Blue Index Austin

Executive Summary

Join the conversation to protect our local waterways

BLUE INDE

WALK



Kevin Jeffery June 2020 **B**lue Index began in 2016 to study the effect of water on people's emotional state and wellbeing. It has since transformed into a public platform that amplifies the voices of community members who value shared waterways and allows cities to collect baseline data on the waters they manage. Though the pilot project started in Austin, Texas, Blue Index is becoming recognized as a tool for municipalities throughout the country to better engage with the public around urban waterscapes and design centered on human health.

For cities and counties, Blue Index is a new, efficient, and effective way to gather non-contact data and engage the public in the management of the water resources that are important and impactful to them. In Austin, Blue Index comprised of 34 photo stations across 16 watersheds and 8 City Council Districts. The project collected over 1,800 individual responses during an 18-month period and has fostered a connection between residents and city management, providing valuable feedback to the city on how its waterscapes are perceived by the public.

The purpose of Blue Index is to identify the effects that waterscapes have on human wellbeing and to distill those effects down into design, maintenance, and policy principles that are locally relevant. Although these principles will be different in each place, as the factors informing them vary wildly from one watershed to another, patterns are likely to emerge as the project grows that inform a common set of principles and lessons learned, making them transferable and adaptable for any community.

Blue Index Goals:

1. Expand public participation in water management and ecological sustainability by encouraging participants to reflect on their surrounding waterscapes, getting people outside, and highlighting relevant environmental opportunities in new and unique ways.

2. Foster communication between residents and local government managers, whereby the municipality can hear directly from those who use and appreciate the outdoor waterscape services they provide and users can take part in informing the maintenance and design of the spaces they care about.

3. Establish best management practices (BMPs) for local government managers to design and maintain urban outdoor spaces. Incorporating this process into a municipality's long-term plans saves on maintenance costs by including lessons from waterscapes that generate a high amount of positive emotional impact for little overall physical maintenance cost. If reproduced in multiple locations, Blue Index data could provide additional insight into environmental psychology for urban settings.

4. Gather baseline and monitoring data for changes to local waterscapes over time. Climate change is causing both expected and unexpected changes to our natural systems. Blue Index generates a robust body of visual and qualitative data from a network of community participants via photography and written assessments over time. This provides important information to communities, watershed advocates, and municipal managers for decision-making.

5. Promote the inclusion of emotional wellbeing and community health in water management models. "Improvement" in water management terms most commonly refers to a method for use and replenishment of natural and synthetic systems in a safe, healthy, and responsible manner. This leaves out the understanding that water has an innate ability to effect metal wellbeing. Adding this understanding to the definition, design, and implementation of water management models in parallel with other water management goals informs a new multipurpose model.

Specifically in the city of Austin, Texas, the project aimed to gather 2,600 qualitative waterscape assessments over 18 months.



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Blue Index utilized photo stations and an online assessment to connect people to waterscapes, collect qualitative data, and capture a visual record of changes to each waterscape over time. A nested model that combines levels of disturbance with physical attributes informed site selection and the method for gathering baseline data.

Stations:

Blue Index photo stations are simple stands that allow the public to engage with waterscapes as they pass by. Each one is comprised of a metal bracket with a place to put a smart phone or tablet (such that each photo is taken from the same angle and perspective), and instructions.

Assessment:

Each Blue Index survey asks the participant to assess their experience with the particular waterscape where the station is located. Some questions are related to the way the waterscape makes the participant feel, while others assess the way he or she or they value it. Together, the survey questions measure the ability for urban waterways to lower anxiety. This is useful information for city planners and managers to have. It will help cities understand how to use water in urban settings to increase community wellbeing, benefiting local residents, economy, and environment.



Nested Model:

A nested model is needed to form a baseline set of data for the City of Austin's multiple waterscapes. The 16 watersheds included in this study are only a sampling of the 72 total watersheds contained within the city limits. It was necessary to build in a diverse selection of sites, including those with opposing physical characteristics and various levels of disturbance, in order to capture a wide variety of user preferences from which to generate a solid set of baseline data.

Each of the 34 waterscapes (shown in the chart by number) represents a different combination of disturbance level and physical attribute, except for stations 32 and 34, which share a designation. The level of disturbance is determined by how frequently the landscape is maintained. The physical attributes measured for each waterscape are: tree canopy density, average water base flow, City of Austin aquatic Environmental Integrity Index (EII) scores, non-domesticated wildlife presence, human amenities along the presence of flooding nearby.

	Abundant ~	Sparse Tree Canopy	Perennia.	Ephenner Flow	High Aquis	Low Aques	Abundan Life Ell	Sparse M. Wildlife	^{4bunda}	Sparse at Amenities	In Inentifies	Elma Floor
Often Disturbed	20	24	4	27	1	3	2	9	7	19	31	
Periodically Disturbed	21	5	16	30	18	6	11	14	12	13	33	
Rarely Disturbed	10	28	8	26	22	25	17	15	23	29	32/34	

The project targeted 34 select areas near lakes, rivers, creeks, ponds and fountains based on a set of predetermined characteristics that used existing data through an iterative process with Austin's Watershed Protection statistician. This included, but was not limited to, FEMA floodplain maps, levels of maintenance, and ArcGIS analysis. The photo stations were situated in visible and easily accessible areas for the public to collect assessments through smart devices. They were positioned in front of each selected waterscape at an ideal perspective to collect a series of photographs that can capture changes over time. The ease of getting permission from public and private landowners in the city played a major part of site selection. Blue Index regularly maintained, installed, and uninsulated all stations along side landowners who helped promote visitation to the photo stations.





RESULTS

Blue Index was successful in getting 1,819 people to submit a photo and complete the assessment process, 70% of the 2,600 response goal. The 18-month study period allowed for ample time to collect a good stock of data for review. On average, the stations pulled in about 101 assessments per month. In addition to the assessment questions, 762 participants also left optional comments. This 42% comment response rate provides helpful insight into the preferences and perceptions of Austin outdoor space users. Additionally, 128 people chose to include their contact information for follow up emails. The assessment was set up with mandatory questions at the beginning and optional questions at the end. This meant that the total number of responses for each question varied. The assessment was a self-selecting process because participation was voluntary. Although Blue Index station signs were placed in highly visible locations near waterways, not every outdoor space user stopped to participate. Therefore the results only reflect those who chose to stop, follow the instructions, and complete the assessment.



5.55

SIGNIFICANTLY LESS RELAXING 4.4%

BLUE INDEX SCORE

In order to translate the 1,819 responses into relevant information, Blue Index developed a system of delineating the waterscapes that have the most positive and negative effect on a person's wellbeing in Austin. Four factors were singled out as the most encompassing indicators of human wellbeing related to waterscapes: *Impression, Cleanliness, Relaxation,* and *Emotion.* Each factor was quantified for each Blue Index Station.

Blue Index Score:

The overall *Blue Index Score* is a number ranging from 0 - 10 that indicates the amount of effect a waterscape has on mental wellbeing. The Blue Index Score weighs each of the four factors equally (25%). A lower score indicates a waterscape having a generally adverse effect on its users, Red Mind effects. A higher score means that the waterscape positively affects how they feel overall, Blue Mind effects.

A Blue Index Score serves as a snapshot of a waterscape over a period of time. It is supported by the observations made through individual assessments as well as the photographic record of the waterscape. The scores can be used in a variety of ways, including city planning, advocacy, and management purposes. The core reason for the score and the index (the method for determining the score) is to encourage the public to engage with these important cultural, recreational, cognitive, and ecosystem service providing areas. This can instill a broad but pervasive sense of connection to and responsibility for urban outdoor spaces.



Participant at Station #18 - Ann & Roy Butler Trail Lake



Blue Index Scores by Station

What do Blue Index Scores suggest about the best and worst sites for mental health?

The stations with the highest and third highest Blue Index Scores are both located in Lady Bird Johnson Wildflower Center on human-made waterways in an area that receives frequent maintenance. The second highest score is from a station located on a bridge, under a highway, with sweeping views of Lady Bird Lake and vast amounts of vegetation that mostly hide downtown Austin. While it's in close proximity to a natural waterway, it's on a river that has been transformed into a lake by a dam. The difference between the first and third highest scores is only a quarter of a point.

The lowest three Blue Index Scores have a 1-point spread. The third lowest in Buttermilk Creek is a natural waterway that is heavily channelized with a low flow that resembles stagnant or trickling water. The second lowest, on Johnson's Branch, is located at the end of a natural waterway that has been piped underground. The pipe also receives stormwater runoff, which causes the waterscape at this station to sometimes appear muddy, agitated, and occasionally polluted. The lowest score is located in Bartholomew Park. Both the lowest and third lowest scores are located in what Austin calls "grow zones" or "no-mow-zones". The city has invested in amenities around the park, but the creek is not well maintained, and respondents observed large quantities of trash. Many respondents also perceived the natural look of the grow zone to indicate an unkempt area with low water quality. Why is this park that has received so many city resources not getting a high Blue Index Score? Perhaps it has to do with the appearance and the sound of flowing water.

The stations with the two highest scores are both located next to running water. This is in contrast to the third highest scoring station and three lowest scoring stations, which show stagnant or non-existent water. Mental health is largely influenced by the perception of what is safe, clean, and tranquil. Having a large amount of green vegetation clear of debris, moving water, and a manicured look are factors that indicated higher levels of relaxation. Interestingly, while the more "manicured look", may have been interpreted as safe and clean, it is not an actual indicator of higher water quality or safe spaces. In fact, the grow zones, which received a largely negative response, are the city's attempt to return to a more healthy and natural landscape. This suggests a need for more awareness and education about what is clean and natural vs. what is perceived as clean and natural in order to build an appreciation for natural landscapes in an urban setting.

HIGHEST BLUE INDEX SCORE

Station #2: LBJ Wildflower Center Woodland Stream **BI Score:** 8.31



SECOND HIGHEST BLUE INDEX SCORE

Station #19: Trail Bridge BI Score: 8.12



THIRD HIGHEST BLUE INDEX SCORE

Station #1: LBJ Wildflower Center Wetland Pond BI Score: 8.07



THIRD LOWEST BLUE INDEX SCORE

Station #26: Pedestrian Bridge BI Score: 4.45



SECOND LOWEST BLUE INDEX SCORE Station #25: Culvert Outlook BI Score: 4.42



LOWEST BLUE INDEX SCORE Station #27: Bartholomew Park Pedestrian Bridge BI Score: 3.42



Many positive steps can be taken to improve Austin waterscapes based on Blue Index results. The following are recommendations for Austin city managers and water advocates to consider adopting.

SHORT-TERM RECOMMENDATIONS: 1-2 YEARS

1. Categorize and invest in waterscapes as essential city services. Valuing the ecosystem and cognitive services provided by waterscapes is equally as important to community wellbeing as other utilities such as transportation, electricity, and wastewater services. Acknowledging their value is an important first step to improving waterscapes. Urban waterscapes serve multiple purposes including improving mental health and should not only be thought of as vital city services, but should be invested in as such. If people feel good about outdoor spaces and know that they are healthy and safe, they will take better care of them.

2. Develop Austin-specific narrative criteria to expand city monitoring and response based on added support from the public. This would serve as an additional water quality standard formed from qualitative information that is used to measure and monitor water quality when pollutants cannot be precisely measured. It describes the waterscape as how it should appear to outdoor-space-users and incorporates Blue Index observations as a barometer of the narrative criteria's success in a specific location. This could be achieved through a series of coordinated public workshops to collaboratively develop a vision for Austin waterscapes.

MID-TERM RECOMMENDATIONS: 3-5 YEARS

3. Recalibrate maintenance data tracking. The City of Austin Parks and Rec Department does not currently organize maintenance information in a way that fully utilizes the Blue Index Planning Tool. The city does keep maintenance data but the cost is sorted by the general location (ex: north or south of Lady Bird Lake). Providing an additional filter on upkeep cost per park or waterscape would allow city managers to efficiently identify the waterscapes that contribute to cognitive wellbeing and pinpoint public space development return on investment more comprehensively.

4. Update urban water education campaign materials, coordinated by the city to explain just what makes Austin's waterscapes so special. The goal would be to teach basic water resource facts, including the indicators of good and poor water quality, the source of Austin's drinking water, and the destination of our wastewater. Assessment results indicate that many Austin outdoor-space-users can not tell confidently if they are looking at good or poor water quality. This campaign could address that lack of awareness and lead to opportunities to partner with the city's already established environmental advocacy groups to help implement or eventually oversee this effort.

LONG-TERM RECOMMENDATIONS: 6-10 YEARS

5. Design urban waterscapes and public spaces to incorporate emotional wellbeing and community health. Water is proven to lower stress and improve mental health. Even the presence of water in a constructed sense, such as fountains or small cascades on the side of a building or staircase, can be therapeutic. Any design that exposes the senses to water should be utilized. The goal should be to have reminders of moving water in such a high frequency that it becomes part of the public's daily experience. Due to limited space and low practically of adding physical waterscapes in high numbers, other creative options should be explored. Aquatic sounds though public speakers, replicating the smell of the lake on a perfect summer day and murals, as well as the use of other art forms as a catalyst, are powerful tools in this effort.

6. Establish a local, youth, green workforce to supplement city staff in the creation and maintenance of green infrastructure, including but not limited to urban waterscapes. Similar to AmericaCorps, an *Austin Corps of Conservation and Environmental Logistic Services* (ACCELS), could provide added capacity to city management, train young people in valuable and transferable skills, and instill an appreciation of the natural landscape as a potential source of livelihood.



Participant at Station #19 - Lady Bird Lake

Learn more about Blue Index Austin and explore the possibility of bringing Blue Index to your community!

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