

The Big Data Revolution in Healthcare

Accelerating Value and Innovation

McKinsey Center for
U.S. Health System Reform

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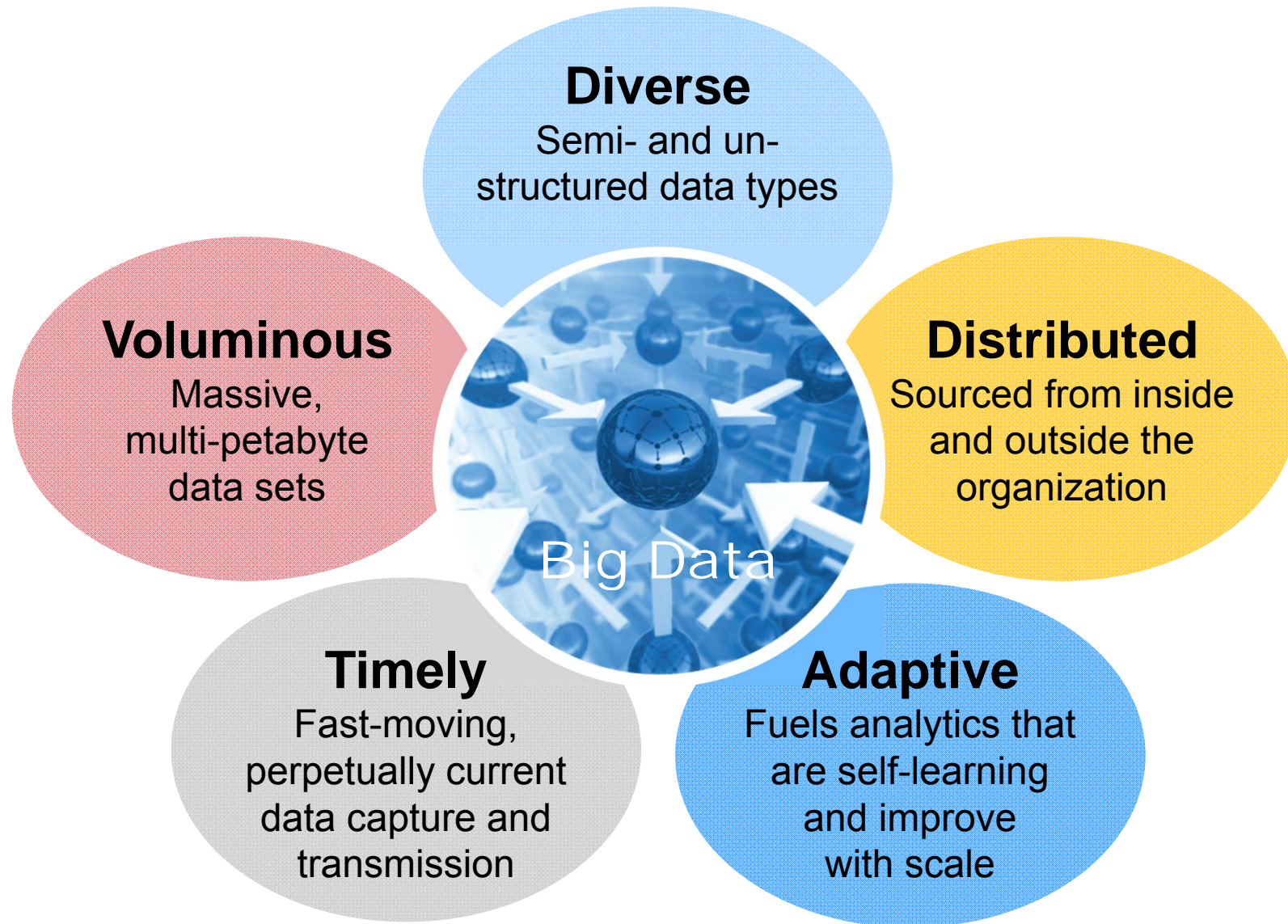
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Executive summary

- 1** *What is different about this discussion now?*
 - Data supply and demand at a tipping point
 - Evolution of payment models creates incentives to share data
 - Technology advancements enable data mining at scale
- 2** *Is the value real? How big could it be?*
 - New paradigms and pathways emerging in data enabled world
 - Progress has already begun; real change underway
 - Scaling up early success can remove \$300-450B of costs from US healthcare system
- 3** *What proof exists that real things are happening?*
 - Barriers are breaking down – innovation from outside and within healthcare forcing new thinking from traditional players
 - New products and business models evolving around easily accessible data (i.e., public and/or customer’s existing data sets)
 - Breadth of examples of innovation focused on timely monitoring/reporting; predictive capabilities will be next
- 4** *How should my organization proceed?*
 - Established players: take advantage of data liquidity and embrace new value pathways enabled by big data
 - Disruptors: Shape your business models around the opportunity to create value and return for your customers

What do we mean by “Big Data”?



Big data has helped transform several industries



- ✓ Regulators make data public at scale
- ✓ Transaction data enables segmentation, evolution of highly targeted products



- ✓ Government and other players provide reporting and prediction data and services
- ✓ Innovation (e.g., genetically modified seeds) bends cost curve and changes playing field



- ✓ Granular POS data drives changes to merchandising, marketing
- ✓ Sophisticated machine-learning algorithms predict future purchases

Many obstacles remain to the healthcare industry taking full advantage of data liquidity

Misaligned incentives



- Volume-driven fee for service model
- 3rd party payment mutes the demand for change

Fragmented information silos



- Complexity in sharing / integrating diverse data
- Fear of penalty – risk of more downside in data than opportunity

Technology underinvestment



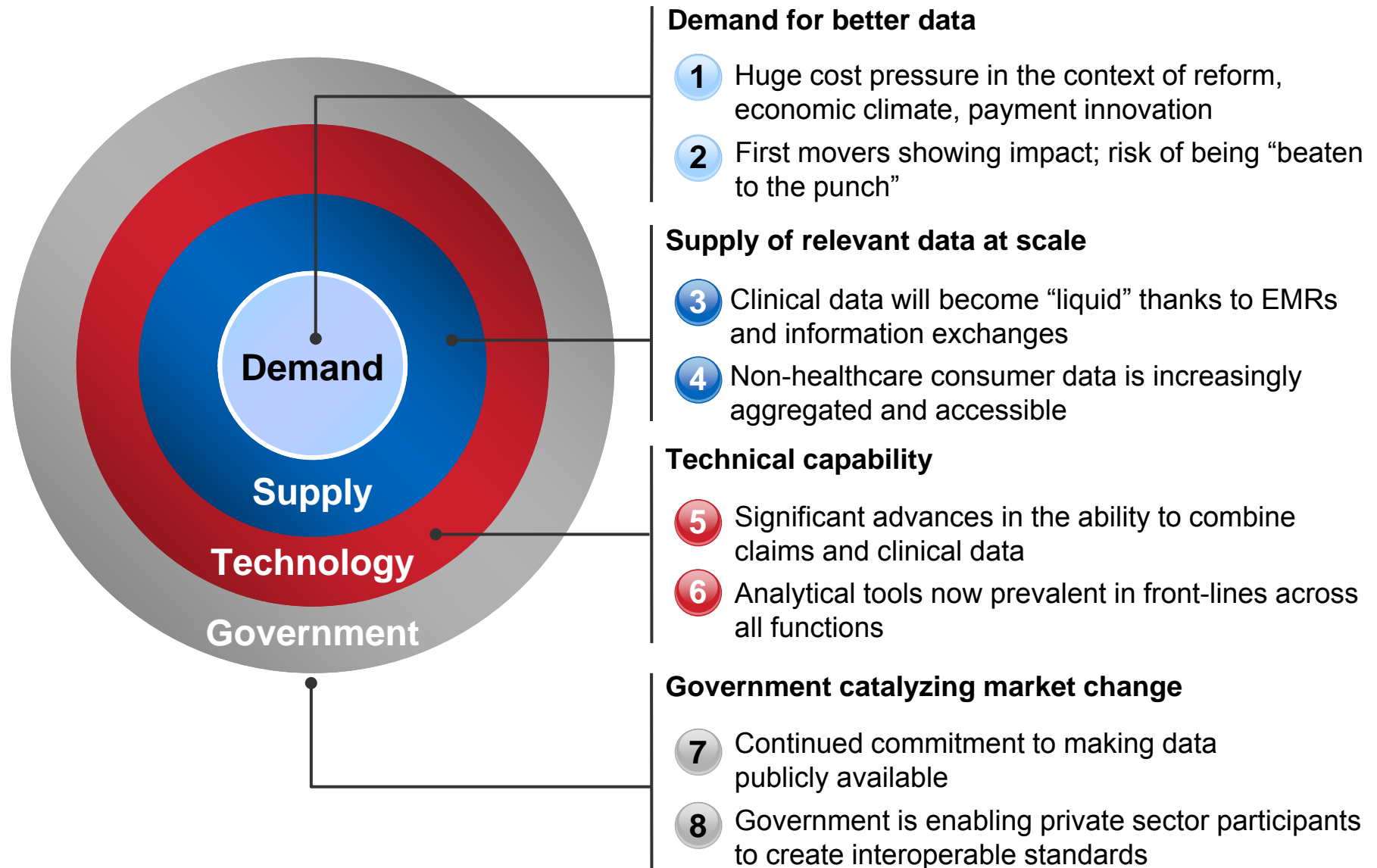
- Uncertain returns on large-scale HIT implementations
- Clinical data still not machine-readable

Resistance to behavior change



- Tradition of physician judgment over protocols
- Privacy concerns resulting from stringent regulations

Why do we believe the healthcare industry is now at a tipping point?



New ways to capture health care value in a data-enabled world

The old drivers

- **Benefit plan designs** that drive cost-sharing and set care limits
- **Medical management techniques** that pit payors vs. providers
- **Unit price discounts** based on contracting, negotiating leverage

The new drivers

- **Patient-oriented segmentation** based on care needs, responses
- **Tighter payor-provider collaboration** to identify the highest-impact care, tradeoffs
- **Payment for value** and rewards for superior performance by even lesser-known providers

We see a new paradigm and value pathways emerging



Right Living

Description

Informed lifestyle choices that promote wellbeing and active engagement of consumers in their own care



Right Care

Evidence-based care that is proven to deliver needed outcomes for each patient while ensuring safety



Right Provider

Care provider (e.g., nurse, physician) and setting that is most appropriate to deliver prescribed clinical impact



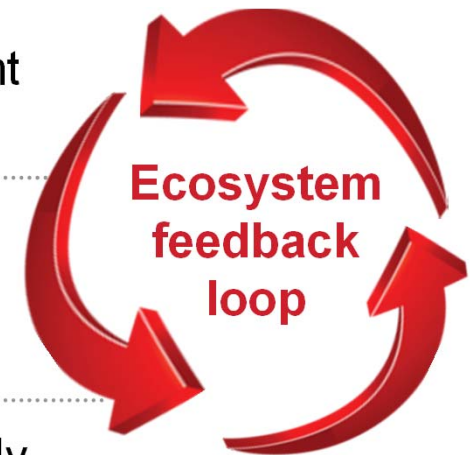
Right Value

Sustainable approaches that continuously enhance health care value by reducing cost at the same or better quality



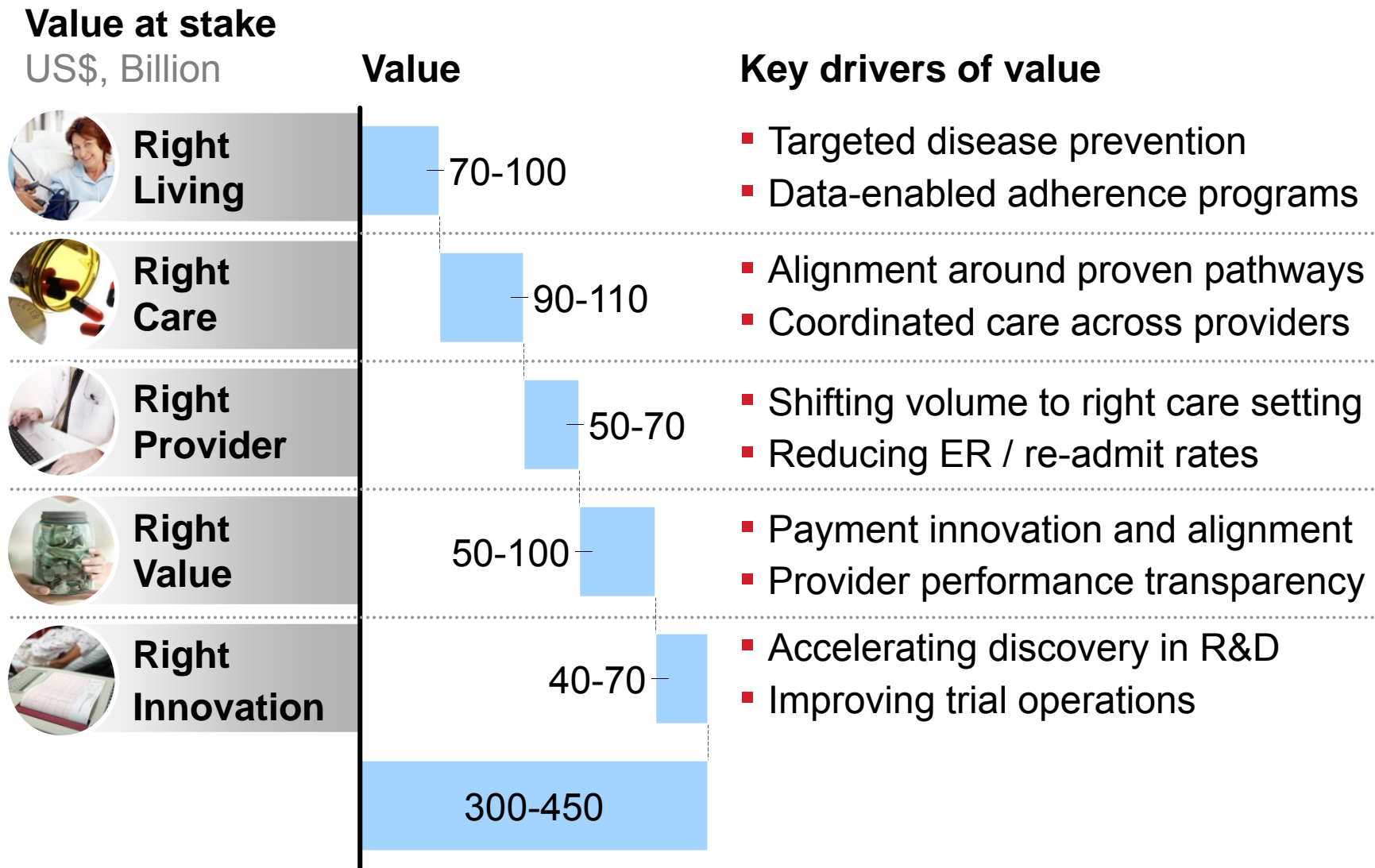
Right Innovation

Innovation to advance the frontiers of medicine and boost R&D productivity in Discovery, Development, & Safety



2. Is the value real? How big could it be?

Applying early successes at scale could reduce US healthcare costs by \$300-450 billion



Observations of 200+ Health Data Initiative applicants, 2011-2012

Our evaluation process

- Reviewed HDI submissions, outside-in
- Limited our analysis to objective review of the submission material
- Continuing to refine perspectives with input from experts & innovators

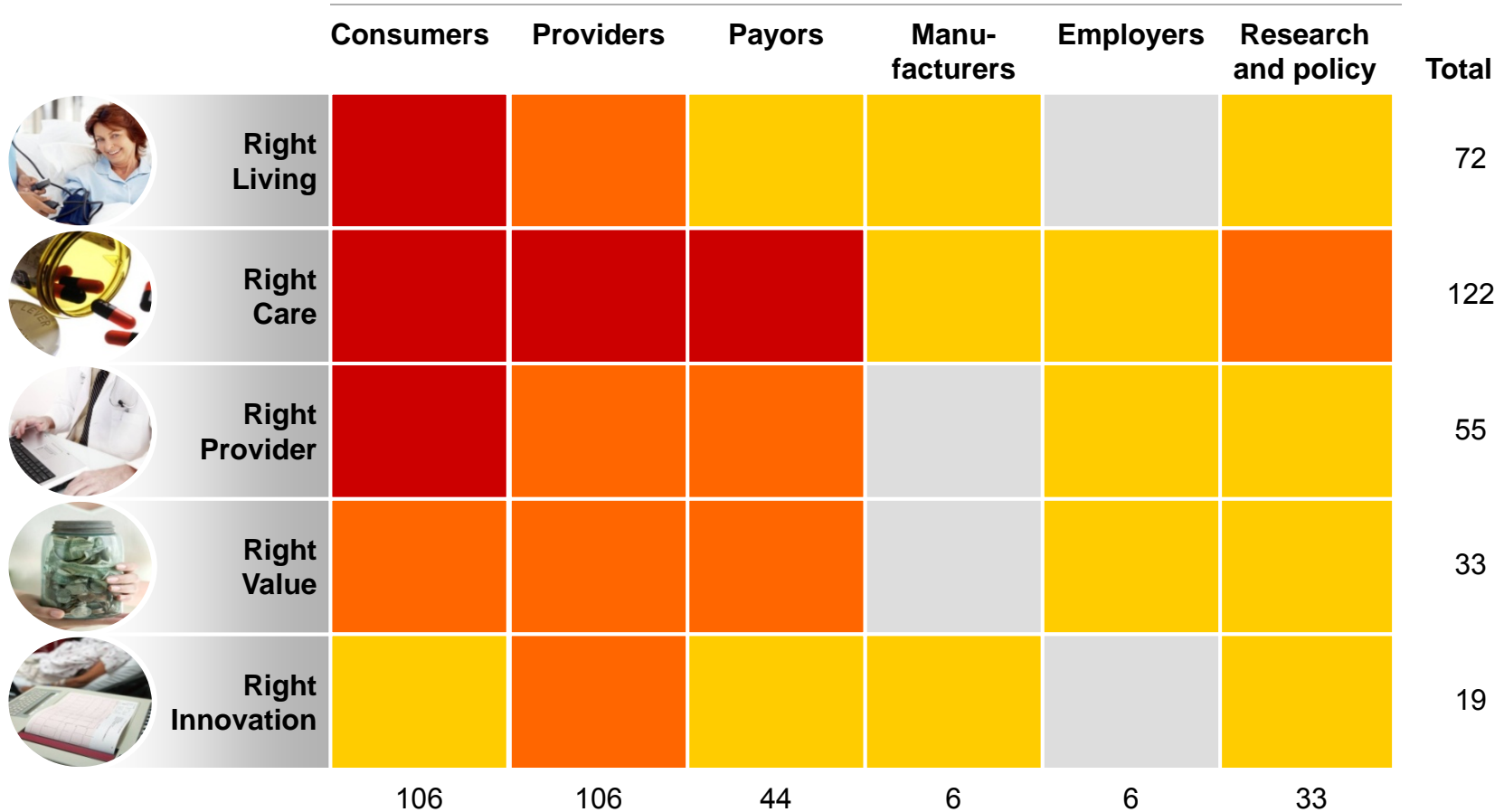
Initial observations

1. Innovators largely targeting providers and consumers as primary users; opportunity to cross to payors, employers, manufacturers
2. Applications targeting consumers may need to engage payors and employers to enforce behavior changes, fund the business model
3. Boom of data-driven innovation based upon public or easily accessible data (2/3 of innovators)
4. Majority of applications build insights retrospectively (reporting, some monitoring); predictive capabilities represent next frontier
5. Activity still building in Right Value and Right Innovation pathways; not yet as well represented
6. New species of businesses emerging to bridge connections between stakeholders

Review of 200+ innovative Health Data applications reveals a strong focus on consumer applications and “Right Care” for payors and providers

Degree of innovation: # of Applications ¹

■ High: > 20
 ■ Medium: 5-20
 ■ Low: < 5
 ■ Absent: 0



¹ Applications fitting in multiple customer categories were counted multiple times

Data sources may inform business model choices for innovators

Observations

- Over two thirds of applicants use **existing / easily accessible data** sources
 - 60% of applications using primarily public data (e.g., Healthdata.gov, CMS claims)
 - + 20% of applications building proprietary data from natural activity (e.g., pedometers, GPS)
- Only **30%** of data applications **use more than one source** as a core element of the solution

Therefore, consider:

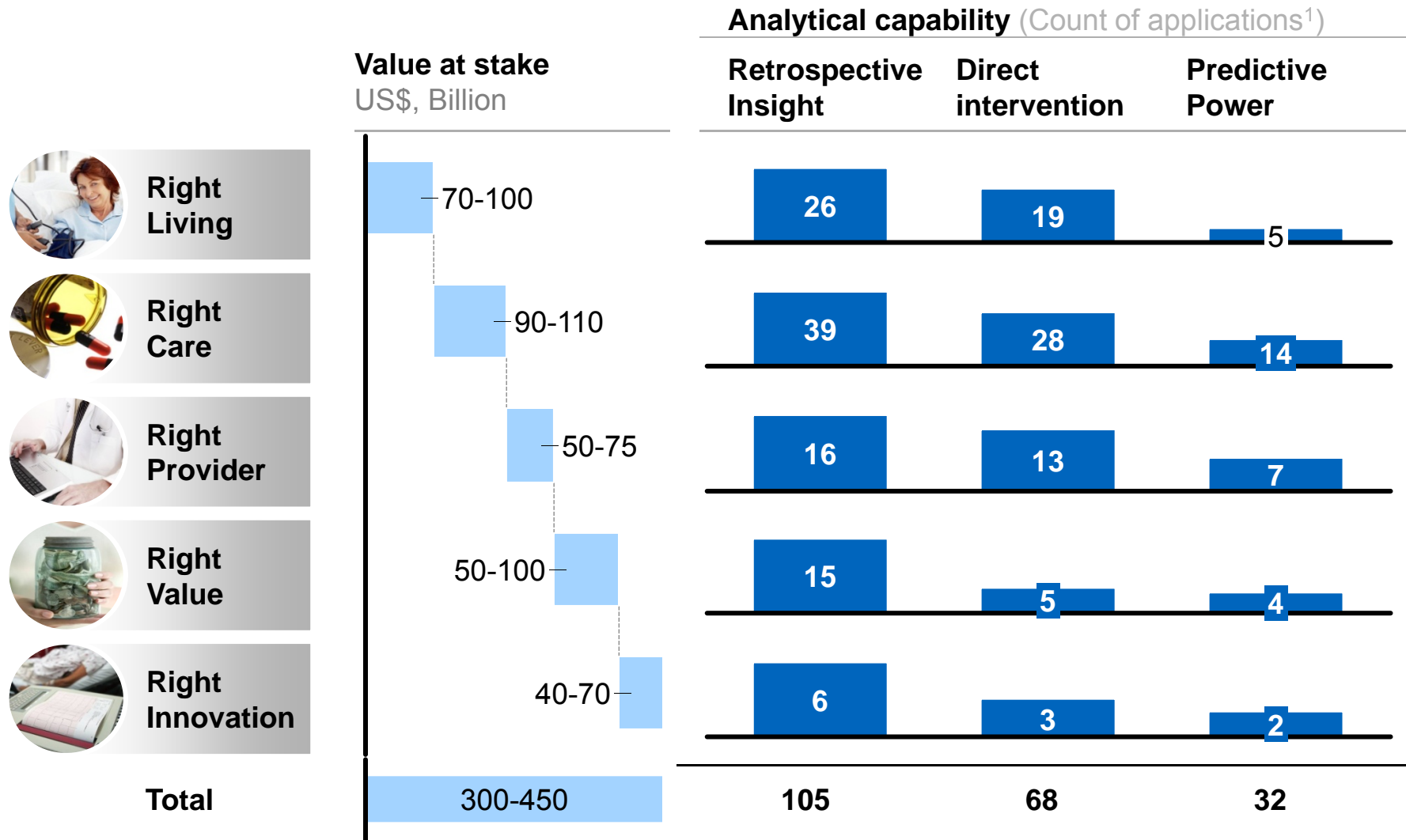
- Huge opportunity existing in public data sources
- Barriers to entry are low, therefore need to differentiate on analytics, effectiveness of interventions or complementary proprietary data

Note: We define data sources as:

- **Public:** Accessible without purchase or partnership required; may be restricted by user or use
- **Proprietary:** Generated or captured by the company; data documented for the first time by the company or application
- **Acquired:** Existing data sets purchased or obtained from non-public 3rd parties (e.g., private payors, EHRs)

1 Applications fitting in multiple customer categories were counted multiple times. This analysis performed only on 100 of the total submissions.

Applications have advanced from retroactive to timely data reporting, with predictive capabilities representing the next frontier



3. What proof exists that real things are happening?

Example companies shaking up traditional approaches to health data



- GPS-enabled tracker monitors acute and prophylactic inhaler usage by consumers and reports to central database
- Collected usage data combined with GPS/geographic to identify individual, group, and population-based trends
- Personalized treatment plans develop in conjunction with established industry guides



- New mobile app that gathers continuous active and passive patient data for risk monitoring and tailored care provision
- Health monitor targeted towards consumers streams to physicians/providers in real time
- Collected data applicable to researchers understanding trends in consumer behavior



- Emerging company focused on ACO-enablement and tailored care through automated, value-based software
- Streamlines provider practices while maintaining high quality of care for consumers
- Supports interaction between consumers and physicians with dedicated call centers



- Biotech support company leveraging information flow and decision-making methods to reduce clinical trial duration, size and costs
- Digital software platforms collect live data from trial sites and applicant pools to streamline trial operations
- Reduce trial duration, cost and risk of failure

We see a short list of industry imperatives that can accelerate the revolution

Bold moves for the industry

1

Enable consumers to make better choices and understand tradeoffs by providing facts in a more consumer-centric approach to care

2

Define common ground for “evidence” and “value” (cost, quality, service) to re-orient payments around value creation

3

Aggregate patient data and make accessible as a natural resource, with clear regulatory guardrails for usage, and a simple and actionable foundation for privacy and security

Taking advantage of the opportunities in a fragmented industry

For established players committed to action

1. Embrace new pathways – transparency will require that you compete on superior healthcare value
2. Develop the associated analytical capabilities, attract new talent, and build new offerings
3. Prepare to operate in a period of ambiguity and flexibility, as new definitions and standards emerge

For disruptors seeking to challenge the status quo

1. Define your offering for sustainable differentiation – much of the data may soon be a public commodity
2. Identify a clear method to scale, technically and through business partnerships
3. Ensure a path to impact and execution for users of your analyses; will take more than insights to capture the full value