

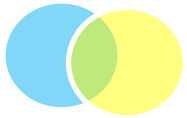
Improving Accurate Health Data Collection Among Child and Youth Farmworkers: A Pilot Qualitative Study

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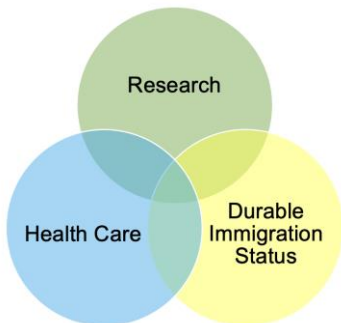
Overview



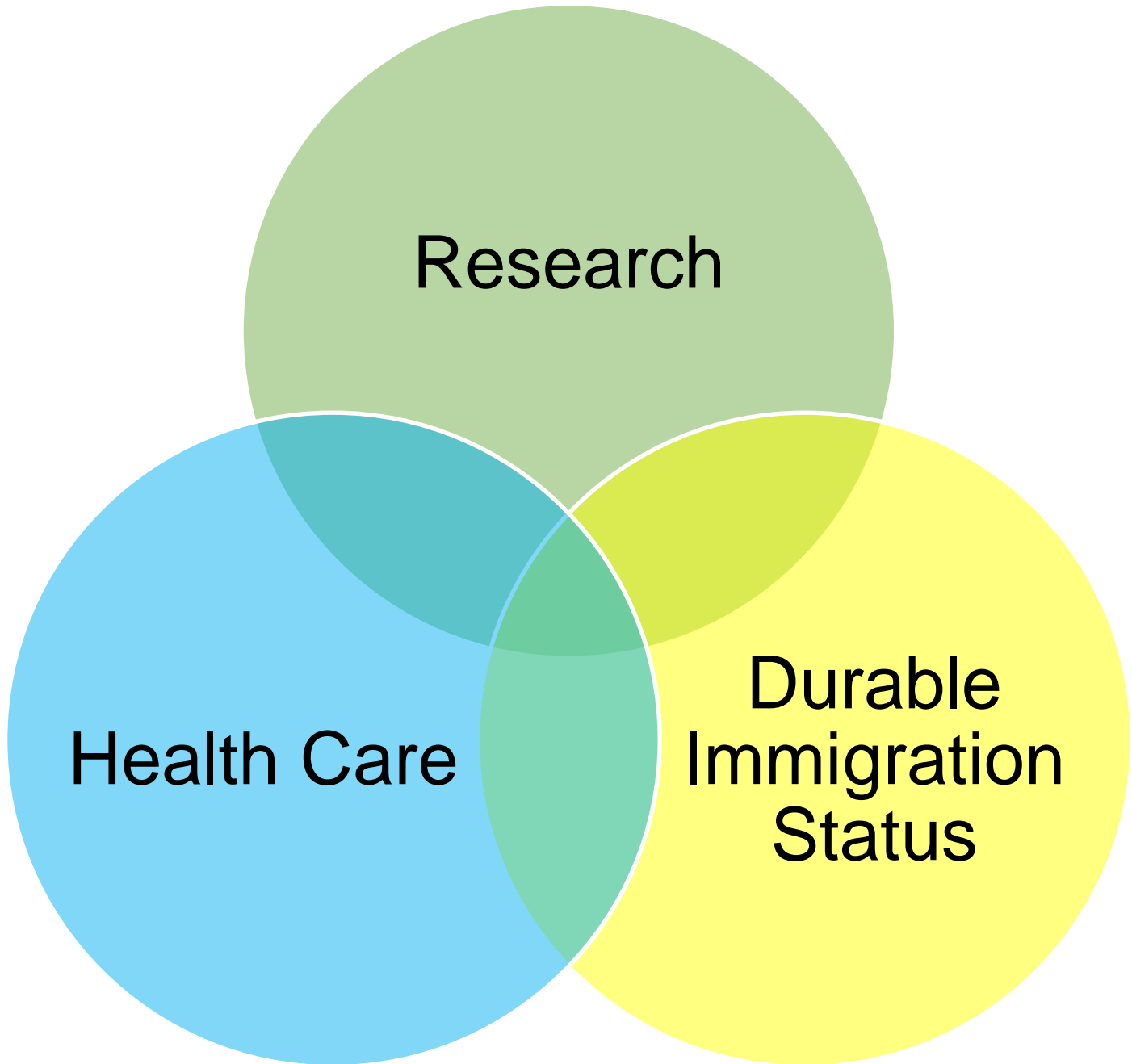
Many migrant children presenting for legal assistance likely have unmet health needs, however we lack a shared tool to assess these needs



New biologic testing can help increase our ability to predict future susceptibilities and/or illuminate paths to support resilience and more testing, which could be used to also help patients and clients



Goal: to develop and test a novel standardized toolkit that can be used by medical and non-medical professionals to perform validated trauma-informed evaluations and to assess the ethics of gathering biological samples to advance our understanding of the biologic markers of disease and wellness.



Research

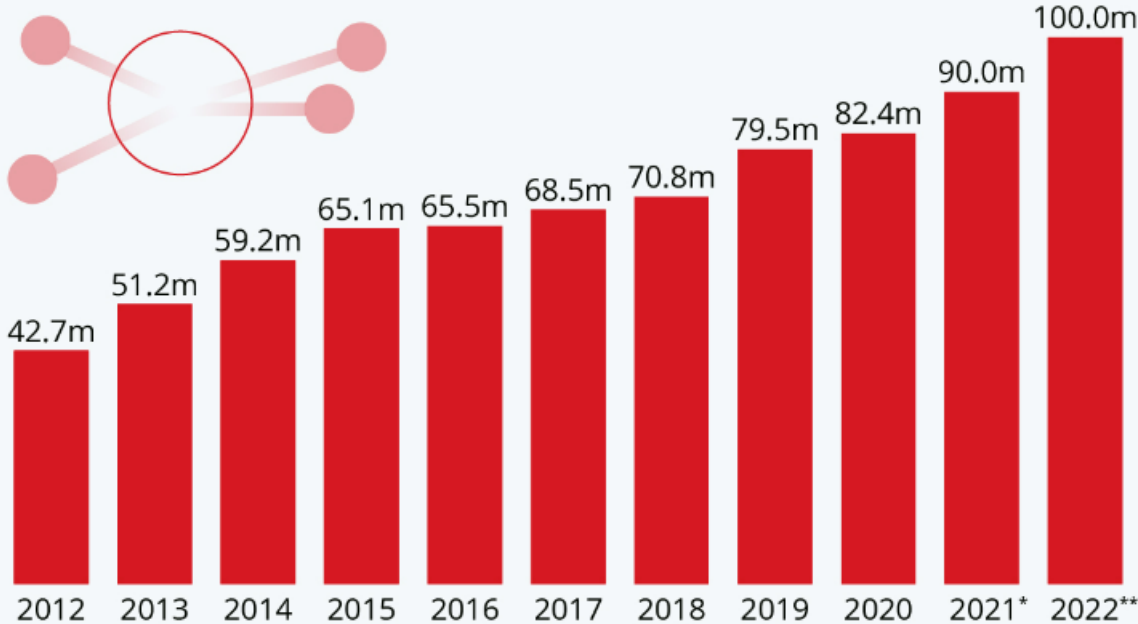
Health Care

Durable
Immigration
Status

More than 100 million individuals are forcibly displaced due to human rights violations

Number of Forcibly Displaced People Reaches 100 Million

Number of forcibly displaced people worldwide by year



Internally displaced, refugees and asylum seekers.
* preliminary figure ** preliminary figure as of May
Source: UNHCR



Nearly 37 million children displaced worldwide – highest number ever recorded

Ahead of World Refugee Day, UNICEF urges governments to strengthen protection and access to services for refugee, migrant and displaced children

16 June 2022

NEWS

US expects record-breaking surge of unaccompanied migrant kids at border this year: report

By Mary Kay Linge

July 9, 2022 3:41pm Updated

<https://nypost.com/2022/07/09/us-expects-historic-surge-of-migrant-kids-this-year-report/>



<https://www.nytimes.com/2021/05/07/us/politics/migrant-children-shelters.html>

Convention on the Rights of the Child (UN, 1989)

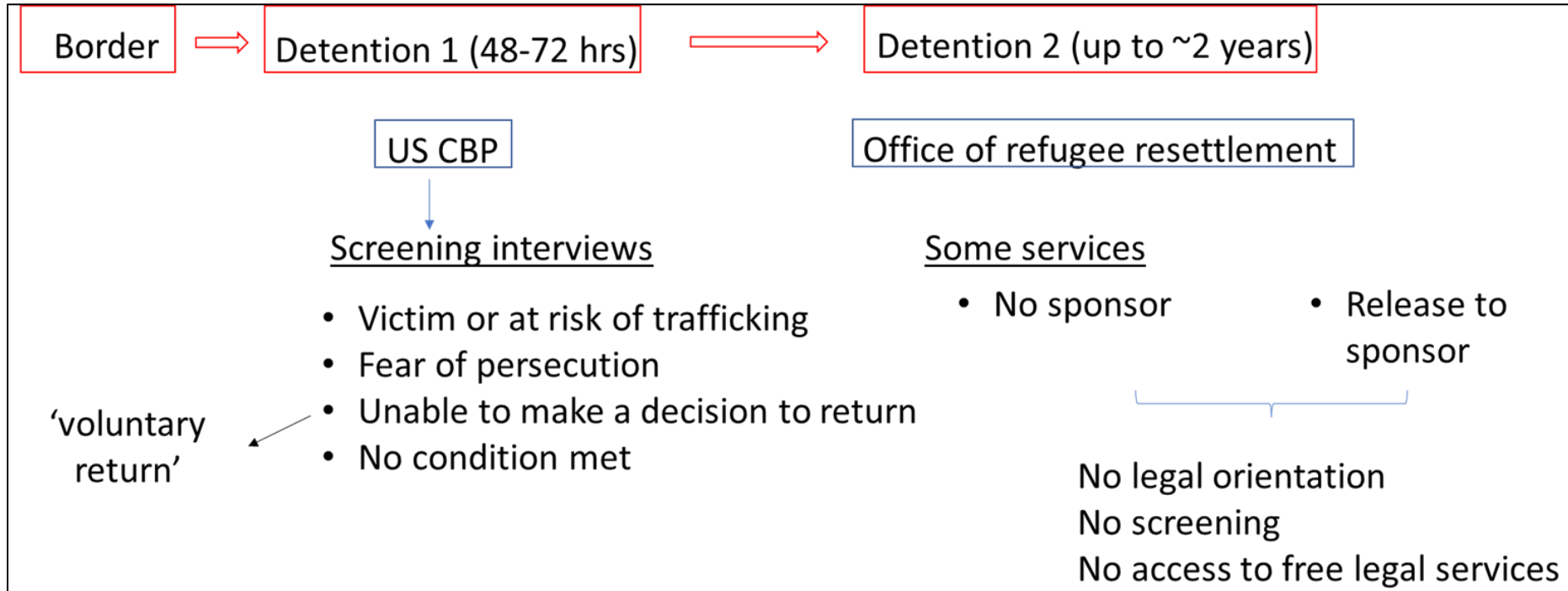
54 articles establishing standards for the appropriate treatment and rights of children

All children have the right to:

- Safety and Security
- Health and Development
- Protection from exploitation
- Education
- Family
- Identity and Nondiscrimination
- Due Process /Legal Representation
- Play



The journey of an unaccompanied minor to the US



Post-release deportation process

- Active “removal” (deportation) proceedings
- No Guardian ad Litem, no monitoring
- No assigned counsel, possibly a brief advice session outside the courtroom



<https://www.themarshallproject.org/>

Prospects for immigration relief



- Asylum



- Special Immigrant Juvenile Status



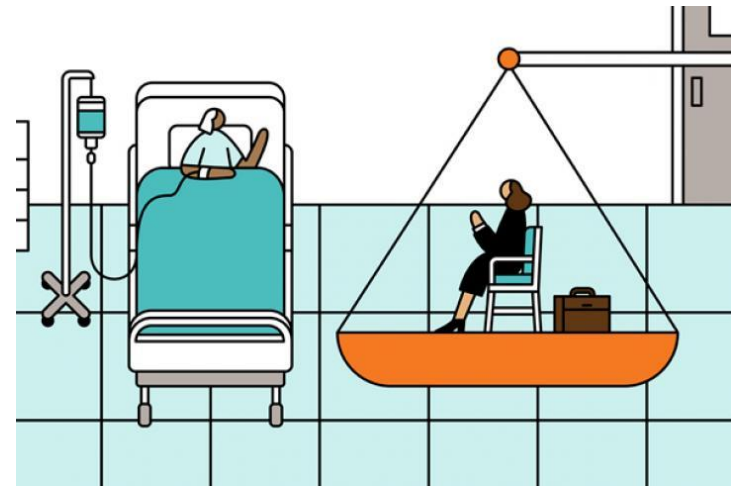
- U/T-Visa



- Family-based

Lawyer access to health data

- Little post-detention contact with medical caregivers
- Deportation drives unaccompanied minors to immigration lawyers
 - Detention center health release materials
 - School athletics/work injuries
 - Interviews and detailed affidavits to prove abuse and neglect



<https://www.commonwealthfund.org/>

Migrant children require special health considerations



Dreamstime.com



ecdc



<https://www.commonwealthfund.org/>

Why is child health so important?

- Nutrition, stress, and environmental exposures all affect the architecture of the developing brain, the cardiovascular system, the immune system, and metabolic regulatory controls.
- Childhood health status is predictive of adult health, well being and productivity.



Immigrant children arrive in the United States with unique health needs

Risks and needs vary by personal experiences and country of origin

- Infectious diseases
 - Under-immunization
 - Environmental exposure
- Psychologic trauma
- Toxic exposures (lead)
- Developmental delays
- Malnutrition
- Micro/macronutrient deficiencies




© Daimon Elisondo Rojas, a doctor from Cuba, treated patients in a migrant camp in Matamoros, Mexico. Photo by Jonathan Soto for CNN.

Social conditions can contribute to increased health risks after immigration


Social Determinants of Health



 Barriers to accessing consistent care (insurance, language, transportation, frequent relocation)

 Unstable housing, exposures

 Ongoing stress, trauma and/or loss

 Poverty, low wages

 Work limiting school attendance

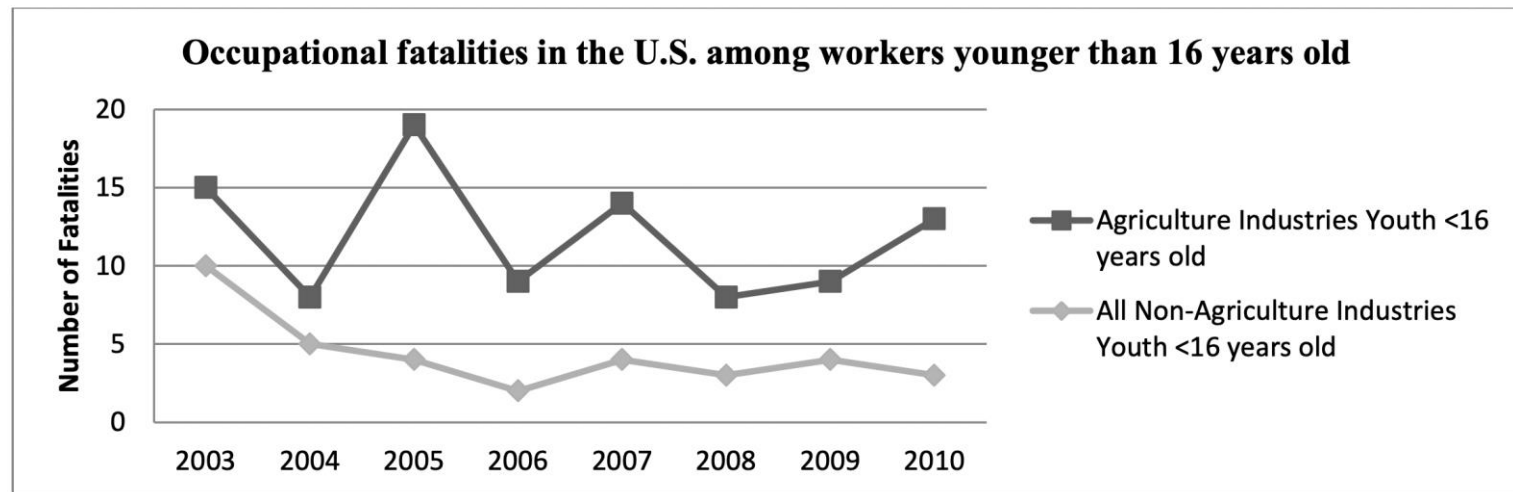
Healthy People 2030, U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. Retrieved [date graphic was accessed], from <https://health.gov/healthypeople/objectives-and-data/social-determinants-health>

Children who enter the workforce face additional occupational hazards, with farmworking being the most dangerous.

- High risk of physical harm/injury
 - More likely to have fatal injuries compared to all other other industries combined
- >33,000 serious injuries annually
Fractures, sprains, frequently lead to lasting problems



Photo from PBS.org – featuring Jose Ansaldo in *East of Salinas*
<https://www.pbs.org/independentlens/documentaries/east-of-salinas/>



Children who live near and/or work on farms are frequently exposed to toxic substances.

- Pesticides - Organophosphates, elemental sulfur
- Effects extend beyond the fields – >residential proximity, lack of play spaces, bounded schools, poor containment practices
- Increased incidence of asthma in these populations
- Long term neurodevelopmental sequelae are likely, but poorly understood



Photo from the Food and Environmental Reporting Network, Warning Signs: How Pesticides Harm the Young Brain, published 5/13/14, <https://thefern.org/2014/03/warning-signs-how-pesticides-harm-the-young-brain/>

Recorded national data suggests that immigrants overall have 'better' markers of health compared to US born individuals

- In adults, higher life expectancy (+3.4 years) and less disability
- Lower infant mortality & incidence of low birth weight
- In childhood, fewer diagnoses of allergies, asthma, obesity, ADHD, mood/anxiety, conduct disorder, smoking and substance abuse.
- This comparative advantage appears to decrease over time after arrival.

Figure 3. Prevalence and adjusted odds* of asthma and one or more chronic conditions among children <18 years of age, by mother's duration of residence in the U.S.: 2007 National Survey of Children's Health^b (n=91,532)

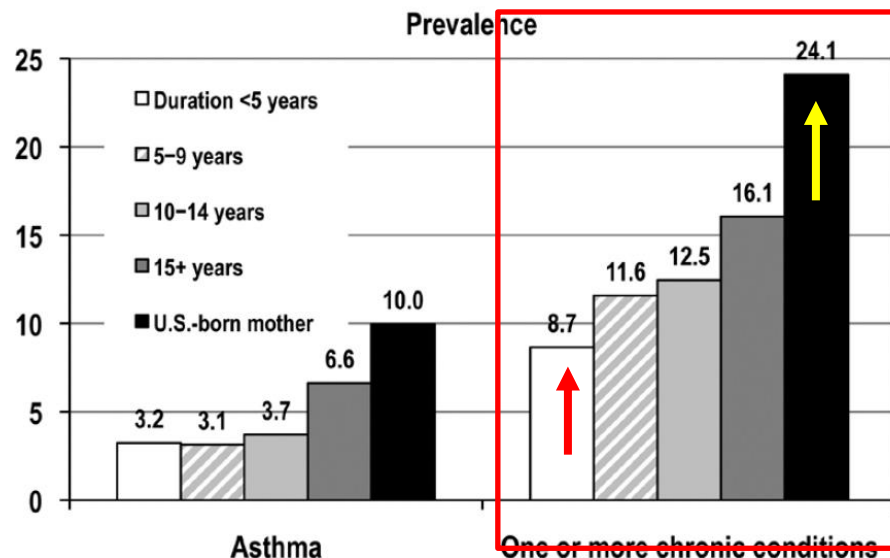


Figure from: Singh, G. K., Yu, S. M., & Kogan, M. D. (2013). Health, chronic conditions, and behavioral risk disparities among US immigrant children and adolescents. *Public Health Reports*, 128(6), 463-479

Historically, the superior markers of health in immigrants were assumed to reflect the presence of less disease.

- Positive selectivity in health, ambition, resilience, education and social resources in immigrants
 - Based on observations that immigrants from Central and South America were overall 'healthier' than those in countries of origin
- Does not account for differences in healthcare utilization and other barriers to diagnosis and documentation.

Large inequities exist in healthcare utilization, with migrant children utilizing healthcare less than US born children

- Immigrant children are less likely to access primary care and preventative health services
- This difference is not fully explained by insurance status
- **Less interactions with the the healthcare system = less opportunities for diagnosis**
- Other potential barriers : concerns about other undocumented family members, impaired communication, work and transportation issues, potential provider bias
- Undocumented children that are never seen by a physician are overlooked in data reporting -> **First presentation may be for legal rather than medical assistance**

The American Academy of Pediatrics recommends trauma-informed comprehensive health screening for all immigrant children

- Upon arrival to the United States:
 - Comprehensive history and physical
 - Assessment of growth
 - Trauma-informed mental health and developmental screening
 - Routine laboratory evaluations to assess for toxic exposures, infections (TB, etc) and anemia
 - Additional risk-based screening or empiric treatment as indicated
 - Annual visits in childhood
- U Visa evaluations are similar but less thorough, SIJ status does not require evaluations at all, and the adjustment of status to permanent residence involves a fuller medical evaluation but often does not occur until a child begins working with a lawyer.



More research is needed to better understand individuals and populations and improve immigrant child health.

Each interaction with a professional is an opportunity to collect information to help that individual and others.



Lawyers could be better equipped to collect information about health status and assist with directing children to preventative care.



Pediatricians need more education on the unique needs to immigrant children, trauma informed interviewing and available legal resources.



Data-informed screening and preventative approaches can help in reducing disparities.



Applying omics tools to advance the health of refugees

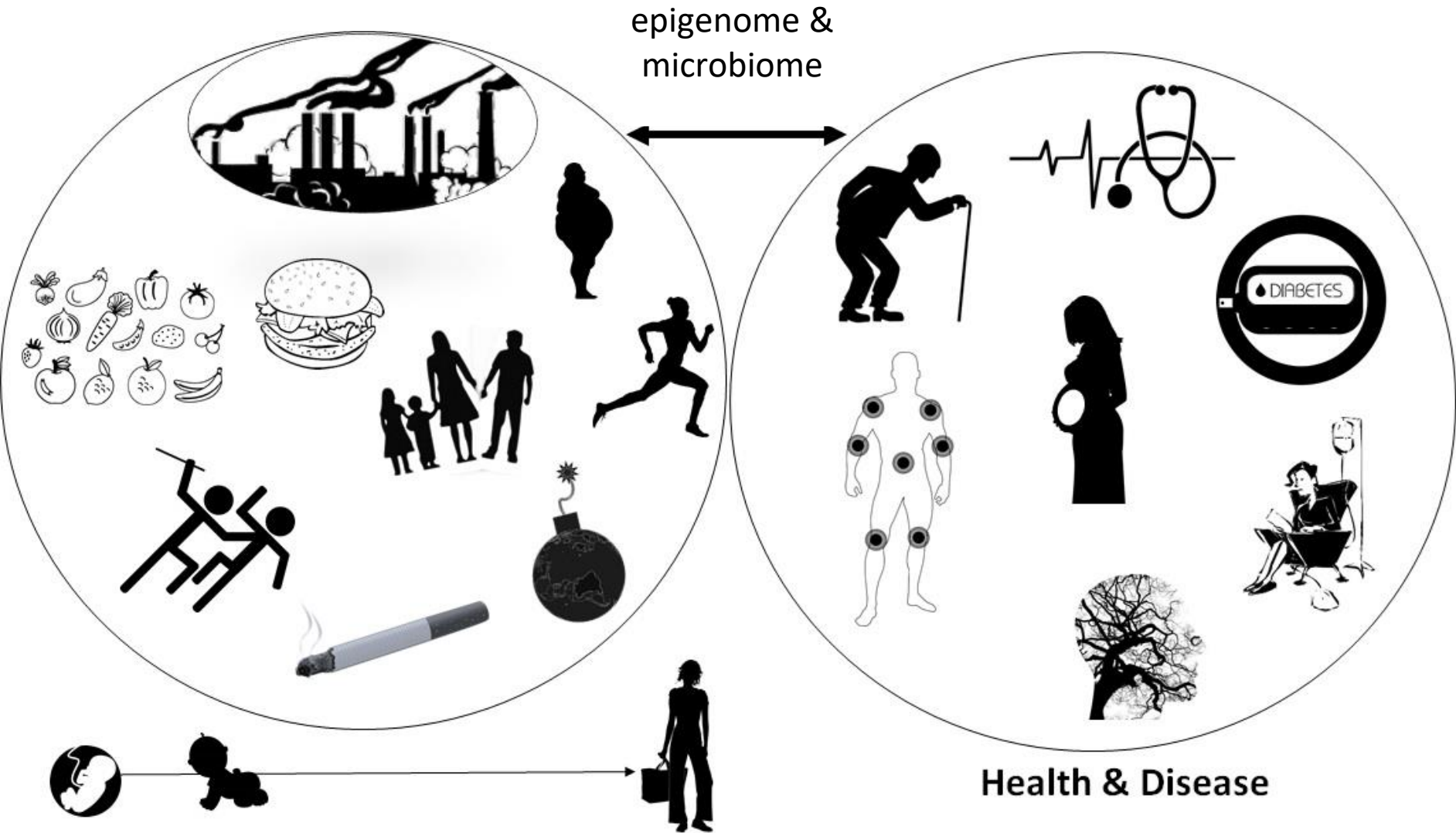
Omics Core

Omics is the study of biological markers and molecules that contribute to the structure and function of an organism.

The goal of the Omics Core is to identify omics determinants of health outcomes in displaced populations. The core aims to establish a community omics advisory board to identify ethical concerns when participating in omics research, develop culturally and linguistically sensitive communication material about omics research studies in the lab, foster relationships with community partners, promote health equity by implementing inclusive subject recruitment strategies, communicate research findings with utmost ethical standards, and design omics clinical studies. The latter includes vendor management and outreach, subject recruitment, sample storage and processing, and big data analyses. The core works closely with the other cores of the Human Rights Impact Lab as well as with other partners.

Core director: [Faten Taki](#), Ph.D

How can epigenome and microbiome profiling advance human rights?



Imagine if we could....



What can we do with this information?

Predict susceptibility/resilience

GoGraph

GetDrawings

VectorStock



Stress/Trauma exposure

- Pre-migration
- During migration
- Post-migration

Sampling



Saliva or stool



DNA



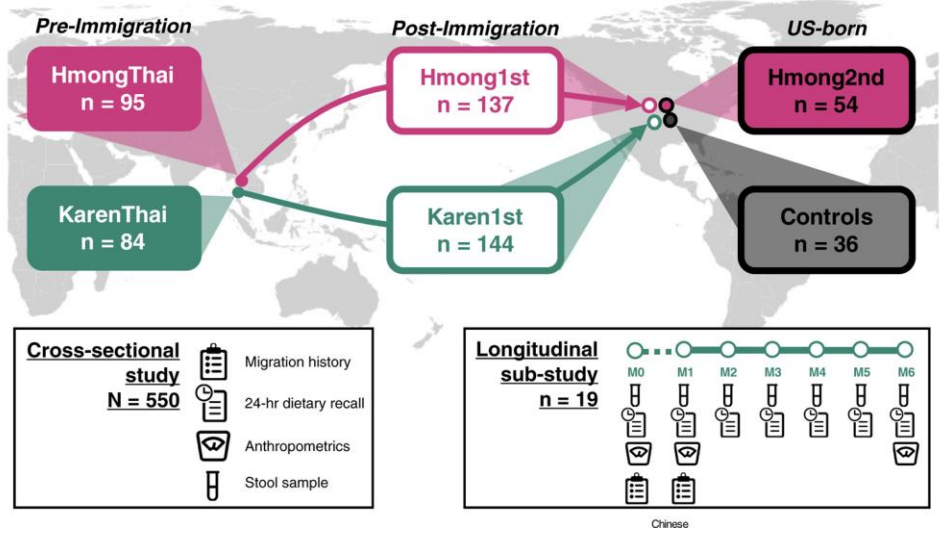
Questionnaire

Epigenetic and gut microbiome profiling



Examples of epigenome and microbiome applications with
displaced populations

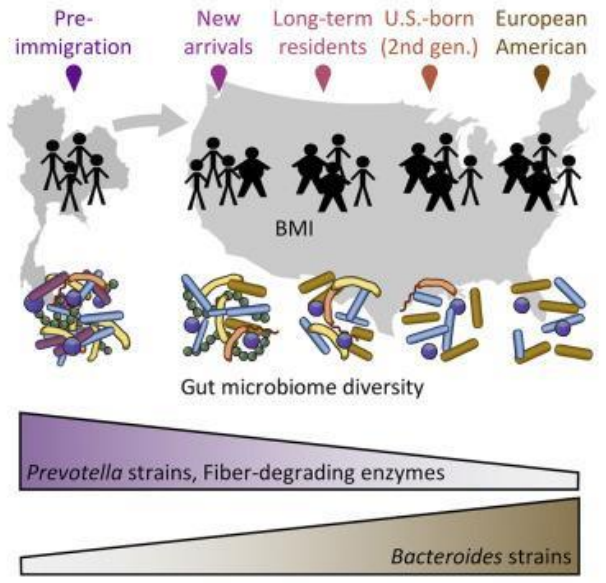
Refugees Microbiome Research:



Article
US Immigration Westernizes the Human Gut Microbiome

Paiva-Vergara¹, Abrego¹, Jahn¹, Kim¹, Torres¹, Ward¹, Galvez A. Al-Ghalib¹, Rhee¹, Shinde¹, Cui¹, Benjamin M. Hirschowitz¹, Sarah K. Iversen¹, Jiali K. Reiss¹, Emily A. Thompson¹, Lisa M. Till¹, Kristina Sotnik¹, Ryan Piro¹, Shannon L. Peregian¹, Phichitra Sanyasakul¹, Mary Xiang¹, Austin D. Kim¹, Grant Kim¹, David Masopust¹, ... Dan K. Rhee^{1,2,3,4,5,6,7,8,9}

Summary text...



Immigrant Microbiome Project

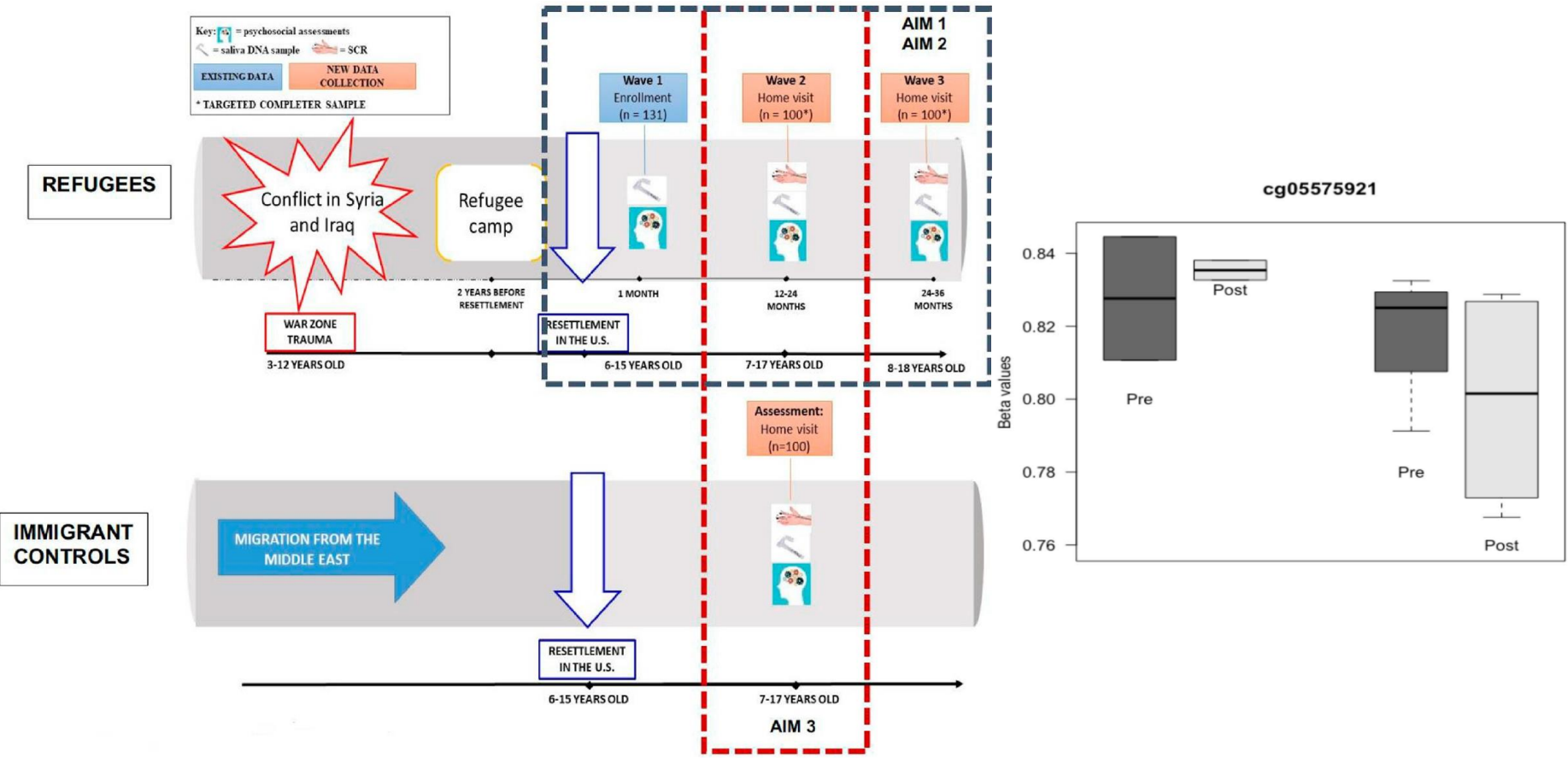
Results from a research study on the human gut microbiome and obesity in Hmong and Karen women in the U.S.



The human microbiome

We know that people who move to the U.S. are more likely to gain weight than if they were to stay in their native country. We wondered if perhaps the gut microbiome had a role.

Biological and Environmental Factors Affecting Risk and Resilience among Syrian Refugee Children



Discussion points

- Can we do sample biobanking for future meta-analyses to inform policy (e.g., Scandinavian countries). How can molecular clinical research help lawyers in court?

Taki and de Melo-Martin *Clin Epigenet*
<https://doi.org/10.1186/s13148-021-01092-8>

Clinical Epigenetics

REVIEW

Open Access

Conducting epigenetics research with refugees and asylum seekers: attending to the ethical challenges



Faten Taki^{1*} and Inmaculada de Melo-Martin^{2*}

Comment | [Published: 05 May 2022](#)

An ethical plan for including forcibly displaced persons in omics and digital technology research

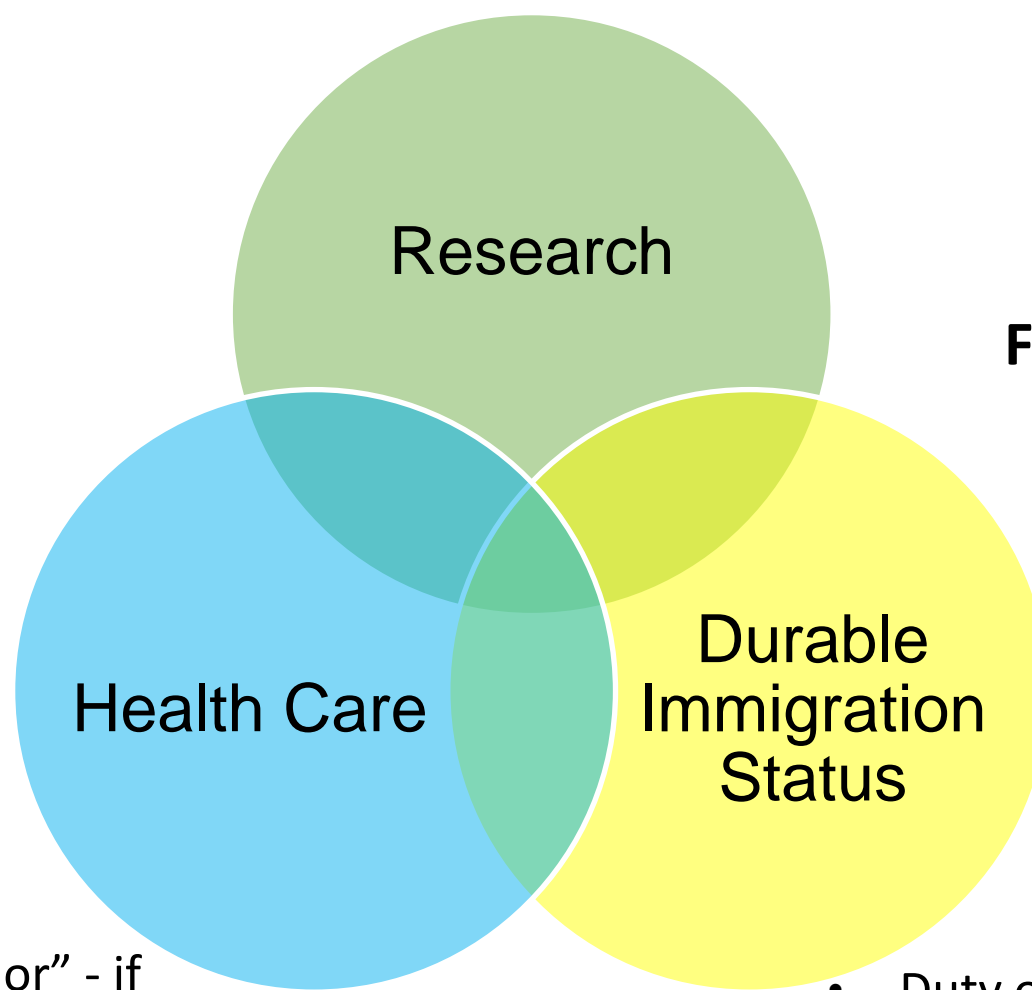
[Faten Taki](#) , [Jacob Lurie](#) & [Gunisha Kaur](#)

Nature Medicine **28**, 1116–1120 (2022) | [Cite this article](#)

- Ethical concerns?

Ethics

**For Clinical
Researcher**



For Lawyer

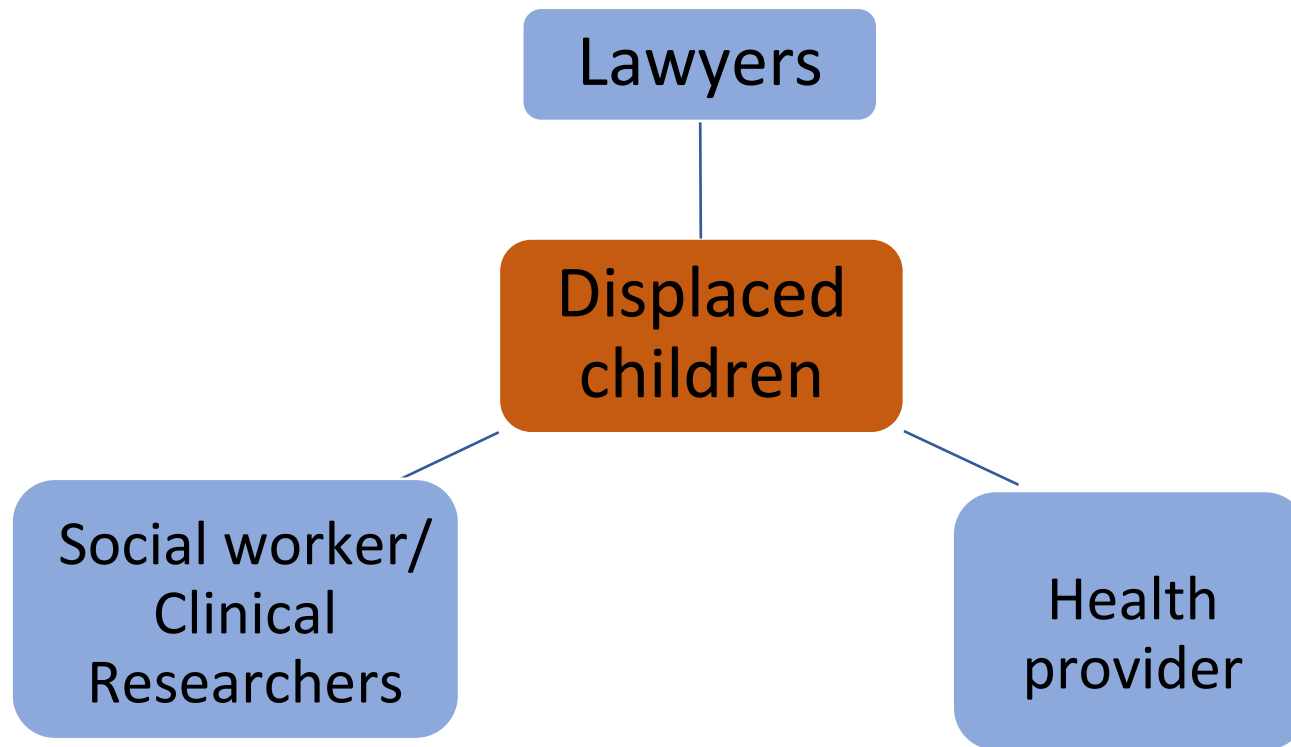


- Defining a “minor” - if uncertain DOB
- Assent/consent for immunizations
- Assent/consent for research testing

- Duty of confidentiality
- Deidentified data versus consent and participation
- Cross-representation
- Allocation of authority
- Distraction from case

Problem: lack of data on the displaced children in the US => health disparities and low success rates in immigration proceedings

Solution: Develop and evaluate a tool to collect multi-level data from displaced children



How?

Solution: Develop and evaluate a tool to collect multi-level data from displaced children

Long-term goal:

- develop a novel standardized toolkit that can be used by medical and non-medical professionals to perform validated trauma-informed evaluations for these children.

Short-term goal:

- **Aim 1:** conduct a qualitative study to assess the perspectives of a multidisciplinary group of professionals on the toolkit design and to test the effectiveness of the pilot toolkit.
 - We will seek feedback on the core categories of the toolkit: demographics, education, work, safety, and medical history and health evaluation, collection of biological samples for biobanking (e.g., saliva, stool).
 - Inclusion criteria: lawyers, social workers, pediatricians, labor organizers, human rights and immigration groups working with displaced children and youth.
- **Aim 2:** Test the pilot toolkit through deportation defense lawyers working with migrant children and youth.
 - How will we measure success? What is the timeline? How do we track cases?

Thank you!

References

- Linton, J. M., Green, A., Chilton, L. A., Duffee, J. H., Dilley, K. J., Gutierrez, J. R., ... & Nelson, J. L. (2019). Providing care for children in immigrant families. *Pediatrics*, *144*(3).
- Gadermann, A. M., Petteni, M. G., Janus, M., Puyat, J. H., Guhn, M., & Georgiades, K. (2022). Prevalence of Mental Health Disorders Among Immigrant, Refugee, and Nonimmigrant Children and Youth in British Columbia, Canada. *JAMA network open*, *5*(2), e2144934-e2144934.
- Van Hook, J., Landale, N. S., & Hillemeier, M. M. (2013). Is the United States bad for children's health. *Risk and resilience among young children of immigrants*. Washington, DC: Migration Policy Institute.
- Rosenberg, J., Shabanova, V., McCollum, S., & Sharifi, M. (2022). Insurance and health care outcomes in regions where undocumented children are medicaid-eligible. *Pediatrics*, *150*(3).
- Singh, G. K., Yu, S. M., & Kogan, M. D. (2013). Health, chronic conditions, and behavioral risk disparities among US immigrant children and adolescents. *Public Health Reports*, *128*(6), 463-479
- Perreira, K. M., & Ornelas, I. J. (2011). The physical and psychological well-being of immigrant children. *The Future of Children*, 195-218.
- Singh, G. K., Rodriguez-Lainz, A., & Kogan, M. D. (2013). Immigrant health inequalities in the United States: use of eight major national data systems. *The Scientific World Journal*, 2013.
- Schwartz, N. A., von Glascoe, C. A., Torres, V., Ramos, L., & Soria-Delgado, C. (2015). "Where they (live, work and) spray": Pesticide exposure, childhood asthma and environmental justice among Mexican-American farmworkers. *Health & place*, *32*, 83-92.
- Wright S, Marlena B, Lee BC (2013). Childhood agricultural injuries: An update for clinicians. *Curr Probl Pediatr Adolesc Health Care*. Vol. 43(2): 20-44.
- The National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention, "Childhood Agricultural Injury Survey (CAIS) Results, 2014," <https://www.cdc.gov/niosh/topics/childag/cais/default.html>
- Rosenberg, J., Shabanova, V., McCollum, S., & Sharifi, M. (2022). Insurance and health care outcomes in regions where undocumented children are medicaid-eligible. *Pediatrics*, *150*(3).