METRICS TOOLKIT

Cities Connecting Children to Nature

Measuring city efforts to connect children to nature

Municipal leaders know that what gets measured gets done. The Cities Connecting Children to Nature (CCCN) initiative supports city leaders in connecting more children, more equitably, to nature. In the long term, cities can measure their impact on health, education, and development of young people. In the meantime, this Metrics Toolkit reflects the current state of the field, taking a building block approach to achieving long term impact. To date, cities' strategies to connect children to nature emphasize policy, infrastructure, and experience. The Metrics Toolkit equips leaders with corresponding indicators and tools to help them track progress within these categories.

Using the Metrics Toolkit

The CCCN Metrics Toolkit adapts three resources used by CCCN pilot cities and partners to articulate their measurement plans and priorities, choose indicators, and assess impact. The Toolkit may prove most useful for a city team that has completed a community asset and gap analysis and stands ready to set informed goals.

> **STEP 1: Consider Indicators and Measures that align with your city's goals.** The indicator bank distills examples of strategies emerging from cities in three areas: policy, infrastructure and experience.

> **STEP 2: Select Indicators and Measures that align with your city's priorities for progress.** First, articulate intended impact; then, map out implementation and accountability considerations.

> **STEP 3: Employ Indicators and Measures to determine baseline conditions** before implementing city strategies and later, at meaningful, planned intervals to assess progress over time.

Additional information about the Toolkit development and specific city examples follow the process below. As CCCN partners continue to refine the indicator bank based on a growing body of city examples, we encourage cities utilizing the CCCN Metrics Toolkit to share indicators, completed worksheets, or comments and questions with us.

Getting set up to measure

The following elements are key to robust and ongoing measurement:

START SMALL. More relevant information exists than cities can track. Limit initial indicators to those directly related to your strategies so assessment and reflection may begin. Refined definitions and more comprehensive data can follow.

EMBRACE EQUITY. To create an equity lens, cities must disaggregate data by demographics such as socioeconomic status, race, gender, language spoken in the home or level of previous park or nature program engagement. Disaggregation allows a detailed, nuanced story about successes and disparities. Cities can increase capacity for disaggregation through collaborative development of common indicators for use by your agencies and partners.

ASSESS BASELINES. Use data to depict and reevaluate indicators at regular intervals, learn how effective your strategies are, and highlight areas for improvement.

SHARE DATA. Cities must build data-sharing partnerships, because city partners greatly influence the extent and depth of children's connection to nature. Diverse city agencies, schools, program providers, and affinity groups have data to paint a fuller picture of nature connection.

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Step 1: Consider Indicators and Measures

The *Sample Indicator Resource Bank* below illustrates emerging **Policy**, **Infrastructure**, and **Experience** indicators that cities can use to assess efforts to improve children's connection to nature. Check off indicators that may align with your city's needs.

POLICY

Sample Indicator Resource Bank

INDICATOR	MEASURE	MEASUREMENT SOURCE & TOOLS
POLICY CHANGE OR NEW POLICY	List or number of policies Number of nature sites open for shared use between schools and city List or numbr of data systems or indicators adapted or created Number or percentage of residents affected or reached List of alignment or integration of city priorities	City plans, statutes Facilities/capital plans and reports Shared use agreements Formal data sharing Partners and partner agreements City data systems and dashboards
LEADERSHIP ACTION	List or number of mayoral or council member actions	Mayor State of the City Address or other speeches Convenings initiated
CITY OR SCHOOL DISTRICT FUNDING	City or school district capital or operating funds allocated Number of full-time children and nature personnel	Tree City USA Standards City or school district budget

INFRASTRUCTURE

Sample Indicator Resource Bank

INDICATOR	MEASURE		MEASUREMENT SOURCE & TOOLS
GREEN SCHOOLYARDS & EARLY CHILDHOOD PLAY AREAS	Green schoolyards, childcare outdoor learning environments, or play yards (square ft/acre) Green schoolyards serving as Green Infrastructure (percentage per acre)	• • • • •	Parks and Recreation records Community garden administrator records Partner agency records[1,2] Local licensing agency/facilities funder
QUALITY OF NATURAL ENVIRONMENTS	Biodiversity Quality of outdoor learning /nature play environment	• • • • •	Urban Biodiversity Index Framework City Biodiversity Index inventory City or district plant inventory/assessment Preschool Outdoor Environment Measurement Scale (POEMS)
PARK NATURAL FEATURES DEVELOPMENT	Number of or extent of added or restored natural features	• • • • •	Park plans
EASE OF ACCESS TO NATURE	Percentage of sidewalks/bike paths Racks/signage Proximity of children's access (yards/mile) Tree canopy coverage	• • • • •	Walkability audit such as MAPS-mini City GIS/mapping[3]

EXPERIENCE

Sample Indicator Resource Bank

INDICATOR	MEASURE		MEASUREMENT SOURCE & TOOLS
IN-SCHOOL ENGAGEMENT WITH NATURE	Hours or days per child/class/school with greater than 75% low-income or students of color Educators trained in connecting children to nature (number)	. . . .	School, district database Program-provider database
AFTERSCHOOL & SUMMER ENGAGEMENT WITH NATURE	Children attending nature programs (number of children/hours) Afterschool/park staff trained in connecting children to nature (number) Hours or days per child/camp/program with greater than 75% low-income or students of color Feelings toward nature	. . . .	Local afterschool network database[4] ACA Affinity for Nature survey
YOUTH PARTICIPATION IN STEWARDSHIP ACTIVITIES	City or school district capital or operating funds allocated Full-time children and nature personnel (number)	. . . .	Stewardship partner records City agency records[5]
PARK & COMMUNITY GARDEN ACTIVATION	Children informally engaged in nature (number/percentage) Children attending nature programming (number)	. . . .	City Parks and Recreation, community partner records Results of observational protocols, e.g., SOPARNA, SOPLAY

Step 2: Select Indicators and Measures

Answer the following questions, completing the chart from left to right. Begin with your city's goals for improving children's connection to nature, and select indicators and measures that align with this vision with the help of the preceding indicator bank.

What progress do you want to make to connect more children to nature, more equitably?		What indicators would signal this progress?	Which corresponding measures will you employ?	Who/which agency/partner has this data or the best ability collect it?	HOW, by WHEN, and under WHOSE leadership on your team will your city establish baseline figures for this indicator?	HOW, at WHAT FREQUENCY and under WHOSE leadership on your team will your city measure progress on this indicator?
	POLICY					
	INFRASTRUCTURE					
	EXPERIENCE					

Step 3: Employ Measures Aligned with Indicators

The template below presents a sample selection of children and nature measures from the indicator bank across all three policy, infrastructure, and experience categories. Add, delete, or modify measures to suit the strategies and indicators selected by your city. Record baseline assessments and reassessments at a relevant time interval.

		MEASURES	Baseline Date: ___ /___ /___	Reassessment Date: ___ /___ /___	Reassessment Date: ___ /___ /___
INDICATORS	POLICY	Example: *Number (#) of full-time children and nature personnel.*			
	INFRASTRUCTURE	Example: *Square-footage (ft^2) of nature features added to parks in low-income neighborhoods.*			
	EXPERIENCE	Example: *Number (#) of children participating in programs that provide significant connections to nature.*			

*Disaggregate data by race/ethnicity/income/neighborhood OR report for subsets such as children of color; children in low-income neighborhoods; or children in school settings with >75% Free and Reduced Lunch.

City Examples

CCCN pilot cities used a variety of indicators represented in the resource bank above, and also developed related local tools. These examples illustrate a variety of approaches to measurement that cities might take, and adaptations made based on local assets and needs.

1. San Francisco created an Early Education Site survey to determine:

a) What is the current state of nature connection in early childhood environments?

b) Where is the disparity within early childhood nature connectivity?

c) What are the opportunities to address the disparities in early childhood environments?

2. Madison deployed interns across Madison school grounds in the summer of 2016 to conduct a physical inventory of school yards. Outdoor educational infrastructure the interns inventoried included:

- Garden
- Outdoor classroom
- Garden/outdoor storage shed
- Access to water spigot
- Garden area seating
- Rain garden/native prairie/pollinator garden
- Trails
- Green house
- Outdoor kitchen
- Storage bins
- Compost
- Rain barrel
- Art installations
- Outdoor music gardens/amenities
- Community garden
- Wildlife habitat (e.g. bird feeders, bat houses)
- Pavilion
- Stage
- Little free libraries
- School forest
- Participation in past outdoor educational grant programs
- Informational signage related to outdoor educational infrastructure

3. Austin conducted a GIS mapping exercise to develop its Nature Equity Score. The layers of data include

- Park space managed across a variety of local and regional agencies
- Park size
- National Recreation and Park Association (NRPA) Park Status (a rubric for determining how restrictions affect accessibility)
- Tree canopy coverage
- Trust for Public Land (TPL) land use status (a rubric for assessing the level of development and ecological value)
- Zip code
- Median household income
- Child population
- Crime
- School boundaries

4. Grand Rapids utilized an afterschool provider nature survey that gauged integration of nature into the afterschool network, in order to establish baseline data.

5. Louisville trained its first group of six Green Career Pathway youth interns in the spring of 2017, and deployed these interns to three recreation centers in the summer to provide nature connection activities for 198 youth, including 136 children of color.

About CCCN & the Metrics Toolkit

CCCN

The Cities Connecting Children to Nature (CCCN) initiative offers local officials guidance for establishing new connections between children and nature, through training on promising practices, access to national experts, and peer learning opportunities. CCCN partners selected seven cities to form a pilot 2016-17 cohort to receive intensive technical assistance to plan and implement citywide strategies to reduce disparities in access to nature. Generous support from The JPB Foundation underwrites the CCCN initiative, led by the National League of Cities Institute for Youth, Education, and Families (YEF Institute) and the Children & Nature Network (C&NN).

State of measuring children's connection to nature

Attempts to measure children's connections to nature constitute a new endeavor for most city governments. Quality, city- or neighborhood-level data that describe children's connection to nature proves critical to understand baseline inequities and strengths, as well as subsequent improvements resulting from strategies. Most cities will need to add data elements beyond those they currently collect to paint the picture of which children connect to nature, how often, and how meaningfully. Given cross-sector influences on nature connection, establishing measures for common use by schools, parks, planners, program providers, and others presents an opportunity for widespread improvement in assessment practices. Pilot CCCN cities pursued manageable first steps such as (a) focusing on target populations or neighborhoods identified through equity assessments; and (b) selecting indicators specifically relevant for their implementation strategies.

Developing the Metrics Toolkit

The CCCN Metrics Toolkit grew organically alongside the pioneering efforts of pilot CCCN sites between November 2015 and September 2017. From an initial, exhaustive list of existing indicators used to measure quality of natural environments and children's access to/ participation in nature, CCCN partners distilled those that offered the most utility and promise for a budding field as demonstrated by the take-up of CCCN pilot sites. The resulting Sample Indicator Resource Bank highlights three categories emphasized by cities: policy, infrastructure, and experience. Policy and Infrastructure indicators focus on efforts in areas directly under the influence of municipal government. Experience indicators lay the groundwork for measuring the effect on children of programming, policy, and infrastructure initiatives, including those of community-based organizations and other city partners.

Dozens of city leaders, national advisers, and researchers contributed to development of the Metrics Toolkit through working groups, advisory meetings, and individual consultations. Robin Moore, Nilda Cosco, and Daniel Jost of the Natural Learning Initiative at the North Carolina State University School of Design contributed trenchant commentary, consulting support, and considerable prior metrics experience to the effort. The pilot CCCN cohort drove development of the Toolkit through its implementation and planning efforts, described further below.

Using the Toolkit within evaluation plans

Ultimately, to make the case for adopting strategies to connect children to nature, city leaders and partners may need to muster data in up to five categories:

- Environmental
- Economic
- Public health
- Inclusivity & access
- Youth development & education

The suggested "experience" indicators in this Toolkit operate at a more basic level to reflect the current average state of data collection in the field. Children and nature initiative designers seeking to elevate impact statements will need to take at least two steps:

1) Gain access to measures such as obesity reduction, decreased reliance on anti-depressants, or higher test scores of children provided more regular access to nature; and,

2) Draw a clear causality line to depict the contribution of nature access to these outcomes.

Taking these steps likely implies more intensive data sharing, as well as engaging a third party with evaluation expertise.

What lies ahead

Local initiative, reflection and feedback continue to identify where the frontier of achievable city goals intersects with a zone of challenge and systemic improvement. CCCN partners plan to evolve and adapt the Metrics Toolkit in concert with this growth in the field.

Additional Resources

Whole Measures for Urban Conservation

The Whole Measures for Urban Conservation framework defines successful urban conservation to include support for equitable outcomes that improve human well-being in cities, in the areas of justice and fairness, economic vitality, community engagement and community resilience. The tool offers processes and rubrics for users to use in program planning, program evaluation, and community engagement.

Results-Based Accountability (RBA)

The RBA framework offers a data-driven decision-making process to help cities solve problems. The framework can be used both to drive organizational performance in city government and also to tackle social change and positive outcomes for city residents.

Green Schoolyards Evaluation Framework

Children & Nature Network's *Green Schoolyards Evaluation Framework* from the Green Schoolyards Resource Hub describes a set of potential outcomes with which green schoolyards can be evaluated across a city, county, or school district. The short- and long-term outcomes may be considered at any stage of the development of green schoolyard program, while also providing evaluative options for longitudinal, multi-city research.

Glossary

The following working definitions illustrate how these terms are used within the CCCN Metrics Toolkit.

DISAGGREGATE
To break apart summary data by demographic subgroups in a way that allows comparisons between subgroups and assessment of equity. Demographic subgroups could be based on racial, ethnic, language, socioeconomic, geographic, experiential, or other characteristics.

INDICATOR
Measurable conditions and activities cities track to denote change over time.

MEASURE
A specific unit used to assess an indicator. For example, to assess children's ease of access to nature, a city might use as a measure the percentage of children who live within a safe, 10-minute walk of a natural area.

METRICS
Standards of measurement that guide a field of practice.

QUALITATIVE
Describing the condition or properties of something rather than its number or amount. For example, a qualitative indicator could describe or categorize the way a child feels towards nature.

QUANTITATIVE
Describing the amount or proportion of something based on numerical values. For example, a quantitative indicator could describe the percentage of city land covered by tree canopy.

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