

Economic Aspects of Transport Airship Operations

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Outline

~~How questions:~~

- ~~1. Options for funding transport airship development, acquisition, and operations.~~
- ~~2. Factors affecting commercial, governmental, or NGO funding of cargo airship development.~~
- ~~3. Risks versus returns, what assurances do investors or government agencies need.~~
- ~~4. Investment mechanisms, (joint ventures, consortiums, public/private partnerships, government loans, etc...).~~

1. Is there justification for any government involvement?



Public and Private Investment

- Private
 - Trucks/cars
 - Airplanes
 - Ships
- Profit driven investments
- Short/medium term assets
- Single consumer
- Public
 - Roads/streets
 - Airports
 - Ports
- Public interest driven investments
- Long lived assets
- Joint consumption

Railways are the exception – are transport airships the same as railways economically, or different?



Economic Roles of Government

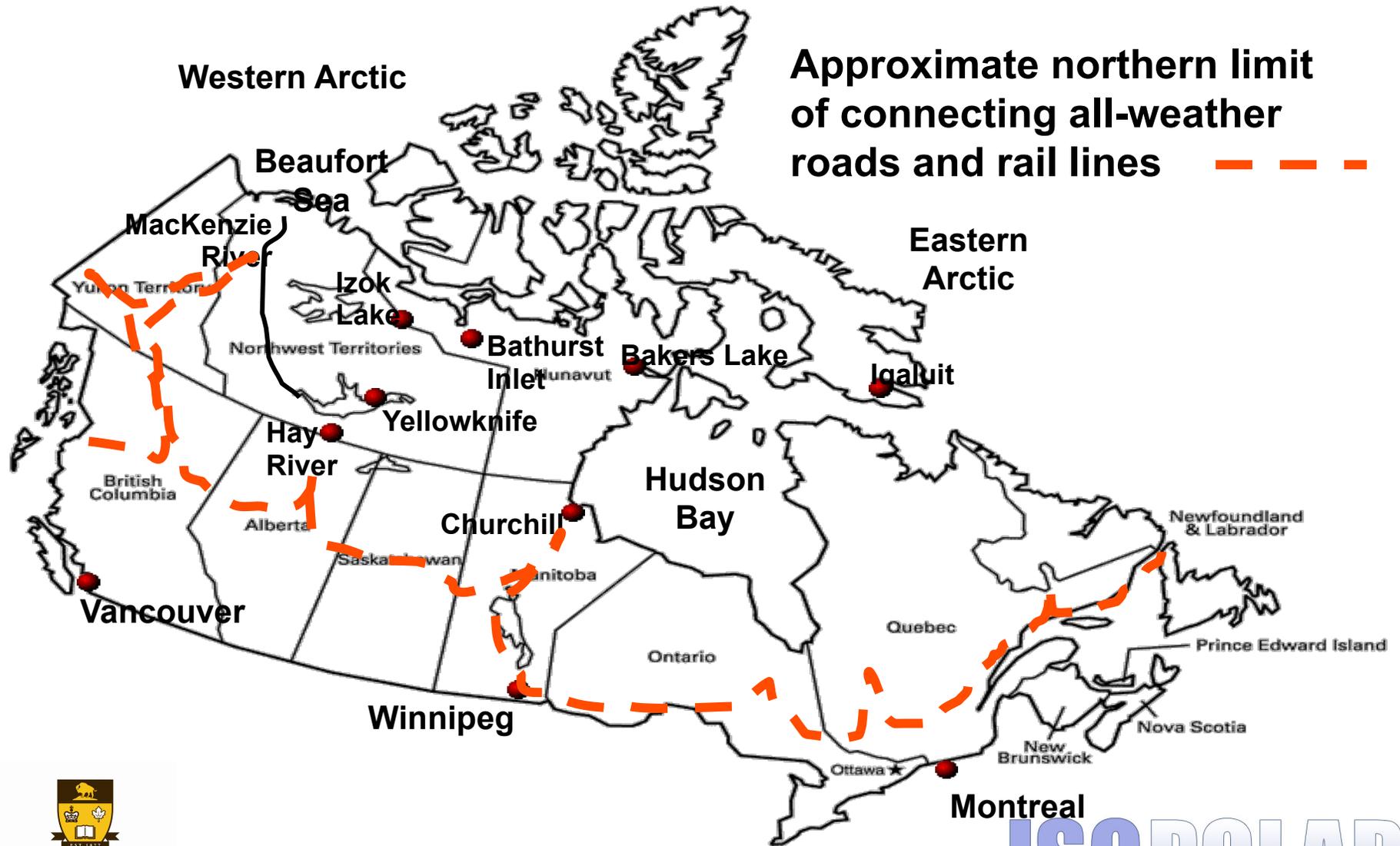
- **Public goods provision**
 - Security and safety
 - High-cost infrastructure
 - Education and research
- **Climate for economic stability and growth**
 - Ending economic disparities
 - Building business confidence
- **Market failure regulation**
 - Controlling monopoly power
 - Minimizing negative externalities



Assurance of security and safety



Provision of high-cost infrastructure

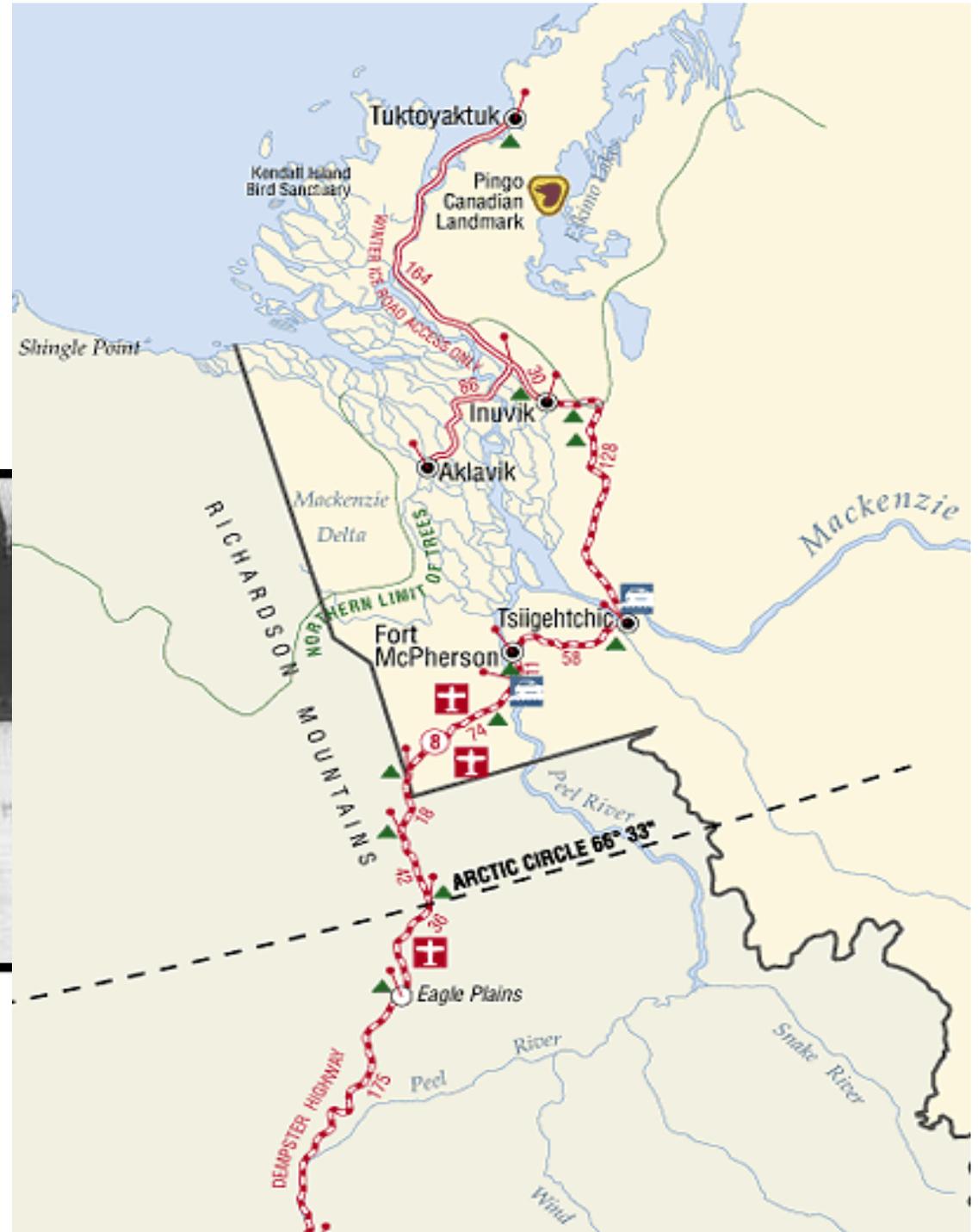


High-cost of infrastructure provision in the North

- **Construction Challenges**
 - Vast Distances
 - Difficult Terrain and Drainage
- **Cost-Benefit Ratios**
 - Thin Markets
 - Few Backhauls
- **Environmental Conditions**
 - Delicate Flora and Fauna
 - Permafrost & Climate Change



Chronic Infrastructure Gaps



Regional economic disparities

High Freight Rates

- Small, old aircraft
- Short, gravel runways
- Few backhaul opportunities
- Monopoly service providers
- Inefficient ground handling



Aircraft Cost Comparison for a 300 km Flight

Aircraft Type	Cargo (kg)	Cost (\$/km)	Cost (\$/kg)	Airstrip (m)
Twin Otter	955	\$6.50	\$4.09	310
DC3	2500	\$10.60	\$2.46	925
Curtis C-46	6800	\$17.95	\$1.58	1075
DHC Buffalo	7500	\$17.00	\$1.37	925
Hercules	20000	\$28.50	\$0.86	1700



Freight Rates, Food Prices and Poverty

<u>Winter 2005</u>	<u>St. Theresa Point</u>	<u>Winnipeg</u>
• Milk 4 Litres	\$ 12.19	\$ 3.48
• Tomatoes	\$ 3.80 lb	\$ 1.99 lb
• Bananas	\$ 2.31 lb	\$ 0.59 lb
• Apples, Macintosh	\$ 2.94 lb	\$ 1.29 lb
• Head Lettuce	\$ 2.69 each	\$ 1.49 each
• Bread 60%	\$ 2.49 each	\$ 0.99 each
• Ground Beef	\$ 9.19 Kilo	\$ 4.29 Kilo
• Red Potatoes	\$ 1.60 lb	\$ 0.79 lb
• Cheerios	\$ 8.45 box	\$ 3.50 box
• Coke 2 Litres	\$ 7.99	\$ 2.09
• Coffee	\$ 11.89 Kilo	\$ 6.99 Kilo

Total Basket \$ 65.54

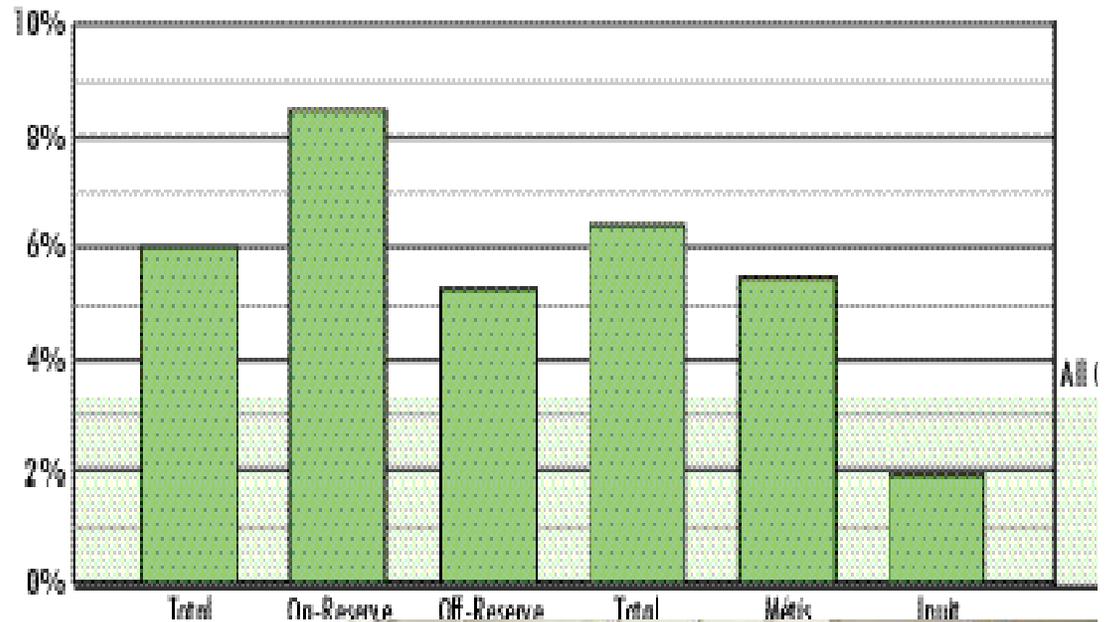
\$ 27.49



Source: *Diabetes in Aboriginal People in Canada: The Evidence*, Health Canada, 2000.

Food Prices, Food Choices and Healthcare

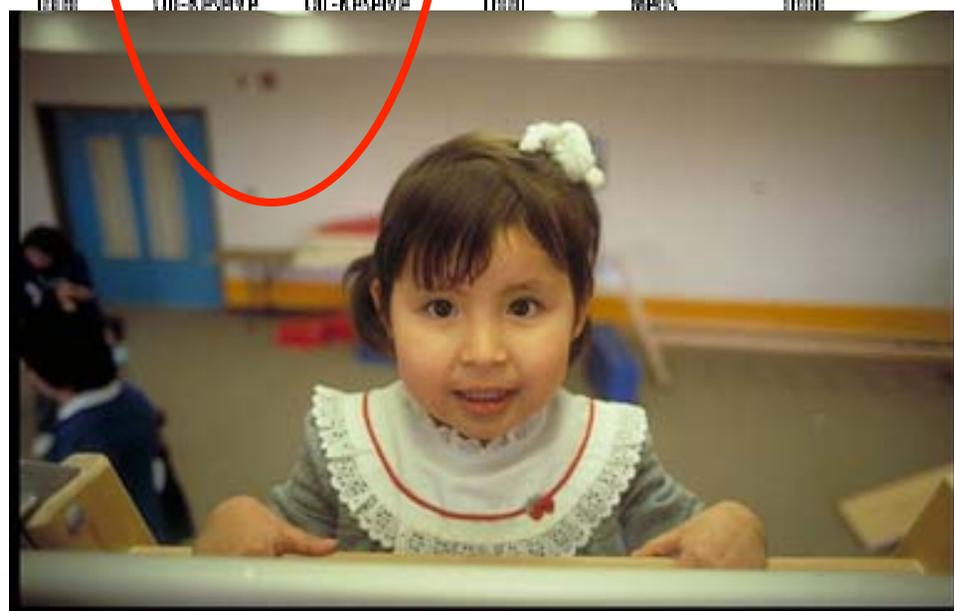
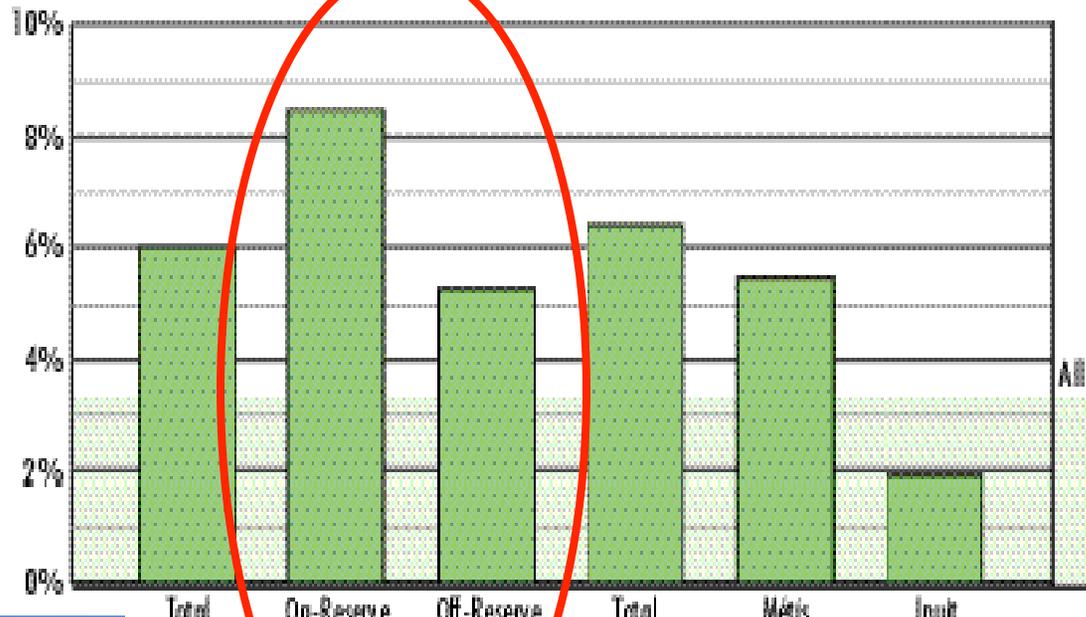
Crude Prevalence of Self-Reported Diabetes from the Aboriginal Peoples Survey, 1991



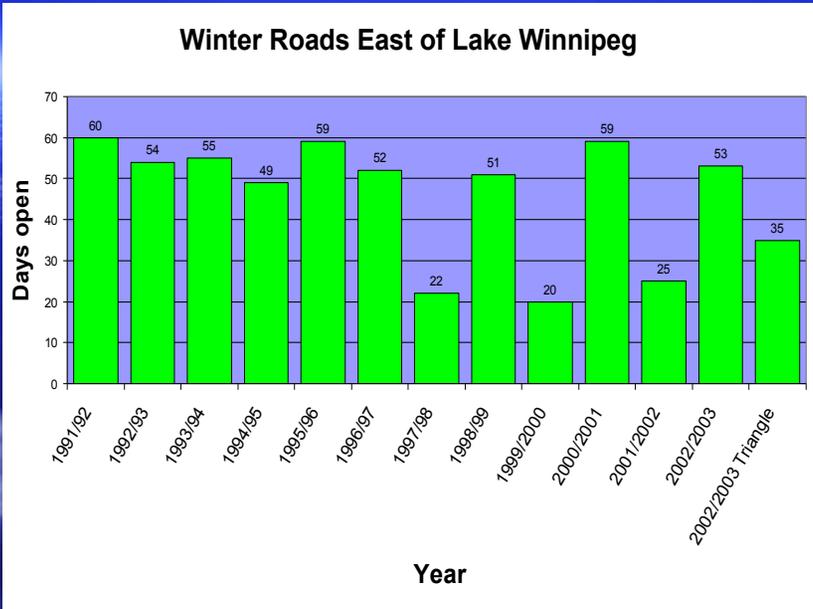
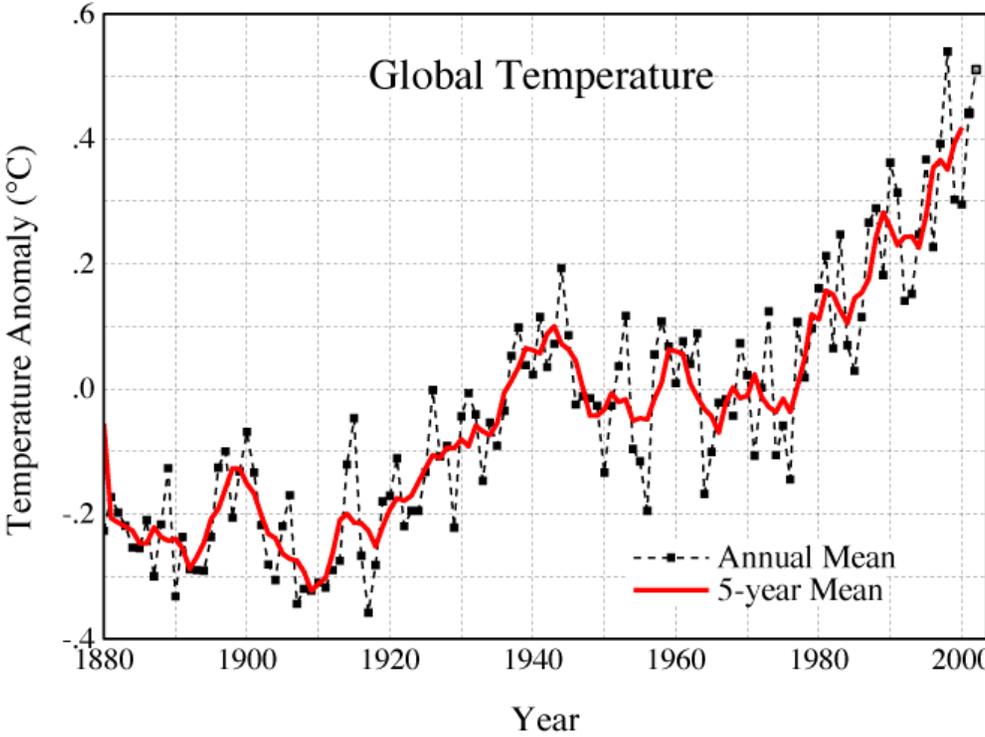
Source: *Diabetes in Aboriginal People in Canada: The Evidence*, Health Canada, 2000.

Poverty, Food Prices and Healthcare

Crude Prevalence of Self-Reported Diabetes from the Aboriginal Peoples Survey, 1991



Shorter season, less reliable ice roads for remote communities and resource developments





Real Ice Road Trucker Tales

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Cost Comparison: Ice Road vs. Air Freight

NORTH SPIRIT LAKE (40,000 to 50,000 lbs – 6 to 7 loads per house)

WINTER ROAD	\$ 17,689.00	\$ 0.44 to \$ 0.33 per lb.
WINNIPEG TO NORTH SPIRIT LAKE VIA RED LAKE		
AIR FREIGHT		
VIA ROAD / WINNIPEG TO RED LAKE	\$ 7,200.00	
VIA WASAYA AIR TO NSL	\$ 34,384.00	
LOCAL HANDLING	\$ <u>4,320.00</u>	
	\$ 45,904.80	\$ 1.15 to \$ 0.92 per lb.

KEEWAYWIN (40,000 to 50,000 lbs – 6 to 7 loads per house)

WINTER ROAD	\$ 30,625.00	\$ 0.77 to \$ 0.61 per lb.
WINNIPEG TO KEEWAYWIN VIA PICKLE LAKE		
AIR FREIGHT		
VIA ROAD / WINNIPEG TO PICKLE LAKE	\$ 7,200.00	
VIA WASAYA AIR TO KWY	\$ 35,454.80	
LOCAL HANDLING	\$ <u>4,320.00</u>	
	\$ 46,974.80	\$ 1.17 to \$ 0.94 per lb





Large volumes of fuel and heavy equipment to move



Problems with indivisible loads



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Resource Development Calculus

1. **Cost of building & maintaining all-weather roads**
2. **Delays in obtaining environmental approval and native land claims**
3. **Stranded assets and costly rehabilitation liability**

Or

1. **Unreliable ice roads with annual construction and maintenance cost**
2. **High inventory carrying costs, storage infrastructure and losses**

Or

1. **Transport Airships**

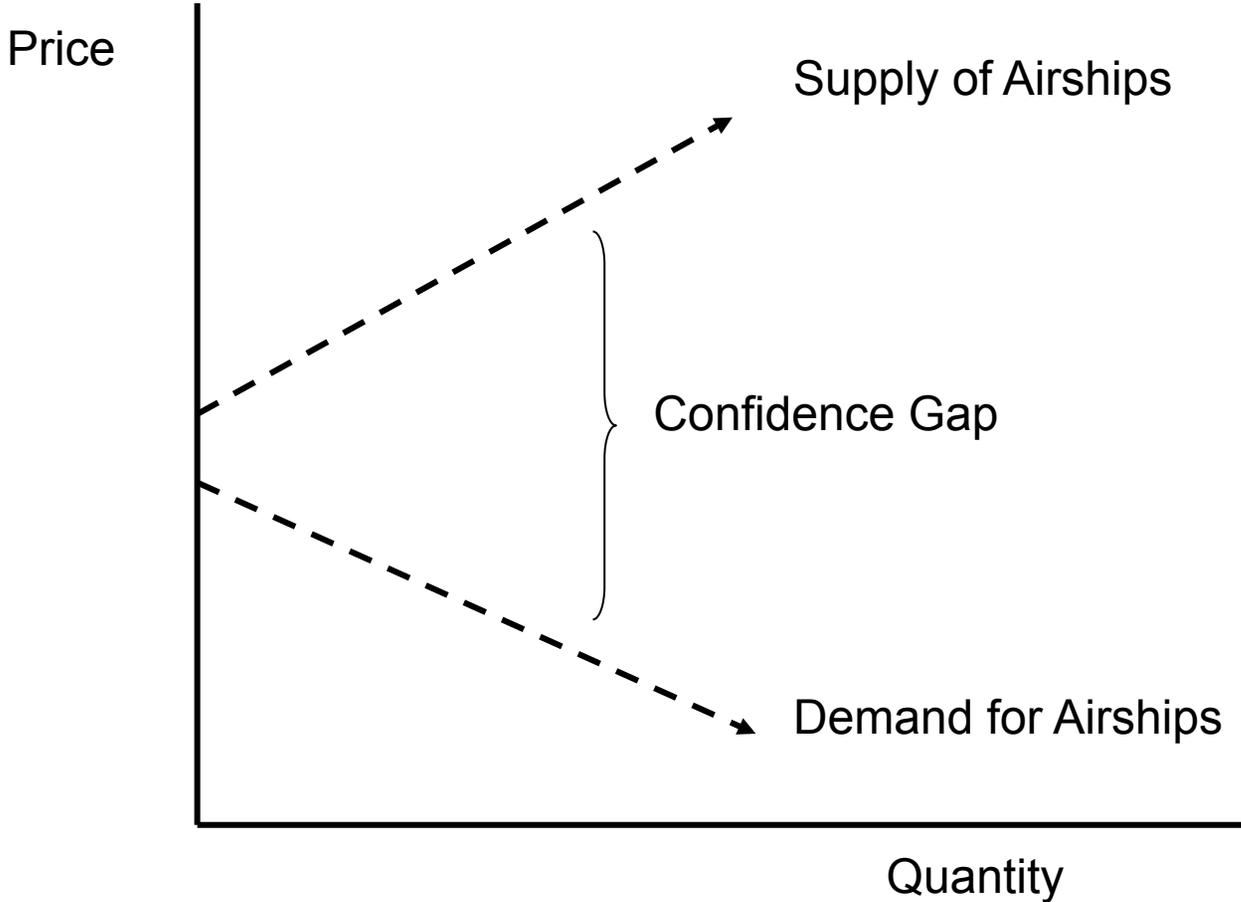


If airships work so well, why are they rare?

- **Shipper doubts**
 - **How do they work?**
 - **What can they do?**
 - **What are the real costs?**
 - **Why such large crews?**
 - **Why the dependence on advertising?**
 - **Why are there not more operators?**



Lack of Business Confidence



Government has traditional roles where the market fails to provide a solution

- **Education**
 - Pilots, AMEs, Engineer
- **Research**
 - Cold weather, cargo/ground handling, etc.
- **Regulations**
 - Operating and air-worthiness
- **Infrastructure**
 - Hangars



Government has a legitimate role in creating business confidence

- **Policy tools to prime the pump**
 - **Public/Private Partnerships**
 - **Loan Guarantees**
 - **Grants and Special Tax Incentives**
 - **Public Acquisition**
 - **Creation of Joint Ventures and Consortiums**
- **Reduction of risk**



Argument for Publically-owned Airship Hangars

- **Accelerate technological development**
- **Reduce business risk**
- **Contain monopolies**

Goodyear Airdock in
Akron, Ohio, constructed
in 1929 by the Goodyear
Zeppelin Corporation



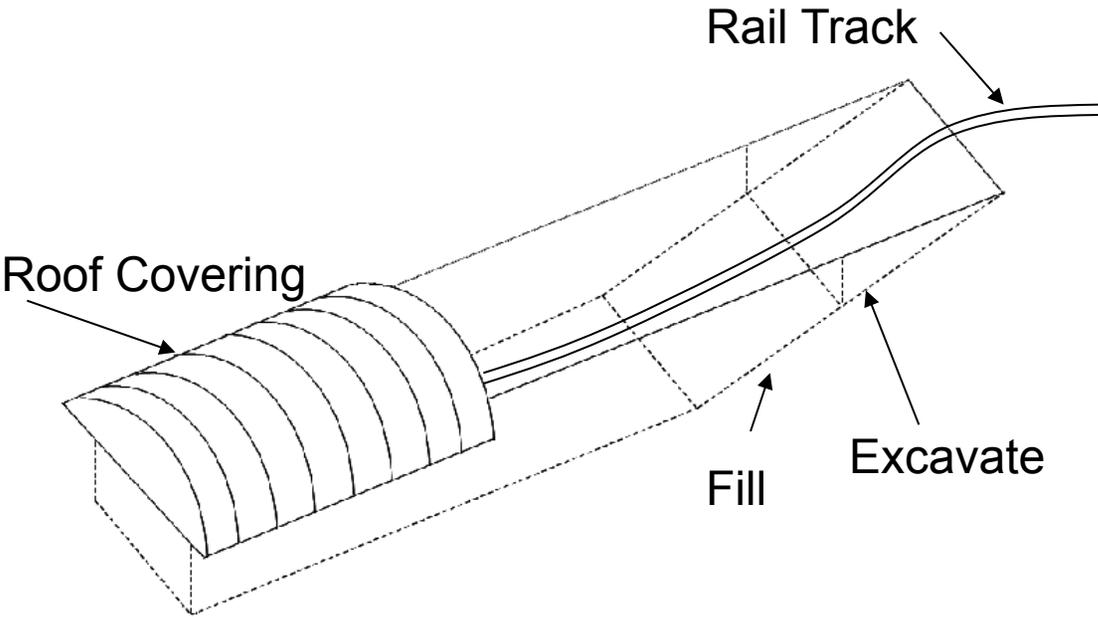
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Canadian Airship Hangar, circa 2011



Airship hangars may find a solution in northern mining areas



Why a public policy for airships in the North is justified

- **Public goods provision**
 - Security and safety
 - High-cost infrastructure
 - Education and research
- **Climate for economic stability and growth**
 - Ending economic disparities
 - Building business confidence
- **Market failure regulation**
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Concluding Remarks

The denial of access is the greatest economic barrier to the development of mineral and energy resources in the North.

Transport airships allow Alaska and the Canadian Territories to maintain control of their future.

Government has a role where the market fails to provide a solution.

