California Infrastructure Outlook

Professor Nick Vyas

What is Infrastructure?

Basic physical and organizational structures needed for the operation of a society or enterprise

Hard Infrastructure

Soft Infrastructure

Hard Infrastructure

Large physical networks necessary for the functioning of a modern industrial nation

Transport

- Road and Highway Networks
- Rail/Mass Transit Systems
- Airports
- Seaports

Energy

- Electrical power network
  - Generation plants,
  - Electrical grid
- Petroleum and Natural Gas

Communication

- Mobile and Telephone networks
- Information Technology

Government Challenges of Developing Hard Infrastructure

Government transportation officials and their consultants rarely account for short-term and long-term supply chain effects in their financial evaluations of freight transportation investments.

Why?

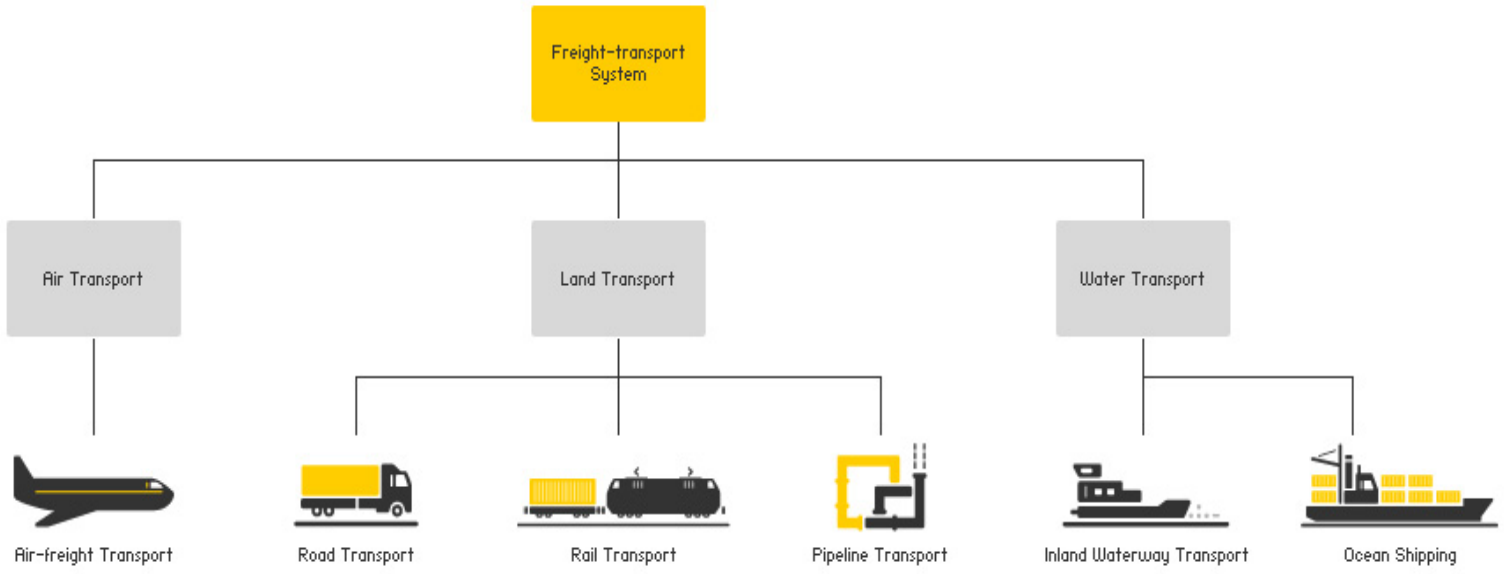
More governmental jurisdictions in infrastructure due to long distances, therefore extremely complex analytics are needed

Decision makers don't always have the time to consider every aspect due to the many costs, benefits, and impacts involved

Transportation/ Distribution

- Transportation optimization focuses on improving the utilization, leveraging and overall management of transportation resources, including company owned vehicles and third party carriers.
- Today, companies have to face competitive pressures to decrease stocks, increase frequency of deliveries and improve response rates. These activities, however, have a direct impact on transportation cost, an impact that has to be carefully analyzed and minimized.

Transport System



Source: Grundlagen der Güterverkehrsökonomie | Claussen 1979

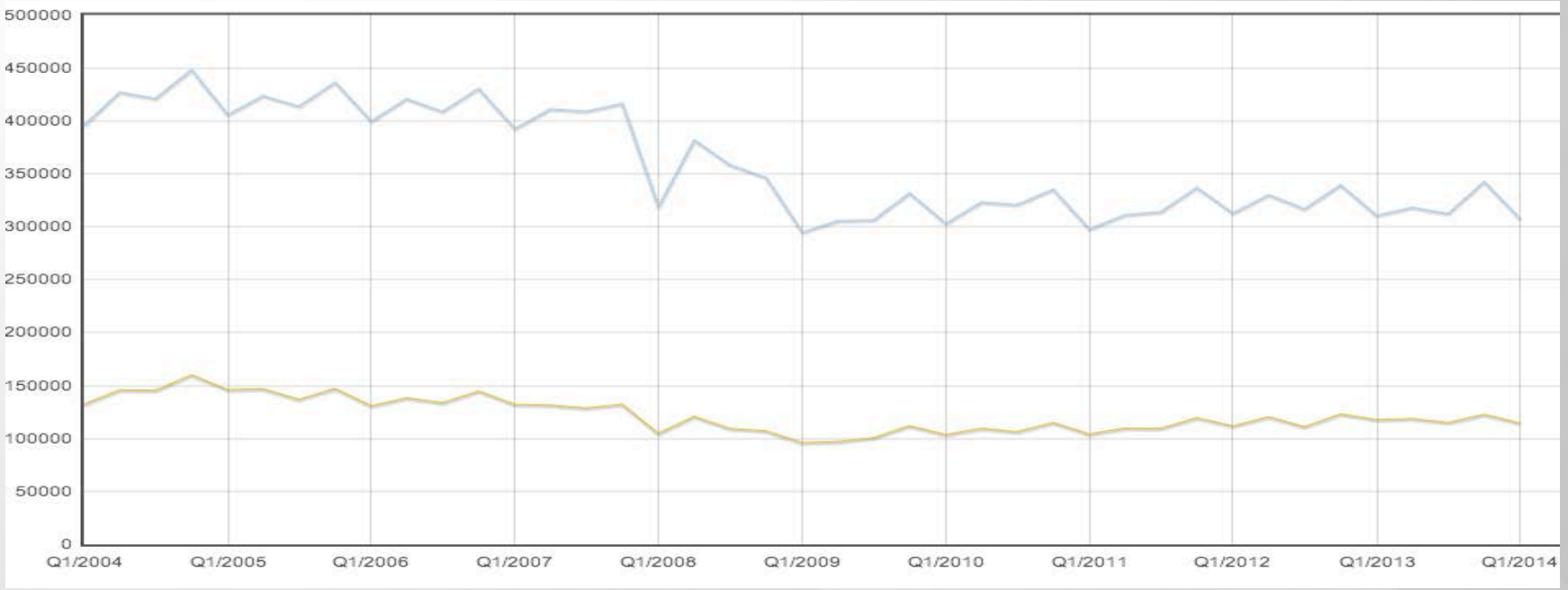
Last Mile Delivery

- Transporting goods via freight rail networks and container ships are often the most efficient and cost-effective manners of shipping.
- However, when goods arrive at a high-capacity freight station or port, they must then be transported to their final destinations.
- This last leg of the supply chain is often less efficient, comprising up to 28% of the total cost to move goods. This has become known as the "last mile problem."

How will infrastructure improvements help the economy?

- Creation of US infrastructure, progression, and maintenance
- US currently has aging infrastructure- from tunnels and airports to pipelines and Wi-Fi systems
- Sustained public investment
  - *Private-public partnerships?*

Total Freight tons from 2004-2014 passing through LAX & CA



What trends do you see and what might account for this?

Growth Accelerating at Los Angeles, Long Beach Ports

- April 2014: both reported double-digit monthly container import growth in April
- Why?
- East is the New West!
  - *A resurgent China as a player in the trans-Pacific container market*
  - *Growing more rapidly than with Canada and Mexico*
  - *Pickup in US consumers spending with easier access to credits and higher disposable incomes*

Total Landed Cost Analysis

Lets take a look at how understanding Total Landed Cost impacts a decision to source in Mexico versus China. With a narrow view, the production costs from a vendor in China look significantly better than costs from Mexico. But once we factor in other variables such as the cost of inventory in transit, transportation, duties, and fuel, the Total Landed Cost of a product sourced in Mexico becomes clearly more attractive.

Problems

- But what problems are they facing at the same time?
  - *Lack of growth in terms of productivity at ports*
  - *Negotiations with West Coast dockworkers and waterfront employers as more and more shippers must wait 3-4 days to get their cargos*
  - *Lengthy truck lines outside terminals due to inefficiencies*

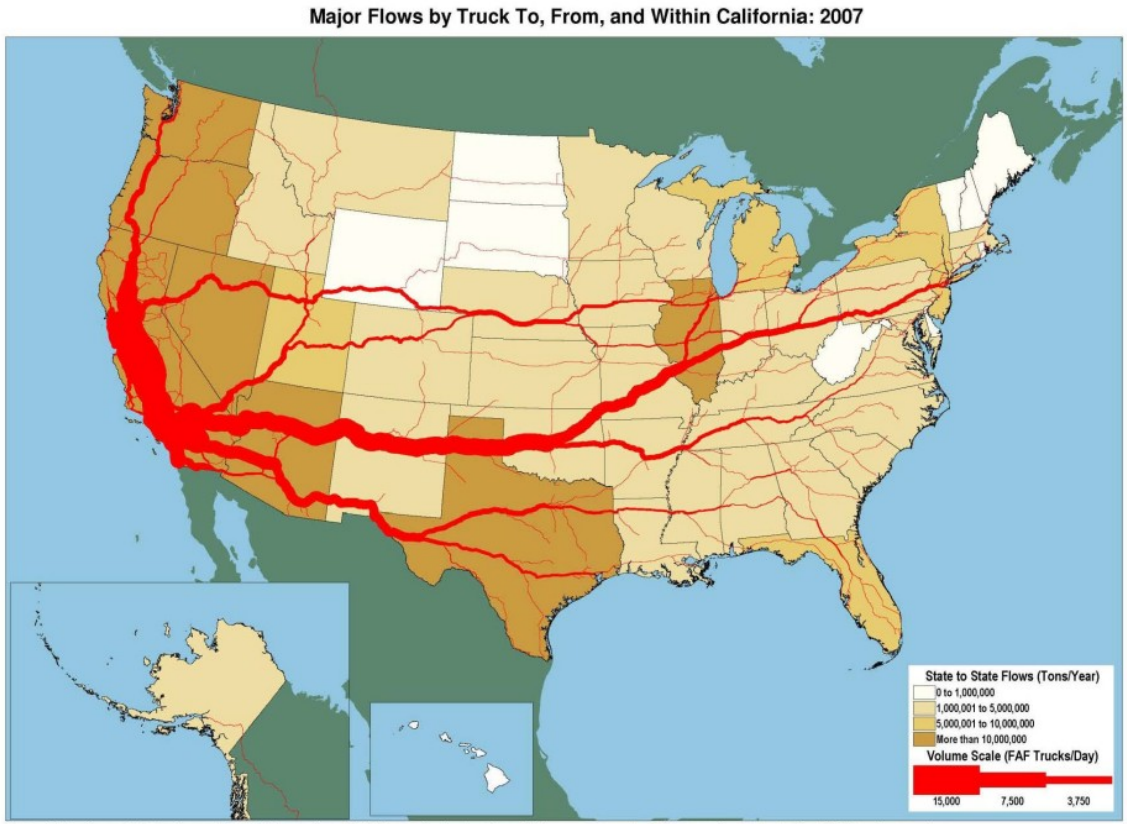
Southern California- Heart of America

Nearly 50% of the nations seaborne cargo enters Long Beach and Los Angeles ports.

Picture Southern California as the heart of America's freight movement network. And the network has a serious health problem. As with an unhealthy heart, our region's freight arteries are clogging. They are becoming less and less efficient. Unfortunately, we all know what happens when arteries become blocked. The heart soon fails, affecting the body as a whole.

Importance of Southern California

The health of the U.S. Economy largely depends on the infrastructure of Southern California



Note: Major flows include domestic and international freight moving by truck on highway segments with more than twenty five FAF trucks per day and between places typically more than fifty miles apart.
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 3.1.2, 2011.

Top Contributing factors to a Great Infrastructure

The top ranked cities such as Singapore, several cites in Germany and Denmark, London, and Honk Kong list these as most important to their outstanding infrastructures:

- Public Services
- Public Transportation
- Ease of conducting business
- Airports

TOP INFRASTRUCTURES IN THE WORLD BY CITY

- 1. Singapore

- 2. Frankfurt

- 3. Munich

Here are the highest ranked 3 cities out of the 30 top cities in the world according to infrastructure. Los Angeles didn’t make the list.

Business Insider's Report on the worst infrastructures in the U.S.

"#2 California

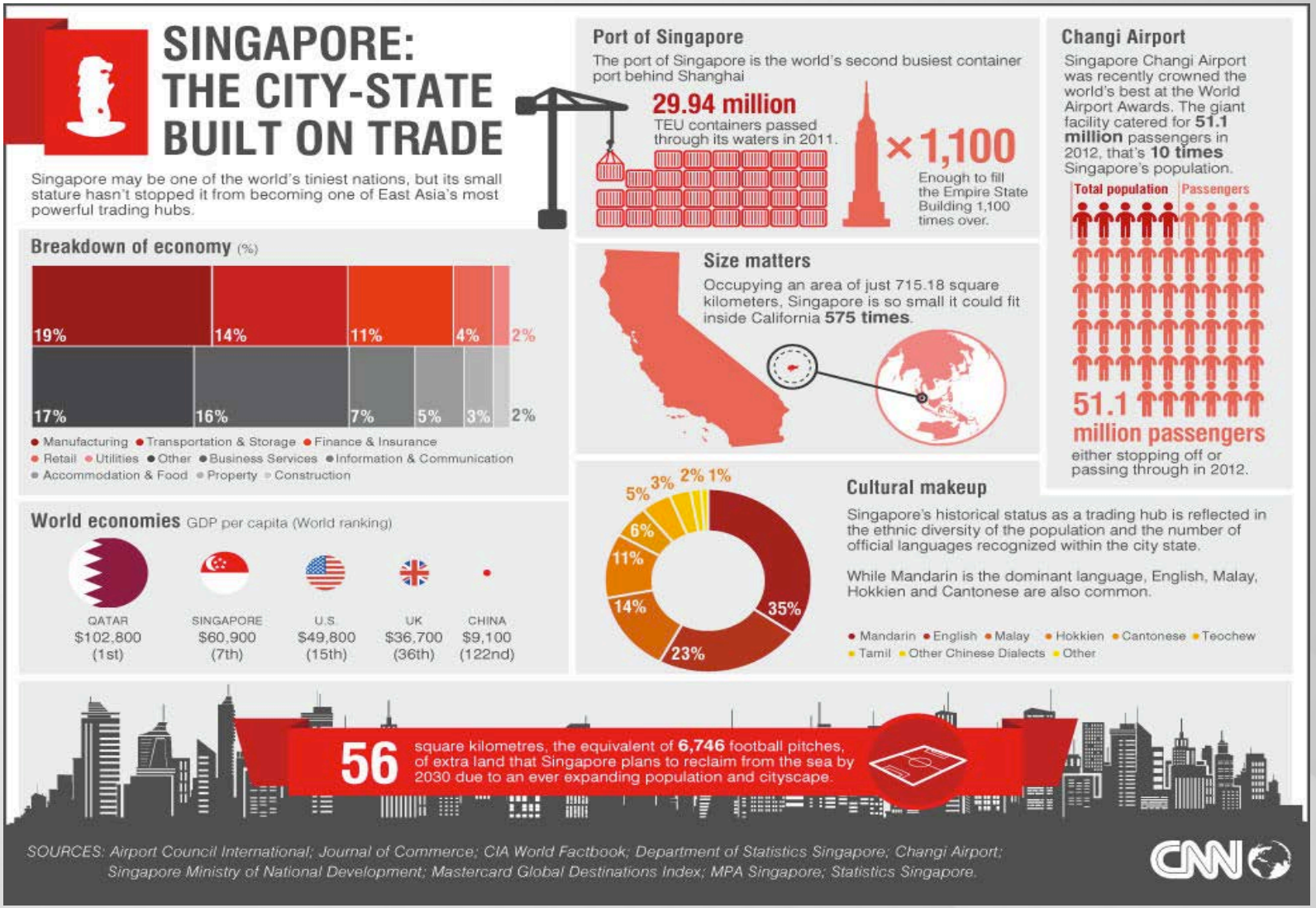
- **28%** of roads in bad condition
- **13%** of bridges deemed "structurally deficient"
- **$590** in additional vehicle operating cost *(in LA it's $746!)"*

Singapore: An example to emulate

Access Asia Pacific Markets Within 24 Hours; Reduced Time-to-Market

- Singapore offers excellent connectivity and manufacturers from US and Europe that are expanding their reach in Asia's markets can leverage Singapore for their postponement strategy to reduce time-to-market.
- Singapore is a reliable and secure location where market-specific customization, labeling and packaging can be conducted upon order receipt, before products are shipped the last mile to fulfill orders from Asia.
- Coupled with highly efficient customs and business-friendly import/export procedures, companies with regional distribution centres in Singapore can offer customers timely delivery to destinations in Asia Pacific.

Source: Singapore Economic Development Board, 2010


SINGAPORE: THE CITY-STATE BUILT ON TRADE
Singapore may be one of the world's tiniest nations, but its small stature hasn't stopped it from becoming one of East Asia's most powerful trading hubs.
Port of Singapore
The port of Singapore is the world's second busiest container port behind Shanghai
29.94 million
TEU containers passed through its waters in 2011.
×1,100
Enough to fill the Empire State Building 1,100 times over.
Changi Airport
Singapore Changi Airport was recently crowned the world's best at the World Airport Awards. The giant facility catered for 51.1 million passengers in 2012, that's 10 times Singapore's population.
Total population
Passengers
51.1 million passengers
either stopping off or passing through in 2012.
Breakdown of economy (%)
19%
14%
11%
4%
2%
17%
16%
7%
5%
3%
2%
Manufacturing
Transportation & Storage
Finance & Insurance
Retail
Utilities
Other
Business Services
Information & Communication
Accommodation & Food
Property
Construction
Size matters
Occupying an area of just 715.18 square kilometers, Singapore is so small it could fit inside California 575 times.
World economies GDP per capita (World ranking)
QATAR $102,800 (1st)
SINGAPORE $60,900 (7th)
U.S $49,800 (15th)
UK $36,700 (36th)
CHINA $9,100 (122nd)
35%
23%
14%
11%
6%
5%
3%
2%
1%
Cultural makeup
Singapore's historical status as a trading hub is reflected in the ethnic diversity of the population and the number of official languages recognized within the city state.
While Mandarin is the dominant language, English, Malay, Hokkien and Cantonese are also common.
Mandarin
English
Malay
Hokkien
Cantonese
Teochew
Tamil
Other Chinese Dialects
Other
56
square kilometres, the equivalent of 6,746 football pitches, of extra land that Singapore plans to reclaim from the sea by 2030 due to an ever expanding population and cityscape.
SOURCES: Airport Council International; Journal of Commerce; CIA World Factbook; Department of Statistics Singapore; Changi Airport; Singapore Ministry of National Development; Mastercard Global Destinations Index; MPA Singapore; Statistics Singapore.
CNN

Transportation Nightmare

"Carmageddon"

The new title for Los Angeles's old problem of massive traffic jams

What's the holdup?

Heading downtown from the Long Beach Port

Current Events: Costly Mistakes

UCLA FLOOD

- Cost to repair estimated at $8 billion

- City's Annual budget: $8.1 billion

Lack of funding towards infrastructure proved devastating for Los Angeles

H20

- Although water is a very scarce resource in Singapore, the Changi Water Reclamation Plant (CWRP), located at the eastern end of Singapore, is one of the largest and most advanced reclamation facilities in the world.

- Southern California's current drought and the UCLA incident indicate the regions dilemma.

WEF Rankings for Trade

The Global Competitiveness Index 2013–2014 rankings

Country/Economy	Rank (out of 148)	Score (1–7)	Rank among 2012–2013 economies*	GCI 2012–2013
Switzerland	1	5.67	1	1
Singapore	2	5.61	2	2
Finland	3	5.54	3	3
Germany	4	5.51	4	6
United States	5	5.48	5	7

Based on a highly detailed analysis of the 12 global pillars: Institutions, Infrastructure, Macroeconomic Environment, Technological readiness, Innovation etc.

*Rankings by World Economic Forum

More WEF rankings

United States

- Quality of port infrastructure .....Ranked #16
- Quality of air transport infrastructure.....Ranked #18

Singapore

- Quality of port infrastructure .....Ranked #2
- Quality of air transport infrastructure.....Ranked #1

SOCAL Transportation Costs

- A large factor in a company's supply chain evaluation is its total landed cost (TLC) once it arrives at the port. Costs associated with quality, insurance, duties and taxes, expedites, deconsolidation, and rework or returns, all impact the total cost of a product.
- Southern California's over-congested infrastructure drives up the price and time to get products in customers hands.
- This last leg of the supply chain is often less efficient, comprising **up to 28% of the total cost to move goods**. This has become known as the "last mile problem."

Thank you!

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