CENTER FOR INNOVATION THROUGH DATA INTELLIGENCE
CIDI
WE ARE A DATA INTELLIGENCE TEAM.

WE USE INTER-AGENCY RESEARCH TO INFORM DATA-DRIVEN POLICY DECISIONS.

WE ARE LOCATED IN THE MAYOR’S OFFICE AND OPERATE UNDER DEPUTY MAYOR FOR HEALTH AND HUMAN SERVICES.
VISION: MAKING DATA COME ALIVE TO INSPIRE CHANGE

DATA

PROCESS

INFORMATION

ACTION

CONTEXT
AREAS OF EXPERTISE

RESEARCH
STRATEGY AND TECHNICAL ASSISTANCE TO AGENCIES
SPECIAL TIME SENSITIVE DATA PROJECTS TO DRIVE ACTION
PROFESSIONAL WRITING AND PUBLICATIONS
LITERATURE REVIEWS AND BEST PRACTICE KNOWLEDGE BASE
OUTSIDE FUNDER RELATIONSHIPS AND FINANCIAL INVESTMENT
SPEAKING ENGAGEMENTS
MAPPING AND DATA VISUALIZATION
REPORT AND INFORMATION DESIGN
DATA SYSTEMS

HRA  HUMAN RESOURCES ADMINISTRATION
DHS  DEPARTMENT OF HOMELESS SERVICES
ACS  ADMINISTRATION FOR CHILDREN’S SERVICES
DOHMH  DEPARTMENT OF HEALTH AND MENTAL HYGIENE
H+H  HEALTH AND HOSPITALS
DOC  DEPARTMENT OF CORRECTIONS*
DOP  DEPARTMENT OF PROBATION*
DYCD  DEPARTMENT OF YOUTH & COMMUNITY DEVELOPMENT*
DFTA  DEPARTMENT FOR THE AGING
DOE  DEPARTMENT OF EDUCATION*

*Not in portfolio
DATA

DATASETS

CITY
Human Resources Administration-Cash Assistance, SNAP, Medicaid
Department of Homeless Services-Prevention, Shelter, Street Homeless
Administration for Children Services-Child Welfare, Juvenile Justice
Department for the Aging-Case Management
Department of Correction-Admissions, Discharges
Department of Probation-Juvenile Justice Intakes, Probation Clients
Department of Finance-Senior Citizen Rent Increase Exemption, Disability Rent Increase Exemption

STATE
NYS Department of Labor-Wages, Unemployment Insurance
Statewide Planning and Research Cooperative System-NYS Hospital and Clinics
Office of Court Administration-Housing Court

NATIONAL
Housing and Urban Development-Public Housing and Housing Choice Vouchers (i.e., Section 8)
Participate in evaluation of the Attendance Matters pilot which has been implemented in three DHS family with children shelters. The pilot is designed to use existing resources with minimal additional resources and coordination support to identify, address and manage multiple systemic, inter-generational and logistical barriers to improve and encourage good school attendance among homeless children.

In collaboration with the NYU School of Medicine, identify adult trends in emergency department visits and hospitalizations before and immediately after homeless shelter entry. The study links DHS data with NYS SPARCS data. The project received a small grant from NYU.

In collaboration with the NYU School of Medicine and University of Pennsylvania, CIDI received a grant from the NYS Health Foundation to identify the health care utilization patterns and costs for the aging population of homeless adults. Findings are informing solutions to mitigate homelessness and concomitant health care costs among this population.
<table>
<thead>
<tr>
<th>Project Title</th>
<th>Description</th>
<th>Agencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEWBORNS IN SHELTER</td>
<td>The study will examine the health status of newborns in shelter and compare their health and human service outcomes to other low-income newborns in NYC.</td>
<td>DHS DOHMH ACS HRA</td>
</tr>
<tr>
<td>THE EFFECTS OF EVICTIONS ON LOW-INCOME FAMILIES</td>
<td>In collaboration with New York University’s Furman Center examine the consequences of evictions for benefits receipt, individual health, homelessness, education, justice involvement and labor market success.</td>
<td>DHS HRA DOC DOE DOL</td>
</tr>
<tr>
<td>A TYPOLOGY OF TRANSITION-AGE YOUTH</td>
<td>In collaboration with the Corporation for Supportive Housing, analyzed the characteristics and trajectories of young adults exiting foster care/ transitional housing to inform housing prioritization for young adults. Funded by New York Community Trust.</td>
<td>DHS ACS DYCD</td>
</tr>
<tr>
<td>NEIGHBORHOODS AND FAMILY HOMELESSNESS IN NEW YORK CITY</td>
<td>Explore how patterns of shelter usage and household well-being compare between families placed in their neighborhood/borough of origin to those placed in new neighborhoods.</td>
<td>DHS HRA DOL DOE</td>
</tr>
<tr>
<td>PREDICTING HOMELESS SHELTER ENTRY</td>
<td>Collaboration with the NYU Furman Center for Real Estate and Urban Policy to understand how household, building and neighborhood characteristics contribute to family homelessness.</td>
<td>DHS HRA NYCHA HPD</td>
</tr>
</tbody>
</table>
In collaboration with Cal State L.A. University, analyze administrative data sets to explore various questions related to the prevalence of dual-system youth, their characteristics, and trajectories. (Funded by the Office of Juvenile Justice and Delinquency Prevention)

Funded by the Conrad Hilton Foundation, the study will enable NYC to understand the long-term educational and employment outcomes of foster youth and to measure the extent to which recent and upcoming policy changes and initiatives are having the intended positive effects.

This atlas includes 59 Community District profiles reflecting their varied characteristics. Each profile starts with a demographic overview and description of community boundaries, and then presents sections organized around the core components of the Two-Generational (2Gen; Children-Parents) and Three-Generational Approach (3Gen; Children-Parents-Grandparents).
A methodological approach in identifying high concentrations of vulnerable populations to assist Post-Emergency Canvassing Operations (PECO).

Through a Robert Wood Johnson Foundation DASH grant, constructed a dataset of DOHMH health data combined with other HHS data at the NTA level. The dataset allows the City to develop comprehensive community health profiles, better align services to the needs of communities, and track progress of initiatives over time.
ACTIONABLE RESEARCH

NYC WELL-BEING INDEX

CIDI commissioned a Capstone team from Columbia University’s School of International and Public Affairs (SIPA) to create a place-based index of socio-economic well-being in NYC communities. The use of a well-being index, a composite measure, integrates data on a range of indicators to approximate the well-being of New Yorkers.
Thrive NYC is a comprehensive mental health roadmap for New York City to raise awareness among New Yorkers about the prevalence and treatment of mental health issues.

CIDI supported Thrive NYC by creating a collection of maps to illustrate the location of mental health and substance use facilities in New York City. These maps also highlight the variation across neighborhoods in access to care.
INTRODUCTION

Young adulthood is a challenging time of transition. Youth who do not have appropriate supports may be at risk of housing instability or homelessness.

It is important to match youths’ needs with available housing placements and other services and to understand gaps in services.

A typology of youths’ outcome trajectories can help understand differences in system use across different domains and be used to prioritize youth with specific risk factors for housing resources.
A TYPOLOGY OF TRANSITION-AGE YOUTH

RESEARCH QUESTIONS

What are the primary patterns of service use for youth once they exit DHS or DYCD homeless shelters or ACS foster care?

What early service use and demographic factors predict these patterns?

Which housing intervention (i.e., subsidized housing or supportive housing) leads to more stable patterns of service use?

Do these patterns differ based on exit system (e.g., foster care or different types of homeless shelters)?
# A TYPOLOGY OF TRANSITION-AGE YOUTH

## SAMPLE

- 18 to 21 years old when they exited from one of the systems listed below
- Exited between July 2011 and 2013
- Outcome period was three years after exit

<table>
<thead>
<tr>
<th>ADMINISTRATION FOR CHILDREN’S SERVICES (ACS)</th>
<th>DEPARTMENT OF YOUTH AND COMMUNITY DEVELOPMENT (DYCD)</th>
<th>DEPARTMENT OF HOMELESS SERVICES (DHS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foster Care</td>
<td>Runaway and Homeless Youth (RHY) Crisis Shelter</td>
<td>Single Adult (SA) Shelter</td>
</tr>
<tr>
<td></td>
<td>Transitional Independent Living (TIL) Program</td>
<td>Adult Families (AF) Shelter</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Families with Children (FWC) Shelter</td>
</tr>
</tbody>
</table>


OUTCOME GROUPS

CONSISTENT SUPPORTIVE HOUSING
N=187
2%
Resided in supportive housing as a head-of-household during their three-year outcome period.

EARLIER HOMELESS EXPERIENCE
N=723
8%
Experienced homelessness in a DYCD or DHS shelter earlier in the three-year outcome period (i.e. within 6 months of exit).

LATER HOMELESS EXPERIENCE
N=675
8%
Experienced homelessness in a DYCD or DHS shelter later in the three-year outcome period (i.e. 1-2 years after exit).

CONSISTENT SUBSIDIZED HOUSING
N=764
9%
Resided in subsidized housing, such as public housing or tenant- or project-based vouchers, as a head-of-household during their three-year outcome period.

FREQUENT JAIL STAYS
N=459
5%
Had multiple and frequent jail stays over the three-year outcome period.

MINIMAL SERVICE USE
N=5,987
68%
Used minimal services during the three-year outcome period, including homeless services, foster care, jail, hospitals, subsidized housing or supportive housing.

WHOLE SAMPLE
n=8,795

EARLIER HOMELESS EXPERIENCE
N=723
8%
Experienced homelessness in a DYCD or DHS shelter earlier in the three-year outcome period (i.e. within 6 months of exit).

LATER HOMELESS EXPERIENCE
N=675
8%
Experienced homelessness in a DYCD or DHS shelter later in the three-year outcome period (i.e. 1-2 years after exit).
EXIT SYSTEM TYPOLOGIES

ACS
FOSTER CARE

DHS
AF SHELTER

DHS
FWC SHELTER

DHS
SA SHELTER

DYCD
RHY
CRISIS SHELTER

DYCD
TIL PROGRAM

Minimal Service Use

Supportive or Subsidized Housing

Later Homeless Experience, Earlier Homeless Experience or Jail Stays

58%
66%
66%
74%
75%
77%
33%
1%
4%
2%
3%
6%
10%
33%
30%
24%
22%
18%
## PREDICTIVE FACTORS

| Gender: Female (compared to Male) |  |  |  |  |
| Gender: Transgender (compared to Male) |  |  |  |  |
| Race: Black/African American (compared to White) |  |  |  |  |
| Exit Age (older) |  |  |  |  |
| Exit System: DHS AF Shelter (compared to ACS Foster Care) |  |  |  |  |
| Exit System: DHS FWC Shelter (compared to ACS Foster Care) |  |  |  |  |
| Exit System: DHS SA Shelter (compared to ACS Foster Care) |  |  |  |  |
| Exit System: DYCD RHY Crisis Shelter (compared to ACS Foster Care) |  |  |  |  |
| Exit System: DYCD TIL Program (compared to ACS Foster Care) |  |  |  |  |

### DEMOGRAPHICS AND EXIT SYSTEM

### PREVIOUS SYSTEM USE

| Multi-system use |  |  |  |
| Number of months in ACS Foster Care |  |  |  |
| Number of movements in ACS Foster Care |  |  |  |
| Number of months in a homeless shelter as a child |  |  |
| Number of stays in a homeless shelter as an adult |  |  |
| Receiving temporary rental assistance upon exit from a DHS shelter |  |  |
| Number of months in the justice system |  |  |  |
| Number of stays in the justice system |  |  |  |
| Ever having a jail or detention stay for a felony |  |  |  |
| Ever having a jail or detention stay for a misdemeanor |  |  |
| Having a hospital visit for SMI/SUD/PTSD |  |  |  |

**INCREASES THE PROBABILITY OF BEING IN A GROUP**

**DECREASES THE PROBABILITY OF BEING A GROUP**
A TYPOLOGY OF TRANSITION-AGE YOUTH

IMPLICATIONS

Services can be **BETTER MATCHED TO YOUTH’S NEEDS** based on information from the service use profiles of each group.

Services and resources can be **BETTER TARGETED TO YOUTH** who need them based on information from the predictive factors.

High rates of hospital use across all groups may indicate a need for better engagement and access to primary care.

A **COORDINATED ENTRY SYSTEM** should ensure youth can access all resources regardless of which system they enter through.
ACTIONABLE RESEARCH: AN EXAMPLE

PREDICTING FAMILY HOMELESSNESS USING MACHINE LEARNING

BACKGROUND
CIDI partnered with NYU’s Furman Center to combine data on human services with data on buildings and neighborhoods to evaluate the potential for using administrative data and machine learning techniques to predict families’ risk of homelessness.

METHOD
This study uses administrative data on receipt of public assistance, including cash assistance and Medicaid, linked to information on homeless shelter applications and stays, building characteristics, and neighborhood characteristics.

We apply predictive tools from machine learning to predict who will apply to or enter shelter.

For each year, we train models on a random subset of families using only information available at that point in time, attempting to predict future shelter application.
1 How Well Can We Predict Family Shelter Application?

**INDIVIDUALS:** Our model performs over 20 times better than random guessing among HRA benefits recipients depending on the size of the homeless population targeted.

**BUILDINGS:** Our model performs over 20 times better than random guessing among all residential buildings in New York City.

2 What Are the Most Important Predictors?

**INDIVIDUALS:**
- Previous application to shelter
- Living in a building that previously housed a homeless family
- Receipt of family assistance

**BUILDINGS:**
- Rates of shelter entry in the neighborhood
- Housing code violations
- Emergency repairs
3 HOW WELL CAN WE PREDICT FAMILY SHELTER CAN PREDICTIONS GUIDE PREVENTION OUTREACH?

INDIVIDUALS: We can identify high risk families that are roughly 1.5 times more likely to apply for shelter within 24 months than families currently seeking Homebase assistance.

BUILDINGS: Our building predictions are 30% more accurate at identifying buildings with high-risk families than comparison models using only the information currently used to direct building outreach.