Social Equity Value Analysis of Infrastructure with **Chris Behr and Cathy LaFata**

Chris Behr

Cathy LaFata

HDR Principal Economist **Chris Behr** evaluates system risk and reliability and economic consequences to improve decision making. **Cathy LaFata**, HDR's transportation equity director, integrates equity and consideration of environmental justice into projects.
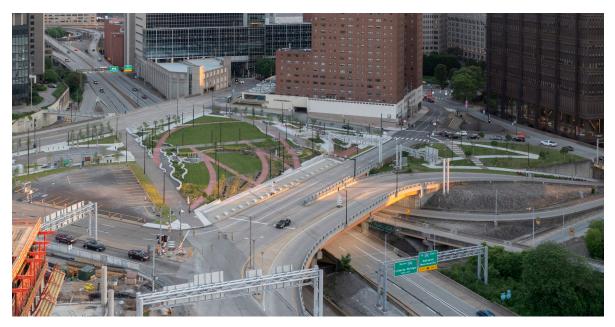
In this installment of Experts Talk they explain the formulation for Behr's SEVA approach and its implications for the infrastructure industry.

A New Approach to Measure the Social Value of Infrastructure Projects to Low Income Populations

While efforts to prioritize equity in infrastructure planning are advancing, the industry has grappled with how to account for benefits of projects to low-income populations. Currently, valuable insights are gained from social vulnerability indices which can be presented visually with maps. Federal, state and local agencies have developed such indices and have at times used them in combination with standard benefit-cost analyses (BCA) to identify projects that both address critical needs and provide positive net benefits to a community.

HDR Principal Economist Chris Behr has been applying distributional analysis methods on infrastructure projects for over two years now. Based on initial research funded by an HDR fellowship grant, he has established an economic analysis method called Social Equity Value Analysis (SEVA). SEVA applies a weighted BCA framework with sound methods for incorporating income distribution data from the U.S. Census and other sources. In a weighted BCAs, project beneficiaries' incomes are used to compute weights, which in turn are combined with standard BCA results to reveal a new measure of social value. Weighted BCAs have long been discussed in economic theory. Now, with SEVA, HDR is developing a growing practice in its application.

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An urban park designed by HDR spans over a depressed section of I-579 in Pittsburgh.

Q. What is SEVA and how can it be used to support the development and funding of infrastructure?

Behr: SEVA reveals the value for money of projects, like a BCA, but from a deeper perspective. In a standard BCA, all project beneficiaries are assumed to place the same value on outcomes such as time savings, risk reduction or cost reduction. With a SEVA, the value of a project accounts for the evidence that people with lower incomes will value benefits more than those at higher incomes. This difference in value per income level is captured by weights computed in SEVA and based on economic theory. Projects that benefit more people with lower incomes show greater social value by using income-weights. Used in conjunction with a traditional benefit-cost analysis, SEVA can help agencies more effectively consider tradeoffs in economic and equity value across infrastructure programs.

SEVA is widely applicable to many forms of infrastructure programs and policy, especially where beneficiaries differ by income levels, which can be evident in different ways, such as transportation mode, neighborhood location or cost of services. As such, SEVA supplements existing approaches to reveal higher values for projects in communities identified as disadvantaged. We have applied SEVA to transportation, water, energy and broadband projects to produce a new measure of project value.

Our findings indicate that the SEVA process can reveal important new insights for the value of a project. In some cases, the results of SEVA show a net positive value of a project even when a standard BCA does not. SEVA is universally applicable for local and state agencies seeking federal funding. While grant programs still look for conventional BCA results, they also seek results from distributional analyses like SEVA.

Q. What is the outlook for the role of equity in infrastructure decision-making? How does SEVA contribute to that?

LaFata: We are moving from a time when infrastructure equity was a nebulous concept to new requirements that it be implementable and measurable. It is not enough to say that a project can benefit a certain community — we must show how and to what extent it benefits that community. A SEVA approach can help us move the needle.

With the issuance of Executive Order 14096 in April 2023 that reflects modifications to how we address environmental justice in project development, it is evident that many of the earlier objectives of equity are flowing into federal requirements. Environmental justice requires that agencies show the specific benefits of their projects, not just identify and mitigate impacts to communities with environmental justice concerns.

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The recent changes to environmental justice confirm the priority of the federal government across all agencies to include equity-related considerations during project development, from planning through implementation. Moreover, federal agencies in the U.S. are focusing attention on the actual benefits of federal investments realized by communities, which requires us to be able to measure those benefits.

Behr: Challenges can arise in implementing SEVA because it generates a measure of project value that differs from a traditional BCA. New information adds complexity to decisions, even if the information helps consider equity goals. To meet this challenge, our consulting practice is moving beyond conducting evaluations of a single project. We are now supporting clients as they consider SEVA and BCA in a portfolio of wide-ranging organizational initiatives. This work enables clients to better evaluate the best use of project funds by balancing economic and financial returns with equity interests across a suite of infrastructure solutions and/or a capital program. We are also in active discussions with several federal agencies in the U.S. to help them understand the implications of weighted BCAs and how their funding decisions can reflect broader implications of social value.

Q. What value will the SEVA approach bring to our clients?

LaFata: The value of this approach goes far beyond that of a benefit-cost analysis.

Clients often ask how they can quantify the benefits of potential programs or specific investments as they apply to disadvantaged or low-income populations. As agencies strive to achieve the objectives of Justice40, which represents the U.S. federal government's goal that 40% of the overall benefits of climate, clean energy, affordable and sustainable housing, and other investments flow to disadvantaged communities, there is a need to be able to measure these benefits. For example, we can show that a new transit stop in a low-income area will improve travel time, access to opportunities, and safety — mostly qualitative benefits. But how do we measure that in a quantitative way? SEVA provides a solution to that issue.

We can show how a project infrastructure decision will affect a specific community by combining both a qualitative analysis, which is often based on meaningful engagement with communities, with this quantitative measurement. This provides infrastructure owners an opportunity to better evaluate their programs' outcomes and make more informed investment decisions. SEVA can also support discretionary grant applications to help an agency deliver solutions that can improve the quality of life in their communities.

Q. How can an agency incorporate SEVA into their decision-making process?

LaFata: If an infrastructure owner is passionate about incorporating equity as a component of their capital program and is looking for opportunities to prioritize underserved communities, SEVA helps identify investments that can provide the biggest bang for the buck. It will not replace the current prioritization process but adds another layer to help agencies identify and prioritize infrastructure applications that have the most equity-related impact. It can also help the delivery team articulate and justify the benefits of a capital improvement plan to the city council and/or the board.

Q. Is SEVA an acceptable economic analysis method?

Behr: SEVA emerged from a research effort begun in 2021 that I spearheaded via the HDR Fellowship Program. When I started this research, the concept of equity had been only recently elevated as an important criterion for government agencies. Although equity goals and needs were being evaluated on a neighborhood-scale with various indicators, economic methods provided no input since U.S. federal guidance on economic analysis, especially benefit-cost analysis, assumed that all beneficiaries gained the same value per unit of improvement. SEVA opened an opportunity for economics to contribute to discussions on equity by revealing how the benefits of projects are distributed by incomes of beneficiaries, and by showing what value those benefits bring to people. This past November, the White House Office of Management and Budget finalized its revisions to guidelines on economic analysis for projects and policies and included for the first time a reference to weighted BCA methods. This new U.S. federal guidance fully legitimizes the approach that we take with SEVA.

Q. What led you to your career specialty?

Behr: My circuitous path to becoming an economist revolves around my interest in structures and systems. Initially, I thought I would become an engineer. I began college in a civil engineering program studying the physical properties of how structures are built. But soon, I found myself drawn more to societally-created structures — that is, the public and private organizations and the policies and investments they implement. After earning bachelor's and master's degrees in economics, I ended up back in school again and earned a second master's degree — this time in civil engineering. Quite fortunately, I was asked to join the HDR economics and statistics team and 18 years later, I am still in the right place and pursuing my dual passions.

LaFata: My interest in equity has emerged from my background as a transportation planner. Good planning is an iterative process in collaboration with communities, so the opportunities are developed to meet the needs of the communities that we serve. I do not think of transportation planning as solely the process to identify how people get from point A to point B. What matters to me is that we as planners are helping to provide infrastructure or service that improves the lives of the people who are at the receiving end of our efforts. This is the reason I became a planner – so that I can help to provide a voice to the communities we serve and improve their lives as a product of my efforts.

I have been working in environmental justice as long as it has been federally regulated, and the more we implement equity measures the more I become confident that this is the future of transportation. Transportation infrastructure has an unfortunate history of harming communities, and we cannot go back to those ill-informed decision-making processes. Our communities deserve better, and we have a path forward to provide them with a better approach.

Q. What advice do you have for those new to the profession?

Behr: Be curious. Lean in and embrace the role that we can play. Even in the constructed realities of our spreadsheets, we are providing an objective perspective on comparative value. The important thing about being curious is what happens in those analyses. Economists should be constantly asking why and why not. For instance, why are we using one source of data and not another? Why is growth in demand increasing so much? Why are the results the way they are? Asking why helps you understand the meaning behind the numbers. Asking why keeps your approach to analyses fresh and helps to unlock underlying meaning in the economic values we produce.

LaFata: Be bold. If it feels like something is the right thing to do, if you have ideas, put them out there. The worst that could happen is that your client, your team, or your community might say not yet. You cannot move the needle if you don't try.

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