

ID: 60009442

Chronic Disease, Maternal and Child Health - Host Site Description

New York City Department of Health and Mental Hygiene

Assignment Location: New York, US-NY
New York City Department of Health and Mental Hygiene
Center for Population Health Data Science (was Division of Epidemiology)

Primary Mentor: Joseph Kennedy, MPH
Director, Data Matching Unit
New York City Department of Health and Mental Hygiene

Secondary Mentor: Kacie Seil, MPH
Senior Director, Office of Vital Statistics
New York City Department of Health and Mental Hygiene

Work Environment

Hybrid

Assignment Description

The Applied Epidemiology Fellow will work within the Center for Population Health Data Science (formerly the Division of Epidemiology) in the Bureau of Vital Statistics. Their position will be within the Office of Vital Statistic's Data Matching Unit. The unit consists of the Director and the Matching Analyst & Strategist. The fellow will attend BVS and division meetings, monthly unit meetings, as well as 1-on-1 meetings with one or both mentors. The agency uses Microsoft products, and the main statistical software used in the Data Matching Unit is SAS. If the fellow knows R or Python, that would be a bonus. Central to this fellowship will be the development of proficiency in matching techniques, as well as identifying opportunities to modernize matching processes through artificial intelligence and machine learning techniques.

Describe Statistical and Data Analysis Support, Such as Databases, Software, and Surveillance Systems Available to the Fellow

The fellow will have access to SAS, R, and Python Servers, Microsoft SQL Server Management Studio, and Microsoft Office 365, including Access and Power BI. The fellow will also have access to NYC birth, death, and spontaneous termination of pregnancy data. Due to the unique role of being part of the Data Matching Unit, there will be opportunities to work with other public health surveillance systems via matching projects or research collaborations (e.g., infectious diseases, mortality among persons experiencing homelessness).

Projects

Surveillance Activity Title: Annual report on mortality among persons experiencing homelessness

Surveillance Activity Description:

The “Annual Report on Deaths Among Persons Experiencing Homelessness” is a collaborative report produced by NYC DOHMH and the Department of Homeless Services (DSS). In these important reports, the number of deaths has varied from 125 in 2007 to 734 in 2023. This report is mandated by City Council and Local Law 7 (LL7) and has been published for 18 years. The fellow will work closely with the Director of the Data Matching Unit to match death certificate data to the list of persons experiencing homeless provided by Department of Homeless Services, Office of Chief Medical Examiner (OCME), and other city agencies. They will work on drafting the report and checking data analyses for accuracy.

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LL7 defines a “person experiencing homelessness” as “a person who at the time of death did not have a known street address of a private residence at which he or she was known or reasonably believed to have resided,” a subset of which includes persons residing in DHS homeless shelters, as well as those deemed to be experiencing unsheltered homelessness, which may also be known as “street homelessness,” and persons without a fixed address. LL7 specifies that deaths must be reported by age group, sex, borough, community district, shelter status and leading cause of death. The report is 16 pages of text, figures, and tables, as well as 10 pages of supplementary tables. The data tables are generated using existing SAS programs and then transferred to report templates. Each year, the previous year’s report is modified with updated data and edited to reflect any major changes affecting the state of homelessness in New York City. The report-drafting process begins in September, when identifiers of persons who have experienced homelessness are received from DHS and OCME. These are matched to New York City death certificates and deduplicated to create a list of deaths to be included. The list is provided to DHS for confirmation that they meet the inclusion criteria as defined in LL7. The draft report is written and/or updated after the list has been finalized and is shared with collaborating agencies (DHS/OCME/HRA) for review. Per LL7, the report is due to City Hall by January 15th of each year. The fellow will attend regular meetings to update status and resolve any issues.

Surveillance Activity Objectives:

Objectives: Learn how to match death certificates to other data sources and develop an accurate case list; gain understanding of health issues affecting populations experiencing homelessness; work collaboratively with other agencies.

Deliverables: Annual Report on Deaths Among Persons Experiencing Homelessness due on January 15th.

Surveillance Activity Impact:

This report is produced to bring awareness to the issue of mortality among people experiencing homeless in New York City. Results from the annual report are used to demonstrate patterns of deaths in this population to key city agencies, as well as inform local officials and the general public. The information is used to determine what programs and policies may be needed to prevent deaths and keep individuals safe.

Surveillance System Evaluation Title: Sibling match evaluation

Surveillance System Evaluation Description:

The sibling match project is a match of persons giving birth in New York City from 1995-2022, linking women across pregnancies. In addition to births, this cohort is also matched to spontaneous terminations of pregnancies and deaths. Specifically, over 3 million births, 750,000 deaths, and 300,000 spontaneous terminations are included in the matching process. The birth certificate is a rich source of data for matching including name, date of birth, address, phone number, social security number, and medical record number. This evaluation will focus on examining the quality of vital statistics data at subsequent births. While birth certificates contain information on the number of previous live births, the quality and accuracy of that data is unknown. Yet, the number of previous live births variable is used in many publications and research projects. The fellow will conduct a literature review on match evaluation and then conduct an evaluation of the sibling match with the intent of improving the quality of the match and improving understanding of the validity of the number of previous live births variable. The findings will inform important operational and data quality improvement work as well. This cohort is also available for other research, such as interpregnancy intervals. Lastly, the fellow will draft a manuscript on the sibling match process and evaluation, along with other members of the Data Matching Unit.

Surveillance System Objectives:

Objectives: Assess and describe the quality of the sibling match; advance scientific writing skills; share experience on match evaluation with divisional data matching workgroup; improve data quality.

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Deliverables: Abstract and presentation at a public health conference; drafted manuscript.

Surveillance System Impact:

Conducting an evaluation of the sibling match process that is done within the Data Matching Unit will provide understanding into how accurate the number of previous live births variable is. Documenting the methodology and evaluation results via a manuscript to be submitted to a peer-reviewed journal will disseminate this important to work to other jurisdictions who conduct matches on vital statistics data.

Major Project Title: A1c in Pregnancy and Postpartum Linkage for Equity (APPLE) cohort matching methodology

Major Project Description:

Women of color are disproportionately impacted by gestational diabetes (GDM), a common pregnancy complication, and are two to four times at greater risk of developing type 2 diabetes after having GDM. The mixed-methods A1c in Pregnancy and Postpartum Linkage for Equity (APPLE) NYC Cohort Study investigates the association between social and built neighborhood environments and postpartum hemoglobin A1c trajectories, how policies influence both neighborhood, and individual risk factors of the progression from gestational diabetes to type 2 diabetes. The research team also explores what are the lived experiences of women of color, living in NYC, who had GDM during pregnancy and how their neighborhoods, social support, and healthcare teams shaped diabetes postpartum. The APPLE Cohort study is made possible by the collaborative teams at Columbia University Mailman School of Public Health, Icahn School of Medicine at Mount Sinai, and the Bureaus of Vital Statistics and Equitable Health Systems at NYC DOHMH. The Bureau of Equitable Health Systems provides A1c Registry data and expertise, and the Bureau of Vital Statistics provides data linkage and vital statistics data expertise. NYC DOHMH staff have contributed as co-authors on the following published manuscripts:

- Janevic T, McCarthy K, Liu SH, Huyhn M, Kennedy J, Tai Chan H, Mayer VL, Vieira L, Tabaei B, Howell F, Howell E, Van Wye G. Racial and Ethnic Inequities in Development of Type 2 Diabetes After Gestational Diabetes Mellitus. *Obstet Gynecol.* 2023 Oct 1;142(4):901-910. doi: 10.1097/AOG.0000000000005324. Epub 2023 Sep 7. PMID: 37678923; PMCID: PMC10510784.
- McCarthy KJ, Liu SH, Huynh M, Kennedy J, Chan HT, Mayer VL, Vieira L, Tabaei B, Howell F, Lee A, Van Wye G, Howell EA, Janevic T. Influence of Gestational Diabetes Mellitus on Diabetes Risk and Glycemic Control in a Retrospective Population-Based Cohort. *Diabetes Care.* 2023 Aug 1;46(8):1483-1491. doi: 10.2337/dc22-1676. PMID: 37341505; PMCID: PMC10369124.
- Vieira L, McCarthy K, Liu SH, Huynh M, Kennedy J, Chan HT, Mayer VL, Tabaei B, Howell F, Wye GV, Howell EA, Janevic T. Predictors and Trends in First-Trimester Hemoglobin A1c Screening in New York City, 2009 to 2017. *Am J Perinatol.* 2023 Sep 29. doi: 10.1055/a-2157-2944. Epub ahead of print. PMID: 37604202.

The APPLE Cohort includes a linkage of 2009-2021 NYC birth data, A1c diabetes registry data, and hospital discharge data to construct a population-based cohort of women who received a diabetes diagnosis following pregnancy. This research collaboration is ongoing, and the cohort data will be expanded to include data through 2023, as well as social and built environment variables. Although many papers have been published using data from the APPLE Cohort, the process of the data matching has not been extensively described in a published manuscript. The fellow will participate in biweekly study team meetings and work with staff in the Data Matching Unit and experts on the A1c registry dataset to draft a manuscript describing the data linkage process, documenting the methodology underlying an important and robust research initiative.

Major Project Objectives:

Objectives: Participate in a collaborative research project with an academic partner; learn about how the data were matched for this cohort study; advance scientific writing skills.

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Deliverables: Written matching protocol; drafted manuscript.

Major Project Impact:

Diabetes is a chronic health condition. This data source can benefit understanding of the relationships between pregnancy and diabetes and persistent health inequities. Cardiometabolic conditions, including diabetes, are one of the key drivers listed in the agency's health agenda, centered around helping New Yorkers living longer, healthier lives.

Additional Project #1 Title: Collaboration with Office of School Health to link NYC students to birth and death certificates.

Project #1 Type: Surveillance Activity

Project #1 Description:

This collaborative project will involve linking data from the NYC DOHMH Office of School Health to NYC birth and death certificates. Currently, there are three ongoing data linkage projects. One focuses on teen pregnancy by linking NYC students to NYC birth records. This is a continuation of a project originally linking 2004-2013 births, from which a manuscript was published (see citation below). Another project involves linking NYC students to their own birth certificates. This will allow for the characterization of demographics and health outcomes of NYC public school students. This will also allow for investigation of the relationship between birthweight and adolescent obesity. This match may also make it possible to identify family groups in the school system. The third project links NYC students to death certificates in order to track causes of death and potential outbreaks.

Yunzal-Butler C, Sackoff J, Korenman S. Longitudinal Patterns of School Disengagement before Conception among New York City Teen Mothers. J Sch Health. 2020 May;90(5):378-385. doi: 10.1111/josh.12886. Epub 2020 Feb 27. PMID: 32107823.

Project #1 Objectives and Expected Deliverables:

Objectives: Participate in the data linkage process, document the processes, and characterize the results of the three data linkage projects.

Deliverables: Written process documentation and descriptive statistics of the three data linkage projects.

Project #1 Impact:

This project supports important programmatic and surveillance efforts for the Office of School Health within NYC DOHMH. Linking birth and death certificate data to student record data helps inform ongoing and new needs of NYC public school students.

Please Describe the Fellow's Anticipated Role in Preparedness and Response Efforts – Include Activities and Time Allocation (Required Competency of Fellowship)

The fellow will review COVID-19 data procedures for the Bureau of Vital Statistics. They will be introduced to how the NYC DOHMH Incident Command System (ICS) works. As needed, they will participate in emergency responses related to vital statistics data needs.

Please Describe the Fellow's Anticipated Role in Cluster and Outbreak Investigations – Include Activities and Time Allocation (Required Competency of Fellowship)

As needed, the fellow will be prepared to match death data during outbreaks. They will help monitor daily/weekly surveillance matches for the Division of Disease Control during an outbreak. In an emergency situation, they may be asked to help other programs who analyze vital event data.

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Please Describe the Fellow's Anticipated Role in the COVID-19 Response – Include Activities and Time Allocation

The fellow will be trained on how to match birth and death data to COVID-19 laboratory testing data. They may be involved in publications related to COVID-19 matching projects, as appropriate.

Please Describe Opportunities for Fellows to Work in Health Equity as well as Incorporating Diversity, Equity, and Inclusion into their Work

The fellow will learn about the agency-wide NYC DOHMH Race to Justice program and participate in relevant trainings and staff activities that highlight diversity, equity, and inclusion. We will also share the written divisional guidance on how to integrate health equity into agency projects and publications.