engage in play and exercise two. The yellow brick road and accessible have -- encourage movement and more exercise. Occupational therapists and physical therapist use the gardens year-round for patient treatment tensions. Last week, the recreational therapy department at the rehabilitation Institute of Oregon held the annual Labor Day picnic for patients and their families. Another social support opportunity. In the last picture the garden -- left picture the garden is used for learning exercise routines for continued recovery after discharge. Patients tell us how much they appreciate getting out of the hospital room for privacy and time with their family and friends. Adult and child patient choose to use the children's garden 24-seven for rehabilitation, recovery and restoration. Watering cans and simple tasks provide independent activity for the family and wealth siblings. Above the children's garden, this second floor underutilized space had -- second-floor underutilized space had been transformed to the new terrace garden. This project was funded by the PKF foundation nature sacred initiative without garden dedication haven't taken place before 2014. Research is now underway. Legacy research Institute is conducting three studies at this time. We are in data collection and expect to have some data analysis ready for dissemination in October 2015. The birthing study is a randomized controlled trial involving 100 low risk pregnant women. The family study this a prospective observational trial involving 60 to -- 2100 family members of patients in the Legacy Emanuel medical Center intensive care unit will have prolonged hospital stays. For study three, nurses are randomized either six weeks of garden exposureexposure, followed by six weeks of no garden or six week of no garden followed by six weeks of garden exposure. The resources listed on the bottom give further explanation of the grant process and research work. We're in the planning -- we are in the planning process of an observational mapping study conducted by Dr. Jennifer and take at Pacific University and her health track PhD student. That Legacy research Institute we are in discussion of planning study five post occupancy evaluation. It's important to us to document how the garden issues, what works and what needs to work better. Year-round programs for -- for patients and families include music, garden tours, plant signage is an independent activity -- independent activity, gardening, cultural education and more. This garden was -- was designed as \* the resource and please, for renting 247 that means walking, walking, walking and getting back to put it in.

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We know that stress is pervasive in nursing and healthcare work. Legacy encourages employees to develop meaningful

stress coping strategies. Spending time in nature every day help to build resilient and maintain health. Therapeutic gardens are designed for four seasons of sensory stimulation to support restoration and recovery. Garden users have choices to learn about native plants, plant pollinators, conservation, local boat. I have Salmon Creek medical Center, patients and joy reviews to the watershed. Have you used to Mount Saint Helens as part of the hospital experience. The metal -- middle window is another overcast day. Imagine Mount Saint Helens. Weekly organic farm stands in the Legacy gardens promote health and well-being. Nearly wrapping up here. 24 miles east of Portland crown point in the Columbia River Gorge is kept by the Vista house. This is the remarkable nearby nature for those who are able to drive - - were able to drive or bike to the site. Today you have seen examples of how Legacy we support efficient, families and employees by --. Creating nearby nature opportunities within the healthcare setting. Here are some resources. Everyone is welcome to attend the American horticultural therapy conference, registration is now we are fortunate to have Dr. Keller's controller keynote on situational and human health, productivity will be. He's joining us. The 2013 therapeutic landscapes book is a research resource and includes all the topics I covered today a much more.

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In closing, thank you and congratulations to the USDA for service for initiating today's new educational series and increasing action around health insurance. PKF foundation -- foundation and the nature sacred initiative in 2012 funded six agencies across the United States to conduct research of how furniture legacies one of the study sites. The therapeutic landscape network is a website with -- met with this website with a wide variety of resources. Patty Patty -- Kathy Wolf, have done an outstanding job of collecting the evidence base and -- in sharing and easy to use format. I regularly recommend Kathy resource link to a wide -- wide range of health and community based inquiries. Legacy is engaged with the intertwined alignments in the Portland Metro area through the newly developed health and Mr. Initiative were we are striving for an inclusive collaborative and action oriented approach to promote mutual benefits of health in nature within the four county region . Lastly, thank you to the Forest Service and urban force connections formed using this national effort to promote and share research around health in nature for all communities. These collaborations and work emphasized the connection the connectedness of each of us to each other. Our future depends on the extraordinary cooperation between us. On behalf of Legacy Health, thank you very much.

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Are we able to return to my slides, Emilio? You should be able to see those.

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All right, thank you, Teresia for an overview. An outstanding example of the breadth and depth of both knowledge and design approach and the use of nature for healing therapy and wellness. I am going to wrap it up -- now with a quick overview of some additional evidence that women bring to bear in our conversations and communities. What I'm seeing less a result of reading literally thousands of articles about the research concerning how people respond in nature and positive ways we can start to tell stories so often evidence is presented as bullet points. I think what we can start to do and the Legacy hospital system with settings outstanding example and we can start to drill in a bit and to tell broader stories about this evidence. Here is one I'm starting to use, cradle-to-grave from the beginning of life on the left to old age where ever you might be whatever your circumstances, it appears nature has a positive effect. We can start at infancy and by the way these flights will be archived on the webinar series website. If you would like to come back and look at these in more detail, please, do soso. We are running short of times -- time so I will go through them quickly. We are seeing correlations, we are seeing relationships between the presence of trees in the -- the neighborhood neighborhood, canopy, nature and infant birth weight. People get older and entered the school systemsystem, moving along even to high school age, those campuses in this study that had window view of trees and shrubs reveal positive outcomes for students. Jeff Donovan and his colleagues a scientist with the Forest Service -- this with the Forest Service in the Pacific Northwest region , took a look at the effect of emerald ash for, an insect that is having an effect on major effects on ash trees, across the country. In a natural experiment where there was rapid decline of the force being able to look at the consequences the neighborhood it's, finding relationship between the presence of canopy and cardiovascular and respiratory health. A topic that's getting quite a bit of interest all around the world based on a handful of studies that have been done in Japan, positive consequences of forced bathing one -- very basic physiological responses, endocrine, cortisol, stress response, immune function, pulse rate and blood pressure. In many instances,

people are not aware that these positive changes are occurring and yet we instinctively are drawn to places that are of quality design and character and offer nearby nature experience. In addition, many are exploring the role of green streets and parks in physical activities and improved health that might be part of that activity or consequence of that activity. Activity have influences on mental health. And here's a review of studies that finding those people diagnosed with mild to moderate depression can be aided by moderate exercise, not high-intensity high-energy activity, but simply moderate walking and doing on a routine basis. Our parks, recreation systems, open spaces are so important and connectivity is a part of that that we have linkages across the green systems in our cities and part of the comprehensive planning system. Going on this idea of cradle-to-grave, as people become older, maybe a little less mobile, needing to activate their muscular system and able to maintain mobility, able to maintain the extended, horticulture therapy is one approach.

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The study that kicked off a lot of interest in this research, Roger Ulrich work in the early 19 eighties looking at hospital patients that were recovering from surgery, some of them randomly assigned to rooms having available breakwall and others assigned to rooms having a view of nature and here you see some research outcomes.

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We know now based on what Teresia shared with us based on direct design implementation and therapy approaches that the Legacy Health systems in Portland, Oregon, we know that not only do healing gardens assist patients, but we are coming to understand that they are important for family and loved ones, as well as the staff that are working in very high stress job situations.

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As of wrap up, urban forest, urban greening and natural nature provide the human habitat in cities that are really not only about aesthetics, that's important to have pleasant places with lots of amenities, but fundamentally and profoundly important for health and wellness. This happens throughout the human life course. If you would like to share these sorts of messages, developed their own stories and evidence and research, green cities good health can be a tool to help you access, it can be the portal to find the crux of this work. As we proceed with all of this with greater understanding, I am promoting the thought and possibility that our vegetation assessment of the urban Forest are -- and not only in the first top-level, the top-down canopy level, but would continue to try to understand the urban understory and the relationship of a more diverse vegetation cohort of component and human well-being. There are certainly economic implications and that's another thing we are doing at the University of Washington, to try to convert the benefits knowledge to some economic monetary term.

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That is the end of the presentation. Thank you to Teresia and Forest Service and I will turn it back over to you.

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Thank you, Kathleen and Teresia for taking this to show the diversity of health benefits provided by urban forest. We have time for questions. Treatment you alone, you can click on the Q&A icon at the top of the screen and typing the question. We have a couple wondering if they can get a copy of the slide presentation and the presentation will be archived and recorded on the website that you saw earlier. It also the question. From Sarah, Do you see differences between different health issues (eg cardiac patients, OB patients, depression)? Do you know if different interventions are better for different kinds of patients? Do you see an impact related to changes in weather or are these gardens equally used and useful year round?.

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This is Teresia. Thank you for the question. Some of those parts of the question we are researching right now in this

new garden where we have been funded for research. I know after 23 years of work on Legacy that these -- these gardens are used to year-round, 24 -- four- four-seven and removal to research that said if people just now it's available that is helpful even if they don't choose to use it. This people use it 24-seven they are a place of escape listed, where people can get their needs met. Did I answer that one ?

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and I jumped in -- I jumped in with a response as well ?

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Sarah, your question will focus on truces activity with Legacy Health and healing garden, Mindy -- then it is a much broader question question. Because the evidence the research that we have been reading and calling and synthesizing points to relationship between certain vegetation conditions and health outcomes. We don't know the causal linkages, we don't know when the, but that yet. We don't know why people respond so favorably to the presence of nature nature. Most studies of correlations, their statistical relationships. I am seeing ever greater effort to understand the cause and the kitchen, but I am seeing in the new research is an effort to understand dosage, how much, how often, what are the conditions that promote different sort of health and healing and therapy responses. That kind of next level digging in and trying to ring more detail to help you plan and design a more types of nature implementations for health, that's what I'm seeing in the next-generation research.

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I have one more thing. I think it's important as both a design -- the design for the broadest range of users possible and I believe that's how your Legacy we have received the best return on investment to date by budget my budget is about \$150,000 a year or 11 gardens including my salary. That's really pretty good investment in the return of all 9500 employees can use these gardens plus our hundreds of thousands of patients and visitors. I think we need to design -- decipher the latest range of users possible at this.

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All right thank you. You have a question from David, We work at a rehabilitation hospital. Do you have any advice about how to get our doctors on board to develop therapeutic gardens at our hospital?.

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This is Teresia, I would say does -- there's an outstanding chapter in the therapeutic landscape look about participatory design process, you are right, physicians are one of the professional groups that need to be involved and there are number of other key players that need to be involved as well. Physicians and nurses get it. They really do get it. They understand outcomes and they want good outcomes for that. Chimps. It starts with the communication and communication and Alicia shipbuilding. It doesn't happen quickly.

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Thank you. I'm taking the question as they are in the queue. I'm sorry of baby -- we look at all the questions today. We will get through as many -- to as many as possible. We have question from Kimco, Please tell us about methods/means/funding for maintaining the gardens. I feel like we need to hold a conference on gardens.

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We do, I hope someone will take the queue and invite all of us got there. The therapeutic landscape of has an extensive -- and management of gardens just like any other programs in hospitals this daily care management, is the same in the therapeutic gardens. In the budgeting, we plan for paid trained professional gardeners to assist. Last year we had 4277 hours of trade volunteer assistance and I am on the ground every day in the gardens across the six hospital making sure that everything means hospital standards. There's a lot to this. Simpson likely to have great training events organized. I am thrilled I think we are international. We are hoping to have medical groups in Asia and Norway are to join us today. We have much to do, please, someone, let's start to organize and help one another.

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Thank you.

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You have a question from -- Is there a program on the market that provides analysis of the impacts of both understory and overstory canopy, similar to how i-Tree and others provide analysis for the overstory canopy?.

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This is Kathy. I will take that question. That is something that the team I've been working with I mentioned the monetization the economic evaluation the benefits and also the use of -- for vegetation assessment should and we have the benefits database the research database, if you think about IT equal I'd truly -- I truly hydro- the other iTunes tools those are the three elements that are the foundation of each tool. Analysis of benefits, assessment of vegetation so you can understand what those benefits might be possible are presented and finally some level of monetary value. We are trying to find the funding, the source of support to provide the quick to bring these three together. There have been preliminary discussion about the night tree health I tree community I tree -- various means. We still have not formalized movement toward this type of tool. It is something that I would like to see happen, yes.

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Thank you.

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We have time for one more question. From work, what was the importance of plant selection and color (flowers, foliage) when designing the gardens for the hospitals? .

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Good question. Again that's covered fairly extensively in the therapeutic landscape book. First of all, its diversity and plant materials, its trees, shrubs, perennials, annuals, vines, conifer conifer, deciduous, broadleaf evergreen in the right percent of evergreen and deciduous mix. It's a lot of thought and analysis that goes into this. We're always lease at the Legacy guidance, we are adding and deleting and planning new plant material so we always have that pop that -- top that we always have that engaging plant environment that's important. It needs to be top quality at all times in all seasons.

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Thank you.

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I will expand on tree -- the comment. We might think about the more broadly than gardens within hospital or healing facility. Could we create such spaces? In our communities in a broader sense. Could we create notes for special places that have the richness and detail of design and expression the become not simply the word aesthetic, but the places of healing, will -- will be better human habitat. I know this is not an easy thing to promote because it involves cost. What we are starting to see is the cost has to pay off. The medical costs of honor of our nation and some of the most substantial economic of late of our society and this is -- this is happening in many other nations as well. If we can begin to express landscape and trees in urban forestry, as health cost savings, we are not quite there yet with economic assessment or economic evaluation. That's the connection we can start to make.

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Thank you.

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I know we are, I will come by then exited the quickly answer them those questions from two different people, how do you connect with the local of the organization to get support from administrators hospital boards, -- board, who would somebody go to the start the conversation.

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Start the conversation I think by developing relationship that takes time. When we started our first garden that Bishop - nursing home took myself two years to establish good relationship with the physical therapist occupational therapist and speech pathologist. It takes time to develop relationship. And there's the educational component that everyone is participating the preparatory education, we are ready to open to the sub textual program developmentdevelopment.

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And I will add if one is tackling this relationship, the community or city or metro level and I'm starting to see the it happened. You have -- I have come to learn is the public health and public health the medical communitycommunity, really is committed to evidence -based policy and program. So while individuals within the health community resonate to -- to the story's and don'ts of healing and wellness, that's an important part of building the relationship to help bring those stories along. When talking with the health professionals, having in your back pocket some of the rigorous research and finding that their expectations for the quality of the research is very high. There's enough of it now that we can begin to bring that in addition to the broker stories and broader design condition that help make the places happened.

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All right. Thank you so much and with that we will have to wrap it up-to-date I apologize for not getting to all the questions. You can send a question to our website. And see what we can to manage to do the answer them. I want to thank Kathleen and Teresia, I want to think all for joining us. And again our website is a good place to go for questions. And we let -- would like you to remember to join us next month for what California climate policy means for urban forests. We will be featuring Greg MacPherson with the U.S. Forest Service, John Milton and Chuck knows. Only -- on the last flight if the code for those seeking I is a certified education credits. Again, thanks, everybody and have a great day.