RESEARCH BRIEF
From Outcomes to Impact:
An Exploratory Model for Estimating the Health Returns of Comprehensive Community Development

A Project of the Build Healthy Places Network in partnership with Metropolitan Planning Council, University of Chicago Center for Spatial Data Science and Chicago Department of Public Health

Chloe Gurin-Sands, MPH, Metropolitan Planning Council
Alden Loury, Metropolitan Planning Council
Shehara Waas, MPP, Metropolitan Planning Council

Marynia Kolak, PhD, University of Chicago

Renee Roy Elias, PhD, Build Healthy Places Network
Douglas P. Jutte, MD, MPH, Build Healthy Places Network

Megan Cunningham, JD, Chicago Department of Public Health
Emily Laflamme, MPH, Chicago Department of Public Health

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OVERVIEW

Cross-sector community development efforts that address multiple social determinants of health are now part of a national movement, but practitioners lack tools to quantify the health value of these interventions in economic terms. The model described here provides a starting point for estimating the health returns of community development investments.[1] The goal of a return on investment (ROI) calculator is to enable community development organizations to make the business case for their work, particularly for the healthcare sector, and ultimately to drive continued investments in low-income communities to improve health and well-being. Our approach builds upon the methodology of the Low Income Investment Fund's Social Impact Calculator and the Work Integration Social Enterprise Societal Cost Impact Calculator and incorporates additional cost savings and social return on investment literature spanning community development, urban planning, and public health. Based on existing research that allow the assignment of dollar amounts, our calculator explores the value of four types of community development interventions that address important social determinants:

- Affordable housing for families
- Community Health Centers (CHCs)
- Equitable Transit-Oriented Development (eTOD)
- Supportive housing for homeless individuals

While a fully comprehensive health return estimator would require incorporating other social determinants of health often present in community development efforts (e.g., workforce development, healthy food access, early childhood, etc.) our model uses existing research to provide a partial estimate of overall health returns. We intend this model to be a starting point to evaluate existing or planned projects and to help guide investment decisions.

In this research brief, we first define health returns and associated metrics drawing from current evidence. Subsequently, we describe the components of our proposed model based on the four community development interventions addressing social determinants noted above. Next, we apply our model to the Conway Center, a large-scale community development investment in Washington D.C., which addresses multiple social determinants of health simultaneously. We conclude with an overall health returns estimate of the Conway Center and discuss limitations of this approach.

WHAT IS A "HEALTH RETURN"?

We define "health returns" as any monetary value of measurable improvements in health and well-being gained from community development investments. "Health returns" are distinct from "health impacts" in that "health returns" have a specific focus on the economic value of "health impacts" (broadly defined) such as lower diabetes rates, improved housing, or economic stability associated with health and well-being. These returns may accrue to a wide range of beneficiaries, be it residents of communities served (e.g. reduced expenses or higher incomes), specific institutions incurring healthcare costs (e.g. healthcare systems, government, or private insurers), or society at-large (in the form of tax savings, reduced social service expenditures, etc.)

We first conducted an extensive review of existing research on healthcare cost savings and social returns on investment, such as increased household income or improved literacy. Using that evidence, we then created a model for "health returns" based on the following metrics. These metrics were selected both for their use in the health returns literature and their utility in real-world community development projects.

- **Cost Savings to Healthcare Systems:** The amount healthcare providers, insurers, and taxpayers would save due to a reduction in high-cost medical interventions such as emergency room visits.
- **Income Boost to Individuals/Households:** The amount of discretionary income an individual or household would have that is no longer needed for housing expenses. Greater income has been associated with better health.[2]
- **Additional Investments:** Additional public and private dollars that can be leveraged (use borrowed money) for a Community Health Center as a result of federal government investment.
- **Savings from Social Cost of Carbon:** A comprehensive estimate of long-term damages done by carbon dioxide emissions, including costs to human health.[3]
- **Value of Reduced Mortality:** An estimate of the value of a life saved from adverse health conditions caused by environmental pollution. This is not a dollar value of an individual life but rather an estimation of an individual's willingness to pay for a reduction in mortality risk.[4]

HEALTH RETURNS BY SOCIAL DETERMINANT OF HEALTH

To develop our model, we first cataloged baseline health return estimates from existing literature for four community development interventions to address social determinants of health that have been both extensively studied and are prominent aspects of community development practice. This includes affordable housing for families, CHCs, eTOD, and supportive housing for homeless individuals. If there were multiple studies with a dollar amount associated with a particular type of return for a specific social determinant (e.g., cost savings of supportive housing), we took note of ranges and averages.

We use the example of the Conway Center, completed in 2019, to show how these baseline estimates provide the foundation for more fine-grained health returns calculations that consider growth rates, change over time, and other factors. The Conway Center is a $90 million comprehensive community development investment in long-disinvested northeast Washington, D.C.; we lay out below how community developers can derive a rough estimate of health returns based on our working model.

The Conway Center includes 202 units of affordable housing (110 designated for low-income households, 92 for previously homeless individuals), job training for 300 adults each year, and a community health center that will provide services for 10,000 local residents annually.[5] In addition, the Center is located directly across the street from a DC Metro subway station providing easy access to public transportation.

CALCULATIONS:
AFFORDABLE HOUSING FOR FAMILIES

Baseline Health Return Estimates:
$7,716 annual income boost per family living in affordable housing[7]

Affordable housing development is one important function of community development, with growing evidence of its monetary benefits for families and communities. According to the 2011 Consumer Expenditure Survey, the lowest income families with children spent $1400 per month on basic necessities, roughly 60 percent of which was spent on just housing alone.[8] Were the same family housed affordably, they would spend only 19 percent on housing. Accounting for inflation and affordability restriction terms[9] of an affordable housing development, we estimate that a family living in affordable housing would experience a monthly savings of $643, translating to $7,716 in additional income annually.[10]

Savings: Assuming that all of the Conway Center's 110 affordable housing units are subsidized with a 25 year affordability restriction term and 2.1% inflation rate, the project would have the potential to generate **$27.5 million in income boosts** to its low-income residents over the life of the project.

COMMUNITY HEALTH CENTERS

Baseline Health Return Estimates:
$3,437 annual cost savings per patient to healthcare systems for patients using Community Health Centers (CHC) compared to other means of receiving primary care services[10]
$2,998 annual income boost per individual from improved health literacy using relevant programs at CHC[11]
$340,000 in new public and private funding per $1 million federal government investment[12]

Community Health Centers (CHC)[13] are non-profit neighborhood health centers serving uninsured, underinsured, low-income, and other individuals with limited access to primary health care services. CHCs are largely funded by local and federal government agencies and were expanded nationally with the passage of the Affordable Care Act in 2011. Our review of existing evidence found a number of studies on the cost savings of CHC. Most notably, researchers of a 2014 study conducted after the passage of the ACA estimated healthcare system cost savings of $3,437 per patient per year.[14]

A 2009 systematic review of the costs of limited health literacy found that individual patients would save between $143 - $7,798 annually with improved literacy. Taking the average savings from the six studies, we assigned an annual income boost of $2,998 for individuals participating in health literacy programs at CHC.[15] Finally, the National Association of Community Health Centers estimates that every $1 million of federal government investment over the lifetime of a CHC led to an additional $340,000 in combined funding from state and local government grants as well as foundation and private grants.

Savings: Assuming that the Conway Center's CHC is a $10 million investment that will serve 10,000 people with a New Market Tax Credit Program term of 7 years and a 6% rate of increase, the project has the potential to produce **$288.5 million** in cost savings to healthcare systems, **$25 million in income boosts** from improved health literacy, and opportunity to leverage an additional **$3.4 million in public and private funding**; a return totaling approximately $316.9 million.

EQUITABLE TRANSIT-ORIENTED DEVELOPMENT (ETOD)

Baseline Health Return Estimates:
$250 annual cost savings to healthcare systems per unit of affordable housing near transit,[16]
$10,160 annual income boost from switching from driving to public transportation[17]
$4,960 average savings by society-at-large from reduced mortality per commuter,[18,19]
$120 savings annually to society-at-large per unit of housing near transit in savings on the social cost of carbon.[20]

For the purposes of this brief, equitable transit-oriented development (eTOD) is defined as a type of urban real estate development serving low-to moderate income households that maximizes housing, commercial, and leisure space within a half-mile of public transportation while minimizing displacement of these households.[21] eTOD has been found to have wide-ranging economic, environmental, and health benefits including increased property values near transit investments, improved access to jobs and economic opportunity, more healthy and active lifestyles from increased walkability, and reductions in greenhouse gas emissions, air pollution, and congestion from reduced household driving.[22] We focused on the monetary benefits of low-income families living near transit in the form of cost savings to healthcare, annual income boost, reduced mortality and social cost of carbon. We calculate returns based on the expected number of commuters in affordable housing units, and take the conservative assumption that only a portion of these units have more than one adult.

Using the Low Income Investment Fund's (LIIF) Social Impact Calculator methodology, we estimated that a 1.18-unit increase in body mass index will increase healthcare expenditures by $250, according to 2014 estimates.[23] Accounting for inflation, we infer that living near transit could potentially prevent these extra costs due to increased physical activity and resulting in lower body mass index. Thus, we estimate that the absence of these extra costs would translate to an income boost.

According to a 2018 report by American Public Transportation Association, individuals can save an average of $10,160 annually when switching from driving to taking public transportation; we infer that these savings could apply to a portion of low-income families living in affordable housing near transit.[24] We conservatively assume that only a third of the total population will be impacted and able to save substantially from reduced car ownership and maintenance.

Next, a classic 1987 study found that a 30-minute increase in physical activity can save two human lives per 1000 people.[25] A 2008 study expanded on this to identify health benefits over the lifetime of an infrastructure project, tying in findings that urban design improvements can increase physical activity for up to 1.24% of an urban population.[26] A dramatic change in walkability for a few people corresponds to big impacts over time. Based on the U.S. Environmental Protection Agency's latest estimated "Value of a Statistical Life" of $10 million (2010), we estimate that eTOD would produce an averaged savings of $4,960 benefit per commuter from reduced mortality to society- at-large. When calculating an amount that accounts for lifetime savings, this corresponds to $496,000 saved per 100 commuters.

The social cost of a ton of CO_2 emissions was $40 in 2014.[28] According to the American Public Transportation Association, a single person can save 4,800 lbs or 2.4 tons of carbon per year when switching from driving to public transportation.[29] We estimate that this would amount to annual savings of $120 per household (estimated at 1.25 people) to society at-large from individuals living in affordable housing near transit who are assumedly using public transportation instead of driving.

◆ **Savings:** The Conway Center is adjacent to a DC Metro subway station, so in line with the LIIF Social Impact Calculator, our eTOD returns calculation is based on previous studies that found 35% of low-income households within a half mile of transit commute by transit or walking (this would amount to 37.4 households within the Center's 110-unit affordable housing development). Assuming a 2.1% rate of increase and 25-year affordability restriction period, the Conway Center has the potential to generate **$447,000 in cost savings to healthcare systems, $12.3 million income boost, $496,000 savings from reduced mortality, and $428,000 savings on the social cost of carbon, resulting in a total rate of return of approximately $13.7 million.**

SUPPORTIVE HOUSING FOR HOMELESS INDIVIDUALS

Baseline Health Return Estimates:
A minimum of $3,919 in annual cost savings to healthcare systems per individual living in supportive housing from reduced hospitalizations and emergency department visits.[29]

In comparison to other low-income individuals, people experiencing homelessness are disproportionately high utilizers of shelters, public health services, and emergency departments due to complex health impacts of housing and economic stability associated with homelessness.[30] By providing accessible, affordable housing with on-site wrap-around health and social services for homeless individuals and families and those living with disabilities, supportive housing has proved to be an effective strategy for improving the health of its users, providing housing stability (which also has been shown to impact physical health), and yielding cost savings to healthcare systems and taxpayers. According to a Denver-based study cited by the Center for Supportive Housing and the National Housing Conference, the decreased use of emergency health services alone as a result of supportive housing can yield cost savings of $3,423 - $24,876 per individual to healthcare systems.[31]

Healthy Future Fund

The completed Conway Center in Washington, D.C.

◆ **Savings:** Assuming that 92 homeless individuals will be served by supportive housing for an affordability period of 25 years and a 2.1% rate of increase, the Conway Center's supportive housing with on-site services has the potential to produce **$11.7 million in cost savings** to healthcare systems.

OUR MODEL FOR ESTIMATING HEALTH RETURNS

Based on conservative estimates, a $90 million investment, and also accounting for 5% loss from other factors, we estimate that Conway Center has the potential to generate **$351.5 million in health returns** over its lifetime (see Table 1). This would translate to a **291% rate of return** accrued to a range of organizations including hospital systems, bank lenders and other investors, transportation agencies, residents, and society at large.

A central issue with any calculation of returns is accounting for uncertainty. First, any attempt to quantify future returns is approximate. Our calculations are based on research and literature conducted in a specific time, under specific conditions, and therefore cannot predict definite returns. Additionally, many factors beyond those explored in this model can influence returns, such as characteristics of the community where the investment is made, specific details of the investment, and other real-world influences. That said, it is still possible to use the numbers generated above to create a ballpark estimate of health returns, accounting for factors such as: 1) improvements that would have happened without the investment, 2) benefits that may be claimed at the expense of other activities outside the project, and 3) any number of other hidden or confounding factors that could have contributed to improved health and well-being as a result of comprehensive community development.

Table 1: Summary of Model Estimates for Health Returns on the Conway Center, Washington, D.C.

These estimates are pulled from the savings identified in each of the four categories in previous sections. To explore an interactive tool applying these model assumptions to a community development effort of your own choosing, go to the Neighborhood Health Calculator.

	CONWAY CENTER INPUTS	HEALTH RETURN CATEGORY	RAW HEALTH RETURNS
Affordable Housing for Families	202 units	Income boost	$27.5 million
Community Health Center	10,000 patients	Cost savings to health systems	$288.5 million*
		Income boost	$25 million*
	$10 million	Leveraged investments	$3.4 million
Equitable Transit-Oriented Development	110 units	Income boost	$12.3 million
	137.5 commuters	Cost savings to health systems	$447,000
		Reduced mortality	$496,000
		Savings from social cost of carbon	$428,000
Supportive Housing	92 individuals	Cost savings to health systems	$11.7 million
		Total Health Returns	**~$370 million over 25 years**
		Adjusted Health Returns assuming 5% loss	**~$351.5 million over 25 years**

* = term rate of 7 years. All other calculations use affordability term of 25 years.

CONCLUSION

This working model provides a starting point for making a business case for community development investments addressing multiple social determinants of health. While a more comprehensive estimation of health returns would need to consider a broader range of specific social determinants of health and types of health returns, we were limited by the evidence available to make those estimates. Yet despite this relatively narrow view, our working model showed that community development investments have the potential to yield health returns well beyond the costs of the original investment, not considering other sources of financial returns. In other words, addressing social determinants can provide investors with the health impact that they seek. There are, of course, limitations to our estimates but this project confirms the value of using existing evidence to make a business case for community development investments. This model may also be presenting a conservative estimate, as it does not consider returns to criminal justice, ability to participate in the workforce, and other social determinants, nor does it estimate benefits that may accrue intergenerationally. Future research might expand this model to include additional social determinants and also to better understand how the benefits of these "health returns" can be shared across investors and low-income communities alike.

Click here to access the interactive Neighborhood Health Calculator based on the model described in this report.

REFERENCES

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[8] Affordable housing developments supported through the federal Low Income Housing Tax Credit Program require rents to remain affordable for a set period of time, typically a minimum of 15 years. Some states require longer affordability restrictions in the U.S. Department of Housing and Urban Development's report, "What Happens to Low-Income Tax Credit Properties at Year 15 and Beyond?"

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