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May 7, 2015

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Series W 30-54. Indexes of Output Per Man-Hour for Production Workers, Selected Industries: 1909 to 1970

Year	Total manufacturing	Canning and preserving	Flour and grain mill products	Bakery products	Sugar	Candy and other confectionery products	Malt liquors	Tobacco products	Cigarettes, chewing and smoking tobacco, and snuff	Cigars	Hosiery	Paper, paper-board, and pulp mills	Petroleum refining	Tires and inner tubes	Footwear
	30	31	32	32a	33	34	35	36	37	38	39	40	41	42	43
1967 = 100															
1970	105.9	111.2	105.5	111.1	103.0	120.3	103.4	98.8	114.7	126.2	115.8	108.6	105.4	105.3	
1969	102.8	105.8	103.1	101.9	101.1	113.3	102.0	98.9	109.3	106.4	110.2	110.6	100.3	97.4	
1968	107.2	106.1	101.5	103.7	108.0	105.7	103.2	103.0	103.8	93.1	106.2	103.7	105.0	103.6	
1967	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1966	98.5	100.8	95.6	99.9	97.9	93.9	99.2	98.6	100.8	88.4	101.2	97.1	98.3	102.6	
1965	100.8	95.3	95.1	94.4	93.7	88.7	99.5	98.1	102.8	80.1	96.4	89.9	96.7	101.2	
1964	96.0	90.5	91.8	90.8	90.8	83.9	94.8	93.5	97.9	80.2	91.3	83.0	94.4	101.7	
1963	91.5	84.5	89.3	85.9	89.1	77.9	93.5	95.0	90.5	75.2	86.9	78.5	86.7	102.3	
1962	91.1	75.2	84.1	84.4	82.5	71.1	89.1	91.5	84.6	66.9	82.0	73.5	79.8	99.0	
1961	91.0	73.9	81.0	77.3	80.9	68.2	85.9	90.4	78.9	64.5	79.0	67.1	74.4	98.3	
1960	85.0	72.2	79.8	71.9	81.5	64.9	82.4	88.0	73.7	58.6	73.9	62.1	70.9	98.0	
1959	80.4	68.3	79.5	68.2	77.8	62.9	77.0	84.2	66.7	57.2	70.9	59.1	68.2	98.6	
1958	77.2	71.8	79.0	64.9	75.7	60.8	72.8	81.3	61.2	57.9	66.7	52.5	62.9	94.4	
1957	77.4	69.2	77.3	61.8	74.3	55.4	67.1	79.6	52.3	48.7	64.9	49.9	59.6	92.0	
1956	74.9	63.6	73.1	62.8	68.8	53.3	64.1	77.3	48.9	46.3	64.3	49.1	56.3	90.0	
1955	70.4	60.6	71.0	60.0	66.8	51.9	60.1	75.3	44.2	45.4	61.0	47.1	54.8	88.1	
1954	67.6	57.7	70.0	58.2	63.1	50.5	60.3	76.3	43.8	45.9	57.4	43.1	53.2	84.3	
1953	62.6	50.4	67.9	52.0	62.5	48.1	60.4	79.7	42.0	44.2	54.9	40.9	51.9	(NA)	
1952	61.8	47.5	65.4	50.0	60.8	48.1	61.8	83.6	42.0	45.9	54.9	39.9	49.3	84.6	
1951	61.5	48.2	62.7	46.0	60.6	46.5	60.3	83.1	40.4	42.4	55.6	38.4	50.9	82.9	
1950	59.7	48.7	62.0	48.8	54.5	46.4	58.1	78.6	39.4	39.7	53.0	36.6	52.6	80.2	
1949	54.1	47.2	61.3	45.1	53.2	46.3	53.6	75.2	35.2	38.0	47.4	31.7	47.9	74.1	
1948	49.8	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	52.2	34.3	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
1947	48.5	49.8	59.6	41.0	53.3	38.6	48.2	68.5	31.4	35.8	44.4	28.6	43.1	63.6	
1946	48.7	44.5	(NA)	(NA)	47.6	33.0	38.6	47.7	28.7	(NA)	48.5	29.9	(NA)	(NA)	
1947 = 100															
1950	114.3	118.3					119.3	115.6	122.5	115.4	118.9				
1949	107.2	111.5					113.2	111.8	114.3	110.3	106.7				
1948		103.2					106.7	107.9	105.6						100.0
1947	100.0	100.0					100.0	100.0	100.0	100.0	100.0				100.0
1946		106.0					98.1	93.5	102.4	108.5	98.0				109.1
1945		102.5					96.5	86.3	106.9	114.4	95.6				104.4
1944		100.5					89.3	81.8	96.6	109.7	95.0				99.5
1943		92.3					84.9	80.0	89.3	106.1	98.1				101.6
1942		93.2					85.3	80.5	89.8	99.6	109.1				100.4
1941		97.8					84.1	78.7	89.3	95.6	115.9				101.8
1940		99.2					80.8	71.5	90.5	94.9	115.0				97.7
1939	93.2	90.0					80.0	69.6	91.3	87.0	109.2				93.8
1938	85.1	85.8					76.1	67.8	84.5		103.2				92.9
1937	83.6	79.8					73.1	66.6	79.5		101.1				89.8
1936	84.5	74.5					75.0	71.3	78.4		99.9				97.3
1935	84.3	90.4					69.4	62.8	75.8		95.5				91.0
1934	79.8	84.3					60.8	56.7	63.6		90.0				84.0
1933	76.0	88.1					61.3	67.1	57.1		94.9				82.5
1932	72.2	76.5					56.1	60.7	52.9		92.7				74.5
1931	77.5	77.5					58.5	59.0	58.1		93.1				68.9
1930	74.3	68.9					52.7	56.9	49.6		81.3				71.0
1929	72.5	61.6					52.5	55.4	50.4		80.8				72.9
1928	69.7	65.2					45.2	44.1	46.2		80.2				72.8
1927	66.2	60.7					44.5	44.2	44.8		76.1				69.3
1926	64.5	64.1					45.8	45.6	45.9		71.8				64.2
1925	62.8	61.9					41.6	39.6	43.4		70.2				58.9
1924	58.9	65.0					39.3	35.3	43.3		65.5				60.0
1923	55.2	59.1					36.7	32.3	41.4		64.2				59.0
1922	56.2						33.0	26.7	40.8		60.5				63.0
1921	51.3	47.4					30.5	23.6	40.0		51.5				59.3
1920	44.6						27.2	18.2	45.8		51.3				62.5
1919	42.1	48.3					27.4	19.5	41.0		49.0				60.3
1914	42.2														
1909	36.6														

NA Not available.



STATISTICAL ATLAS

OF THE

UNITED STATES

BASED ON THE RESULTS OF THE

NINTH CENSUS 1870

WITH CONTRIBUTIONS FROM MANY EMINENT MEN OF SCIENCE AND SEVERAL DEPARTMENTS OF THE GOVERNMENT.

COMPILED UNDER AUTHORITY OF CONGRESS

BY

FRANCIS A. WALKER, M.A.

SUPERINTENDENT OF THE 9TH CENSUS.

PRODUCTION OF STATISTICAL CHARTS AND DIAGRAMS BY THE BUREAU OF THE CENSUS.

JULY 25, 1874.

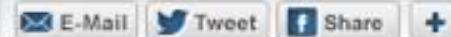
1874.





The White House

Office of the Press Secretary



For Immediate Release

May 09, 2013

Executive Order -- Making Open and Machine Readable the New Default for Government Information

EXECUTIVE ORDER

MAKING OPEN AND MACHINE READABLE THE NEW DEFAULT FOR GOVERNMENT INFORMATION

By the authority vested in me as President by the Constitution and the laws of the United States of America, it is hereby ordered as follows:

Section 1. General Principles. Openness in government strengthens our democracy, promotes the delivery of efficient and effective services to the public, and contributes to economic growth. As one vital benefit of open government, making information resources easy to find, accessible, and usable can fuel entrepreneurship, innovation, and scientific discovery that improves Americans' lives and contributes significantly to job creation.

Decades ago, the U.S. Government made both weather data and the Global Positioning System freely available. Since that time, American entrepreneurs and innovators have utilized these resources to create navigation systems, weather newscasts and warning systems, location-based applications, precision farming tools, and much more, improving Americans' lives in countless ways and leading to economic growth and job creation. In

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LATEST BLOG POSTS

May 28, 2014 3:33 PM EDT

"America Must Always Lead": President Obama Addresses West Point Graduates
President Obama travels to West Point to congratulate the newest officers in the U.S. Army and to reflect on America's foreign policy agenda.

May 28, 2014 2:50 PM EDT

Remembering and Celebrating the Life of Dr. Maya Angelou
President Obama releases a statement on the passing of author, poet, and activist Dr. Maya Angelou.

The home of the U.S. Government's open data

Here you will find data, tools, and resources to conduct research, develop web and mobile applications, design data visualizations, and more.

GET STARTED

SEARCH OVER 129,642 DATASETS



BROWSE TOPICS



Agriculture



Business



Climate



Consumer



Ecosystems



Education



Energy



Finance



Health



Local
Government



Manufacturing



Ocean



Public Safety



Science &
Research

HIGHLIGHTS

Launch of Health theme of Climate.Data.Gov

(April 7th 2015) The U.S. Government has released a collection of datasets to help individuals and communities plan for the impacts of climate change on the public's health. These resources can help answer a number of relevant questions, including:

131,457 datasets & collections
83 agencies

Automated harvesting of agency public data listings

(As of May 6, 2015)

Search datasets... Order by:

Datasets ordered by Popular

Filter by location

Enter location...

Map data CC-BY-SA by [OpenStreetMap](#)
Tiles by [MapQuest](#)

Topics

- Local Government (9764)
- AAPI (1680)
- Climate (539)
- Energy (413)
- Safety (341)
- Show More Topics

Topic Categories

- Pacific Islands (988)
- Environment (949)

131,457 datasets found

Consumer Complaint Database 1501 recent views Federal

Consumer Financial Protection Bureau — These are complaints we've received about financial products and services.

Federal Logistics Information System Web Search (WebFLIS) 1289 recent views Federal

Department of Defense — Federal Logistics Information System Web Search (WebFLIS) provides essential information about supply items including the National Stock Number (NSN), the item...

National Stock Number Extract 1122 recent views Federal

General Services Administration — National Stock Number extract includes the current listing of National Stock Numbers (NSNs), NSN item name and descriptions, and current selling price of each...

U.S. International Trade in Goods and Services 1080 recent views Federal

US Census Bureau, Department of Commerce — Monthly report that provides national trade data including imports, exports, and balance of payments for goods and services. Statistics are also reported on a...

American Community Survey 818 recent views Federal

US Census Bureau, Department of Commerce — An annual nationwide survey that collects information such as age, race, income, commute time to work, home value, veteran status, and other data.

Explore data, tools, apps and research related to new technologies, facilities, and research. The U.S.

Government funds research for government agencies to help empower U.S. innovation—through this page you now have access to all of that valuable research and data.

HIGHLIGHTS

Federal R&D Facilities for Entrepreneurs and Innovators

[View this Dataset](#)

As part of the Administration's [Lab-to-Market initiative](#), agencies are publishing machine-readable data on over 700 Federal R&D facilities that may be utilized by entrepreneurs and innovators to research, prototype, and test new technologies. These facilities, operated by [NASA](#), the [Department of Energy \(DOE\)](#), and the [National Institute of Health \(NIH\)](#), include cutting-edge research tools and together represent billions of dollars of taxpayer investment.

Each facility has its own set of use policies, so a contact person is included in the data wherever possible. For example, some entrepreneurs may be able to access NASA's National Center for Advanced Manufacturing to produce the high-strength, defect-free joints required for cutting-edge aeronautics, or DOE's Manufacturing Demonstration Facility at Oak Ridge National Laboratory for collaborative projects in additive manufacturing, composites and carbon fiber, and other leading clean energy technologies. [Learn more...](#)

[More Highlights](#)

UPDATES

Federal R&D Facilities: Open for Collaboration

June 17, 2014 *By Doug Rand*

Today the Obama Administration is upgrading [Research.Data.gov](#) to include, for the first time in one place, machine-readable data on

Federal datasets are subject to the U.S. Federal Government Data Policy. Non-federal participants (e.g., universities, organizations, and tribal, state, and local governments) maintain their own data policies. Data policies influence the usefulness of the data. Learn more about how to search for data and use this catalog.

supply chain

Order by: Relevance

Datasets ordered by Relevance

You are searching in the list of datasets. Show results in entire Data.gov site.

Filter by location Clear

Enter location...

Map data CC-BY-SA by [OpenStreetMap](#)
Tiles by [MapQuest](#)

Topics Clear All

A-Z 1-9

Climate (1)

Topic Categories Clear All

A-Z 1-9

Food Resilience (1)

Food Safety and Nut... (1)

Dataset Type Clear All

12 datasets found for "supply chain"

Supply Chain Performance 🔥

Department of State — Contains SCM metrics, network information, distribution, motor vehicle and inventory data



National Item File (NIF) 🔥

Department of Veterans Affairs — The National Item File (NIF) is used to uniquely identify products used in the supply chain. The Universal Product Number is placed as a bar code on products to...



Aqueduct Global Water Risk Atlas

World Resources Institute — Aqueduct's global water risk mapping tool helps companies, investors, governments, and other users understand where and how water risks and opportunities are...



HTML

Shipment Management

Department of State — Contains supply chain data including receiving, SL billing, stock requests (pick & pack), shipment data and tracking, inventory backorders, etc. , * Includes...



Food Dollar Series

Department of Agriculture — The food dollar series measures annual expenditures by U.S. consumers on domestically produced food. This data series is composed of three primary series - the...



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**General Services Administration**General Services Administration Agency. [read more](#)**Publisher**

General Services Administration

Contact

Tonya Summerville

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Dataset**National Stock Number Extract**

Public Updated: Mar 13, 2015

National Stock Number extract includes the current listing of National Stock Numbers (NSNs), NSN item name and descriptions, and current selling price of each product listed in GSA Advantage and managed by GSA for use by the general public. This list contains only stocked items in the GSA Supply Chain and does not list nonstocked items. Each NSN is listed with the vendors description of the item. Some descriptions exceed the standard length and are truncated.

Downloads and Resources **Excel Document**
NSN_DATA.xls

Open With

Download

Dates

Metadata Created Date	Apr 30, 2014
Metadata Updated Date	Mar 13, 2015
Frequency	Annual
Last Update	2014-09-04

Metadata Source **Data.json Metadata**
[Download Metadata](#)

Harvested from GSA JSON

national-stock-number nsn part-number product vendor

About this Dataset

Resource Type	Dataset
Metadata Created Date	Apr 30, 2014
Metadata Updated Date	Mar 13, 2015
Publisher	General Services Administration
Unique Identifier	GSA-2084



Department of
Transportation

Publisher

Maritime Administration

Contact

Jonathan Hsieh

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PIERS Shipping Information: U.S. Waterborne Foreign Trade by U.S. Custom Districts

Updated: Mar 31, 2015

This dataset provides quarterly commodity flows in the U.S. Waterborne Foreign Trade based on PIERS manifest data, most comprehensive statistics on global cargo movements transiting Seaports in the U.S. and Latin America. It is the only source of container movement data in TEU's (twenty equivalent units).

Access & Use Information

Public: This dataset is intended for public access and use.

License: License Not Specified

Downloads and Resources

Excel Document
U.S._Waterborne_Foreign_Trade_by_Custom_District.XLS

Open With **Download**

- plotly
- CartoDB

References

http://www.marad.dot.gov/library_landing_page/data_and_statistics/Data_and_Statistics.htm

Dates

Metadata Created Date	Nov 27, 2014
Metadata Updated Date	Mar 31, 2015
Frequency	Quarterly
Release Date	2014-11-21
Last Update	2014-11-24

Metadata Source

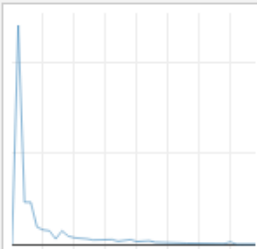
Data.json Metadata
Download Metadata

Harvested from DOT JSON

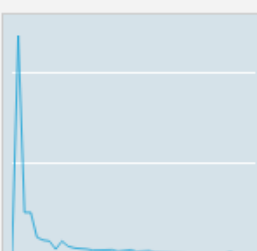
container port trade waterborne

THEMES


SAVE THEME



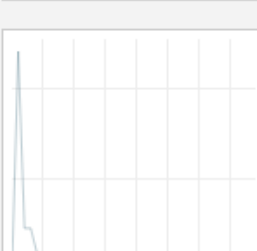
Plotly Defaults



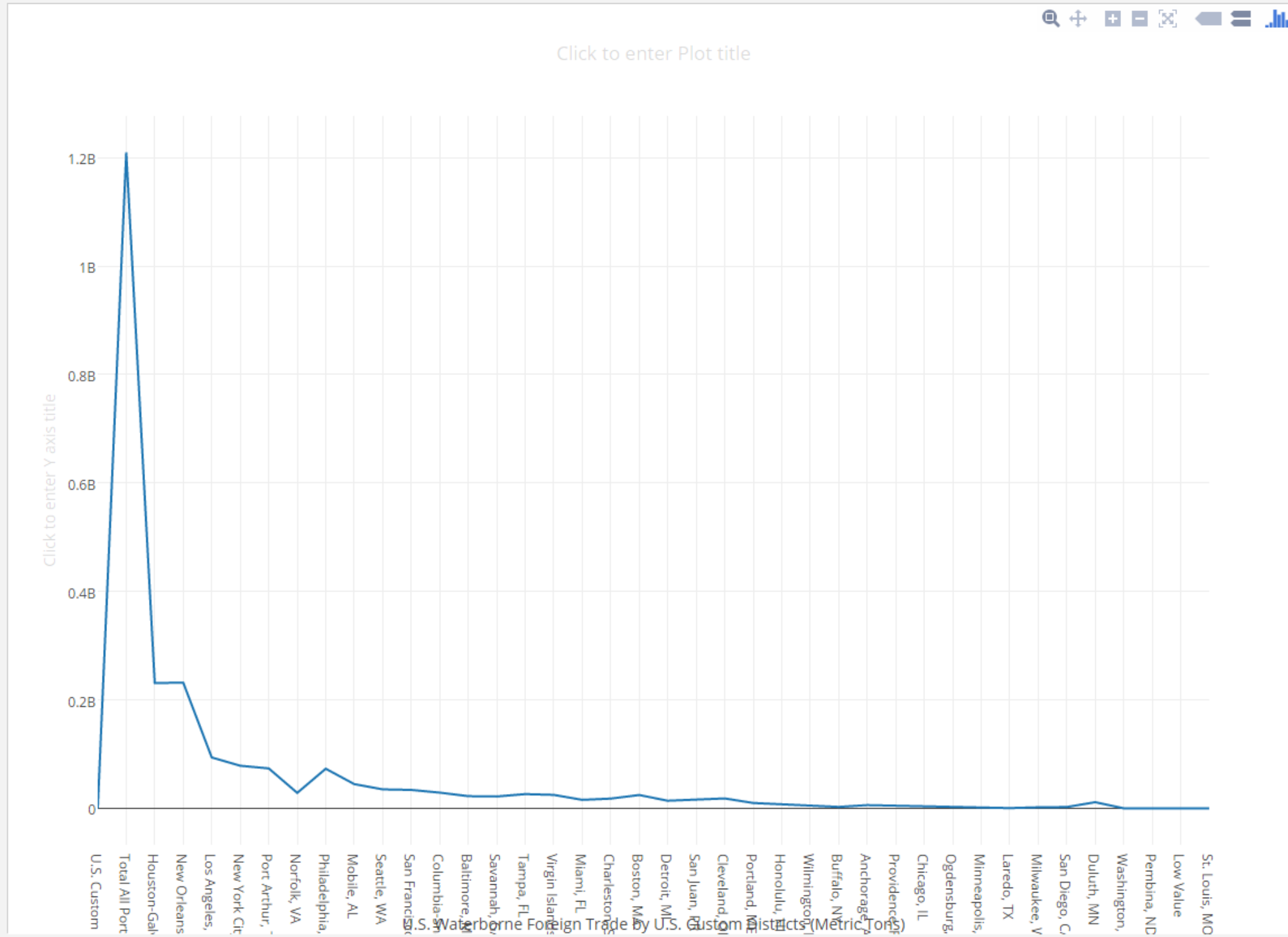
Catherine



Urbain



Laurier





data.gov/contact

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Reshoring Initiative

Bringing Manufacturing Back Home

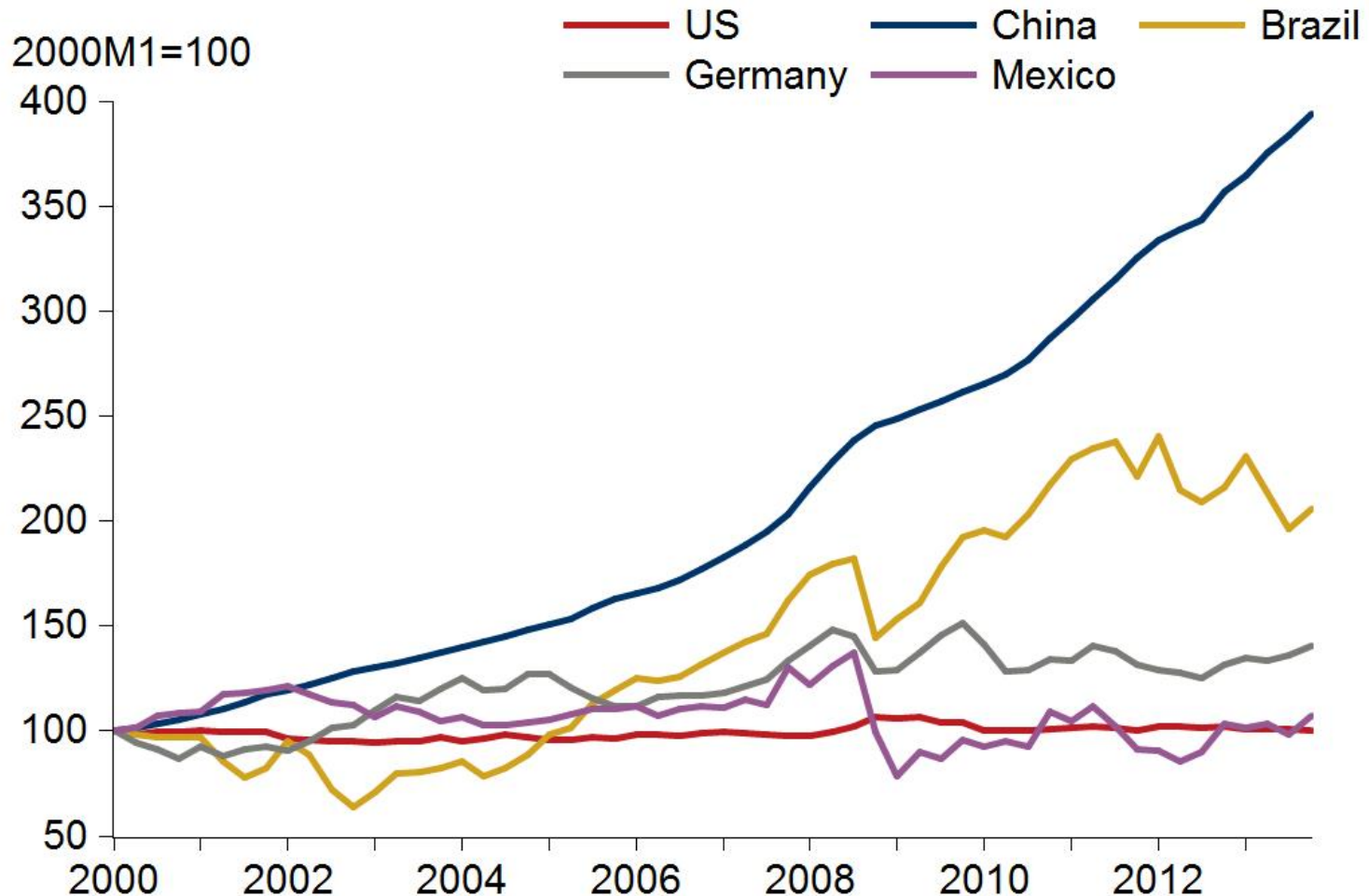
Harry C. Moser

SelectUSA Academy
EDO Track: Trends in Reshoring

- **Reshoring/Backshoring/Onshoring/Insourcing:** Bringing back manufacture of products that will be sold or assembled here.
- **Transplants/FDI:** Similar logic
- **Localization** - producing near the consumer!

Indexed Unit Labor Costs in the Manufacturing Sector of Selected Countries

US: Unit labor costs in manufacturing in US\$



Source: Oxford Economics/Haver Analytics

The Bleeding has Stopped

Manufacturing Jobs/Year			
	2003	2014	% Change
New Offshoring	~150,000*	30,000-50,000*	-70%
New Reshoring & FDI	12,000*	60,000**	+ 400%
Net Jobs Gained	~-140,000	~+10,000	N/A

* Estimated ** Calculated



Offshoring: Reasons and Solutions Summary

Reason	Status/Comment/ Action
Penetrating the foreign market	OK
Cheap labor	Gap rapidly declining
PPV: Focus on price instead of total cost	CDF (Suzanne) TCO (Harry)
Herd mentality in which companies followed each other offshore	You!

Unil

UNIL | Université de Lausanne



Professor Suzanne de Treville

Hidden profits in responsive supply chains

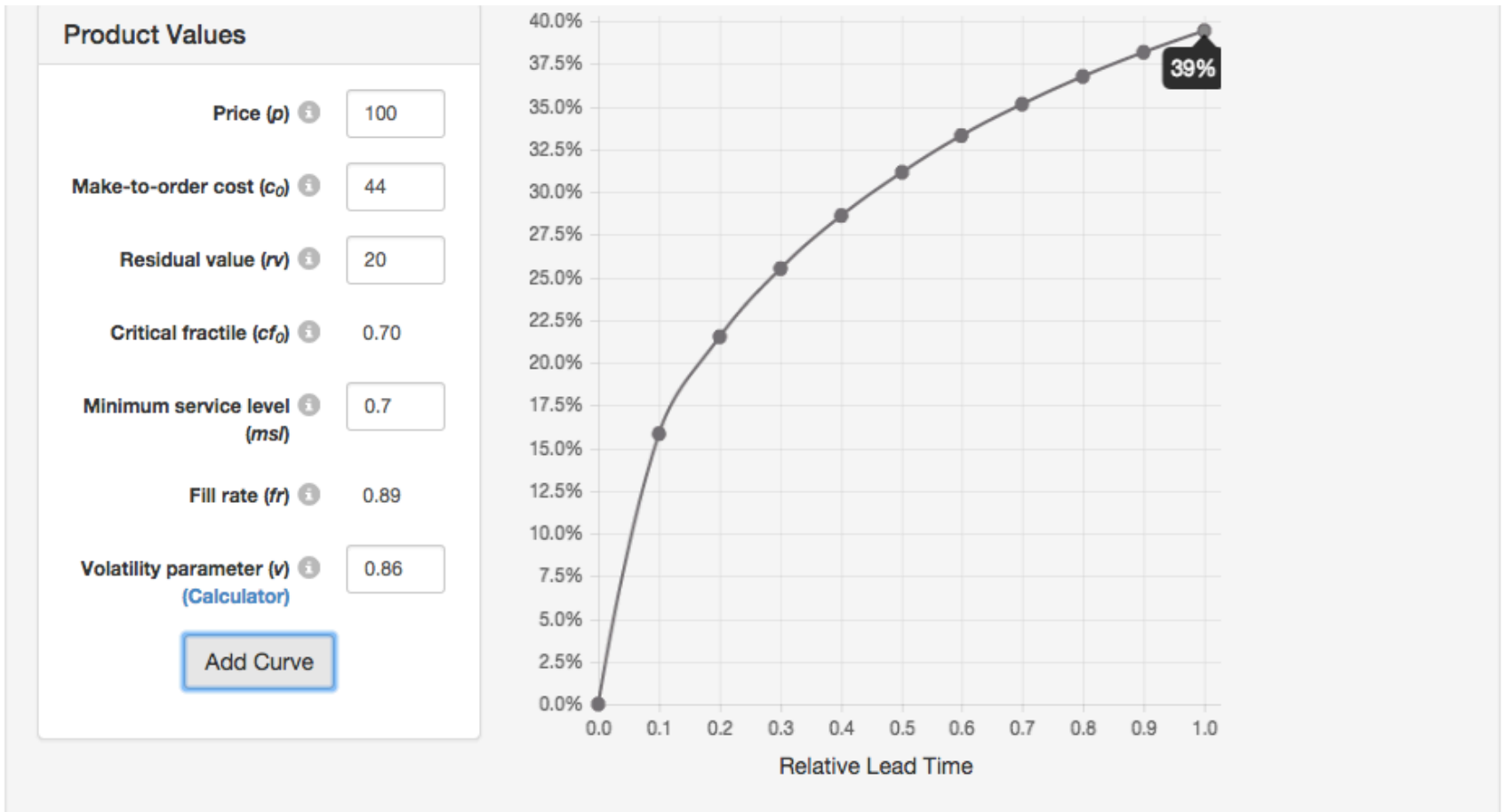
How to compare:

- A local supplier that is positioned to deliver to order and is next to R&D
- An offshore supplier that offers a unit cost that is 30% cheaper
- Intuition: innovation and service matter, but hard to take action based only on intuition
- Quantitative-finance tools allow us to uncover the hidden profit potential in responsiveness

Product A

- Demand peak 3X median demand 1 in 10 demand periods (high volatility)
- Selling price \$100
- Local production cost \$44, offshore production 30% cheaper
- Liquidation value after the demand period \$20

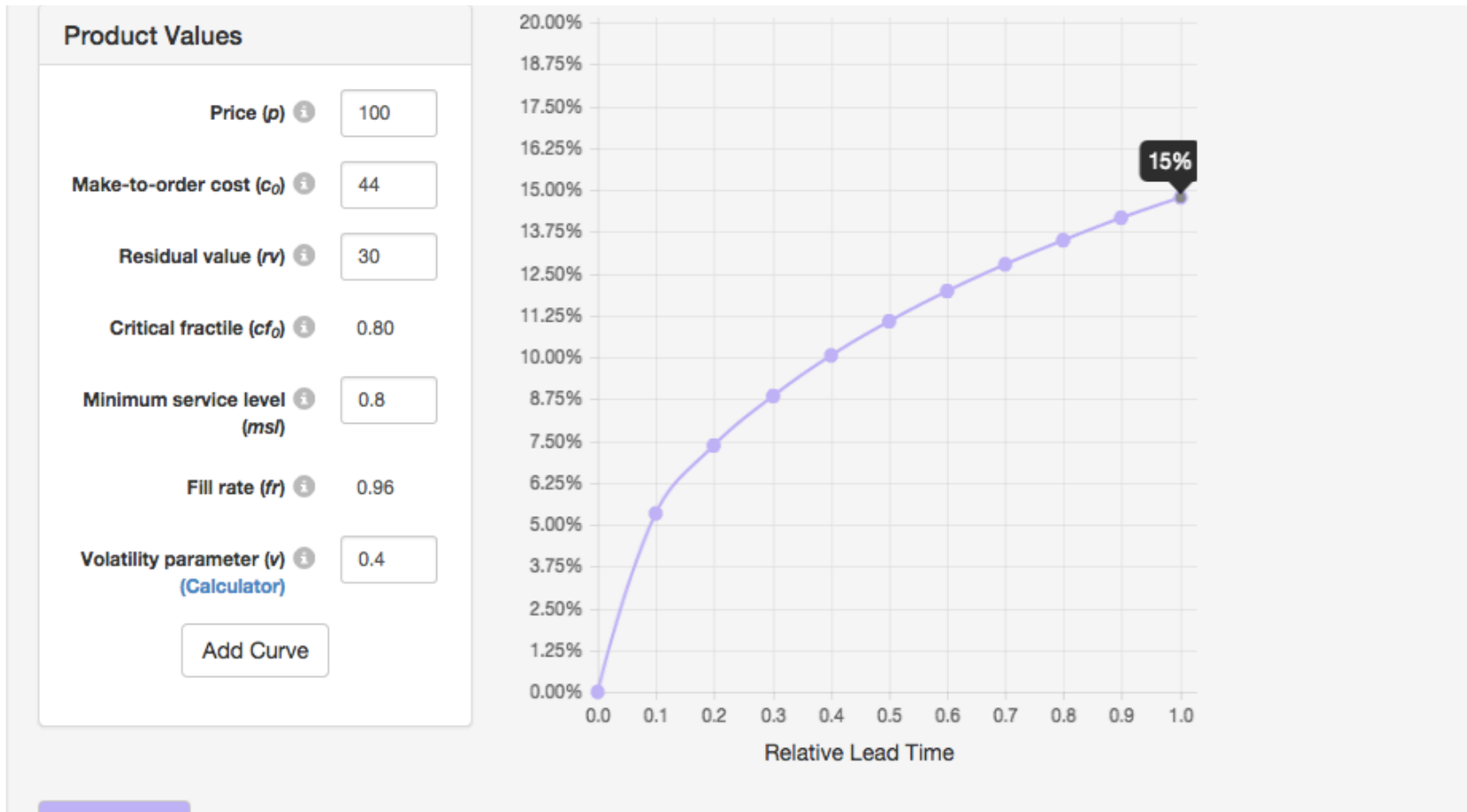
Local production dominates



Product B

- Demand peak 2X median demand 2 weeks a year (moderate volatility)
- Selling price \$100
- Local production cost \$44, offshore 30% less
- Inventory holding cost if held over to the following demand period \$2

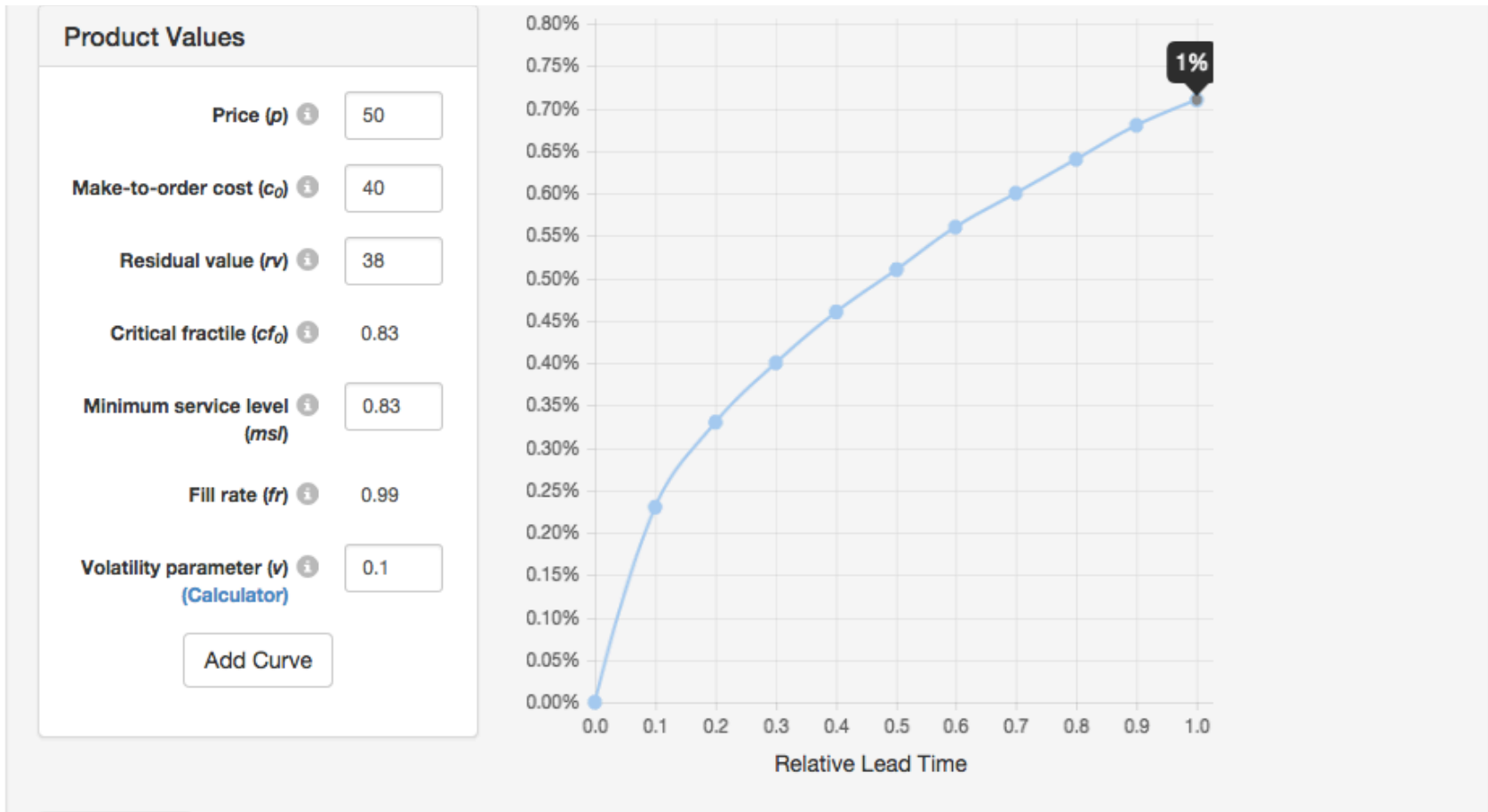
CDF + TCO matches cost differential



Product C

- Produced locally on same equipment as Product A
- Demand peak 1.1X median demand 2 months of 12
- Price \$50
- Materials \$16
- Overhead \$16
- Labor (local) \$8
- Labor (offshore) \$0 => 20% cost differential
- Inventory holding cost \$2

Obvious to offshore?



Portfolio combining Products A and C

- Capacity of 2X median demand for A maximizes profit and allows responsiveness
- A is profitable even with the labor and overhead costs of the extra capacity
- Leftover capacity used to produce C => incremental revenue
- Incremental cost of producing C: only variable cost
- Both A and C are thus profitable
- *C is more profitable than it would be produced offshore*

Benefits

- A produced close to R&D => innovation
- Local production of C closes off the “food chain” to the offshore competitor
- C—a standard product—still benefits from the innovation emerging from A
- Reduced carbon footprint

Take Aways

- The mismatch cost leaves an impressive amount of money on the table
- Use of the CDF together with the TCO provides a compelling case for local manufacturing
- A portfolio of high and low-volatility products yields high profit, competitive advantage, and innovation



The Reshoring Initiative Provides

- Free Total Cost of Ownership (TCO) software for:
 - Companies for sourcing
 - Suppliers of parts and equipment for selling
 - EDOs for promoting reshoring and FDI
- Online Library of 2,000+ reshoring articles
- Statistics from TCO and Library databases
- Case Study template for posting cases.
- Solutions to major supply chain problems
- Motivation for skilled manufacturing careers

TCO Comparison Example

Present and Forecast US and China Price and TCO (US\$)





19 TCO cases, China vs. U.S. 2012

Comparison Basis	% of cases where U.S. has the advantage
Price	5%
TCO	53%
Difference	48%*

*Conservatively 25% might return if companies shifted to TCO

Source: TCO user database



Reshoring More Effective than Exporting: U.S. is Much More Competitive at Home!

		Where Sold	
		U.S.	China
Where Made	U.S.	\$100	\$115
	China	\$100	\$85
Difference		0	30%

Based on TCO being 15% higher for exports

Economic Development Programs: PA, MS, NY

Action	Source/Responsibility
Identify local imports by U.S. or foreign companies	Datamyne
Suggest to companies they source locally	EDO/MEP/ etc.
Train companies on TCO & CDF to overcome issue of higher local price	Reshoring Initiative
Needed further cost reductions	MEP/ Comm. College/ Technology Suppliers/EDO



Need Boots on the Ground in PA and MS

- Need help from local suppliers
- Suggest companies where they lost to offshoring
- We will visit the companies, educate on TCO and encourage reshoring
 - MS: April 23 in Canton
 - PA: Email Reshore2PA@nepirc.com
- Details:
[MS and PA Reshoring | Reshoring Blog | Reshoring Initiative](#)
- Ready to expand to other states.

Reshored Industries

Industry	Jobs	Companies	% of Companies Reporting Jobs
Transportation Equipment	19046	30	43%
Electrical Equipment, Appliances, Components	12120	47	62%
Computer/Electronic Products	6783	24	42%
Food	2938	9	56%
Machinery	2795	16	56%
Apparel/Textiles	1954	37	41%
Fabricated Metal Products	1749	25	40%
Wood Products	1028	17	35%
Office	810	3	67%
Medical Equipment	628	13	38%
Hobbies	581	22	32%
Construction	577	4	100%
Chemicals	300	2	50%
Plastic/Rubber Products	298	11	36%
Home and Kitchen	204	14	29%
Castings	0	3	0
Primary Metal Products	0	3	0
Research and Services	0	2	0
Energy	0	1	0
Agriculture	0	1	0
Environmental	0	1	0
Tools	0	1	0

Sources:
 Reshoring
 Initiative Library,
 August 31, 2014.

Cases 2007
 through 8/31/14.

Negative Issues Offshore

Negative Issues	# Cases
Lead time	111
Quality/rework/warranty	109
Rising wages and Currency Variation	88
Freight cost	82
Total cost	49
Inventory	37
IP risk/ Supply chain interruption risk	29 each
Delivery	28
Communications	18
Green considerations/Loss of control	15 each
Travel cost/time	14
Price	5
Difficulty of innovation/product differentiation/Regulatory compliance	4 each
Burden on Staff, Emergency air freight, Political instability	2 each
Employee turnover, Strained offshore relationships, Natural disaster risk	1 each

Positive Reasons to Reshore

Positive Reasons to Reshore	# Cases
Skilled workforce	87
Image/brand	80
Government incentives	79
Automation/Technology/3D printing	57
U.S. energy prices	49
Re-design	41
Higher productivity	36
R&D	35
Lean	27
Eco-system synergies	22
Infrastructure	20
Customer responsiveness	14
Lower real-estate/construction	8
Labor concessions	7



Countries From Which Reshored

Country	Reshored Cases	Global Regions	Reshored Cases
China	135	Asia	165
Mexico	20	North America	26
India	11	Western Europe	6
Canada	6	Eastern Europe	2
Japan	5	South America	1
Taiwan	5	Africa	1
Korea	3		
Hungary	2		
Vietnam	2		
Germany, France, Brazil, Spain, Netherlands, Italy, Egypt, Indonesia, UK, Singapore, Malaysia, Sri Lanka, Australia	1 each		

Jobs Reshored by State

State	Jobs	Companies	Avg. Jobs/ Facility	State	Jobs	Companies	Jobs/ Facility	State	Jobs	Companies	Avg. Jobs/ Facility
SC	7780	7	1111	AZ	700	2	350	RI	200	2	100
MI	6721	13	517	FL	611	12	51	IA	193	2	97
CA	6014	28	215	MA	598	10	60	WA	150	3	50
KY	4612	5	922	MS	540	5	108	MO	150	6	25
TX	3712	12	309	UT	464	6	77	MD	90	6	15
OH	3611	18	201	AL	397	4	99	MN	64	9	7
GA	3005	7	429	WI	342	11	31	MT	25	1	25
TN	2490	11	226	NJ	335	3	112	DE	0	2	0
NY	1089	17	64	IN	320	5	64	VA	0	1	0
NC	1020	14	73	PA	279	11	25	CT	0	2	0
ID	1000	2	500	AR	210	4	53	ME	0	1	0
KS	1000	2	500	IL	205	9	23	VT	0	2	0
CO	738	6	123	NH	200	1	200	ND	0	1	0

Sources: Reshoring Initiative Library, August 31, 2014.

Cases 2007 through 8/31/14.

Contact:

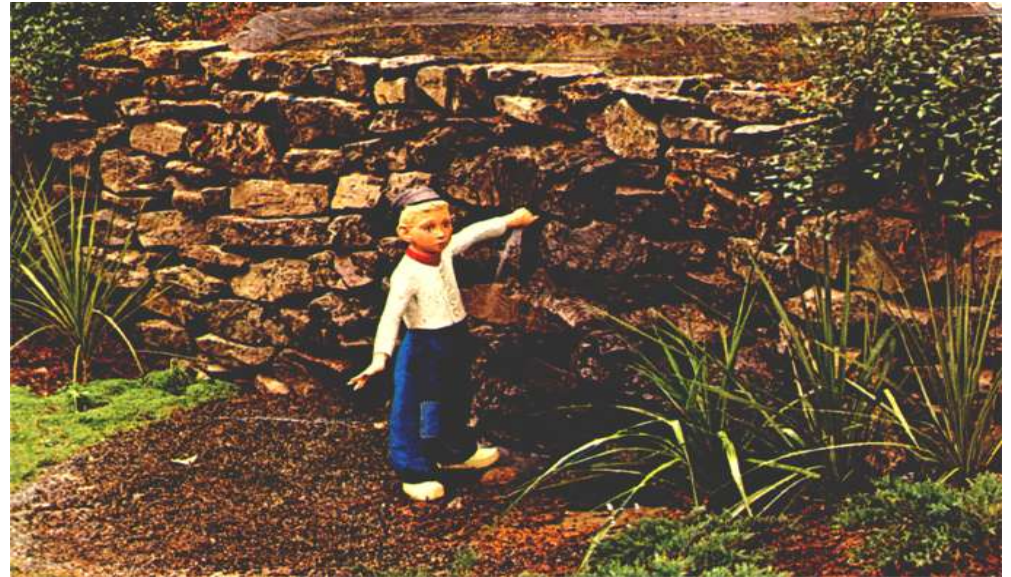
Harry Moser

Founder and President

847-726-2975

harry.moser@reshorennow.org

www.reshorennow.org



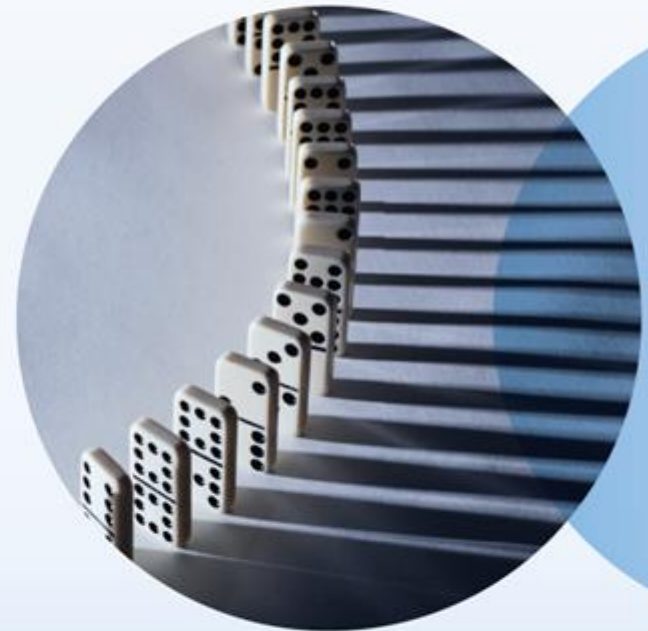
- [TCO Estimator](#)
- [Using the TCO Estimator: A How-To Guide](#)
- [Library](#)
- [Submit a Case Study](#)
- [Economic Development Program](#)

Supply chain insurance and risk assessment

Protecting profitability if the chain breaks

Linda Conrad
Director of Strategic Business Risk
Zurich Global Corporate
linda.conrad@zurich.com

www.SupplyChainRiskInsights.com



About the Supply Chain Resilience Survey



- Annual BCI and Zurich survey which considers **supply chain disruption** and benchmarks **BC arrangements** in this area
- **Sixth** of an annual series, 2014 report authored by Patrick Alcantara (BCI Research Associate)
- **525 respondents** from **71 countries**, around 60% are BC or supply chain professionals

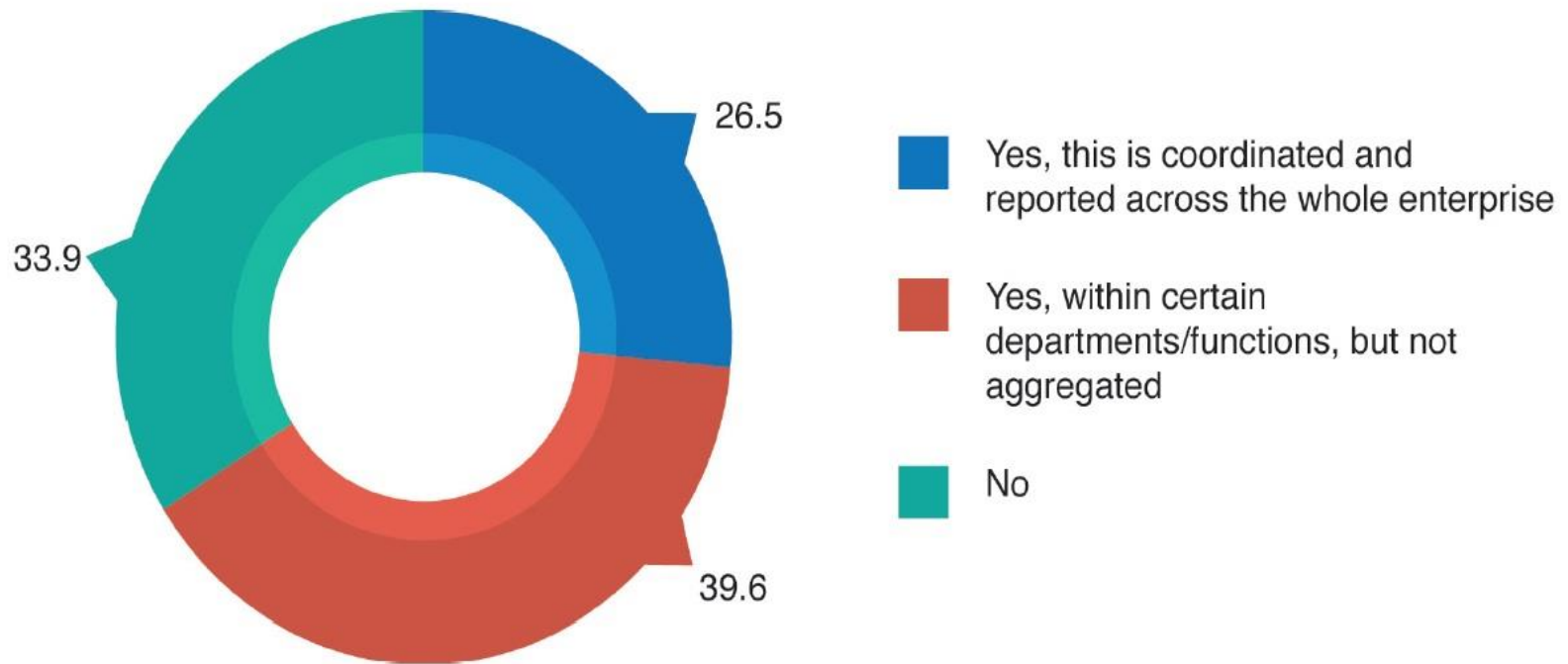
The Headlines

- Nearly 75% of respondents still **do NOT have full visibility** of their supply chains.
- At least 80% report **at least one instance** of supply chain disruption. **Half** of disruptions originate below the **Tier , direct supplier**.
- The primary sources of disruptions were **unplanned IT & telecoms outage, adverse weather** and **outsourcer service failure**. These comprise the top three sources of disruption **since 2012**.
- **70% of the world's goods go through 6 ports**

The Headlines

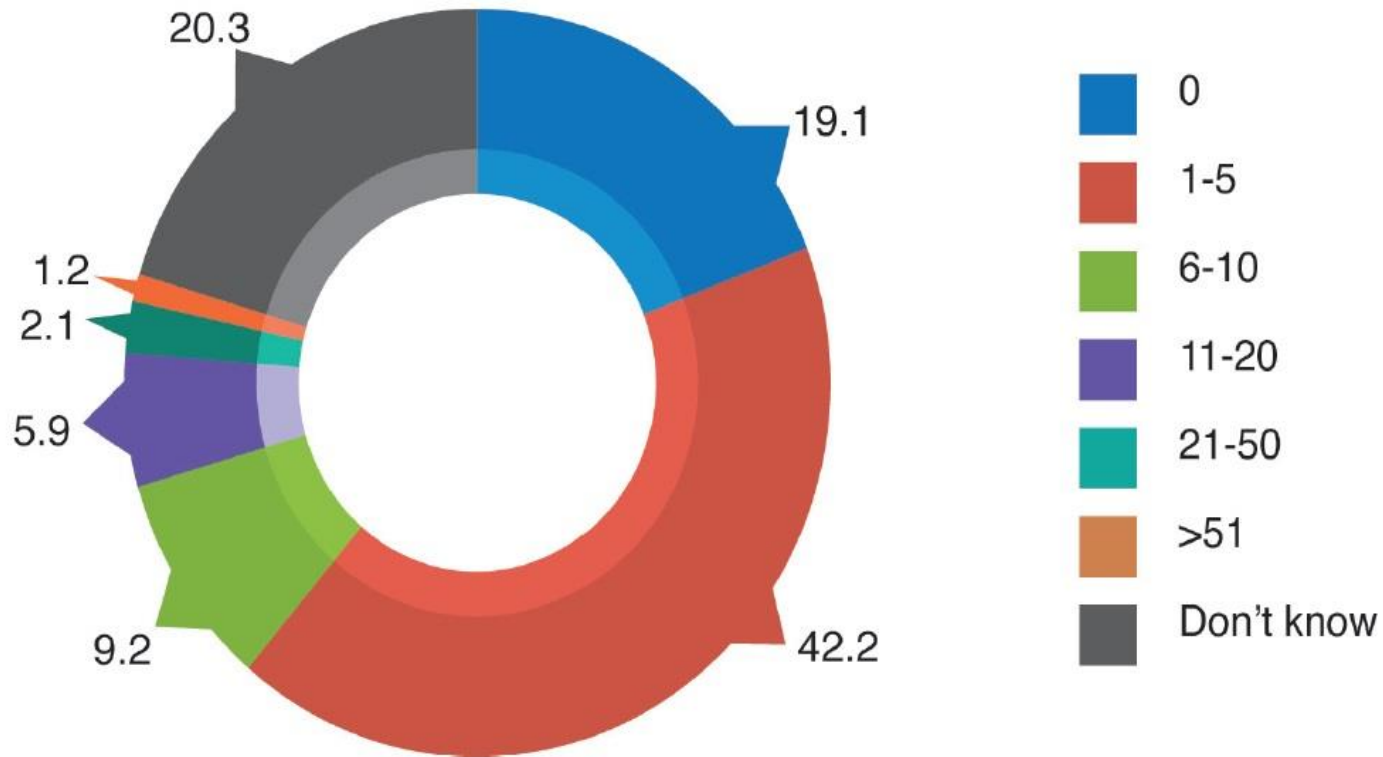
- The **loss of productivity** remains as the top consequence of supply chain disruptions for the sixth year running. The **increased cost of working** and **loss of revenue** round out the top three.
- Almost a quarter of respondents (23.6%) report **annual cumulative losses of at least €1 million**. More have recorded losses of **at least €1 million from a single incident** (13.2% from 8.6%).
- 40% of respondents **have NOT insured their losses** arising from supply chain disruption (through Contingent Business Interruption cover or Zurich's 'all risk' Supply Chain Insurance)

Recording Supply Chain Disruption



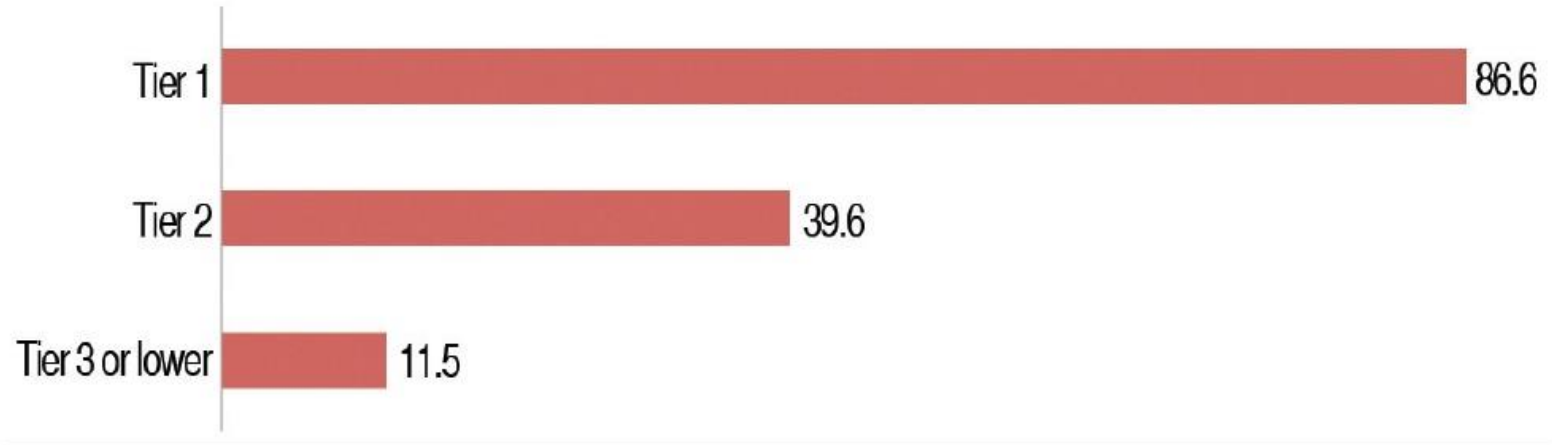
Only 26.5% have full visibility of their supply chains.

Number of Supply Chain Incidents



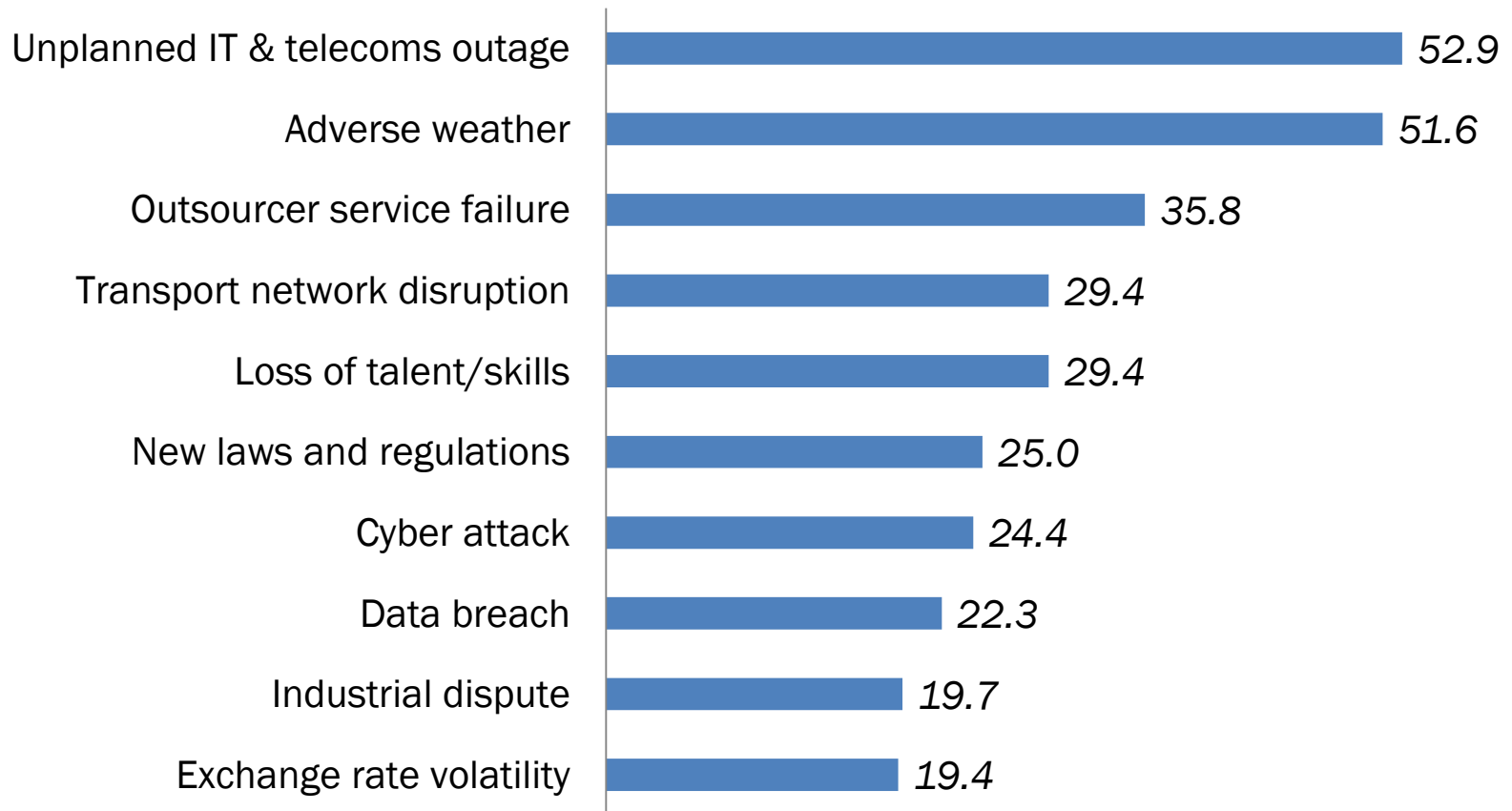
At least 80% report at least one instance of supply chain disruption in the last 12 months.

Origins of Supply Chain Disruption



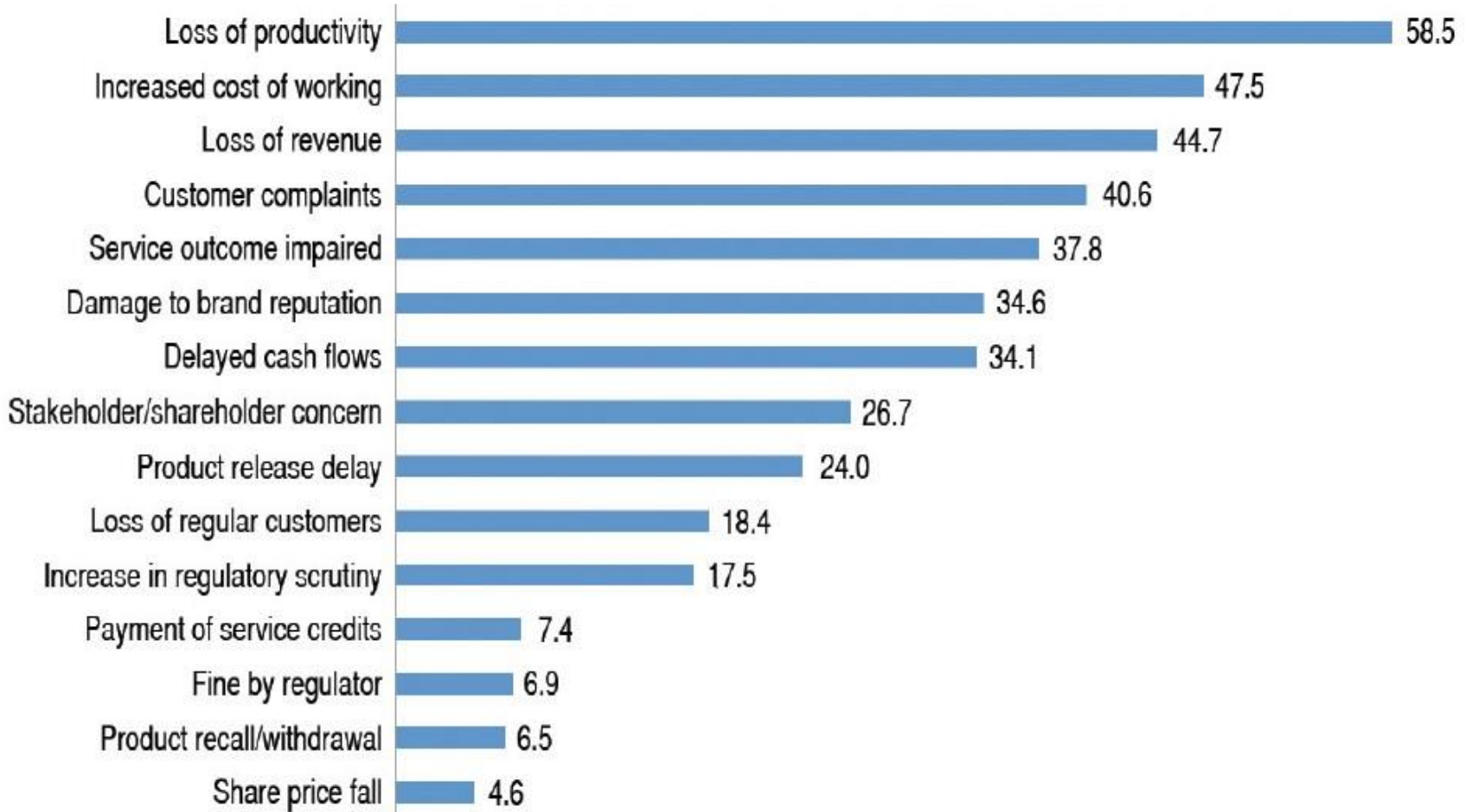
Half report disruptions occurring below Tier 1 suppliers.

Causes of Supply Chain Disruption



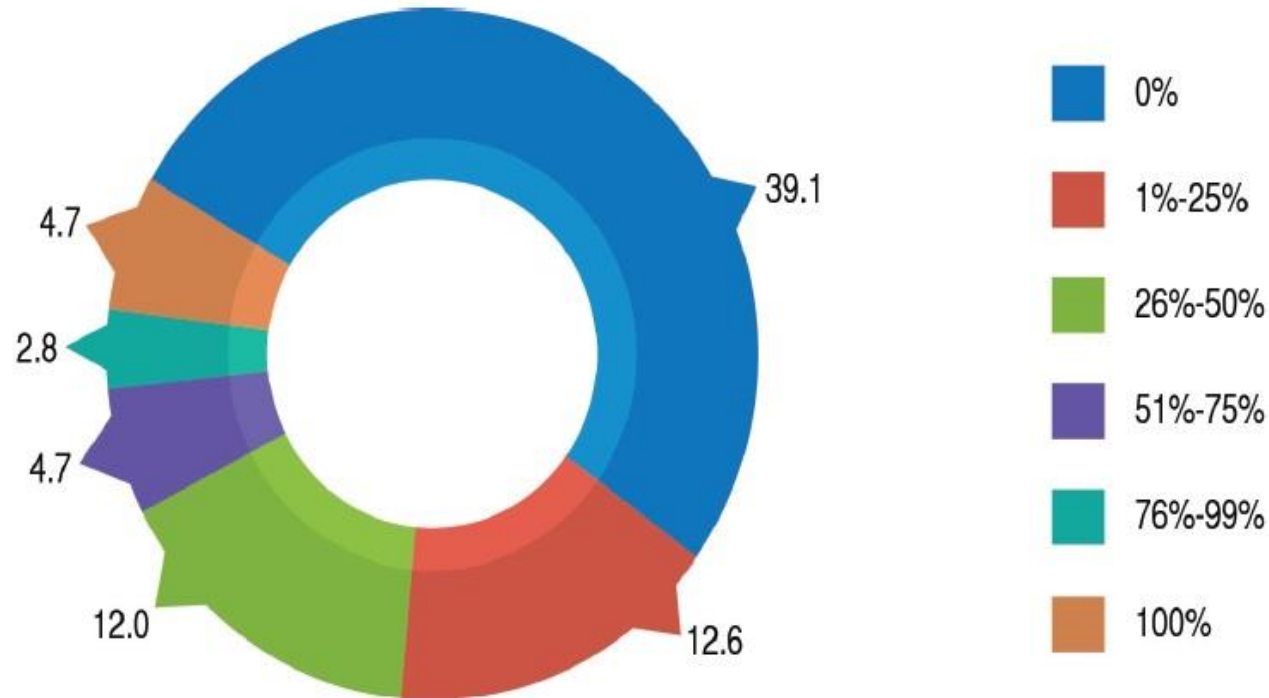
**Expressed in %, multiple answers allowed*

Consequences of Supply Chain Disruption



More than a third of respondents (34.6%) mention reputational damage as a consequence of disruption.

Insuring Supply Chain Loss



Almost 40% do not insure losses from supply chain disruption (through Contingent Business Interruption cover or Zurich's 'all risk' Supply Chain Insurance)

**Expressed in %, 'Don't know' responses excluded*

Horizon Scanning Risks to Supply Chains

In the next 12 months

- IT & telecoms outage (57.7%)
- Adverse weather (48.8%)
- Outsourcer service failure (41.4%)
- Cyber attack (37.2%)
- Data breach (36.3%)

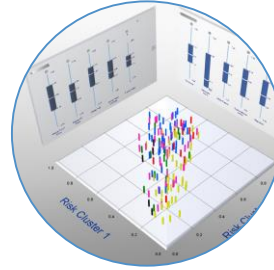
In the next 5 years

- Cyber attack (53.9%)
- IT & telecoms outage (51.0%)
- Outsourcer service failure (42.3%)
- Data breach (38.9%)
- Adverse weather (38.0%)

Zurich business resilience and supplier tool suite

Zurich Risk Room

Provides macro country insights, e.g. political stability, economic status, labour situation



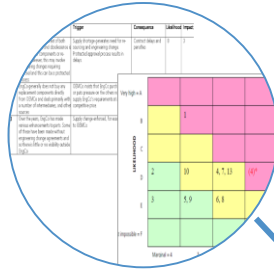
Nat Cat - Location risk

Provides exposure information for supplier locations in respect of e.g. floods, earthquakes, windstorm, related transport infrastructure



Total Risk Profiling

Structured approach to defining risk appetite and prioritisation for dealing with risks in the supply chain



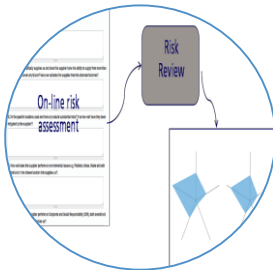
Profit risk exposure

Enables a company to understand its total supply chain profit exposure in terms of a particular location, country or region



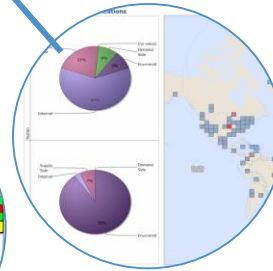
Supplier risk assessment

Formalised assessment of relevant areas which are part of the due diligence process within the sourcing activity



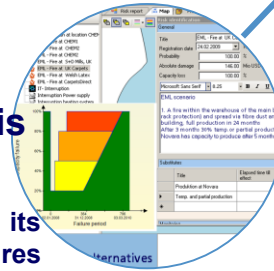
Disruption understanding

Helps in the understanding of the level and nature of disruptions in the particular industry or a certain location from a unique database



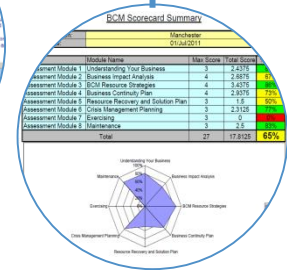
Business interruption analysis and modelling

Helps a company model and quantify its relevant BI exposures



Business Continuity Management

Helps evaluate gaps and then build workable business continuity plans



Zurich Risk Room on the go



A **simplified, demo version** of the full app

Contains **7 predefined scenarios** on:

- *Macroeconomic Imbalances*
- *Political Volatility*
- *Nat. Cat. and Disaster Management*
- *Supply Chain Disruption*
- *Demographic Shifts*
- *Sustainable Growth*
- *Human Capital*

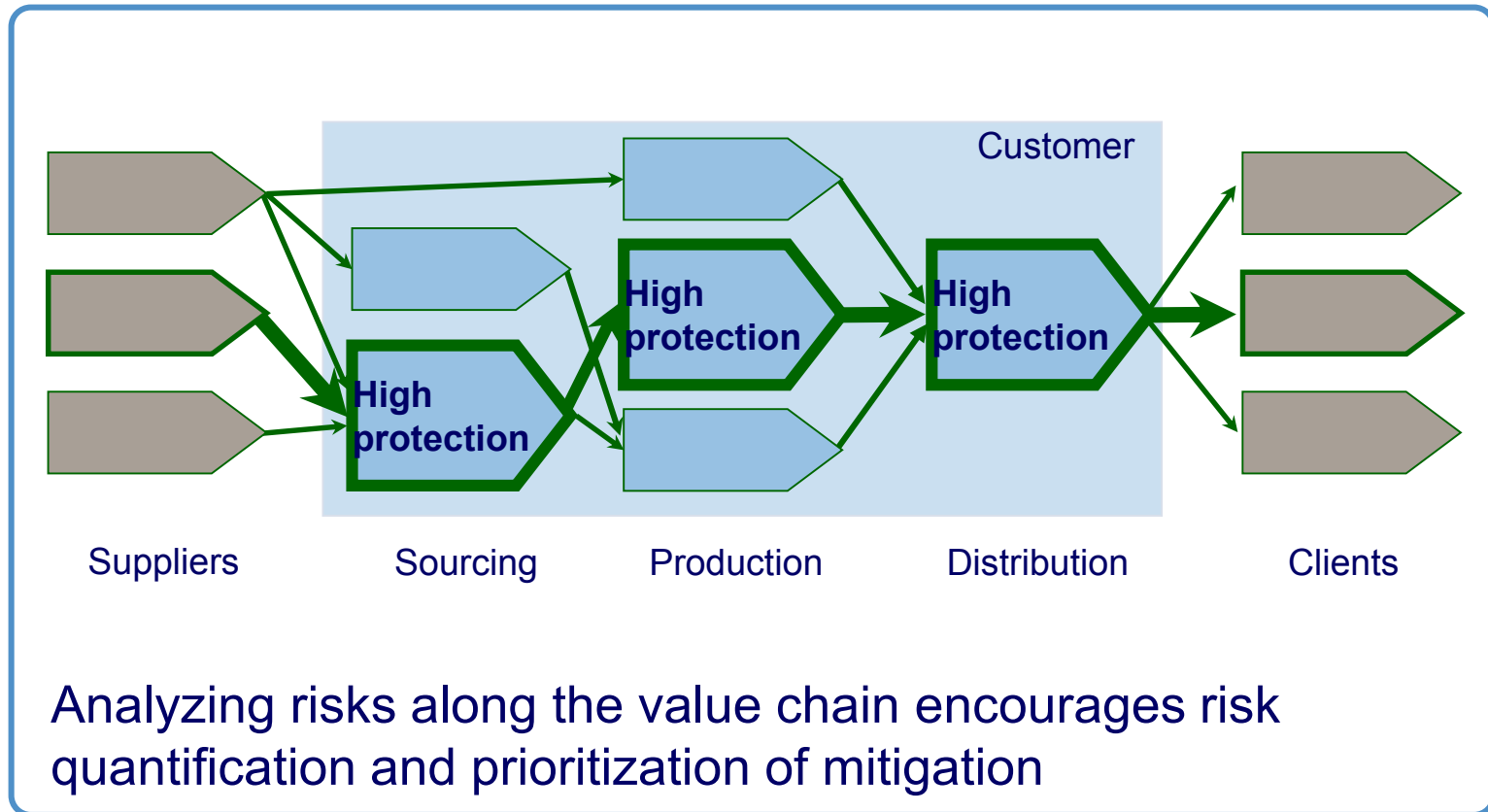
Easy to navigate, intuitive interface

Provides the ability to **model changes in individual risks** to see how they impact other, **interconnected risks**

Available **free of charge to the general public** as part of Zurich's thought leadership innovations and initiatives

Visit www.zurich.com/riskroom or download a free demo for Apple or Android

Business Interruption modeling:



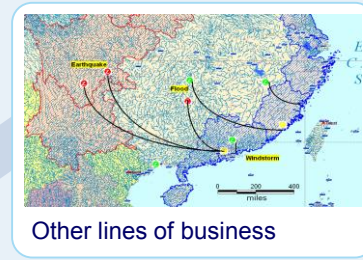
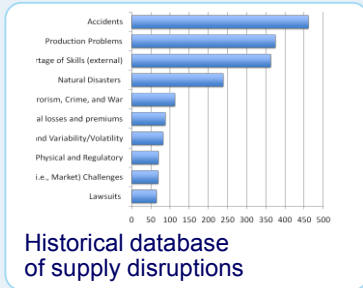
Understanding where and how your supply chain could be vulnerable



Risk assessment stages



Zurich supply chain rating risk model



Supply / supplier 1

Risk Factor	As Is
Industry/Supply-Specific - Geographical Exposures	B
Industry/Supply-Specific - Economic Exposures	C
Industry/Supply-Specific - Political Exposures	C
Industry/Supply-Specific - Structural Risks	B
Supplier Specific - Geographical Exposures	B
Supplier Specific - Economic Exposures	C
Supplier Specific - Structural Risks	C
Supplier Specific - Political Exposures	B
Product Management / New Product Development	B
Supplier Selection Management	B
Supplier Management (Financial Strength)	B
Supply Chain Performance	B
Internal Risk Management	C
Business Continuity Management (BCM)	C
Vulnerability To Accidents / Errors	B
Vulnerability To Malicious Interference	A
Commercial Contract Management	B
Skills And IP Management (Insured)	E(+C)
Regulatory Issues	A
Relationship With Supplier (Influence, Maturity)	B
Supplier's Security Of Supply	B
Supplier's Knowledge And Experience Of Providing Required Supplies	A
Skills and IP Management (Supplier)	E(+C)
Site Engineering Factor	B

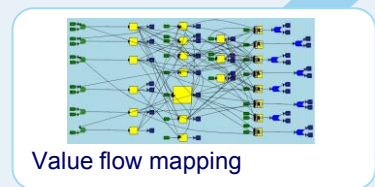
Assessment and grading



The information will be used to monitor and manage ACCUMULATION. It will be captured as part of the underlying data related to the respective structures.

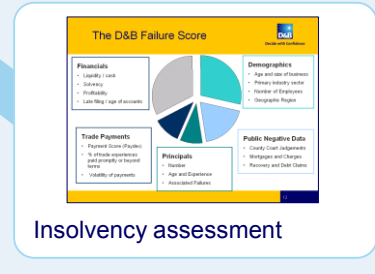
WEEK	Week start	Week end	Week start	Week end
Week 1	01/01/2023	07/01/2023	01/01/2023	07/01/2023
Week 2	08/01/2023	14/01/2023	08/01/2023	14/01/2023
Week 3	15/01/2023	21/01/2023	15/01/2023	21/01/2023
Week 4	22/01/2023	28/01/2023	22/01/2023	28/01/2023

Accumulation database



GSP

Industry and supply research



Supply chain grading

	Risk Factor	As is	Comments	To Be	Advice
1	Industry/Supply-Specific - Geographical Exposures	B		A	
2	Industry/Supply-Specific - Economic Exposures.	B		A	
3	Industry/Supply-Specific - Political Exposures.	B		A	
4	Industry/Supply-Specific - Structural Risks	B		A	
5	Supplier Specific - Geographical Exposures	B		A	
6	Supplier Specific - Economic Exposures	B		A	
7	Supplier Specific - Political Exposures	B		A	
8	Supplier Specific - Structural Risks	B		A	
9	Product Management / New Product Development	B		A	
10	Supplier Selection Management	B		A	
11	Supplier Management (Financial Strength)	B		A	
12	Supply Chain Performance	B		A	
13	Internal Risk Management	B		A	
14	Business Continuity Management (BCM)	B		A	
15	Vulnerability To Accidents / Errors	B		A	
16	Vulnerability To Malicious Intervention	B		A	
17	Commercial Contract Management	B		A	
18	Skills And IP Management (Insured)	B		A	
19	Regulatory Issues	B		A	
20	Relationship With Supplier (Influence, Maturity)	B		A	
21	Supplier's Security Of Supply	B		A	
22	Supplier's Knowledge And Experience Of Providing Required Supplies	B		A	
23	Skills and IP Management (Supplier)	B		A	
24	Risk Engineering Factor	B		A	
OVERALL GRADING =		72		4	

Supplier vulnerability rating / questionnaire

Core information					Financial basis	Vulnerability factors							Vulnerability score
Supplier	Supply	Location(s)	Plants	Lines	Margin	Single source - One location	Single source - Multiple locations	Product Uniqueness	Alternative replacement time	Contingency arrangements	Relationship	Delivery performance	
		City, country	How many	How many	€m est	Y / N	Y / N	Hi / Med / Lo	Months	Describe	Poor = 1 Excellent = 5	Poor = 1 Excellent = 5	
Supplier 1	Supply 1	Osaka, Japan	5	9	100	Y		Hi	12	Inventory (2 week)	4	5	85
Supplier 2	Supply 2	Guangzhou, China	7	7	80	Y		Lo	1	None	4	1	65
Supplier 3	Supply 3	Vigo, Spain Milan, Italy	1	1	25	N	Y	Lo	6	Inventory (3 days)	1	3	55
Supplier 4	Supply 4	France, Spain, Germany, UK, Italy	3	4	50	N	N	Lo	1	Several alternative suppliers approved	2	4	40
Supplier 5	Supply 5	Hsinchu, Taiwan	2	3	40	Y		Med	9	Inventory (3 days)	4	1	60

How we have helped other customers through risk assessment



Two key suppliers at the next level in the supply chain were in significant financial trouble

Exposure due to potential failure of a supplier higher than initially estimated: USD10 million vs. USD1 million



Actual reliance on one supplier significantly greater than presumed: 70% vs. 20%

Company discovered that key component supplier and its alternative were located in earthquake zone



Protecting profitability and balance sheet funding

- Reduced fluctuations in results
- Balance sheet protection
- Maintain customer relationships
- Protect brand & reputation
- Informed decision making
- Increase transparency



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Industry awards and recognitions



**BUSINESS
INSURANCE**

*2011 Innovation Award,
to recognize leadership,
inventiveness and
ingenuity*



irm

The Institute of
Risk Management

*2011 Best Supply
Chain Risk Initiative*



CIR

CONTINUITY INSURANCE & RISK
thinking resilience

*2012 World's Best Global
Supply Chain/Trade
Disruption insurer*



**GLOBAL
FINANCE**

*2013 World's Best Global
Supply Chain/Trade
Disruption insurer*

Covering risks not covered by other insurance products

	Supply Chain	Contingent BI	Marine & Marine BI	Trade Credit	Political Risk	Product Liability
Supplier insolvency	*			*		
Failure of fuel supply or utilities	*					
Communication system failure	*					
Transport failures or port blockage	*		*			
Raw materials or component delays	*					
Supplier staff illness or strikes	*					
Cyber risks, virus	*					
Denied access to supplier's premises	*					
Physical damage	*	*	*			
Political risk	*				*	
Expropriation	*				*	
Prod. Quality/recall						*

Transparent, predictable claims settlements

A simple example:

- Loss of profits for failure of supply of components = USD300,000 per week
- Increased cost of working to source alternative = USD100,000 per week
(Based on higher cost of replacement component, additional shipping costs)

Probable Maximum Loss

Loss of component deliveries relating to **30 weeks** of production

Alternative supplier available but cannot deliver for **20 weeks**

Back to original supplier after **30 weeks**

Calculation:

20 weeks loss of profits $20 \times \text{USD}300,000 = \text{USD}6\text{m}$

10 weeks increased costs $10 \times \text{USD}100,000 = \text{USD}1\text{m}$

PML = USD7m > Limit

Claim based on agreed formula

Loss of component deliveries relating to **15 weeks** of production

Alternative supplier available but cannot deliver for **8 weeks**

Back to original supplier after **15 weeks**

Calculation:

8 weeks loss of profits $8 \times \text{USD}300,000 = \text{USD}2.4\text{m}$

7 weeks increased costs $7 \times \text{USD}100,000 = \text{USD}0.7\text{m}$

Claim = USD3.1m

Benefits of Supply Chain Resilience

Communication is the key to ensure **appropriate plans are activated before the impact is felt** within the organisation. When our supplier told us they were experiencing issues, we invoked a plan immediately and **saved any issues downstream.**

- Respondent from 2014 survey

Benefits of Supply Chain Resilience

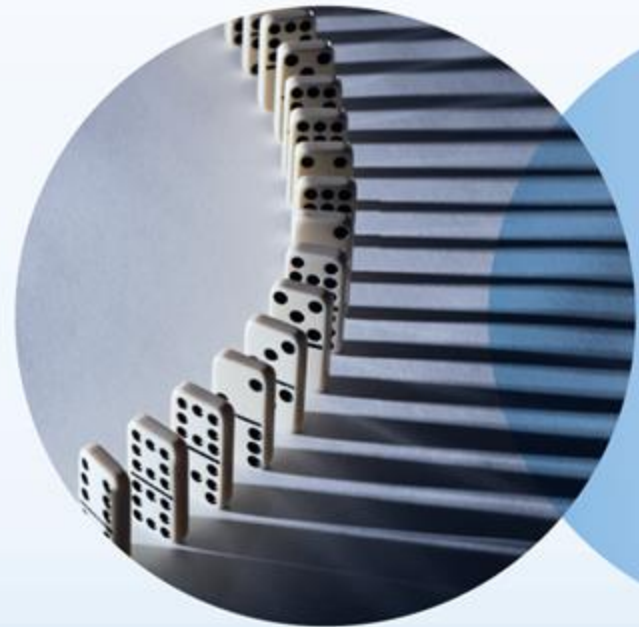
There were multiple occasions where we have rallied to support a client when either third party suppliers... or our own direct suppliers have caused disruption; in most cases **our reputation has actually improved** as a result of our dedication to resolve issues.

- Respondent from 2014 survey

Supply chain risk assessment and insurance

Protecting profitability if the chain breaks

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Thank you

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Advanced Manufacturing – New Policy Approaches



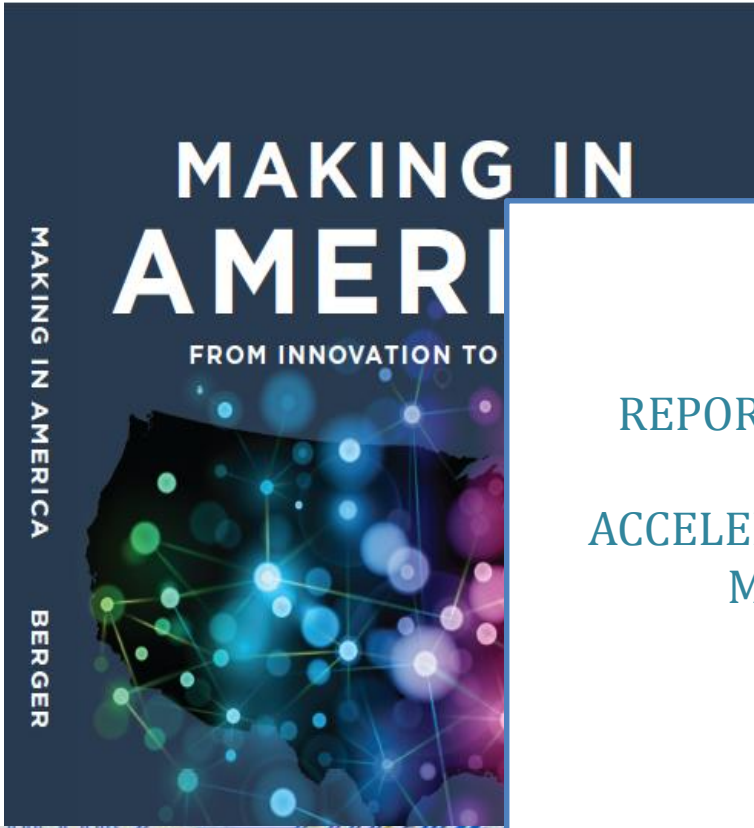
*Production and Supply Chain
Management Society -
“College of Supply Chain
Management” Conference*

May 7, 2015

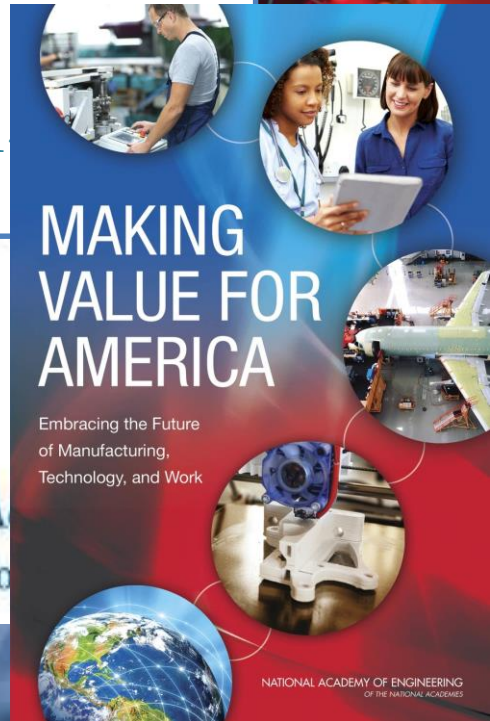
William B. Bonvillian

Director, MIT Wash. Office

What's the
Advanced
Mfg
Context? --
- Recent
Reports...



REPORT TO THE PRESIDENT
ACCELERATING U.S. ADVANCED
MANUFACTURING
October 2011



The Manufacturing Problem:

- 1) Manufacturing is not Agriculture
- 2) Our Manufacturing Firms are Increasingly: “*Home Alone*”
- 3) Small, mid-sized and start-up firms – most of U.S. manufacturing - can’t get financing to “Scale-Up” innovative production
- 4) Strong innovation capability = strong production capability
 - Emerging advanced technology fields
- 5) What Germany can teach us: strong ecosystem
- 6) Jobs – How manufacturing sector affects U.S. services sector
- 7) Manufacturing is part of the innovation system

A New Manufacturing Innovation Model?

- Elements: Manufacturing Institutes,
- Cross-Gov’t/Industry/Univ’s Collaboration,
- Technology Strategies, training, financing, etc.
- A new collaborative university role



Point One: Manufacturing is not Agriculture

- For a long time we thought manufacturing was agriculture.
 - In 1900 half of population farming; now less than 2% farming
 - Producing more than ever, so enormous “productivity gains’ in agriculture
- But the reports tell us this manufacturing is not agriculture
- We lost 5.8 million manufacturing jobs from 2000 to 2010
 - We thought manufacturing output was holding firm, but it wasn’t - on reexamination we’re finding it was in decline (in 16 of 19 sectors)
 - So we didn’t get the productivity gains we thought
 - Capital and plant investment rate down in 2000s
- Job loss data tells us manufacturing sector is hollowing out



Point Two: Home Alone

- The reports tell us for the past three decades we have been thinning out our manufacturing ecosystem
 - We used to have firms and supply chains that were very vertically integrated
 - We hit on a financial model of emphasizing quarterly returns, which led us to reduce risk by making our firms focus on “core competency” and go “asset light”
 - So the shared assets of training, bringing best practices to suppliers, thinned out
 - **The companies in our system are now much more “home alone”**



Point Three: The Scale Up Problem

- We have 3 manufacturing sectors:
 - **1) Our big multinationals** – they are global, they can get production efficiencies by producing in lower cost countries and they must be in all the global markets
 - They're OK, although they are increasingly producing abroad
- + **Two More Vulnerable Sectors:**
 - **2) Main Street firms** – they do most of our manufacturing, there are 300,000 small and mid-size firms
 - They **have trouble getting production scale up funding**, they're thinly capitalized, must be risk adverse to survive, and don't do R&D (although they can be very innovative about process)
 - **3) Our entrepreneurial startups that make something** –
 - they do well until they have to **scale up for production** of their product – they **lack financing for scale-up** here – Venture firms don't fund this – send startups to contract mfgs. in Asia
 - So they turn to contract manufacturers abroad



Point Four: The Tie between Innovation and Production

- US had: *innovate here/produce here* – got full spectrum of gains
- Then US did: *innovate here/produce there*
- But - for most products need to tie innovation closely to initial production
 - Need dense feedback loops as you do product design- initial production requires very creative engineering and design – it's part of innovation
 - So if you shift production capability, in many cases innovation capability has to follow it
 - Result: *Produce there = Innovate there*
- Innovation is U.S. strong suit –what it does best
- But if many of our important innovations have to follow production, then endangering our innovation strength
- And Innovation is the key factor in growth



Point Four, con't

- Are there new advanced manufacturing “Paradigms” that could lead to restoration of mfg. leadership?
- **Energy Efficiency** – energy is “waste”
- **“Network centric”**
 - mix of advanced IT, RFID, sensors in every stage and element, new decision making from “big data” analytics, **advanced robotics, supercomputing w/adv'd simulation & modeling**
- **Advanced materials**
 - “materials genome” – ability with supercomputing to design all possible materials with designer features
 - Biomaterials, bio fabrication, syntehtic biology
 - Lightweighting everything
- **Nanomanufacturing**
 - fabrication at the nano-scale
- **Mass Customization**
 - Production of one at cost of mass production (ex.: 3D printing /additive mfg, etc.)
- **Distribution efficiency**
 - IT advances that yield distribution efficiency (ie, supply chain)



Point Four, con't: DOE 3D Printed

Shelby Cobra at ONL - concept to printed, 6 weeks; 500 parts/24 hours

Used - [BAAM](#) ("Big Area Additive Manufacturing") machine -- can print parts 500 to 1,000 times faster than current industrial 3D printers



Point Five: what Germany can teach us

- We thought that we had to lose manufacturing jobs to low cost producers in Asia because we are high wage.
- But Germany is high wage and high cost – German wages and benefits are 66% higher than the U.S.
- They run a major manufacturing surplus, including a manufacturing surplus with China
- They have a deep ecosystem for their manufacturers, small and large – they aren't "home alone"
- Extensive collaborative R&D shared by industry- gov't- universities around manufacturing technologies and processes
- Shared training system for their workforce
- Ways to link their supply chains for rapid scale
- Some German practices don't apply, some do



Point Six - Behind it all: Understanding the Hourglass --



<---- Resources, Suppliers,
Components,
Innovation

<--- Production (12m jobs)

<--- Distribution, Sales, Life
Cycle



Point Seven: Production must be seen as part of the Innovation System

- Manufacturing not pictured as part of the innovation process
 - Focus on only R&D: fragmented view
 - Innovation is a system, from early-stage research through production
- Production is the major enabler of “increasing returns” in an economy – it is a scale-able factor
 - a foundational societal wealth creator.
- treat production as critical element that must be connected to innovation system
or risk innovation erosion



Problem Summary: Seven Points...

- Manufacturing is part of Innovation System
- Manufacturing is not Agriculture
- U.S. Manufacturing Firms are Increasingly “Home Alone”
- The Scale-Up problem for small, mid-sized, and start-up firms – most of U.S. manufacturing production strong
- Close linkage between innovation/production
- New production paradigms?
- Germany: strong mfg. ecosystem
- Jobs – tie tradeable goods to tradeable services for scaleable growth
- manufacturing sector affects services



Is Advanced Manufacturing a *New Innovation Model?*

- **BACKGROUND**: R&D and Talent are the two direct innovation factors
- “Innovation organization” is the *third* direct innovation factor –way talent and R&D come together
- So: how the federal R&D system organized is critical
- ***5 Periods of federal innovation organization:***
 - Postwar, Sputnik, Competitiveness, Energy, Manufacturing
- Fundamental divide in design of US R&D agencies
 - **“Connected” model in wartime period**
 - **“Disconnected” postwar model**
 - **Then: Reconnect process in some areas**



DOD Builds a Parallel Universe along side the Vannevar[Bush] model...

- Most of US R&D on basic research/pipeline model -- but there is a parallel universe:
 - Dept. of Defense (DOD) rebuilt the ***connected*** model of WW2 for the Cold War
 - Launched: aviation, nuclear, electronics, space, computing, internet – ***major innovation waves of the 20th century***
 - DOD: Pervasive role at all stages of the pipeline - from R to D to prototype to demonstration to creating initial market
 - **POINT: Sputnik is first of a series of external pressures that force change in U.S. innovation system**



How far down the innovation pipeline does the Federal Government role go?



THE INNOVATION PIPELINE:

Research-> Dev-> Prototype-> Demo-> Testbed-> Production-> Market

NSF, DOE OS, NIH,

etc.:



DOD:



DOD has a "Connected System"

The last manufacturing crisis - 1980s Competitiveness Period:

- *The Bayh Dole Act*
 - Universities own federal research results
 - Pushed university researchers pipeline to technology development and company creation.
- *The Manufacturing Extension Partnership (MEP)*
 - bring the latest manufacturing technologies and processes to small manufacturers.
- *The Small Business Innovation Research (SBIR) program*
 - R&D grants to small and start-up companies



80s Competitiveness Period, Con't:

- *The Advanced Technology Program (ATP)*
 - high-risk R&D undertaken by industry.
- *Sematech*
 - U.S. semiconductor industry
 - Advanced manufacturing challenge – organize suppliers
 - DARPA matched industry Sematech funding until 1996
- *So: gov't role moved further down the pipeline*



Then: 2012 & 2014 Advanced Mfg.

Partnership – 4 Basic Recommendations:

- *Transformative Technologies – Technology Strategies Linked to R&D*
- *Implementing Manufacturing Institutes and networking them*
- *Demand-Driven Workforce Solutions*
- *Technology Scale-Up/Policy*



New Period? Advanced Manufacturing

- **Advanced Manufacturing Partnership (AMP) - idea:**
 - need innovation-based efficiency gains to compete with low cost/low wage nations
 - Apply innovation capabilities to manufacturing
 - So: New Technologies/Processes/Business Models
- **“Advanced Manufacturing Institutes”**- 15 now planned
 - Collaborative–industry/univ/gov’t –in a way, Sematech model
 - Testbed role / Workforce education role
 - 3D printing, power electronics, lightweighting metals/materials, digital manufacturing, “smart” mfg., photonics, composites, advanced fiber, etc.
- **Creating an Adv’d Manufacturing System:**
 - Technology Strategies around adv’d mfg. technologies
 - Industry-Univ-Gov’t. - collaborative advice – advisory panel
 - Integrated adv’d mfg R&D across agencies–feed-in to Instit’s
 - Scale-up financing fund - \$10 b



Linking Policy to the 7 Problem Points

- Lesson from “home alone” – restore the ecosystem:
 - Manufacturing Institutes – like Germany’s Fraunhofers?
- Lesson from “innovation/production connection” - reconnect:
 - Use the federal R&D system in adv’d mfg
 - Technology strategies for adv’d mfg paradigms
 - Collaborative – industry-univ.-gov’t
 - Focus on cross-sector technologies
 - Tie in R&D system to strategies, link to institutes
- Lesson re Workforce: need training for adv’d mfg
 - community college role, adv’d engineering
- Lesson re Production Scale up
 - Gap in financing system – needs review



Lessons from AMP For University Role in Policy



- Universities co-led the AMP process with industry CEO's and leaders
- Joint industry-univ. committee for innovation policy analysis - new
 - Developing “Technology Strategies” in three tech areas together was particularly instructive - forced collaboration and new thinking
- Manufacturing Institutes are a new model for technology evaluation and stand-up
 - Fraunhofer model
 - Ties industry/universities together in longer innov. chain
 - Joins the sectors not simply in research but in later stage development