



A Quantitative Framework for Measuring Personalized Medicine Integration into US Healthcare Delivery Organizations

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Objective

- This project will examine varying perspectives and practices in order to **capture a holistic picture of the clinical adoption of personalized medicine strategies and technologies within the U.S health care system** by querying provider institutions about baseline community, institutional, and service delivery details as well as practice patterns and viewpoints related to personalized medicine and its utilization. This, in turn, can help inform efforts to address the most critical outstanding integration challenges. The landscape analysis includes a representative sample of U.S. health care delivery institutions and includes both quantitative and qualitative results to ensure that a **U.S. health system-wide picture of the integration of personalized medicine** is captured.

Summary of Findings

- The development of a novel maturity model designed to objectively measure PM adoption across health systems.
 - Based on a broad survey across different types of hospital systems, geographies, therapeutic areas, and adoption levels
 - Multi-factorial definition of PM adoption: beyond testing, includes data utilization, consistency, data sharing, leadership, funding, etc.
- 83 percent of the institutions studied scored a two or higher on the five-point scale used to examine their integration efforts.
- Only 22 percent of the institutions studied scored a four or a five on the personalized medicine integration scale.
- Distribution of the overall level of personalized medicine integration broken down by health institution affiliation (academic, community teaching, community non-teaching), practice type, and demographics, as well as by criteria.

Project Design



Deeply profile 3-4 US health systems to understand the varying perspectives, practices, and institutional program implementation regarding personalized medicine

Build on health system profiles, and in collaboration with the project steering committee, develop a PM Adoption Framework or “thermometer”

Leverage the PM Adoption Framework in a quantitative survey to broadly assess the PM adoption landscape

Prepare the results for publication

Summary of Methodology

Organizations were evaluated based on the level of personalized medicine integration across five key clinical areas.

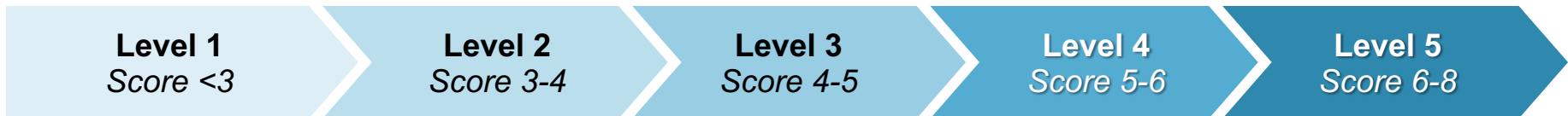


Evaluation of PM adoption across 8 criteria

Each criteria scored independently 0-1

Each therapeutic area score totaled 0-8

Top 3 therapeutic area scores averaged for institution score



* Organizations will only be evaluated based on the indication areas in which there are active personalized medicine programs.

Source: Health Advances interviews and analysis.

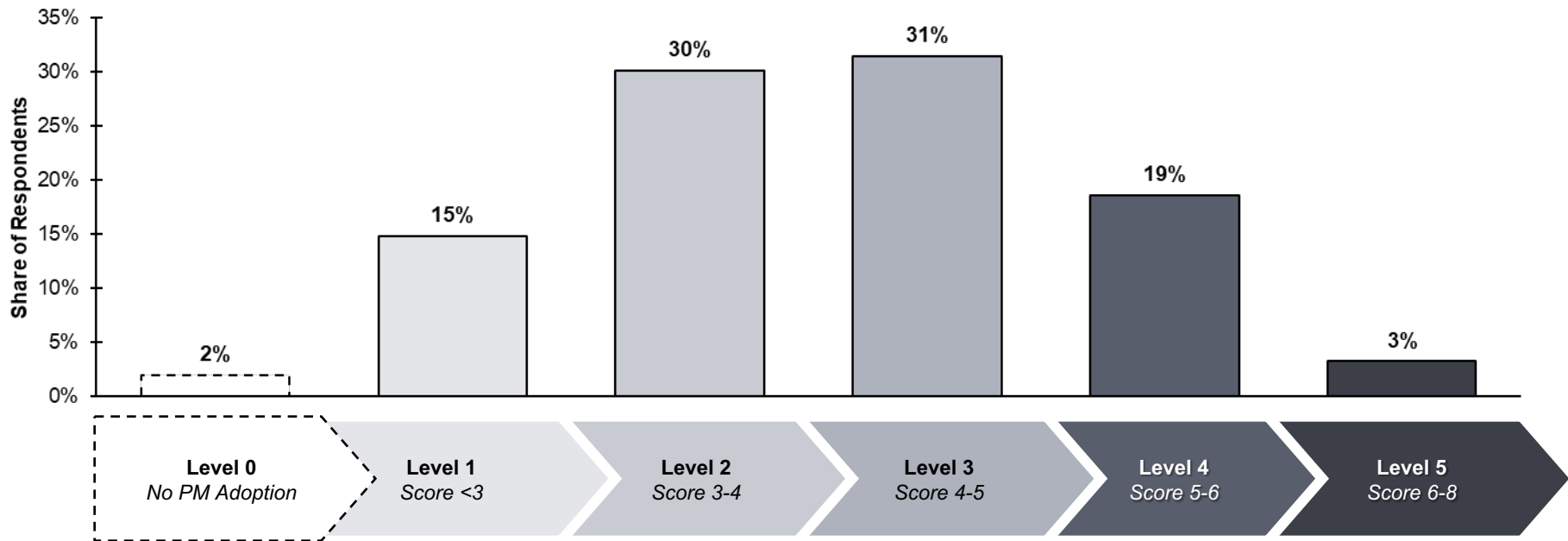
Multi-Factorial PM Adoption Model

A multi-factorial set of criteria was established to assess health systems across 8 independent dimensions of PM adoption.



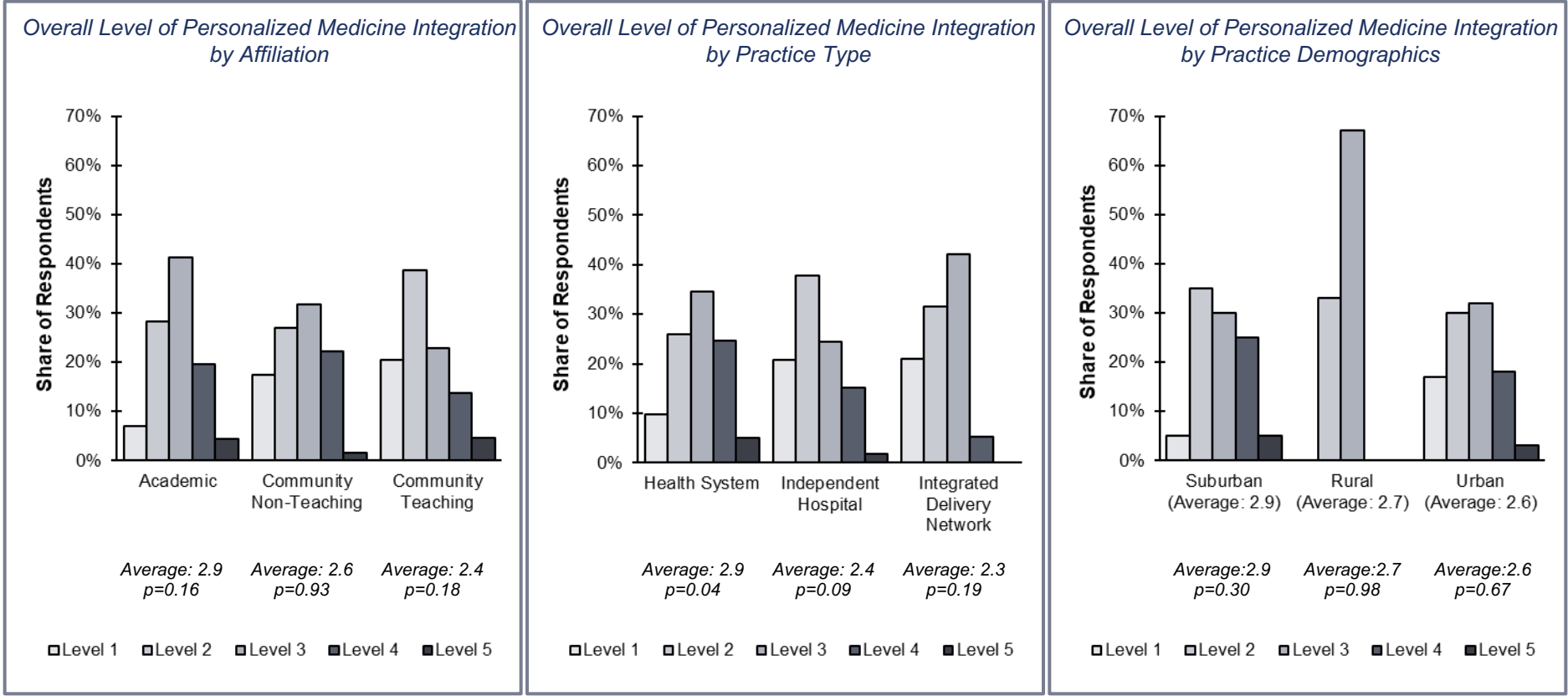
Source: Health Advances PMC PM Adoption Study.

U.S. Health System: Distribution of Overall Level of Personalized Medicine Integration



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Figure 4. US Health System Distribution of Overall Level of Personalized Medicine Integration by Affiliation, Practice Type, and Practice Demographics



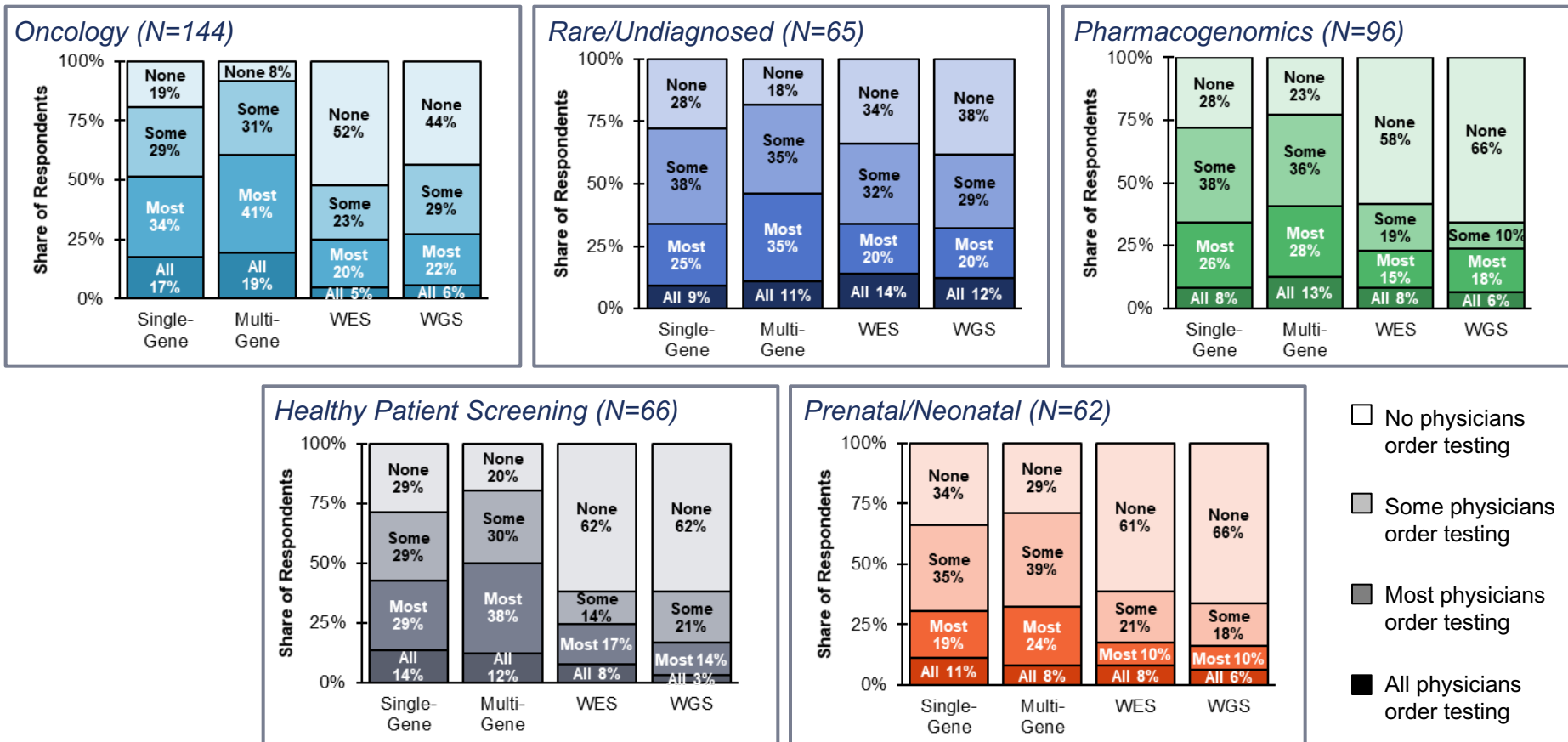
Source: Author's Analysis of US Health System Personalized Medicine Integration Survey.



Physicians are ordering both targeted and broad genetic testing. WES and WGS are most common for oncology and rare/undiagnosed diseases.

Genetic Testing Ordered by Physicians at Health Systems

Respondents with PM Initiatives in Clinical Area



- No physicians order testing
- Some physicians order testing
- Most physicians order testing
- All physicians order testing

Questions: Which of the following types of testing are ordered by physicians at your organization to enable personalized medicine approaches in [clinical area]?

How consistently do physicians at your organization order these types of testing for personalized medicine approaches in oncology?

Note: WES = Whole Exome Sequencing, WGS = Whole Genome Sequencing.

Source: Health Advances survey and analysis.

Conclusion

- Based on a survey of a representative sample of 153 health care providers, revealed a system-wide (83% of institutions implementing at least at level 2) but incomplete (only 22% of institutions implement at highest levels) push to implement personalized medicine in clinical practice.
 - underlines both the momentum that the field has as well as the limitations associated with the utilization of new biomedical technologies and practices.
 - U.S Health Systems are making tremendous progress, but we must build on this momentum in order to raise all health care delivery institutions to the highest levels of personalized medicine integration.
- Interrogation of each health system's unique PM adoption "fingerprint" can highlight specific challenges and potential solutions that may be insightful for the health system and other industry stakeholders

Next Steps:

Improvements in Clinical Care Associated with Personalized Medicine

- This project will examine the effect of integrating personalized medicine approaches in driving improved clinical care and systemic efficiency.