Medical Device Industry Cluster and Transportation Implications

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Research Question and Objectives

- *What role does transportation play in supporting the Minnesota’s Medical Device Industry Cluster*

- **Objectives/Methods:**
  - Analyze Medical Device Industry Cluster Supply Chain
  - Assess Transportation Linkages
  - Determine Spatial Patterns of Cluster
  - Understand Implications of MN Business
  - Assess Transportation Linkages
1. Economic Competitiveness

- In 2018, Minnesota’s annual export: $22.7 billion
  - 20th in the nation
  - 10% increase compared to 2017
- 23% from medical device, pharmaceutical, and optics
- 4th largest labor force in medical device sector

Minnesota is a National Leader in Medical Device Industry Cluster
Medical Devices Industry Cluster Linkages
2. Economic Development

- Presence of major corporate headquarters: Target, Best Buy, Medtronic, Mayo Clinic
- Continued economic development involves a range of hard and soft infrastructure items.
- Economic development implications and opportunities in greater Minnesota

Industries Linked to Medical Devices are Distributed Statewide
3. Transportation

- Multimodal: ground and air transport
  - Connecting different modes to improve efficiency
  - Hard and soft infrastructure
    - Policies that focus on freight, passengers, and different modes of transportation
- MSP as a key player of high value goods
  - Passenger-oriented

Assessing Transportation Implications

- Changing the way we think about regional airports
- Airports handle 3% volume, 36% value of global merchandise
- Air cargo ops benefit high-value, high-tech, service-based economies
  - Adapt to local industry demands
  - Improve regional market attractiveness
  - Promote entrepreneurial innovation
- Why is cargo measured only in volume, not value?

J.D. Kasarda’s Aerotropolis
Total Volume of Medical Goods in Minnesota By Air and Truck (Thousands of Tons)

Source: Freight Analysis Framework (FAF), BTS and FHWA

Total Value of Medical Goods in Minnesota By Air and Truck (Millions of US$)

Source: Freight Analysis Framework (FAF), BTS and FHWA
4. Talent /Innovation

- Continuous flow of talent
- New developments prompt changes and requires new talents and expertise

5. Data/Research

- Lack of comprehensive data impedes a complete understanding of the value flows from the Medical Device Industry Cluster in terms of economic and community value and the role of transportation and related infrastructure improvements.
The Value of Strategic Freight Network Planning

“[There is a] need to recognize and adapt to evolving supply chain operations. Changing definitions of “value” have led modern supply chains to operate on a just-in-time schedule... This has changed the nature of the freight transportation system, increasing the need for resiliency and redundancy across all transportation modes and along the supply chain”

MnDOT’s 2016 Statewide Freight System Plan

Policy Implications for Transportation and Economic Development

- Value of MSP air cargo data to domestic and international destinations would be an important economic development tool (MSP Airport, GREATER MSP, DEED).
- I-494 and I-94 MnPASS vs general purpose lane decisions should take into account value of cargo that could be transported to MSP Airport in MnPASS lanes (MnDOT, Metro Council).
- Economic development opportunities for high-value healthcare inventory management with MSP Airport (MSP Airport, Medical Alley, King Solutions).
StoryMap of Integrated Analysis

Global Airfreight Networks and Regional Competitiveness

https://tinyurl.com/mnmedicaldevices

THANK YOU!

Questions?