

# Designing Global Health Supply Chains for the Future

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Maeve Magner  
Prashant Yadav

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**WILLIAM DAVIDSON INSTITUTE**  
AT THE UNIVERSITY OF MICHIGAN



# Introduction: Designing Global Health Supply Chains of the Future

## 2016 HHL workshop :

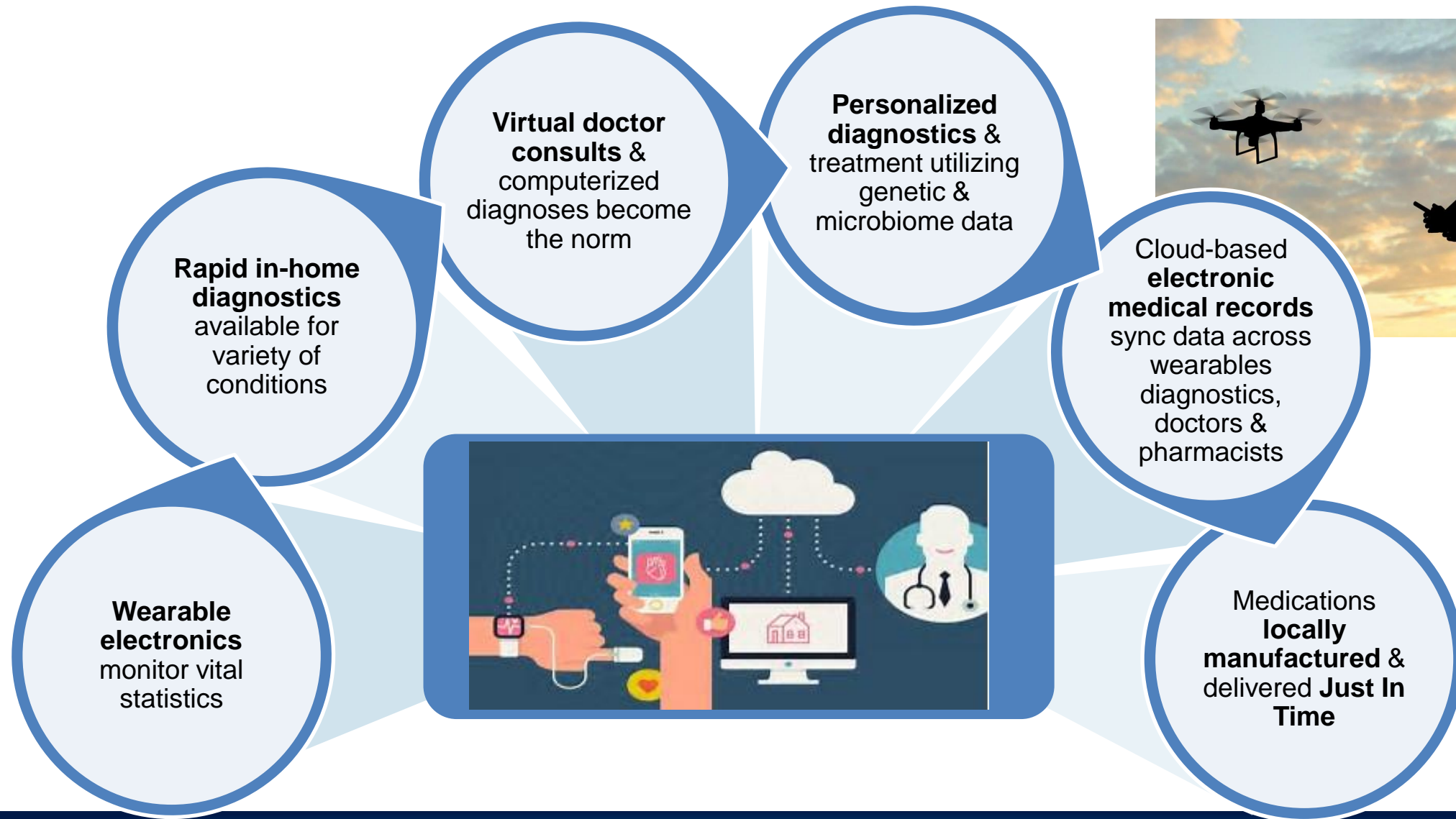
- Shared trends that will impact global health systems & supply chains by 2030
- Got input & discussed regarding their relevance

## Objectives for today's session:

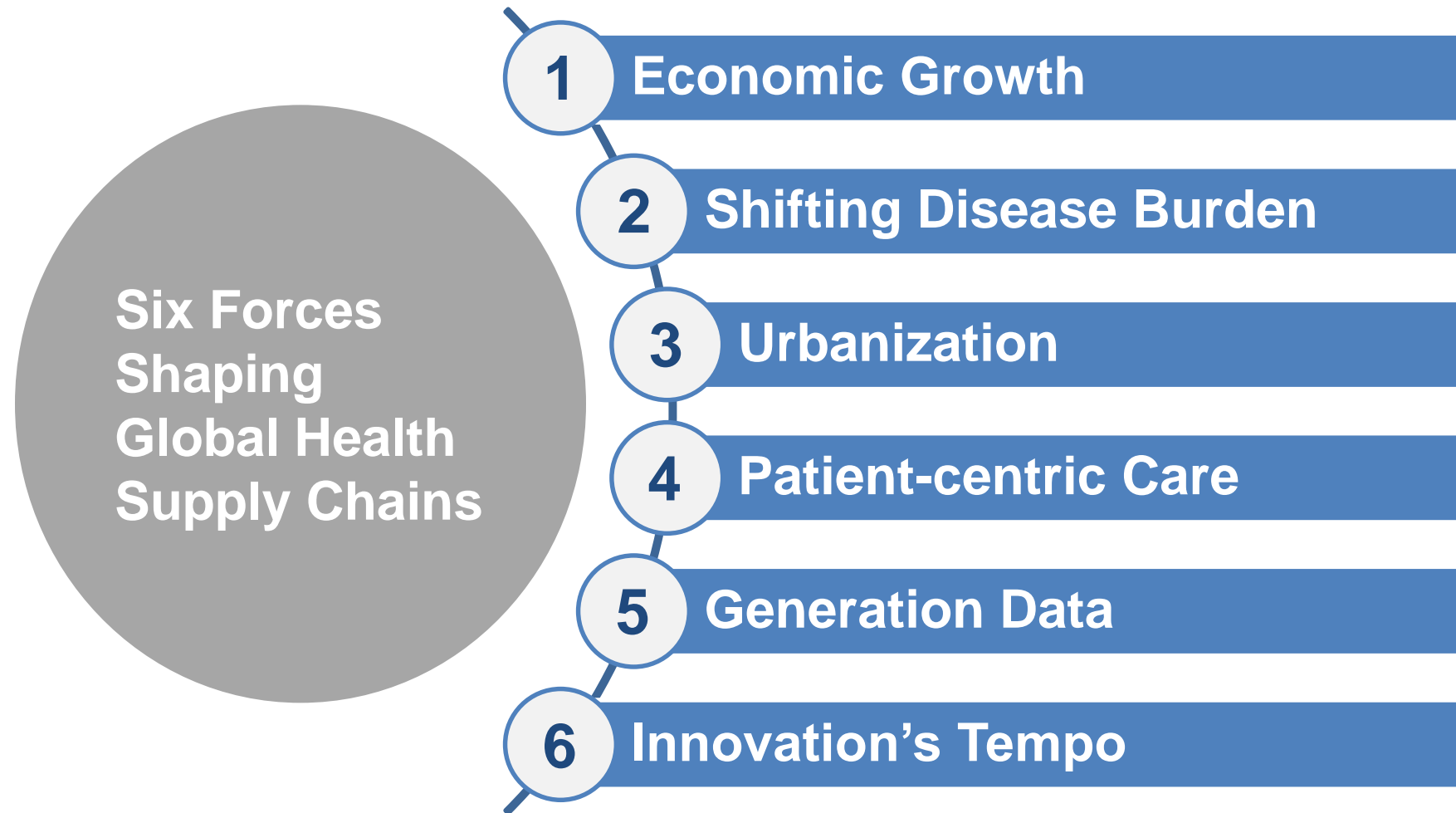
- Share key trends, forces and recommendations from the final paper
- Discuss potential impact from perspective of governments, global agencies, private companies, and patients
- Stimulate thinking around current investments & actions that supply chain actors can take to proactively prepare for the future health supply chain ecosystem



## In 2030, Story of Kofi a patient in suburb of Accra,



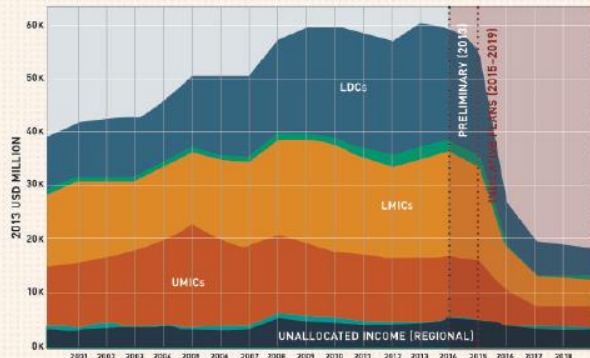
Six broad economic, demographic, and technological trends most likely to impact global health supply chains in 2030 and beyond





# 1 Economic Growth | *Rising incomes redefine healthcare financing*

DEVELOPMENT AID TO COUNTRIES  
IN DIFFERENT INCOME GROUPS



■ LDCs ■ Other LICs ■ LMICs ■ UMICs ■ UNALLOCATED INCOME (REGIONAL)

Please note that the figures for 2015 and beyond do not cover all aid providers as it only covers the aid providers that have agreed to publicly share the information. For those who have agreed to share the information, the figures represent provider's best available estimates of most recent spending as well as their indicative forward spending plans.

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% OF COUNTRIES IN LOW AND LOWER  
MIDDLE INCOME



UNIVERSAL HEALTH COVERAGE REACHES  
A LARGE NUMBER OF COUNTRIES BY 2030



TRADITIONAL AID FOR  
HEALTH SERVICES



DOMESTIC FINANCING  
FOR HEALTH



WILLINGNESS TO  
PAY FOR HEALTH



COMMERCIAL VIABILITY  
OF MARKETS

## Compass Questions

### Global Agencies:

- What can be done to improve supply chains in countries likely to be left behind in the growth agenda?
- How should “supply chain readiness” be factored into country graduation thresholds?

### Governments:

- Are we building effective domestic capacity to manage strategic procurement using domestic resources or reimbursement for product purchasing under insurance?
- Do we understand obstacles to building and retaining supply chain talent in more competitive markets?

### Private Actors:

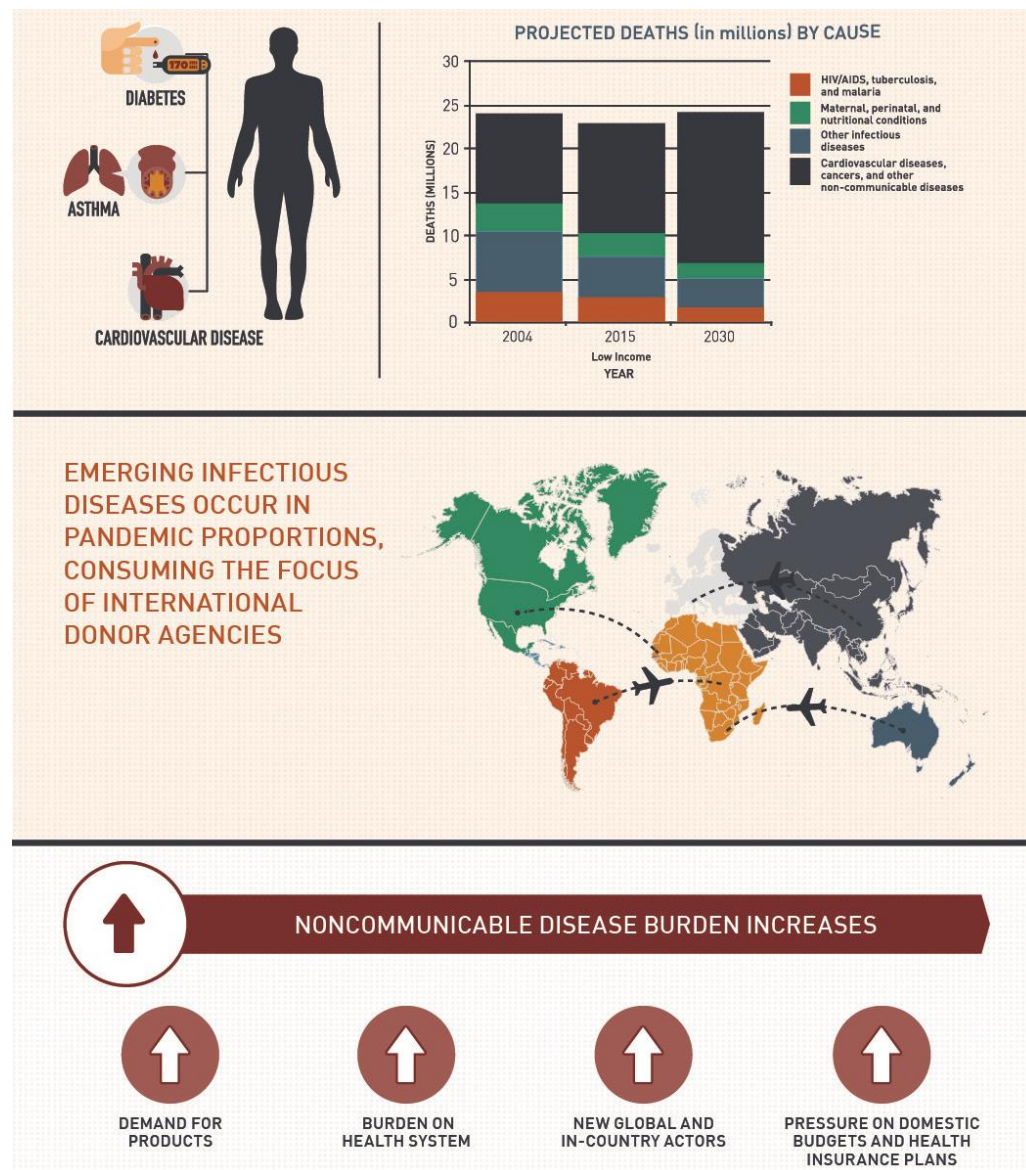
- Are we sufficiently leveraging the distribution footprint of global pharma companies and the capital investments of international donors?

### Patients:

- How will we prepare patients to participate in national healthcare schemes?



## 2 Shifting Disease Burden | *New demands pressure healthcare delivery*



### Compass Questions

#### Global Agencies:

- As governments scale up direct healthcare financing, can global agencies collaborate on supply chain financing strategies to smooth out peaks in health product demand?
- How can global agencies help governments and private actors plan new processes to respond to anti-microbial resistance and changing disease burdens?

#### Governments:

- Are supply chain services and technical assistance provided today appropriate to deal with increased conflict, emergencies, and mass migration?

#### Private Actors:

- Will wholesalers and retailers find a sustainable way to serve populations in crisis? How can we incentivize them?

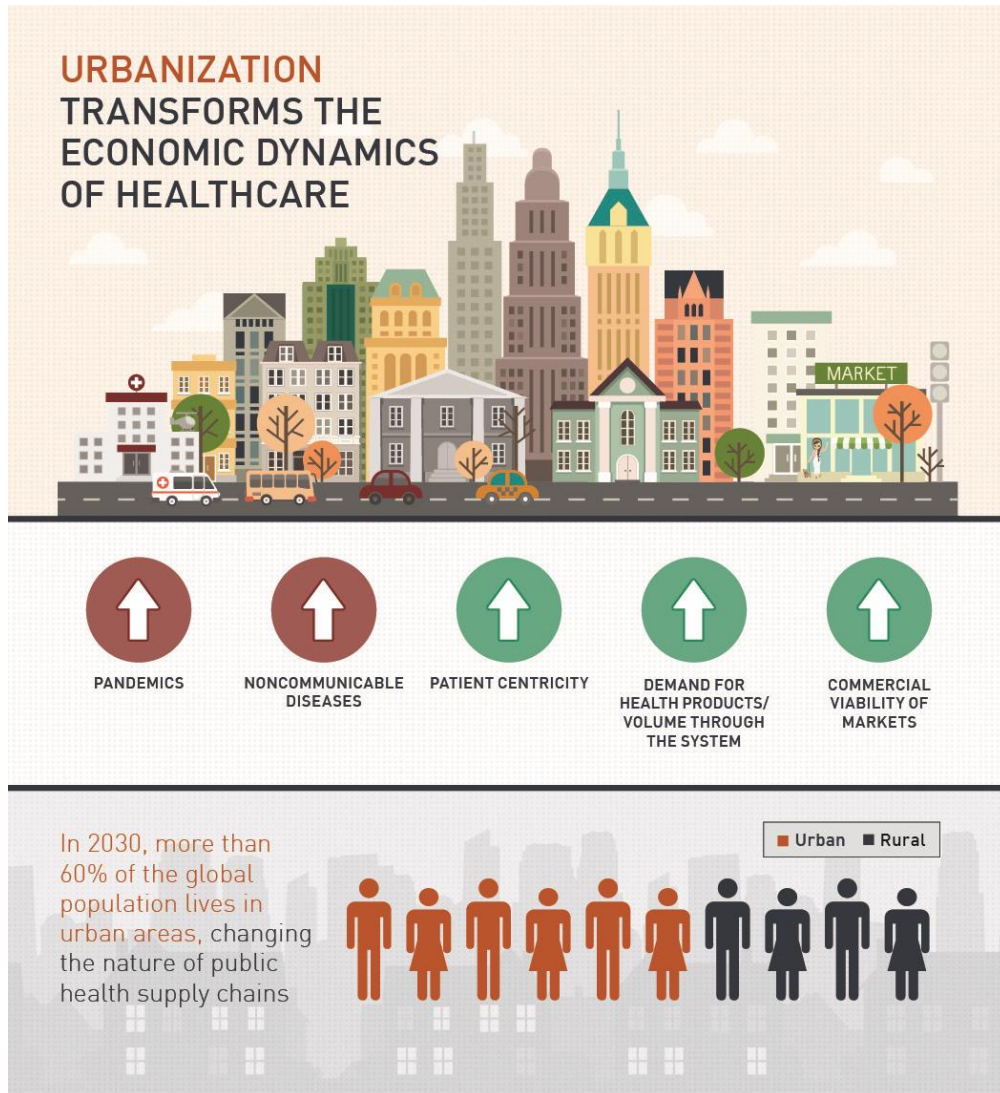
#### Patients:

- How can crowd-sourced health awareness drive regional cooperation and response?





# 3 Urbanization | *Urban growth transforms healthcare markets*



## Compass Questions

### Global Agencies:

- How can agencies facilitate public and private sector responses to the challenges associated with urbanization – inequality, urban poverty, and the proliferation of slums?

### Governments:

- Is your current supply chain design equipped to cover the full spectrum of population needs? How will you better serve urban and rural markets?

### Private Actors:

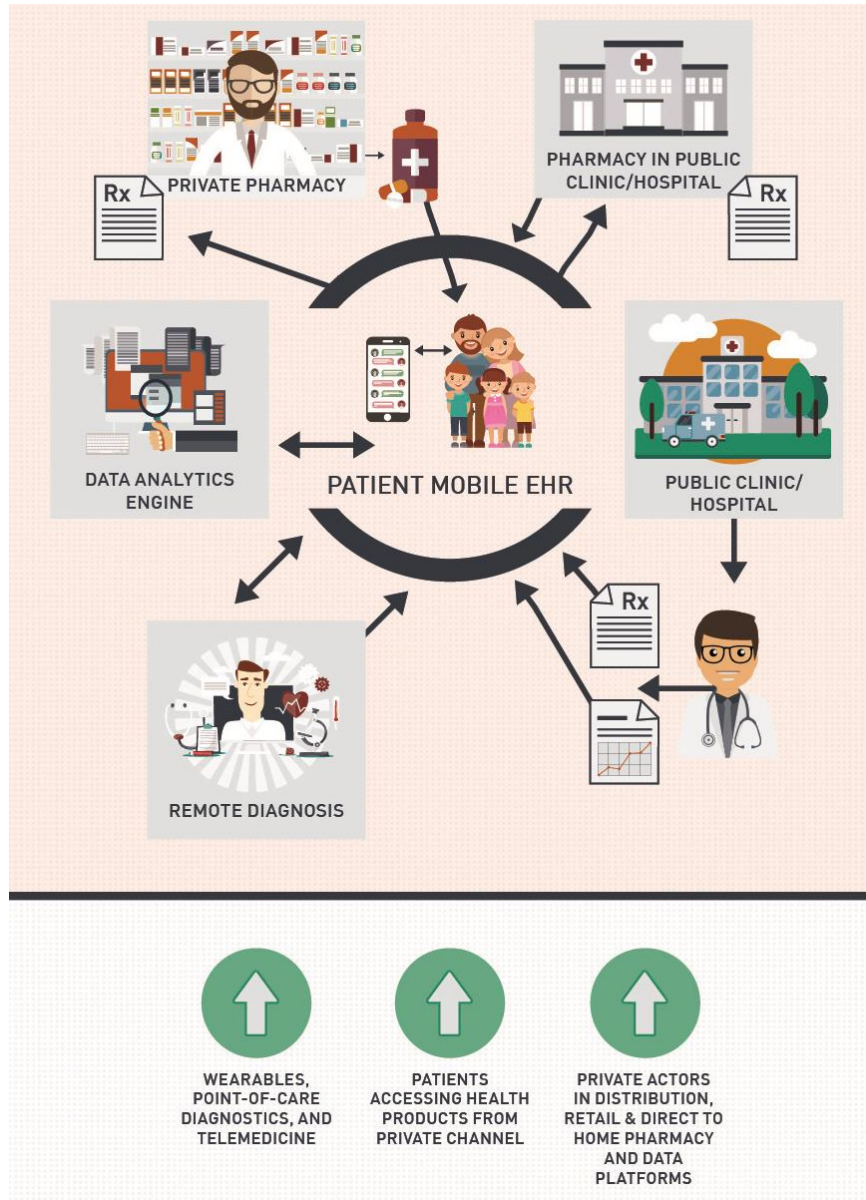
- How well does existing supply chain infrastructure align with omni-channel strategies and ability to serve rural markets?

### Patients:

- How are governments and private supply chain actors gearing up for a future in which patients obtain health products interchangeably – private and public sources, digital and physical touchpoints?



## 4 Patient-Centric Care | *Supply chains organize around patient data*



### Compass Questions

#### Global Agencies:

- How can agencies support standards for patient health data that support patient-centric supply chains? How can they protect the public good in the process?

#### Governments:

- Is your supply chain ready to support a highly patient-centric model across public and private channels?

#### Private Actors:

- Does your supply chain design account for new forms of feedback (e.g. social media, at-home diagnostics)?

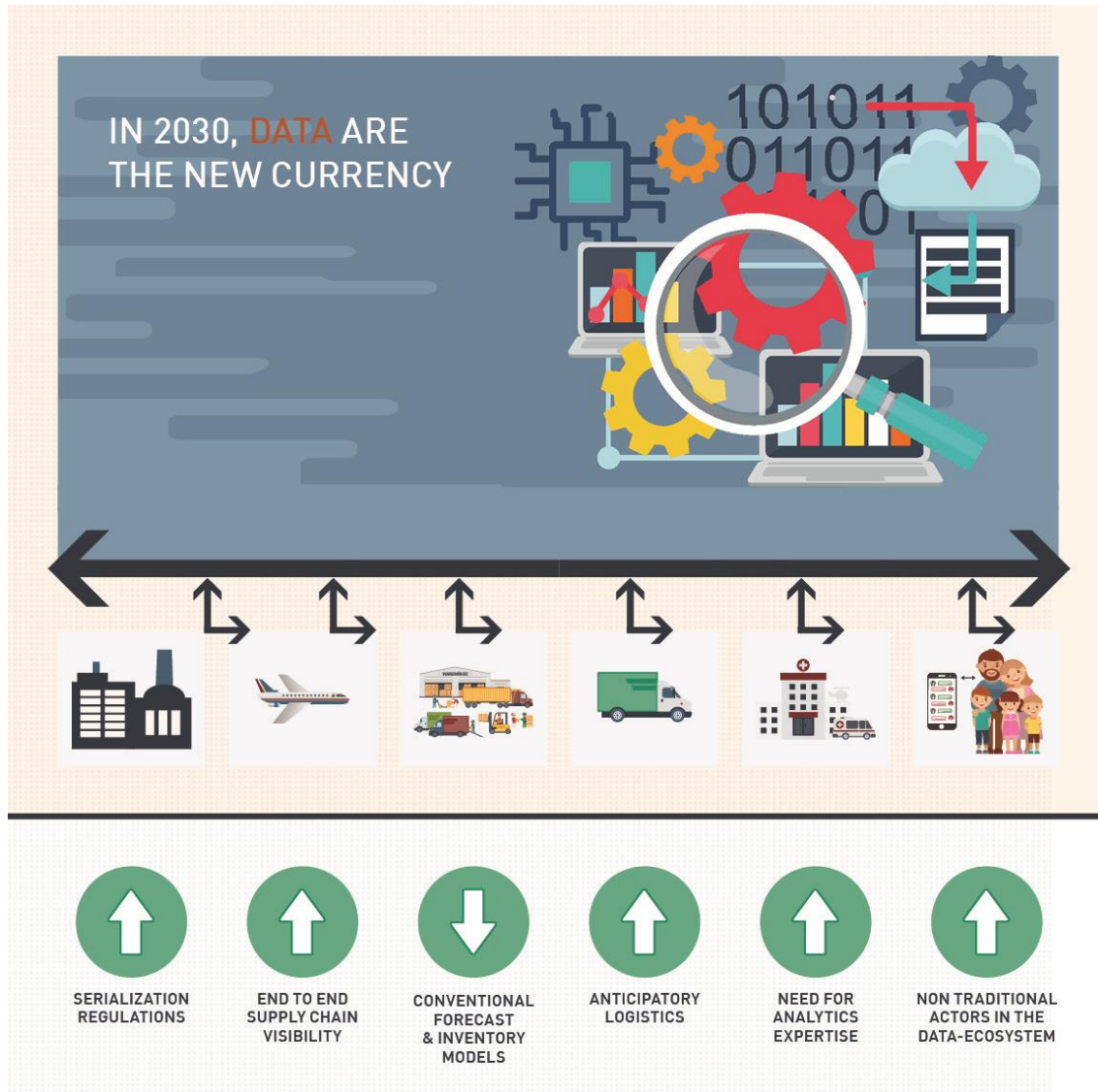
#### Patients:

- How can you leverage patient interest in health data to shape healthy patient behaviors? How can you educate patient populations about privacy risks and tradeoffs?





## 5 Generation Data | *Competition thrives with data abundance*



### Compass Questions

#### Global Agencies:

- How can data and analytics open new market opportunities and impact access to healthcare in your region? Have you considered the lessons from serialization efforts in Europe and the U.S.?

#### Governments:

- Are you developing regulatory capacity to provide oversight and governance for data-abundant, patient-centric supply chains?

#### Private Actors:

- Have you considered the potential of anticipatory, demand-driven supply chain design for improving your performance in markets you serve today?

#### Patients:

- Have you thought about the role of new Internet of Things sensors in your programs? How they could impact your preventive care, vaccine, and asset management programs?



## 6 Innovation's Tempo | *New business models arise from new networks*

### NEW BUSINESS MODELS AND TECHNOLOGY DISRUPT PUBLIC HEALTH SUPPLY CHAINS



ASSET-SHARING  
BUSINESS  
MODELS



NEW  
SUPPLY CHAIN  
TECHNOLOGIES



DATA, VISIBILITY  
AND ANALYTICS



DECENTRALIZED  
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PRECISION  
MEDICINE,  
DIAGNOSTICS  
AND PERSONAL  
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TIME FROM  
ORDER TO  
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### Compass Questions

#### Global Agencies:

- Can your organization adopt more catalytic & collaborative strategies to avoid becoming a constraint on progress?
- Do you have the specialists needed to address tomorrow's supply chain priorities? Are they empowered to act?

#### Governments:

- Do you have a workforce development plan that a) recognizes future shifts in needed skills and b) manages tradeoffs that will accompany greater automation?
- How are you creating incentives for new market entrants?
- How ready is your supply chain for marketplace procurement practices?

#### Private Actors:

- Are you evolving the core of your business model to sufficiently align with emerging technologies in decentralized manufacturing, transport, and distribution?

#### Patients:

- As new business models emerge, how will you create incentives to serve all segments of the patient population?



# Risk of not adapting - Without adequate planning & adaptation, these Six Forces are likely to cause disruption in future health supply chains

## Hyper-fragmentation & Isolated Progress

- Unregulated markets become mainstay of healthcare treatment seeking
- Greater disparity between public & private sector health systems in productivity, service level, and innovation

## Talent Capital Shortages

- Lack of analytics skills bog down governments & global agencies
- Struggle to translate data potential into supply chain cost & service improvement

## Traditional Labor Upheaval

- Innovator markets shed traditional supply chain workforce
- Fewer jobs in trucking, warehouse & inventory management, data entry

## Rural Areas Face Public Jeopardy

- Rural, remote areas further marginalized by:
  - Lack of clarity on public vs. private healthcare roles
  - Diminished public-sector capacity

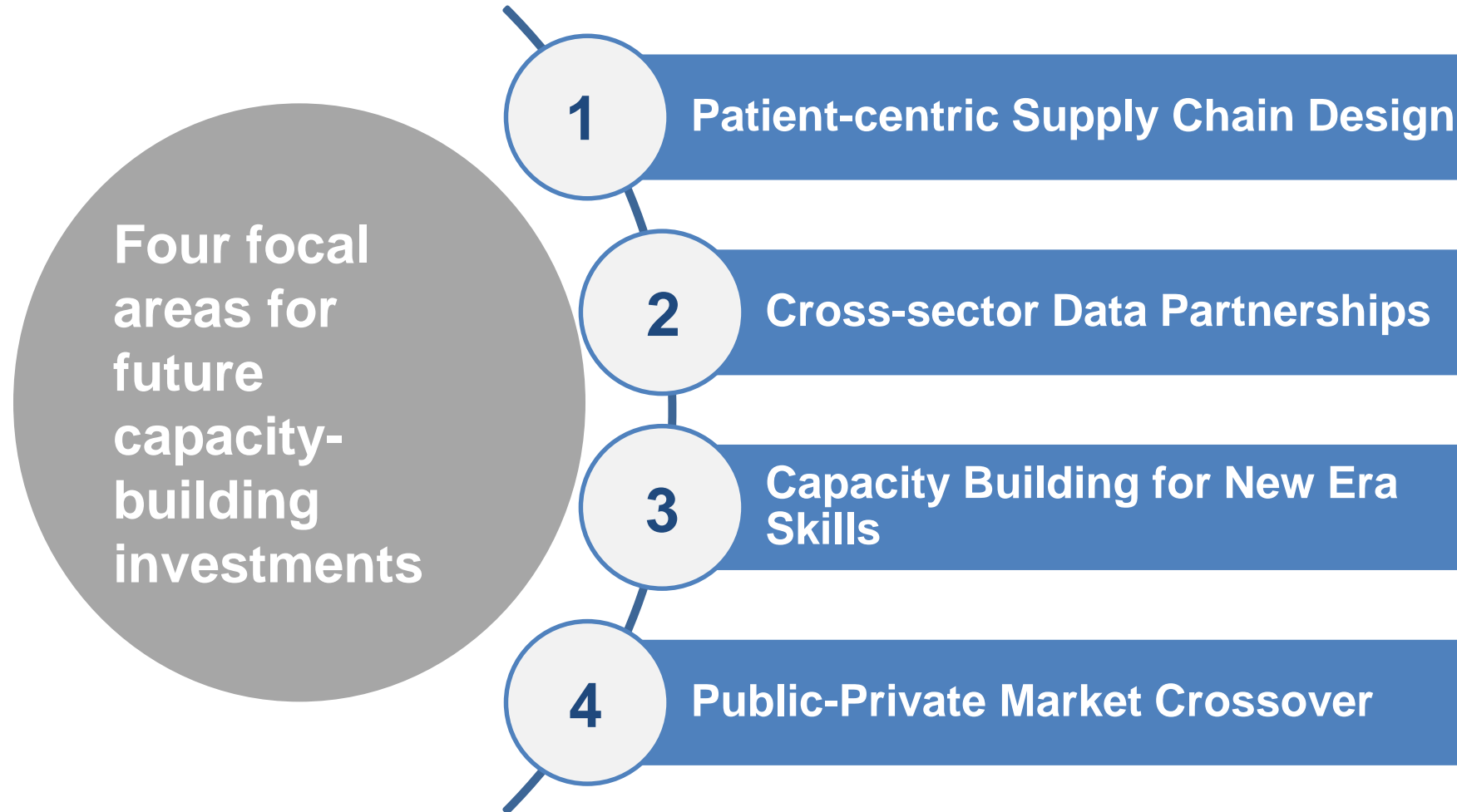
## Incomplete Global Coordination

- Multinational organizations fail to provide technical know-how, financial resources and coordination to fulfill new country needs





We propose 4 key initiatives governments, global agencies and private actors should focus on



# 1. Patient-centric supply chain design

## Key imperative

*Design supply chains that start from the patient and work backwards, blending government and private channels, mixing online and brick-and-mortar*

## Specific areas of inquiry

- Research demand-side journeys to align business models with patient need
- Model channel-agnostic supply chains for urban & rural settings
- Model shifts in public health supply chain needs to adapt to future disease burden
- Model potential impact of omni-channel strategies to improve supply chain efficiencies



## 2. Cross-sector Data Partnerships

### Key imperative

*Supply chains that rely on long-term forecasts must now give way to supply chains that can respond more nimbly and quickly through timely data analysis & feedback*

### Specific areas of inquiry

- Build partnerships between institutions engaged in developing advanced analytics and ICT capacity along with supply chain organizations
- Encourage centers of excellence among global agencies and governments to drive regional best practices and sharing





### 3. Capacity Building for New Era Skills

#### Key imperative

*Developing human capital at all levels of the supply chain will be essential in creating organizations flexible enough to withstand significant transformation*

#### Specific areas of inquiry

- Model the needed capacity in strategic procurement, market shaping, & financial management
- Embrace emergent learning/training tools and foster new career pathways focused on extracting knowledge from data
- Promote mechanisms that encourage innovation and new/unconventional market entrants, e.g. SC innovation fund or group purchasing organization.



## 4. Public-Private Market Crossover

### Key imperative

*Public and private supply chains running in parallel will be increasingly vulnerable to shifting demographics & disease burden; we must explore models for more effective public-private collaboration*

### Specific areas of inquiry

- Develop mechanisms & organizational pathways for adopting government – private supply chain models
- Promote better private-sector understanding of public-sector processes and constraints
- Define best practices for how to invest in private health markets while maintaining focus on common good and equity of health provision



## In closing here are some guiding questions for key supply chain actors

### Governments

- Is your supply chain ready to support a highly patient-centric model across public and private channels?
- Are you developing regulatory capacity to provide oversight and governance for data-abundant, patient-centric supply chains?
- Do you have a workforce development plan that anticipates future shifts in needed skills and addresses obstacles to retaining talent in more competitive markets?

### Global Agencies

- What can be done to improve supply chains in countries left behind in the growth agenda? How should “supply chain readiness” be factored into country graduation thresholds?
- Do you have the specialists needed to address tomorrow’s supply chain priorities? Are they empowered to act?
- As governments scale up direct healthcare financing, can global agencies collaborate on supply chain financing strategies to smooth out peaks in health product demand?

### Private Actors

- How is your organization preparing for a future in which patients obtain health products through multiple private, public, digital and physical sources?
- Are you evolving the core of your business model to sufficiently align with emerging technologies in decentralized manufacturing, transport, and distribution?
- How can we incentivize wholesalers and retailers find a sustainable way to serve rural areas and populations in crisis?

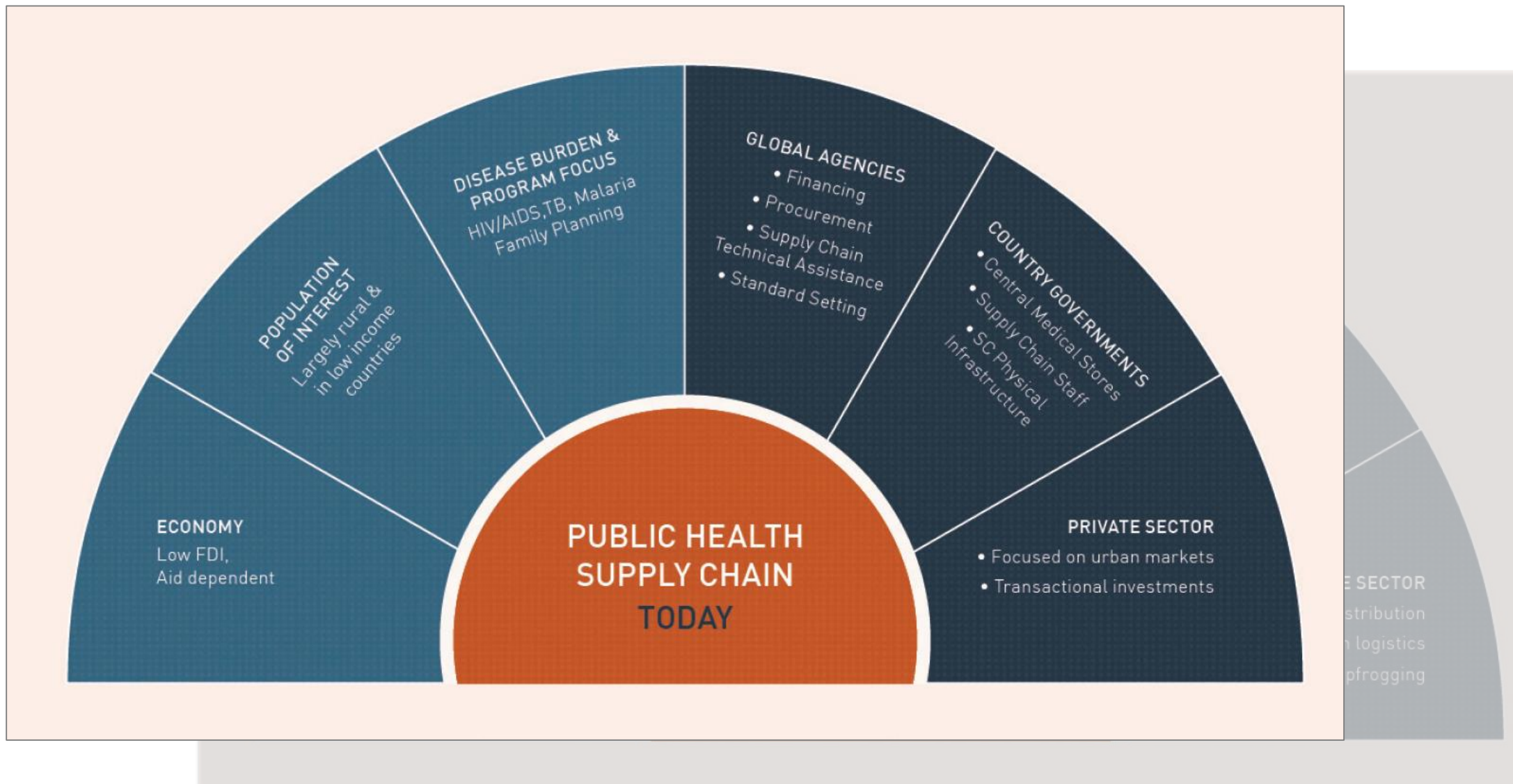




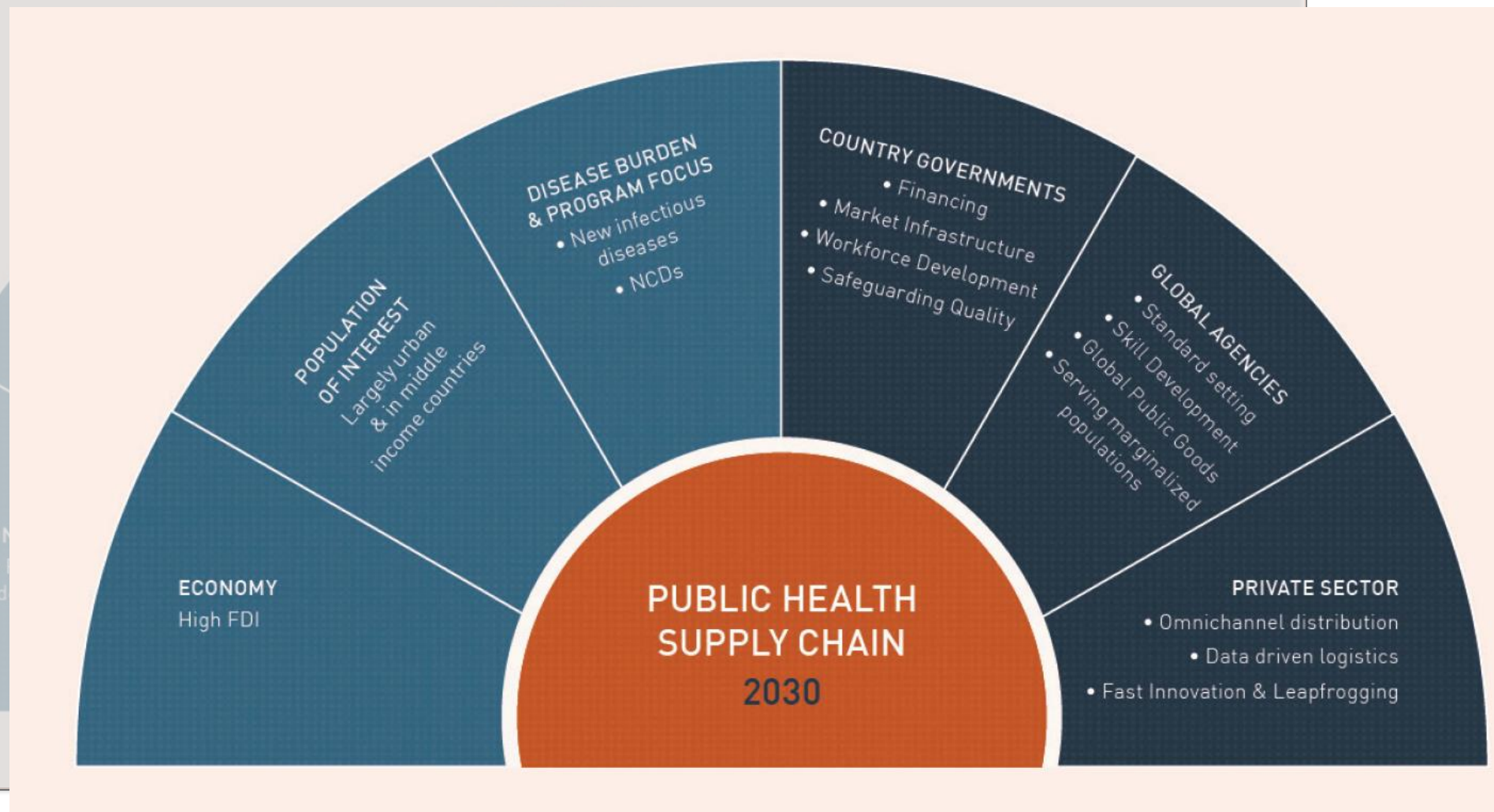
# Extra Slides



## Global health supply chains will likely look much different in 2030



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# Our approach to identifying key trends and their impacts:



## DESKTOP RESEARCH:

Review of macro trend reports from various institutions, think tanks, and logistics companies



## EXPERT CONVERSATIONS:

First round interviews with experts from a variety of industries, including pharmaceuticals, consumer packaged goods, high-tech electronics, and logistics companies, among others



## MACRO-MICRO ANALYSIS:

Reflection on how macro-micro trends will interact to ascertain the potential impact on global health supply chains



## FOLLOW-UP WITH EXPERTS:

Second round interviews to further consolidate and explore causal chains.



## PRELIMINARY FINDINGS:

Feedback from a select group of public health and humanitarian sector logisticians.



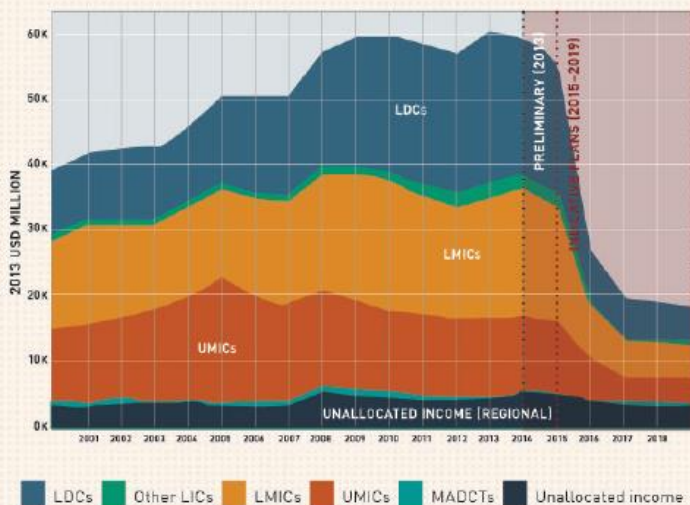
## IMPACT ANALYSIS:

Analyzed the implications of these trends for supply chain actors (governments, agencies, and private actors).





## DEVELOPMENT AID TO COUNTRIES IN DIFFERENT INCOME GROUPS



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## % OF COUNTRIES IN LOW AND LOWER MIDDLE INCOME



## UNIVERSAL HEALTH COVERAGE REACHES A LARGE NUMBER OF COUNTRIES BY 2030



# 1. Economic Growth

*Rising incomes redefine  
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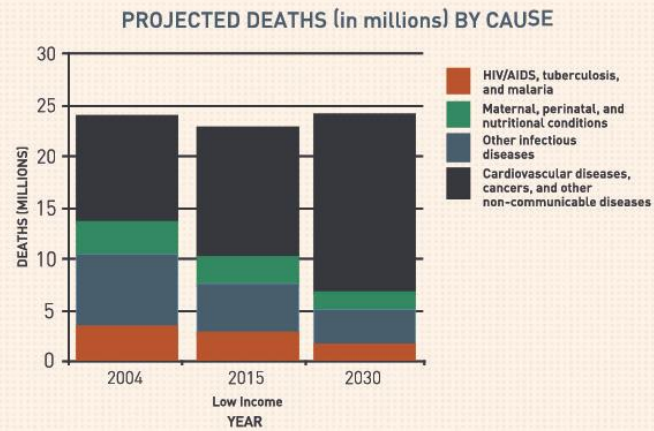
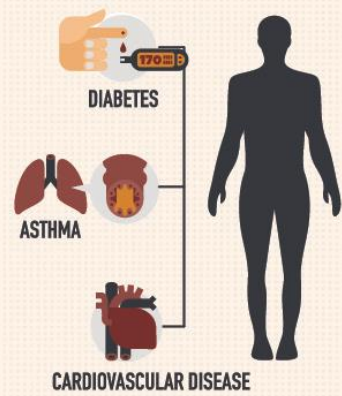


WILLINGNESS TO  
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COMMERCIAL VIABILITY  
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EMERGING INFECTIOUS DISEASES OCCUR IN PANDEMIC PROPORTIONS, CONSUMING THE FOCUS OF INTERNATIONAL DONOR AGENCIES



## 2. Shifting Disease Burden

*New demands pressure healthcare delivery*





## URBANIZATION TRANSFORMS THE ECONOMIC DYNAMICS OF HEALTHCARE



PANDEMICS



NONCOMMUNICABLE  
DISEASES



PATIENT CENTRICITY



DEMAND FOR  
HEALTH PRODUCTS/  
VOLUME THROUGH  
THE SYSTEM



COMMERCIAL  
VIABILITY OF  
MARKETS

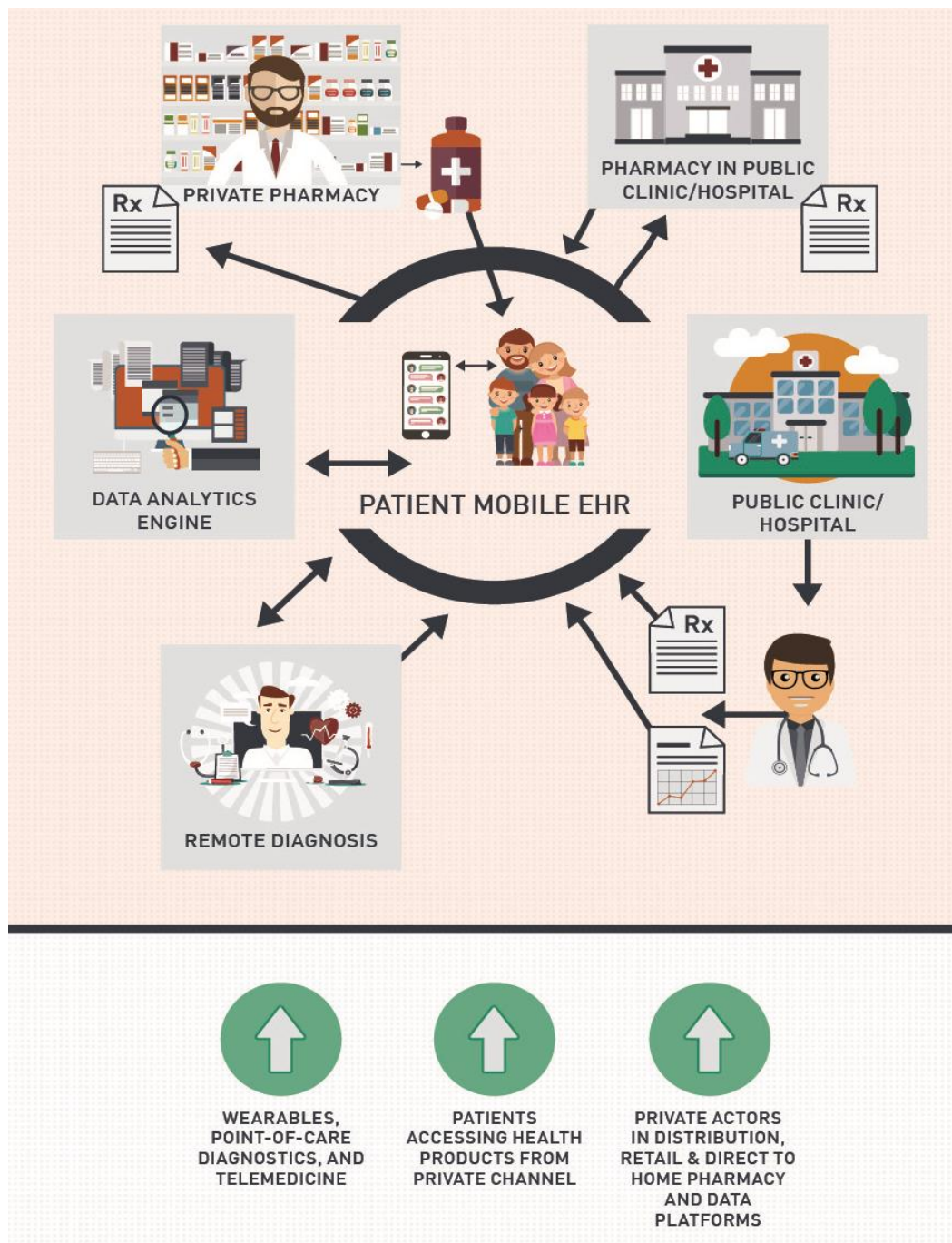
In 2030, more than  
60% of the global  
population lives in  
urban areas, changing  
the nature of public  
health supply chains



## 3. Urbanization

*Urban growth transforms  
healthcare markets*





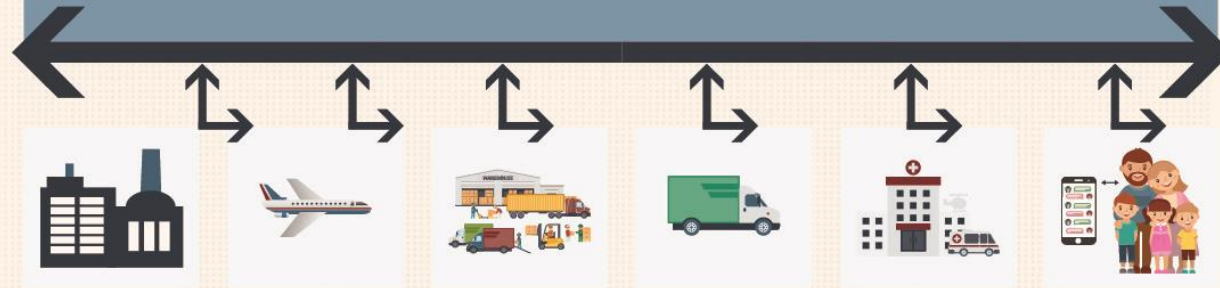
## 4. Patient-centric Care

*Supply chains organize around patient data*





IN 2030, DATA ARE  
THE NEW CURRENCY



SERIALIZATION  
REGULATIONS



END TO END  
SUPPLY CHAIN  
VISIBILITY



CONVENTIONAL  
FORECAST  
& INVENTORY  
MODELS



ANTICIPATORY  
LOGISTICS



NEED FOR  
ANALYTICS  
EXPERTISE



NON TRADITIONAL  
ACTORS IN THE  
DATA-ECOSYSTEM

## 5. Generation Data

*Competition thrives with data  
abundance*



## NEW BUSINESS MODELS AND TECHNOLOGY DISRUPT PUBLIC HEALTH SUPPLY CHAINS



ASSET-SHARING  
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## 6. Innovation's Tempo

*New business models arise from  
new networks*

