Center for Systems and Community Design

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This proposed Center was approved by the CUNY Graduate School of Public Health and Health Policy Faculty Student Council on March 4, 2016.
Center for Systems and Community Design

Overview
The vision of the Center is to be a hub of research excellence and innovation in health promotion and disease prevention through systems and community design. The mission of the Center is to converge faculty, students and external experts to develop and test novel prevention strategies for the promotion of effective and sustainable systems and community change for health. The focus of the Center will go beyond isolating and targeting traditional risk factors of disease. Rather, the Center aims to understand the important feedbacks, structures and goals inherent in complex organizational and community systems underlying health and, in turn, enable or create systems parameters that are health-promoting while disrupting or mitigating those that are deleterious to health. Given the recognized complexity of public health challenges today, with many interacting actors, factors and sectors across biological, behavioral, social, political, and economic domains, the Center is founded on the principle that a solution-oriented complex systems approach is necessary for achieving lasting, transformative health and for improving health equity.

Background
Endemic and policy-resistant public health and social problems such as obesity, chronic disease, mental illness, and poor quality of life are complex systems problems where the intersection and feedbacks among multiple actors, factors and sectors, as well as dynamic changes over time, render the behavior of the system difficult to predict and manage. As such, simple solutions such as giving people the knowledge and skills alone or relying on a singular policy change are seldom effective in the long term. To successfully address these complexities, we need new ways of thinking and new tools. We need to be able to simultaneously tackle factors across the individual, environmental and policy levels as well as directly impact and shift the social and cultural space where individuals interact with each other and with the multiple facets of their environment. A systems approach to public health focuses on unraveling and intervening on such feedbacks and dynamics inherent in complex problems. In addition, seeing complex problems through a systems lens may also yield insights into the structures or goals of a system that may need to be modified, re-aligned or created to effectively and sustainably generate health.

Community design is the application of systems thinking to the community setting. The Center is committed to addressing complex public health issues within New York City and beyond, with a particular emphasis on closing the health disparity gap in underserved communities. Research on community design focuses on both the social and built environment of communities. In addition, the Center is interested in developing and testing new practices for community engagement, cross-sectoral collaboration, and the adaptation of business models for innovation in communities. Questions such as what motivates people in the present, how culture forms and changes, and how the social, physical, economic and political environment can be...
leveraged and harnessed to expand people’s choices and motivation for health are central to the concept of community design.

Methodological research will also be part of the Center’s work. Systems science, as an emerging field in public health, brings to the forefront new and exciting tools that complement existing methods and help us grapple with complexity. For example, there are both qualitative and computational technologies that we can use to map and simulate the complexity of the world in which we live and observe how the public health and social problems of interest arise. These systems models can also serve as virtual laboratories within which interventions can be designed and tested. The effect of these interventions, in varying combinations and time sequence, can be studied over time to help us answer questions of effectiveness, sustainability, scalability and reach. In addition, systems modeling can be used to help narrow hypotheses or generate new ones to inform subsequent empirical research. Last but not least, there are systems frameworks and tools from diverse fields, such as social sciences and business that are useful for informing the design and evaluation of systems change in the context of prevention systems and community health. Through its research, the Center aims to advance the science on such frameworks and tools.

The formation of the Center comes at a critical time in the field of public health. Over the last decade, there have been increasing calls for the integration of systems approaches with health promotion and disease prevention. Both the National Institutes of Health and the Institute of Medicine have spearheaded and pushed for the development of this integration. Systems think is also a key cross-cutting competency within the accreditation framework for public health education. However, to date, there are few schools of public health with the expertise to grow this area of science, in terms of both developmental and translational research. The proposed Center will be unique in the convergence of diverse disciplines and methodologies, in the translation of systems insights into innovations in prevention and community health, and in the building of capacity in systems practice among faculty fellows and students in the Center.

Objectives
There are four overarching functional objectives that the Center seeks to achieve:

1. **Research Function:** To foster and conduct collaborative and trans-disciplinary research through the lens of systems science and design thinking, leveraging theories and methods from diverse disciplines.

2. **Educational Function:** To train the next generation of systems thinkers and practitioners in public health through the engagement of students and young investigators in the Center’s work.
3. **Convening Function:** To serve as a think tank and forum of multi-stakeholder and cross-sectoral dialogue and solution generation for urgent and complex public health issues.

4. **Practice Function:** To provide expert consultancy to communities and organizations in diverse sectors on strategies for creating and evaluating systems change.

The Center sees the infusion of outside ideas from not only academia but diverse practice and business communities to be key to the process of innovation. As such, the Center envisions institutionalizing the role of non-resident fellows who are experts external to CUNY and who can fill expertise gaps or help forge new ideas and collaboration in the Center. Non-resident fellows will be unsalaried but the Center will cover their travels to New York periodically, as needed, to participate in Center activities. If appropriate, courtesy appointments can be provided to non-resident fellows who wish to work more closely with students in accordance with the requirements of academic programs.

As funding permits, the Center envisions playing a leading role in curating and cultivating transdisciplinary and cross-sectoral thinking and work on complex public health issues. This could occur, for example, in the form of an annual or special forum that brings together diverse stakeholders to focus on a particular complex issue. The Center would serve as a neutral convener in this case and lends its expertise in framing the problem, unpacking complex issues, synthesizing solutions, and recommending next steps.

Finally, as a way to broaden the Center’s funding and impact, the Center will provide expert consultancy to organizations, communities, and government agencies, as requested, on how best to design for and evaluate systems change within their specific contexts. Over time, the Center will develop a business model to market its capabilities. This will ensure that the Center can grow and maintain its infrastructure beyond coverage of faculty time.

**Topical Areas**
Topics of interest to the Center are broad by design and not limited to a particular aspect of health and wellness. It is the systems and design thinking approach that is central to the Center. Current areas of research by founding faculty of the Center include:

- Urban design and health
- Architecture and health
- Development and applications of health technology
- Cultural dynamics and health
- Integrated models of primary and secondary prevention
- Integrated models prevention and primary care
• Application of design thinking to community health
• Systems modeling
• Behavioral design in health
• Social media and marketing
• Public opinions research and strategies for public mobilization
• Evaluation of systems change
• Policy and systems implementation and scale-up

Examples of Research Initiatives
Two examples are briefly described here to illustrate the kinds of research the Center would undertake to address systems and community design. These do not represent all the projects in progress or in development at the School.

1. Systems Design. One of the currently funded projects involves the development and deployment of a benchmarking system using common metrics to assess the design, performance and impact of industry-sponsored community-based programs on food access and obesity prevention. The project is supported by the Healthy Weight Commitment Foundation. The new benchmarking system includes several components, including a company-level survey, a program-level survey, and a community-level mixed-methods field assessment. In rating company and program performance using a common framework, the system will provide insights into how company strategies and programs can be improved, how corporate social responsibility can be broadened to be comprehensive of community health, and how greater collective impact can be achieved through industry and cross-sector synergy. Ultimately, the initiative is designed to foster a new platform for enhanced public-private partnerships and to drive community health strategies that are likely to yield the greatest health impact.

2. Community Design. Another example of a funded project that falls within the Center is supported by the National Cancer Institute. It involves a longitudinal, natural experiment evaluation of the impact of citywide park redesign and renovation on physical activity, mental health and community wellbeing in NYC. There has been significant interest in the role of the built environment on health, but few studies have been conducted at the scale of the CUNY initiative. The study will recruit and track 2,000 adults in 20 intervention park neighborhoods vs. 20 control park neighborhood over five years. In addition, the study will leverage the latest mobile technology for participant recruitment, engagement, survey collection, and motion and location monitoring. The study will yield critical insights to inform future urban and community design policies and practices in NYC, nationally and internationally.

Justification for the Center
The Center serves as a key focal point for innovation in the CUNY Graduate School of Public Health and Health Policy. It will bring about focused energy to realize the School’s mission in promoting equitable, efficient and evidence-based solutions to
pressing health problems. The Center will significantly add visibility to the research work and expertise areas of the School and provide a point of distinction for the School from other accredited schools of public health. Through the Center, an organized platform of research will facilitate the engagement and collaboration of both internal and external researchers, leading to increased research productivity for the School. Last but not least, the Center will play a critical role in linking students to faculty research across disciplines. Within the Center, cross-fertilization of research ideas and methods will be made possible for faculty and students from administratively isolated departments.

**Governance, Faculty and Staff**

The Center will be directed by Dr. Terry Huang, Professor of Community Health, at the CUNY Graduate School of Public Health and Health Policy. Dr. Huang was recruited to the School in 2014 to build a new research portfolio in public health innovation. He was previously Professor and Chair in the Department of Health Promotion at the University of Nebraska Medical Center (UNMC) in 2010-14 and Director of the Obesity Research Strategic Core at the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development, National Institutes of Health (NIH), in 2005-2010. He was a co-founder of, and remains a senior advisor to, the National Collaborative on Childhood Obesity Research (NCCOR), which leads the national roadmap for childhood obesity research across the NIH, Centers for Disease Control and Prevention, U.S. Department of Agriculture, and the Robert Wood Johnson Foundation. Dr. Huang is a global leader on creative solutions for obesity and chronic disease, systems-oriented prevention strategies, cross-sectoral partnerships, and the translation of science to policy. Since his time at the NIH, he is recognized as an early champion and ongoing leader on the integration of systems science with obesity research nationally and internationally. He has a strong funded research record and has published over 100 peer-reviewed articles. He has also served as a consultant or expert for the Institute of Medicine, Robert Wood Johnson Foundation, Global Alliance for Improved Nutrition, Access to Nutrition Foundation, EPODE International Network, The Australian Prevention Partnership Center, Victoria Health Department (Australia), The Johns Hopkins University Global Obesity Prevention Center, and Deakin University, among other notable organizations. For his work with NCCOR, Dr. Huang received the U.S. Department of Health and Human Services Secretary’s Innovation Award in 2010 and the NIH Director’s Award in 2011. In addition, he received the National Cancer Institute Award of Merit in 2012 and was named UNMC Distinguished Scientist in 2013. He is an alumnus of the American Swiss Foundation Young Leaders Program. Dr. Huang holds a PhD in Preventive Medicine and an MPH from the University of Southern California, and a BA in Psychology from McGill University. He is Board Certified in Public Health (CPH) and Fellow, Councilor, and Past Program Chair of The Obesity Society. He is also VP North America of the World Obesity Federation.

The director will be provided one course release per year to oversee the development of the Center. In addition, once formed, the Center expects to bring on
a deputy director to assist the director in the management and operation of the Center. The deputy director will also be provided one course release per year.

Founding faculty members of the Center are drawn from current faculty within the CUNY School of Public Health and Health Policy. These faculty serve as resident fellows of the Center. Resident fellows are not paid through the Center. They remain administratively within the School’s departments. However, in accordance to appropriate scope, their research will contribute to the funding pool of the Center through the return of indirect costs. In the future, new resident fellows may be invited from both within the School and from other colleges and schools within CUNY. Resident fellows will serve renewable 3-year terms. In addition to the Director, the list of other founding faculty includes (in alphabetical order):

- Nevin Cohen (urban planning and design)
- Sergio Costa (political science)
- Sandra Echeverria (social, cultural and community health)
- Sean Haley (substance use and policy systems research)
- Glen Johnson (geospatial analysis, ecological health)
- Sheng Li (systems modeling)
- Chris Palmedo (public opinions research, social marketing)
- Diana Romero (qualitative and community-engaged research)
- Gordon Shen (policy implementation)
- Jim Stimpson (policy research and analysis)
- Lorna Thorpe (epidemiology and practice-based research)
- Kasia Wyka (mental health, quantitative methods, and evaluation research)

Non-resident fellows will be invited to join the Center based on their unique expertise area. Non-resident fellows are based outside CUNY and can be from both academic and practice-based settings. Non-resident fellows will be selected to fill expertise gaps within the Center and based on their ability to meaningfully contribute to the research of the Center. They will serve 2-year renewable terms. The following topical areas will be of particular interest to the Center in selecting non-resident fellows:

- Architecture
- Business and NGO analysis and research
- Consumer research and behavioral economics
- Design and innovation
- Marketing and branding
- Mobile health research
- Social network analysis and intervention
- System dynamics

The Center’s governance will be supported through an advisory board, to be formed and convened upon the official establishment of the Center. The advisory board will
meet at least once a year to provide guidance on the Center’s mission and activities, as well as to give input into future growth opportunities.

The Center’s operation will initially be supported by a doctoral fellow and a part-time grants administrator. In the future, a deputy or assistant director with relevant expertise as well as competency in grants and operations will be sought to help the Center grow its research portfolio and assist in the management of its activities. Current grants and contracts support a number of project coordinators and research assistants. The Center will continue to sponsor graduate students and interns as funding and research opportunities arise.

The Center is one of the key initiatives in the new Graduate School of Public Health and Health Policy. As such, every effort will be made to sustain the Center in the long run. Should there be leadership change at the Center, a national search will be conducted to identify replacement for the leadership of the Center.

In accordance with the by-laws of the CUNY Graduate School of Public Health and Health Policy, the concept of the Center has been ratified by the School’s Faculty Student Council.

**Funding and Budget**

The Center is currently funded at approximately $1M a year through mostly extramural research and contracts, alongside modest contributions from the Graduate School of Public Health and Health Policy to support the infrastructure of the Center. Both federal and major foundation grants are part of the portfolio. Funding is expected to sustain at least through the next five years. The Director and fellows of the Center will continue to pursue new partnerships and funding opportunities each year to add to the Center’s research portfolio. Notable organizations of funding options include but are not limited to:

- National Institutes of Health
- Centers for Disease Control and Prevention
- US Department of Agriculture
- US Department of Defense
- US Department of Housing and Urban Development
- US Department of Interior
- National Science Foundation
- Robert Wood Johnson Foundation
- Colorado Health Foundation
- NY State Health Foundation
- United Health Fund
- City of New York

The majority of the Center’s funding is used to directly support research activities. The recovery of indirec-ts will be used to support non-research operations such as
invited lectures, workshops, training activities, and travel of non-resident fellows to interface with members in the Center.

The Center is expected to work with the School’s development team to identify and solicit potential private donors, with the goal of establishing a named Center in the future.

Table 1 provides a general outline of the Center's revenues in the next five years, based on contributions from the dean’s budget at the Graduate School of Public Health and Health Policy and currently secured extramural funding. Funding growth is expected as new grants and contracts are acquired. Table 2 summarizes the expected expenses of the Center over the next five years.
Table 1. Center for Systems and Community Design Revenues 2016-2021

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
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<td>GSPHHP Contributions</td>
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<tr>
<td>Subtotal</td>
<td>151,208</td>
<td>152,587</td>
<td>109,475</td>
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<td>Grants &amp; Contracts</td>
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<tr>
<td>Direct</td>
<td>715,240</td>
<td>754,933</td>
<td>404,240</td>
<td>403,240</td>
<td>390,513</td>
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<td>Indirect Return</td>
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<td>69,731</td>
<td>61,365</td>
<td>59,453</td>
<td>58,952</td>
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<td>(20% to PI/20% to Center)</td>
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<tr>
<td>Subtotal</td>
<td>794,528</td>
<td>824,664</td>
<td>465,605</td>
<td>462,293</td>
<td>449,465</td>
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<tr>
<td>Total Revenue</td>
<td>945,736</td>
<td>977,251</td>
<td>575,080</td>
<td>462,293</td>
<td>449,465</td>
</tr>
</tbody>
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Table 2. Center for Systems and Community Design Expenses 2016-2021

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<thead>
<tr>
<th></th>
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<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty/Staff</td>
<td>FTE</td>
<td>Salary &amp; Fringe</td>
<td>FTE</td>
<td>Salary &amp; Fringe</td>
<td>FTE</td>
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<tr>
<td>Director (Dr. Huang)</td>
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<td>74,466</td>
<td>36%</td>
<td>74,466</td>
<td>36%</td>
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<tr>
<td>Deputy Director (TBN)</td>
<td>18%</td>
<td>21,897</td>
<td>18%</td>
<td>22,335</td>
<td>18%</td>
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<tr>
<td>Project Manager</td>
<td>100%</td>
<td>83,004</td>
<td>100%</td>
<td>83,004</td>
<td>100%</td>
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<tr>
<td>Grants Administrator</td>
<td>15%</td>
<td>21,598</td>
<td>15%</td>
<td>22,030</td>
<td>15%</td>
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<td>Doctoral Fellow</td>
<td>50%</td>
<td>25,480</td>
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<td>25,989</td>
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<td>Research Assistants (6-18)</td>
<td>50%</td>
<td>179,094</td>
<td>50%</td>
<td>179,094</td>
<td>50%</td>
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<tr>
<td>Subtotal</td>
<td>405,539</td>
<td>406,918</td>
<td>349,108</td>
<td>291,577</td>
<td>293,809</td>
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<td>Research Operations</td>
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<td>570,333</td>
<td>225,972</td>
<td>170,716</td>
<td>155,656</td>
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<tr>
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<td>170,716</td>
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1Full-time faculty/staff at the GSPHHP; 18% FTE represents 1 course buyout for faculty at the CUNY GSPHHP; remaining percent efforts pertain to teaching and other responsibilities at the GSPHHP.