Transportation data requirements for modeling supply chain interdependent critical infrastructures (SCICI) in an urban environment like St. Louis, Missouri.

Data Type	Category	Data Description	Measured Units	Ownership	Data Challenges
Freight	Agricultural Products	Grain, livestock, Milk, Eggs, Vegetables, etc.	Various	Private/Public	Static Data; Generalized Data; Proprietary Data
Freight	Manufactured Goods	Electronics, Machinery, Textiles, Paper, etc.	Tons	Private/Public	
Freight	Raw Materials	Coal, Iron Ore, Copper, Bauxite, Lumber, etc	Tons	Private/Public	
Freight Flow	Road Transport	Freight transported over roads	Tons	Private/Public	Inconsistency; Estimation required; Public/Private ownership
Freight Flow	Rail Transport	Freight transported on rail	Tons	Private	
Freight Flow	Air Transport	Freight transported by air	Tons	Private	
Freight Flow	Water Transport	Freight transported by water	Tons	Private/Public	
Freight Flow	Pipeline Transport	Freight transported through pipeline	Tons	Private/Public	
Infrastructure Capacity	Road-Hub	Bulk, General Cargo, Containers, etc.	Tons	Private	Varied amount of data needed; Different capabilities of hubs; Interdependency of data
Infrastructure Capacity	Rail-Hub	Bulk, Intermodal, Shunting, etc.	Tons	Private	
Infrastructure Capacity	Water-Hub	Rail Car Storage, Dry Storage, Liquid Storage	Tons/Bushels	Private	
Infrastructure Capacity	Air-Hub	Terminal Storage	Tons	Private	
Location (Geospatial)	Hubs	Location of hubs in the area	Coordinates	Private/Public	Ever changing data; Use of Software; Static Data
Location (Geospatial)	Utility components	Location of all utilities that aid freight flow	Coordinates	Private/Public	
Location (Geospatial)	Roads/Bridges	Location of all roads and bridges	Coordinates	Public	
Location (Geospatial)	Airports	Location of air infrastructure	Coordinates	Private/Public	
Location (Geospatial)	Docks/Storage	Location of docks and storage areas	Coordinates	Private	
Location (Geospatial)	Rail	Location of all rail infrastructure	Coordinates	Private/Public	
Location (Geospatial)	Locks/Dams	Location of all dams and river locks	Coordinates	Private/Public	
Location (Geospatial)	Tunnels/Culverts	Location and length of all tunnels and culverts	Coordinates	Public	
Location (Geospatial)	Hydrography	Location of all surface streams	Coordinates	Private/Public	
Location (Geospatial)	Elevation	Elevation of each location	Meters	Public	
Location (Geospatial)	Orthoimagery	Geospatially located surface image	NULL	Public	
Location (Geospatial)	Pipelines	Location of pipelines and pumping stations	Coordinates	Public	
Restoration	Number of People	Number of people need and available	Number	Private/Public	Different temporal factors; Vast Amounts of data; Scalability; Ownership of data
Restoration	Travel Time	Time required for teams to arrive in area	Hours/Days	Private/Public	
Restoration	Skill Set	Skills necessary for each repair job	Qualitative	Private/Public	
Restoration	Mode Substitution	Mode substitutions facilitating freight flow	Mode	Private/Public	
Restoration	Task Management	Assignment and management of repair tasks	Qualitative	Private/Public	
Restoration	Equipment Necessary	Materials required for restoration	Tons/Pieces	Private/Public	
Hazard Risks/Vulnerability	Historic Data	Previous hazards that have caused damage	Text	Private/Public	Inconsistency; Estimation required; Public/Private ownership
Hazard Risks/Vulnerability	Fragility Data	Vulnerability of element to hazard	Percentage	Public	
Hazard Risks/Vulnerability	Damage Estimation	Severity and extent of damage from simulation	Percentage	Public	

References

Ramachandran, V., Shoberg, T., Long, S.K., Corns, S., and Carlo, H., 2015. Identifying geographical interdependency in critical infrastructure systems using publically available geospatial data in order to model restoration strategies in the after-math of large-scale disasters, *International Journal of Geospatial and Environmental Research*, 2(1), Article 4. http://dc.uwm.edu/ijger/vol2/iss1/4.

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