

# Families' search for meaning and value in rare genetic diagnoses

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# Overview

- What is the “utility” of diagnostic genome sequencing?
  - Current definitions and approaches
- Findings from clinical genomics research
  - Families’ perspectives
  - Toward an expanded understanding of utility

# Understanding utility



## Clinical utility

decision making

health outcomes



## Personal utility

**Affective**, e.g. feeling of responsibility

**Cognitive**, e.g. understanding of condition

**Behavioral**, e.g. family communication, healthcare decisions

**Social**, e.g. social support, discrimination/stigma



**Clinical utility**

the “middle ground”



**Personal utility**

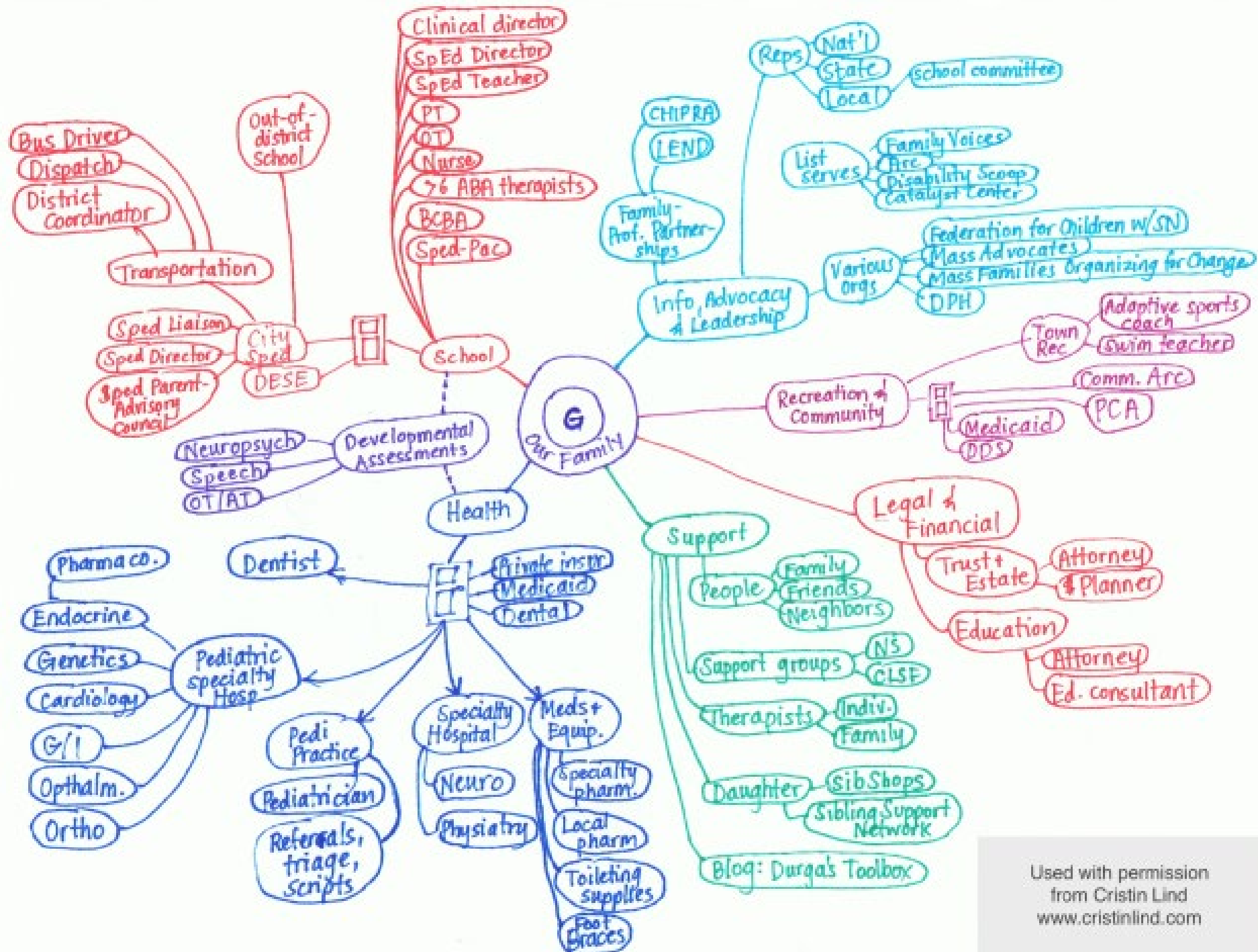


Essay—Ethics in Translational Research |  **Full Access**


## **Moving to the Middle Ground: Redefining Genomic Utility to Expand Understanding of Familial Benefit**

Kyle B. Brothers, Greg M. Cooper, Katelyn C. McNamara, Amy A. Lemke, Josie Timmons, Carla A. Rich, R. Jean Cadigan, Roselle S. Ponsaran, Aaron J. Goldenberg


First published: 19 January 2024 | <https://doi.org/10.1002/eahr.500199>



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What role does a rare genomic diagnosis play  
in families' efforts to navigate these complex  
service landscapes?





Program in Prenatal and Pediatric  
Genomic Sequencing  
(P3EGS)  
2017-2022



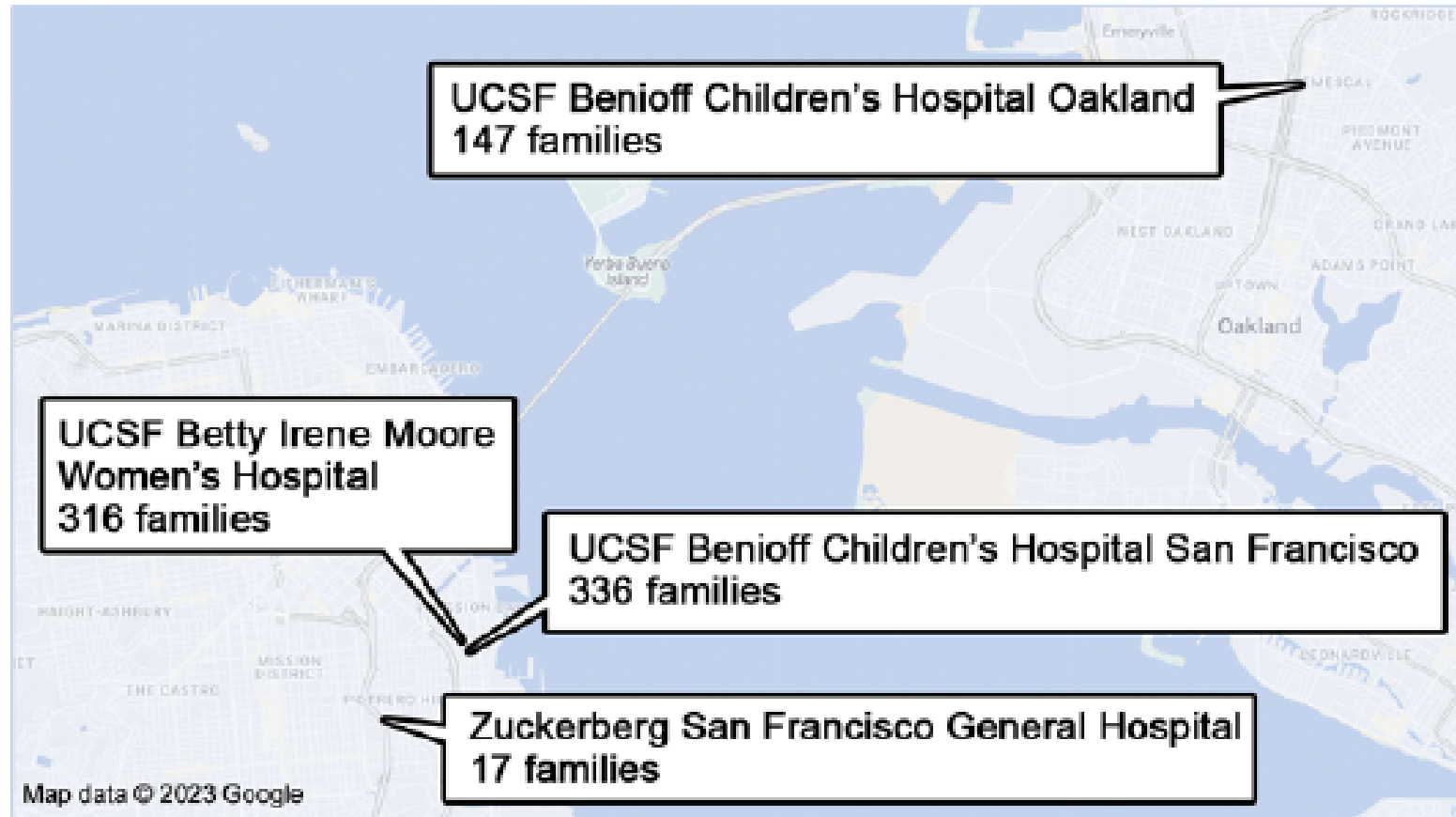
- 6 clinical sites
- Recruit 60% underrepresented minority or “medically underserved” populations



# P3EGS Study Aims

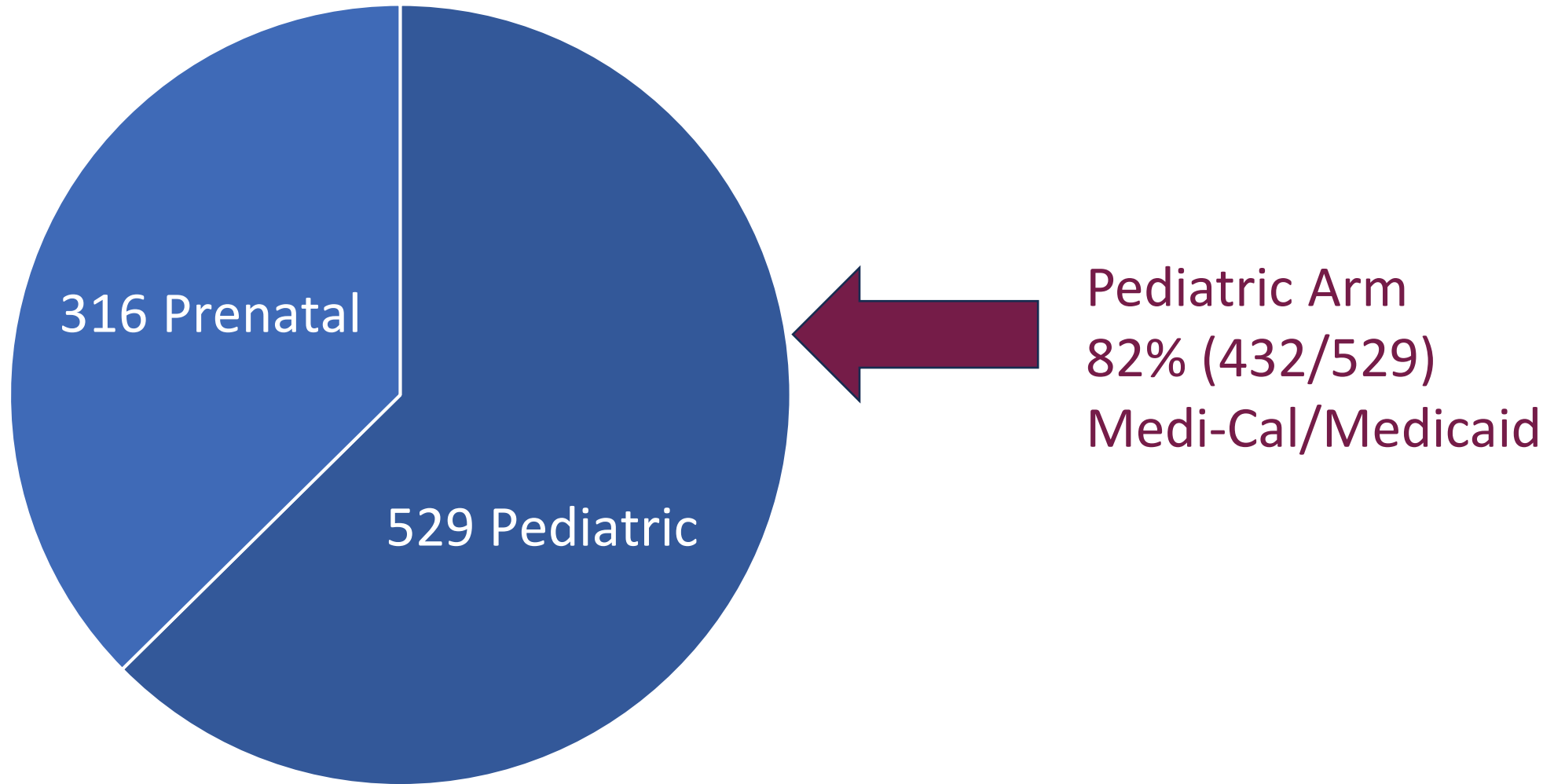
- Examine the clinical utility of exome sequencing
  - Children
  - Pregnant women
- Explore ethical and social issues

# Recruitment

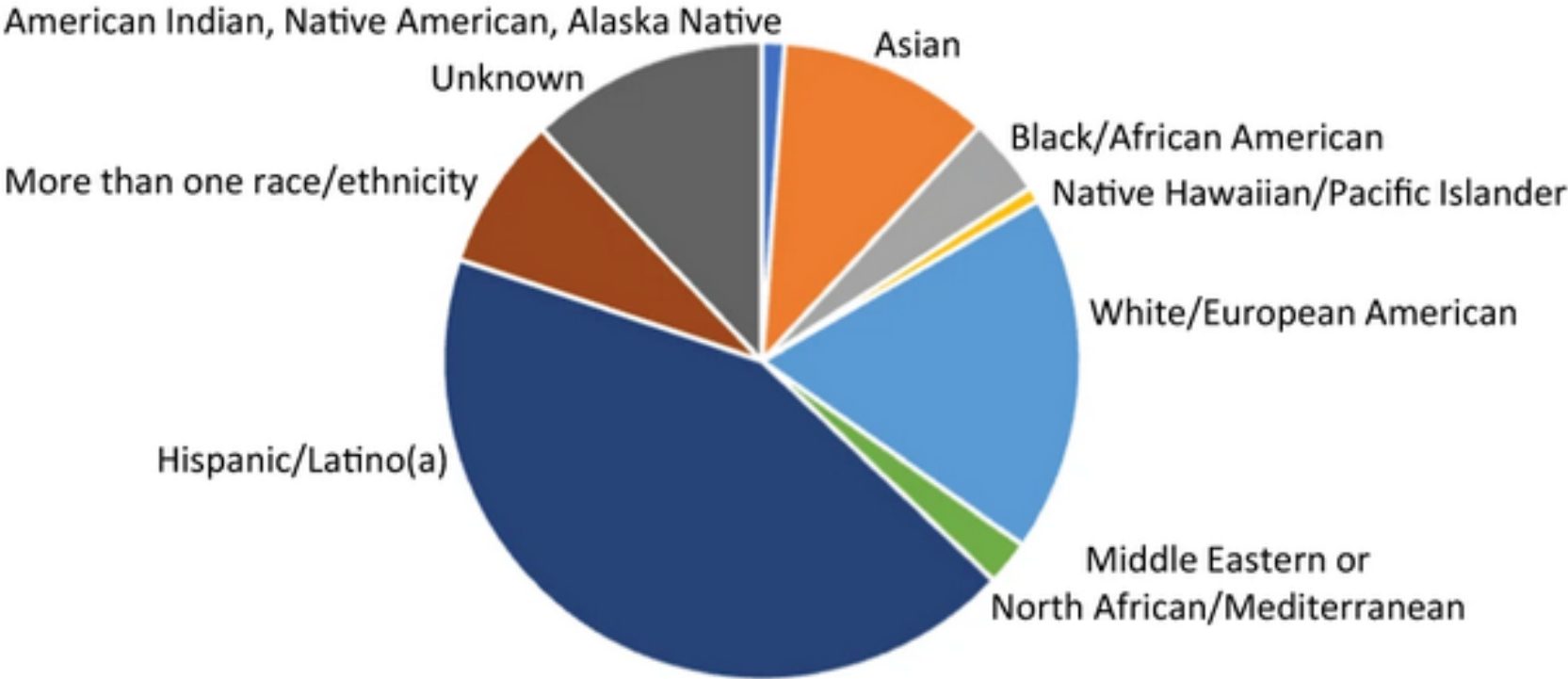


Community Medical  
Centers, Fresno  
29 families

# P3EGS study population (845 families)



# Self-reported race/ethnicity (pediatric)



Slavotinek, A. *et al.* (2023) *npj Genomic Medicine*

# P3EGS ethnographic project

- Clinic observations
- In-depth interviews with parents
  - 2 weeks after learning results
  - 6 months later



- ✓ Expectations
- ✓ Understandings
- ✓ Decisions
- ✓ Day-to-day life
- ✓ Social context

P3EGS  
pediatric arm

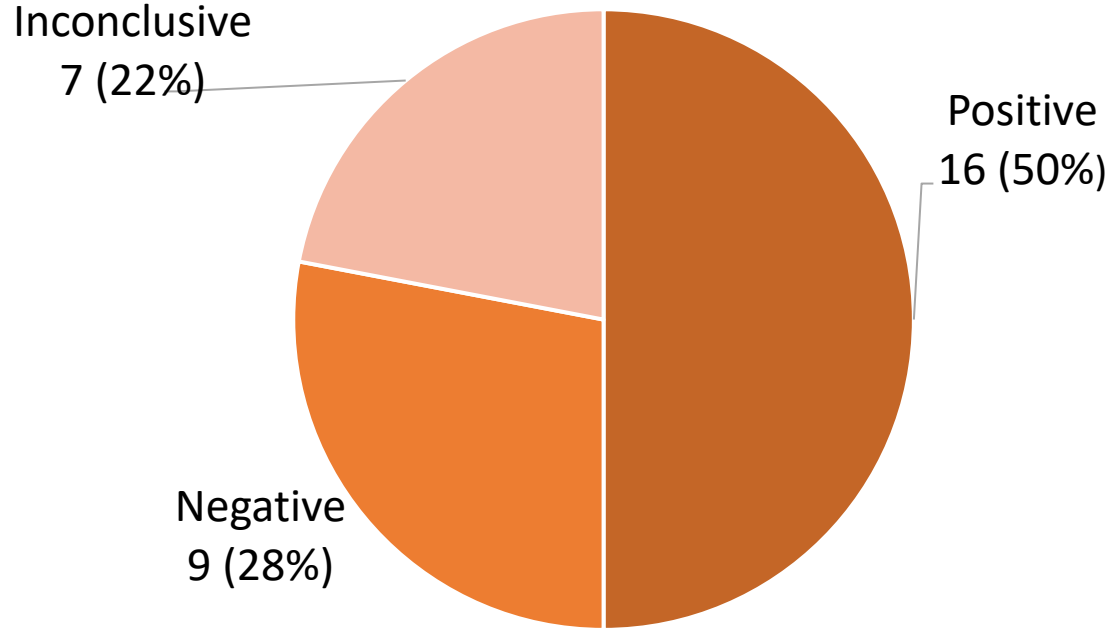
Interviews

| Interviews                  | 2 weeks after results | 6 months after results |
|-----------------------------|-----------------------|------------------------|
| Mother, father or caregiver | 32                    | 29                     |
| Language                    |                       |                        |
| Spanish                     | 15                    | 11                     |
| English                     | 17                    | 18                     |
| TOTAL                       | 32                    | 29                     |

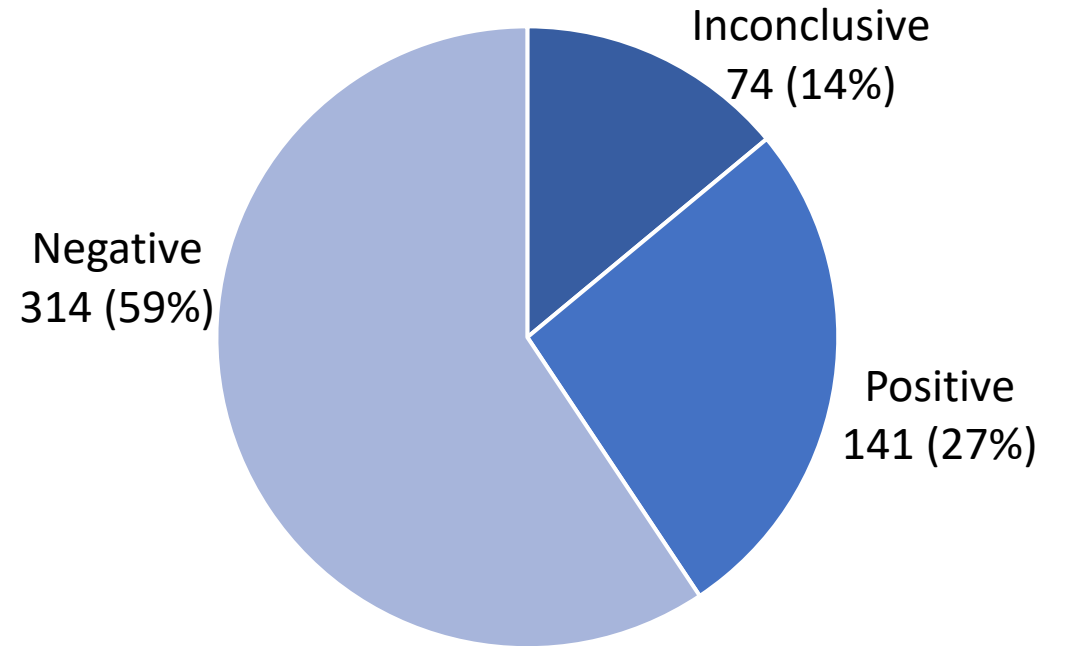
Clinic observations

| Enrollment/consent | Return of results |
|--------------------|-------------------|
| 49 sessions        | 53 sessions       |

Pediatric interviewees' results (n=32)



Pediatric overall results (n=529)





What we learned about  
the utility of genomic  
information  
from families



Most parents  
were seeking  
an explanation  
*and help*

*“...maybe if there was something that  
no one was trying to help me with and  
that she needed...number one is  
school...”*

- Mother of 6-year-old, positive result



### Receive In-Home Services

Get free assistance with your personal care and daily chores from a qualified, IHSS Care Provider who comes to your home.



### Provide In-Home Services

Provide care for a family member, a friend, or a referral. You'll receive a salary, insurance, and other benefits when you work for one or more IHSS Care Recipients.



*“Will this help us qualify for IHSS?”*

- Mother considering enrolling her child in P3EGS

Parents and clinicians  
became partners in  
creating value

## Families learned

- To lower expectations
- That a “cure” or improved treatment options was unlikely
- That pursuing further knowledge was good parenting
- To absolve themselves of guilt
- Faith in what genomic science might learn in the future

*We don't know exactly yet what he has,  
but we are on the right path.*

(Parent)

Etiological  
information  
prompted relief,  
even with  
only a partial answer

*“...it definitely answered the growth  
issues.”*

- parent, positive result

Many parents felt  
frustrated

*“They [results] haven’t helped us as all.” [...] “We just have a name but we don’t know what it means.”*

- parents, positive result

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*“I’m kind of more waiting for your team to let me know, once you have more information in terms of that specific mutation as more people get testing done.”*

- mother, inconclusive result

A genomic diagnosis  
facilitated access to  
services...for some  
families

*Participant: He just turned three and he's already in Head Start, he goes to school three hours a day.*

*Interviewer: Was the genetic testing important to get Head Start?*

*Participant: Yes. The genetic testing gave us a diagnosis, where in turn the diagnosis lets us know what possible problems go along with his syndrome, so we're able to get a jumpstart on it and give him early treatment.*

- mother of 2-year-old, positive result associated with a well-known syndrome

More often,  
parents struggled  
to use genomic  
information

*“...even though I took the genetics papers to the school, they didn't pay much attention to it...”*

- mother of 5-year old, positive result\*

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*“It did not change the [clinical] diagnosis and it did not change the IEP [individualized education plan] but it did create sort of an animosity between myself and the school district.”*

- mother of 8-year-old, positive result\*

\* NOT associated with known syndrome

# Families' ability to realize “middle ground” utility shaped by:

- Type of result
- How long the child has been “in the system”
- Knowledge, skills, resources



*Underserved families are at a disadvantage*



# Toward an expanded, multi-level conception of utility

equity



What role does genomic information play in families' ability to access services, their day-to-day lives, and their personal/social/economic well being?

Are schools and community-based service providers able to use genomic information alongside functional and clinical assessments?

How do federal, state and local policies shape the meaning and actionability of genomic information?

Thank you to the families who shared with us their day-to-day challenges and joys



# P3EGS Research Team

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## Principal Investigators

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## Co-Investigators

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