How to Win the Pavement Selection Contest

Illinois Asphalt Pavement Association

March 2003

Roadmap

- Efficient reliable transportation
- Focus on reliability
- Doing so will win
- More so in future


FLYER


BOEHL


SLOW
BUMP

Tools

- Quality
- Innovation
- Contract incentives
- Life cycle cost analysis

Quality

- Investments that make the road last
- Investments well worth the cost


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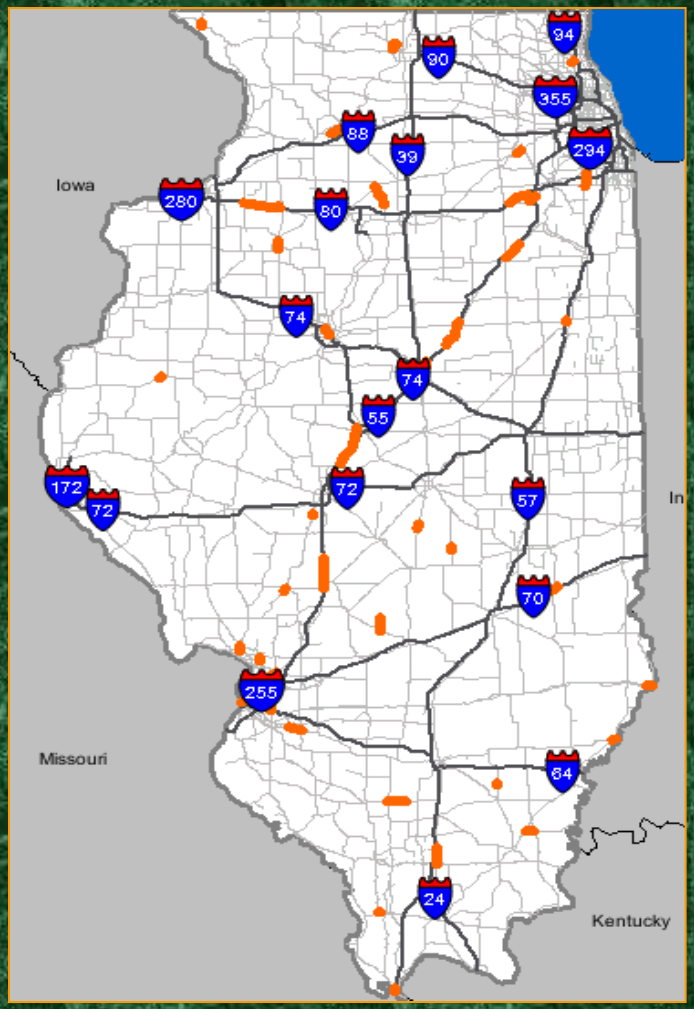
Illinois Asphalt Industry

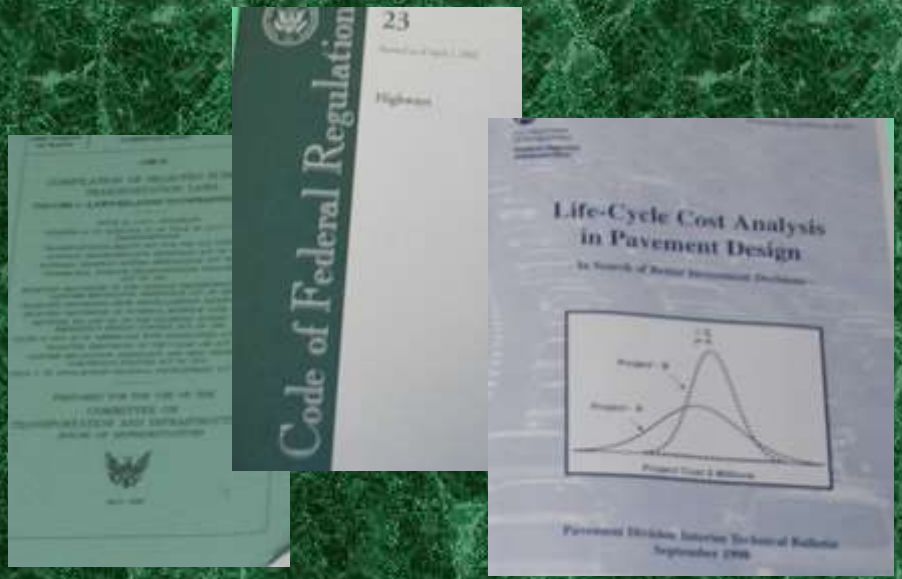
Contract Incentives

- A plus B, lane rental
- Most direct
- Most expensive
- $ here save days
- Quality saves years



Life Cycle Cost Analysis

- Add up the costs over life of design
- Convert to current $
- Select the lowest cost



Life Cycle Cost Elements

- Construction ------ $
- Rehabilitation ---- future $
- Delay to traffic --- time?

Does Delay Cost Business?

- Driver's wages
- Capital costs
- Delay in arrival of product

Does Delay Cost You?

- Commute to work
- Car full of kids on vacation
- How much is it worth to you?
- Congestion pricing
- Lots of studies

Delay Hourly Costs

Cars	Trucks	Big Trucks	Spouse
$10 to $13	$17 to 20	$21 to $24	$100

Example: I-55 Springfield

- 25,000 ADT
- 15 minutes
- 30 days

I-55 Calculations

- 25000 ADT X .25 hrs =6,250 hrs/day
- 6,250 hrs X 30 days=188,000 hrs
- 188,000 hours X $10/hour=

$2 million in user delay

Perspective

Rehab	User Delay
$5,000,000	$2,000,000

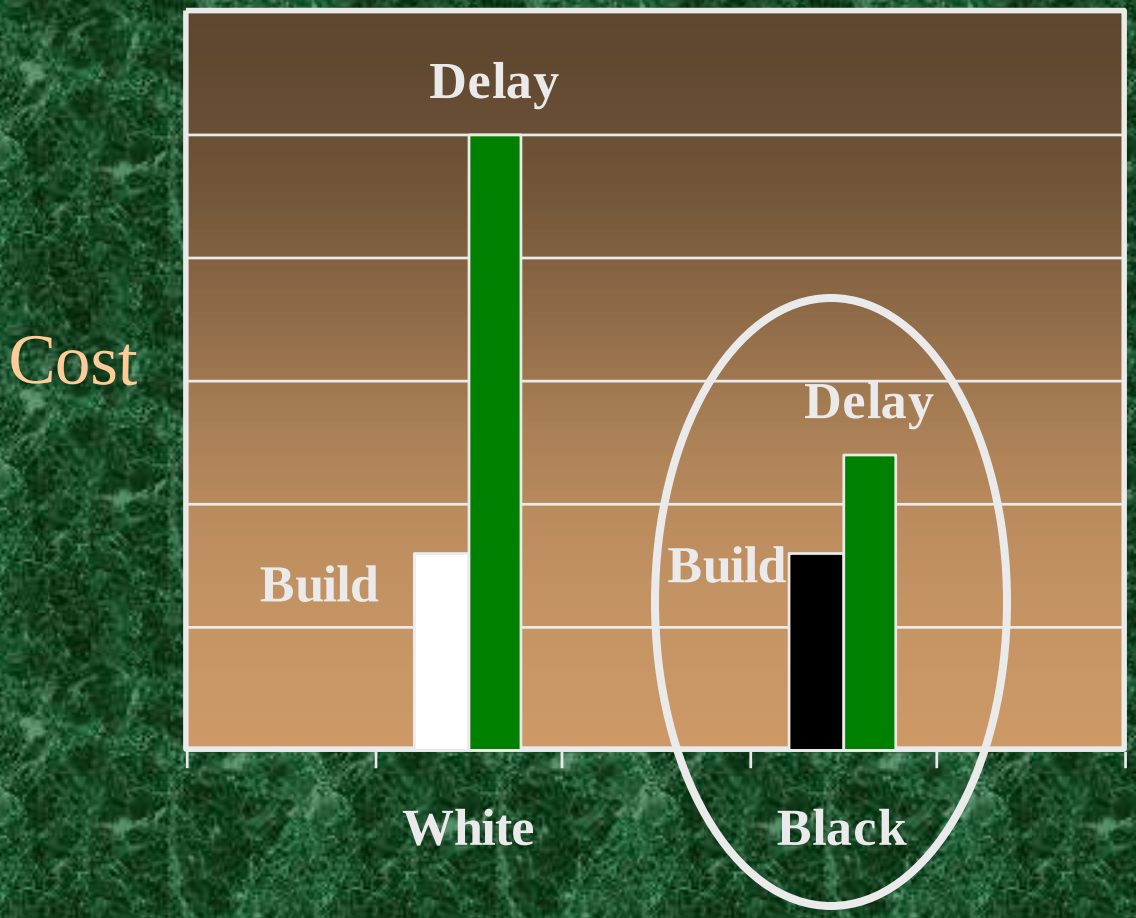
*Patch and overlay 11 miles@ $500K/Mile

User Delay on the Brakes

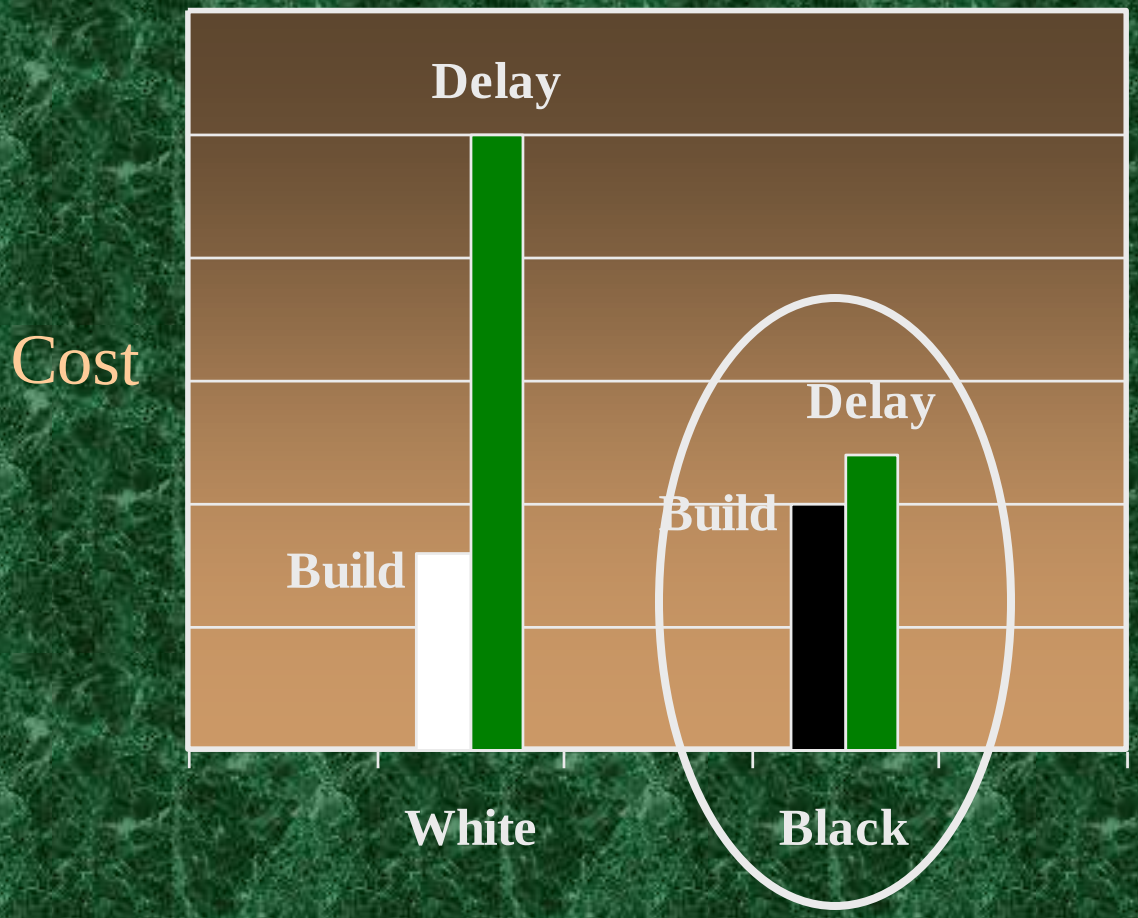
Braking the Bank

- Magnitude makes it difficult
- User delay not considered

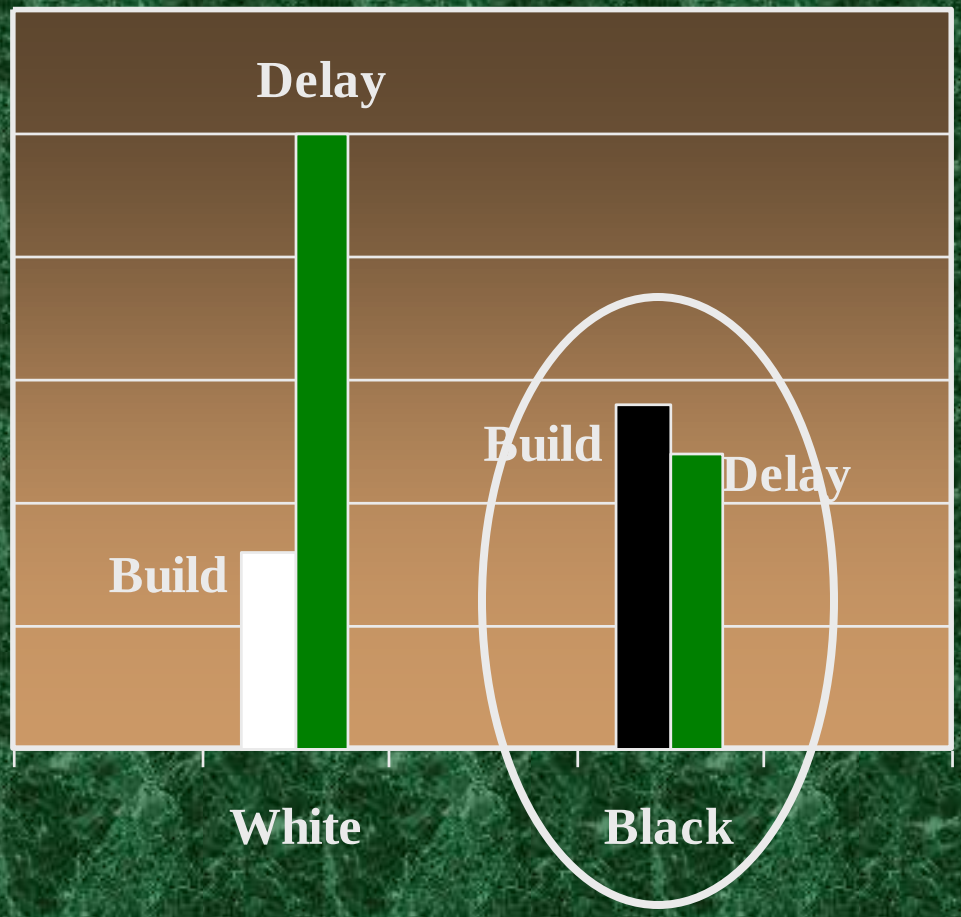
Framework for Selection



A Little More Difficult



More Difficult Yet



The Right Tool For The Job

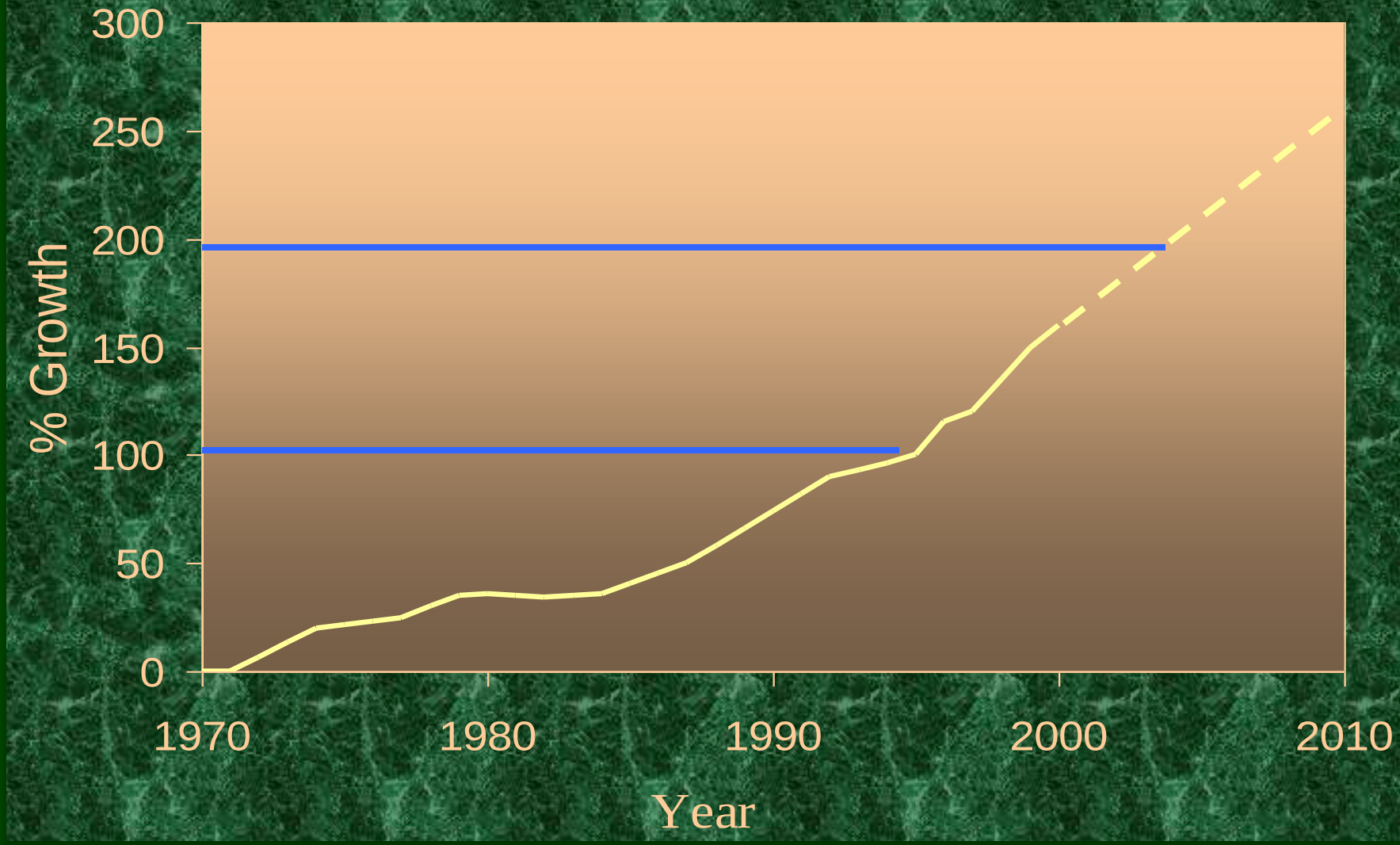
- User delay is real $
- Focus long term
- Rather than first cost
- Balance incentives

Not so Obvious

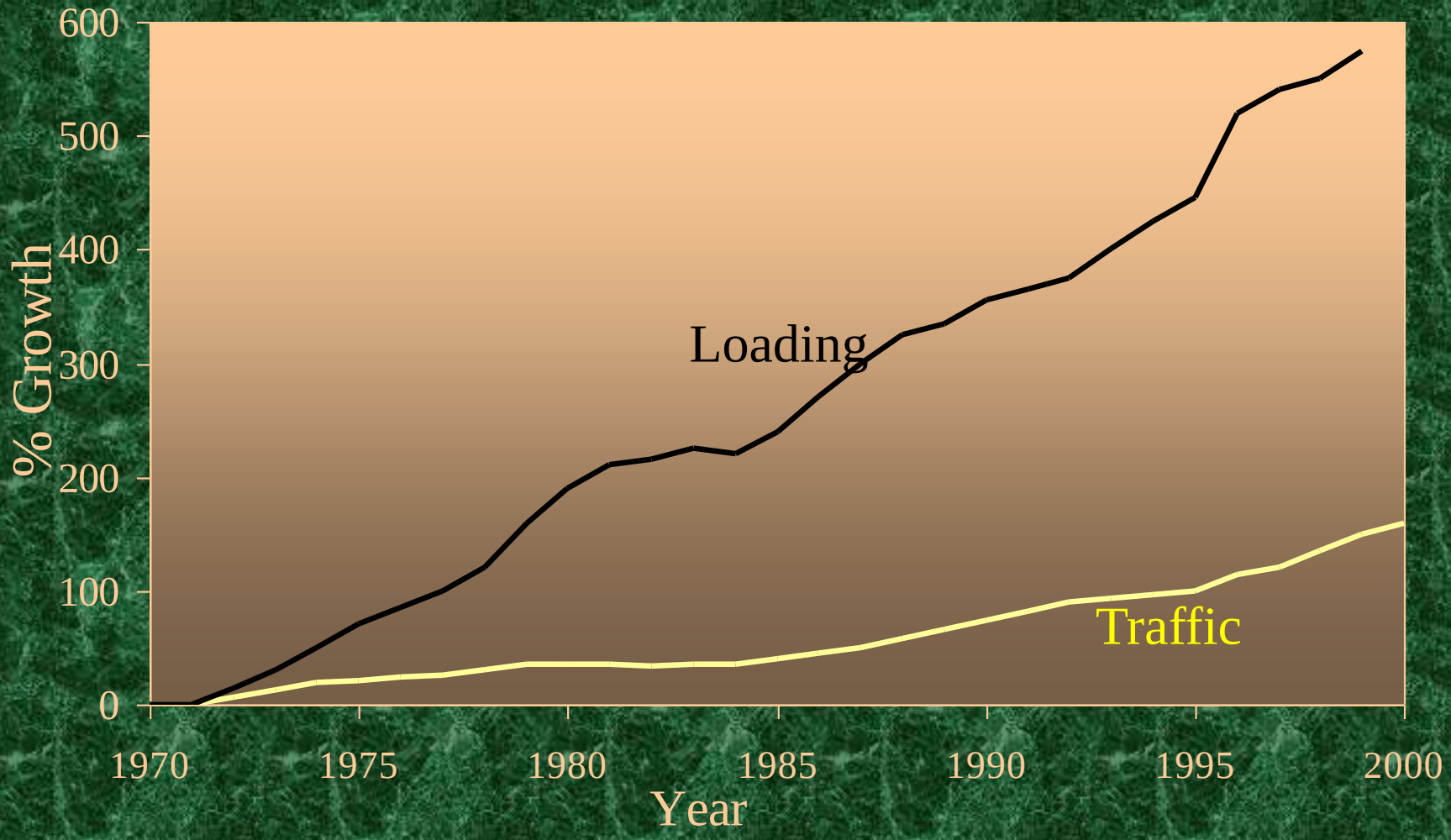
- Delay driving contract incentives
- Selection policies based on delay
- More so in the future

Average Daily Traffic

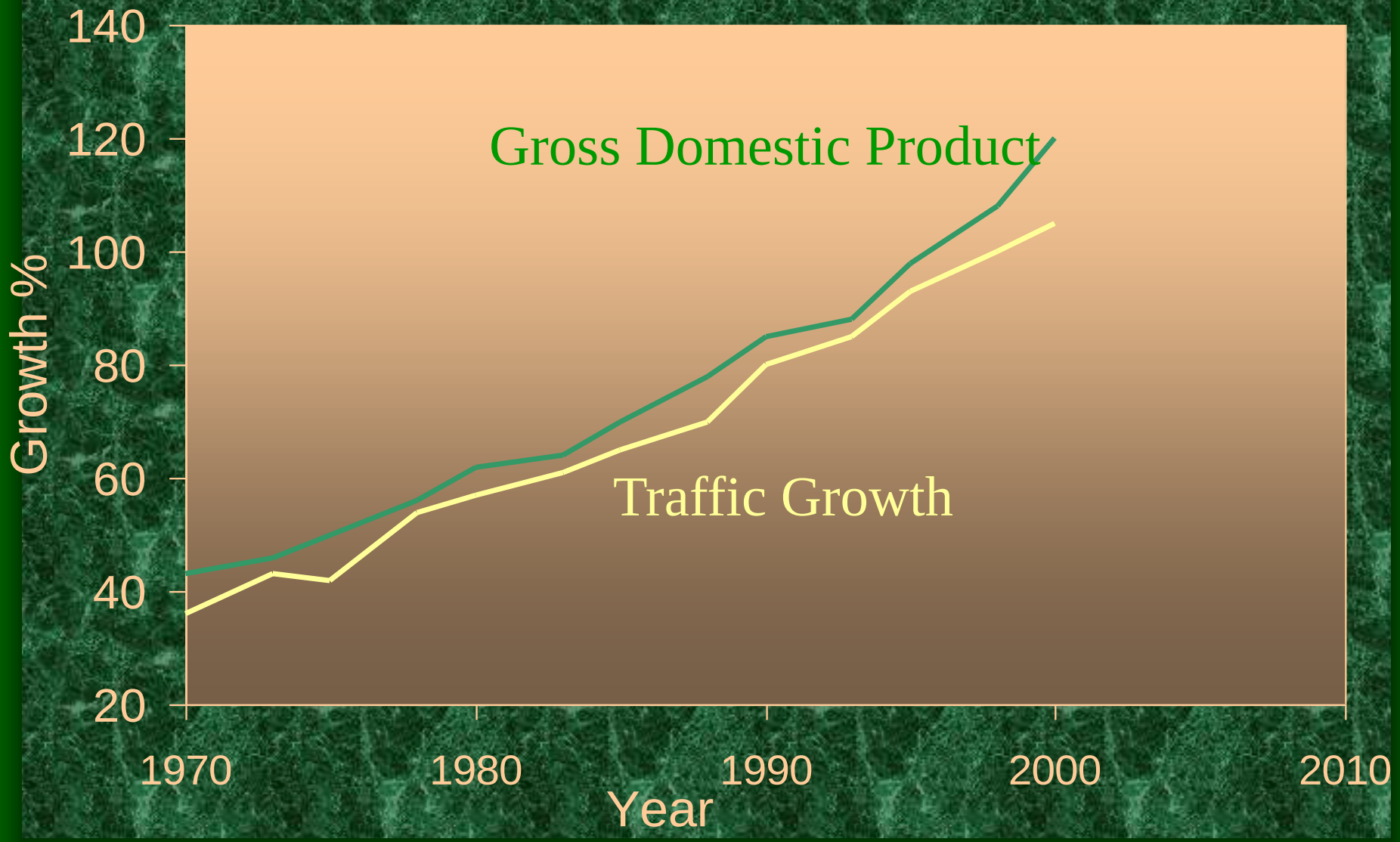
Interstate Traffic Growth



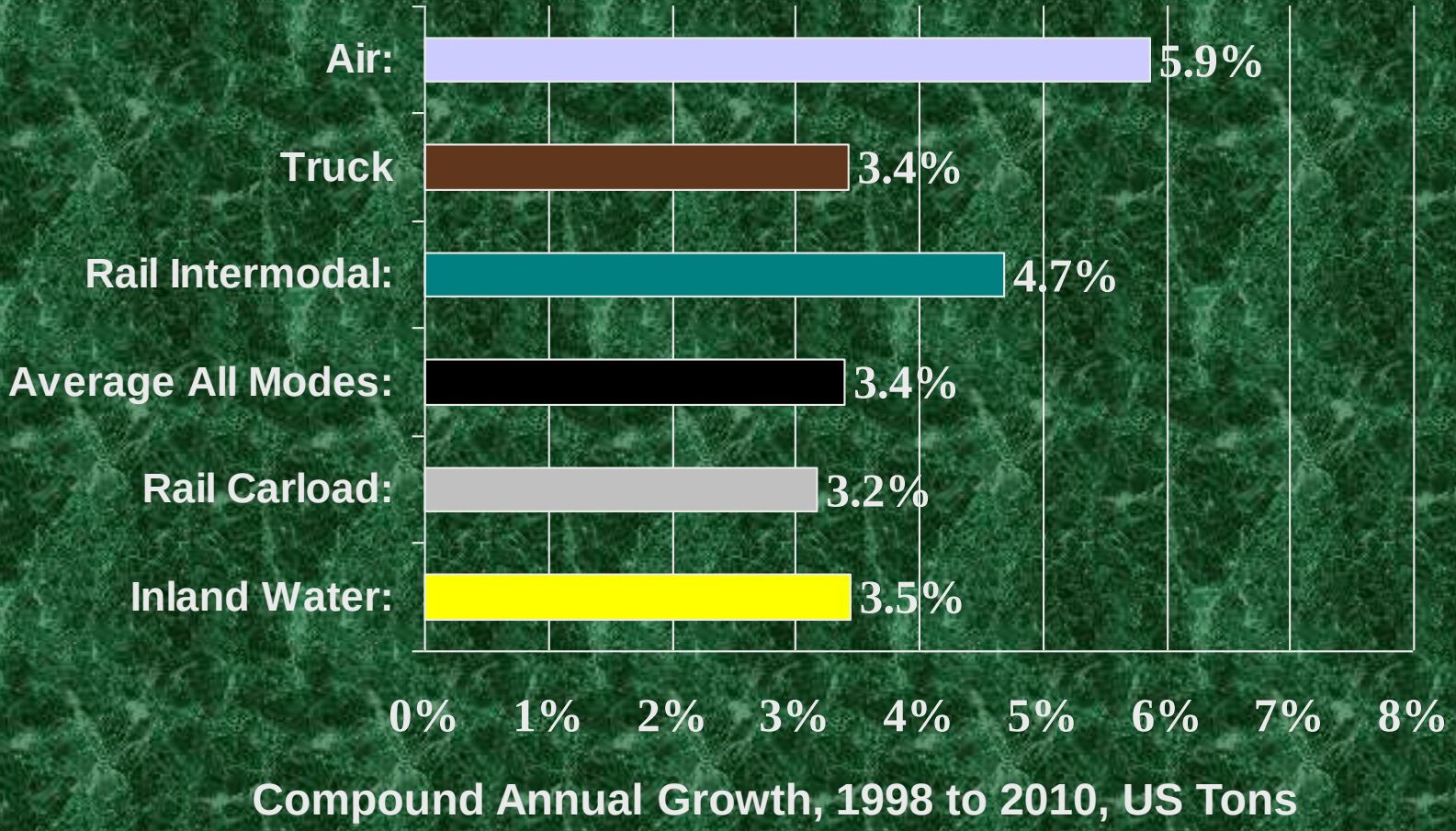
Interstate Loading Growth



Economic Well Being

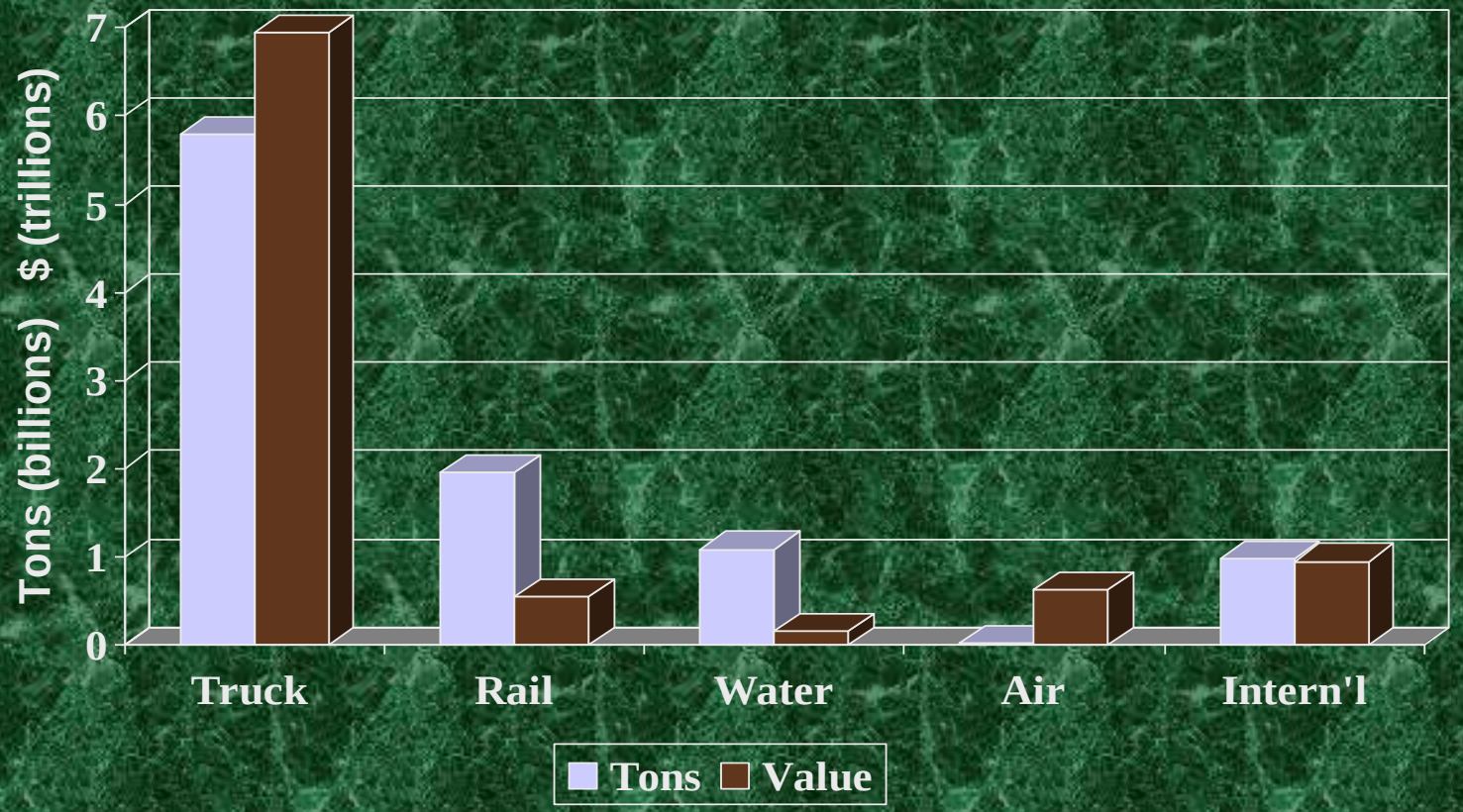


Modal Growth Rates to 2010

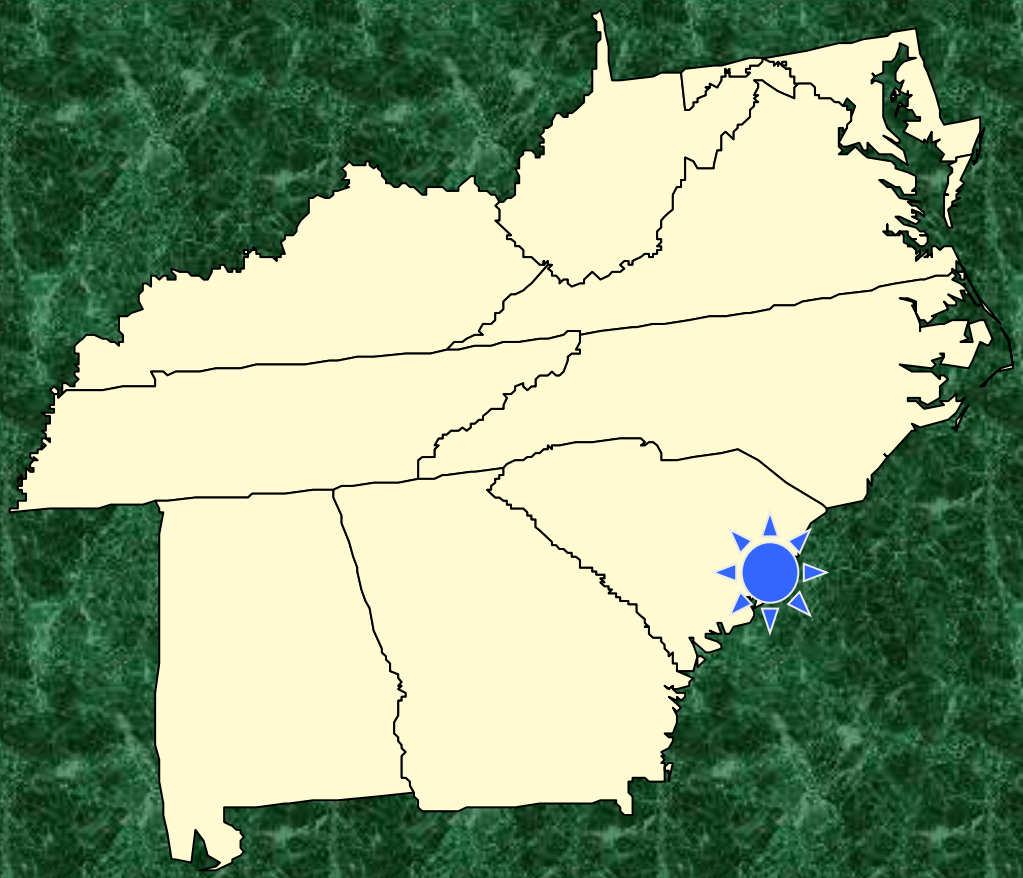


Domestic Freight Tons and Value

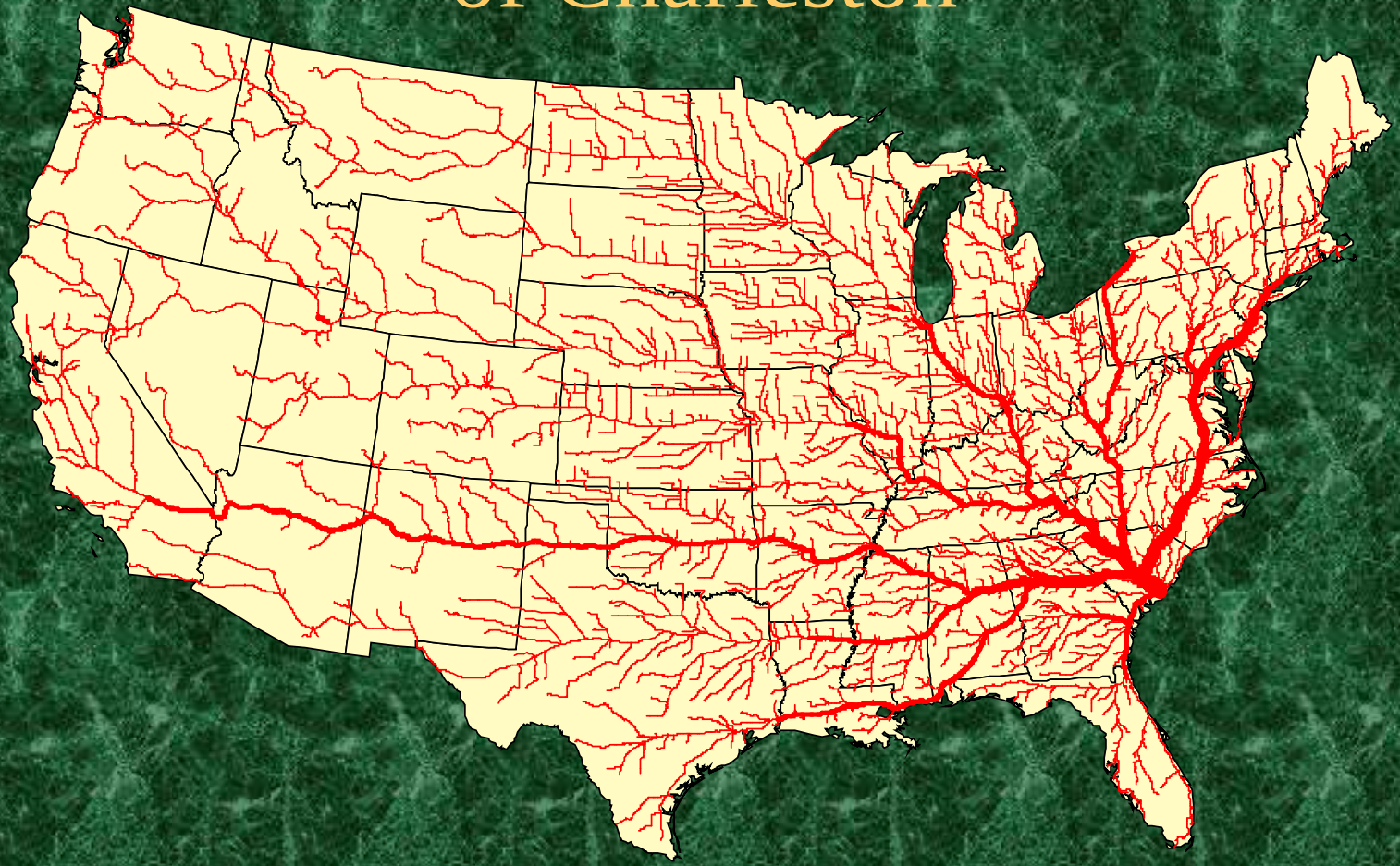
Approximation



Port Example- Charleston

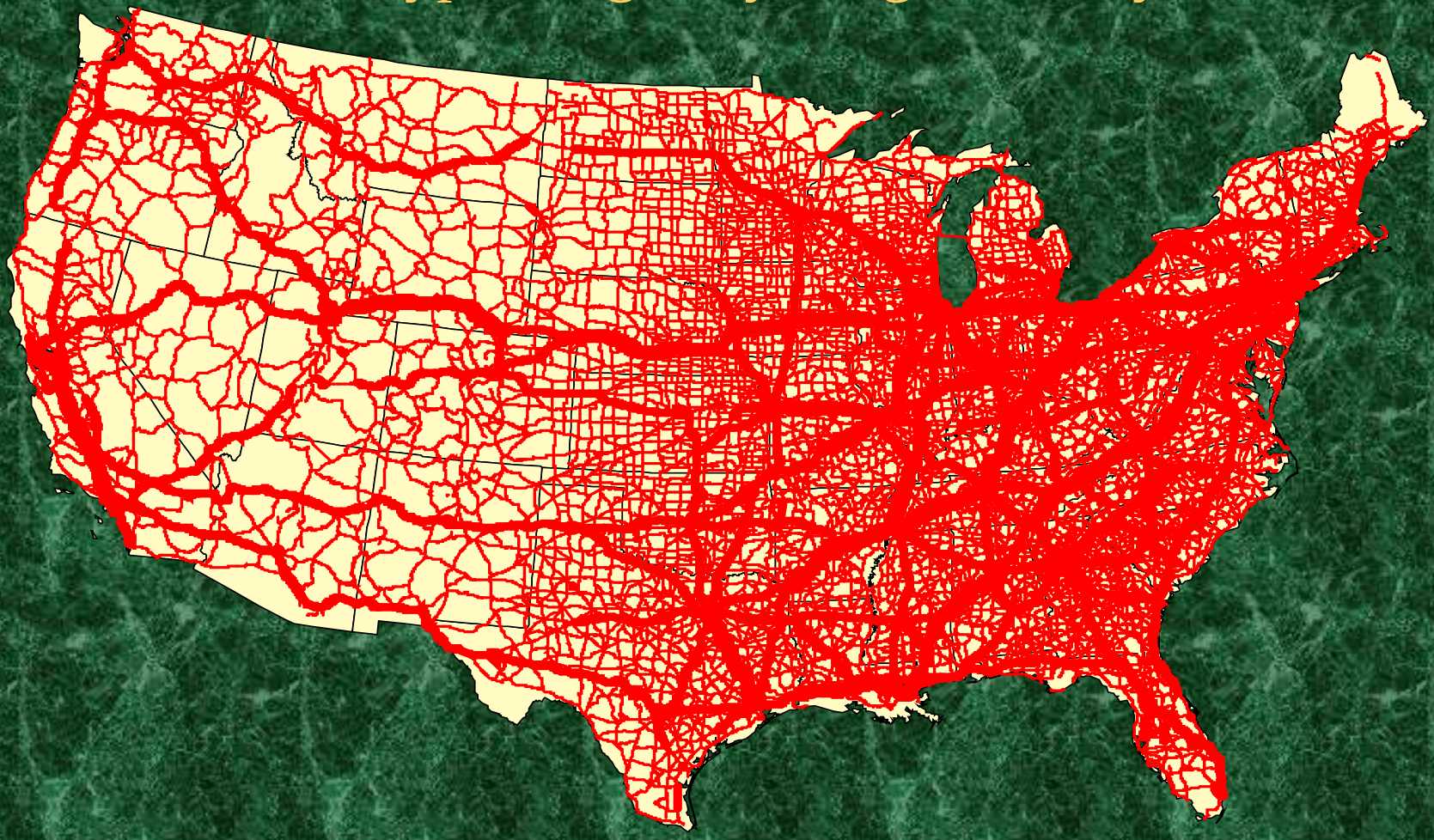


Highway Flows of International Freight Moving into and From the Port of Charleston

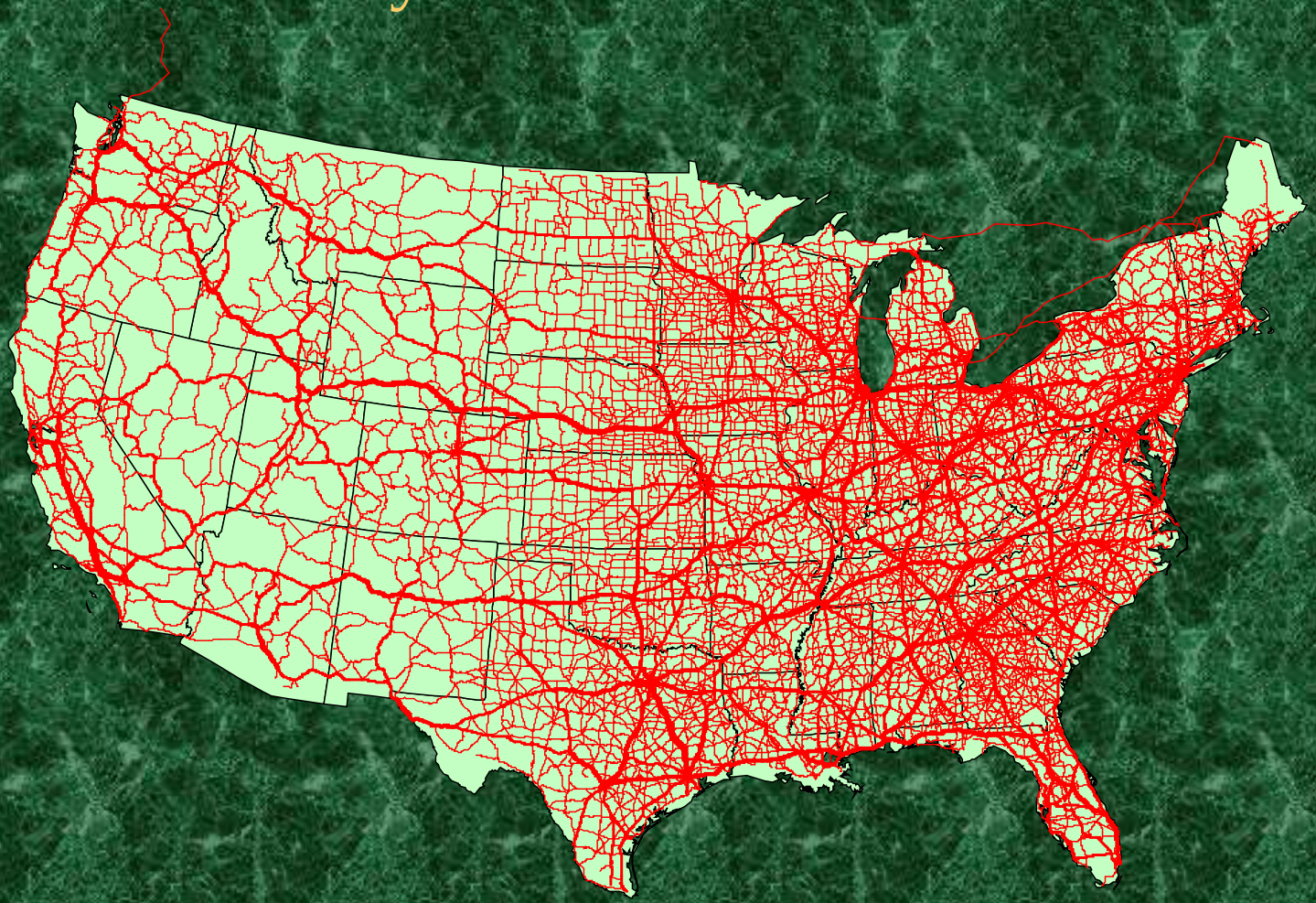


Truck Freight Flows, All Commodities

All truck types; highway freight density in tons



Truck Traffic Growth on Highways, 2020 Density of Incremental US Truck Tons

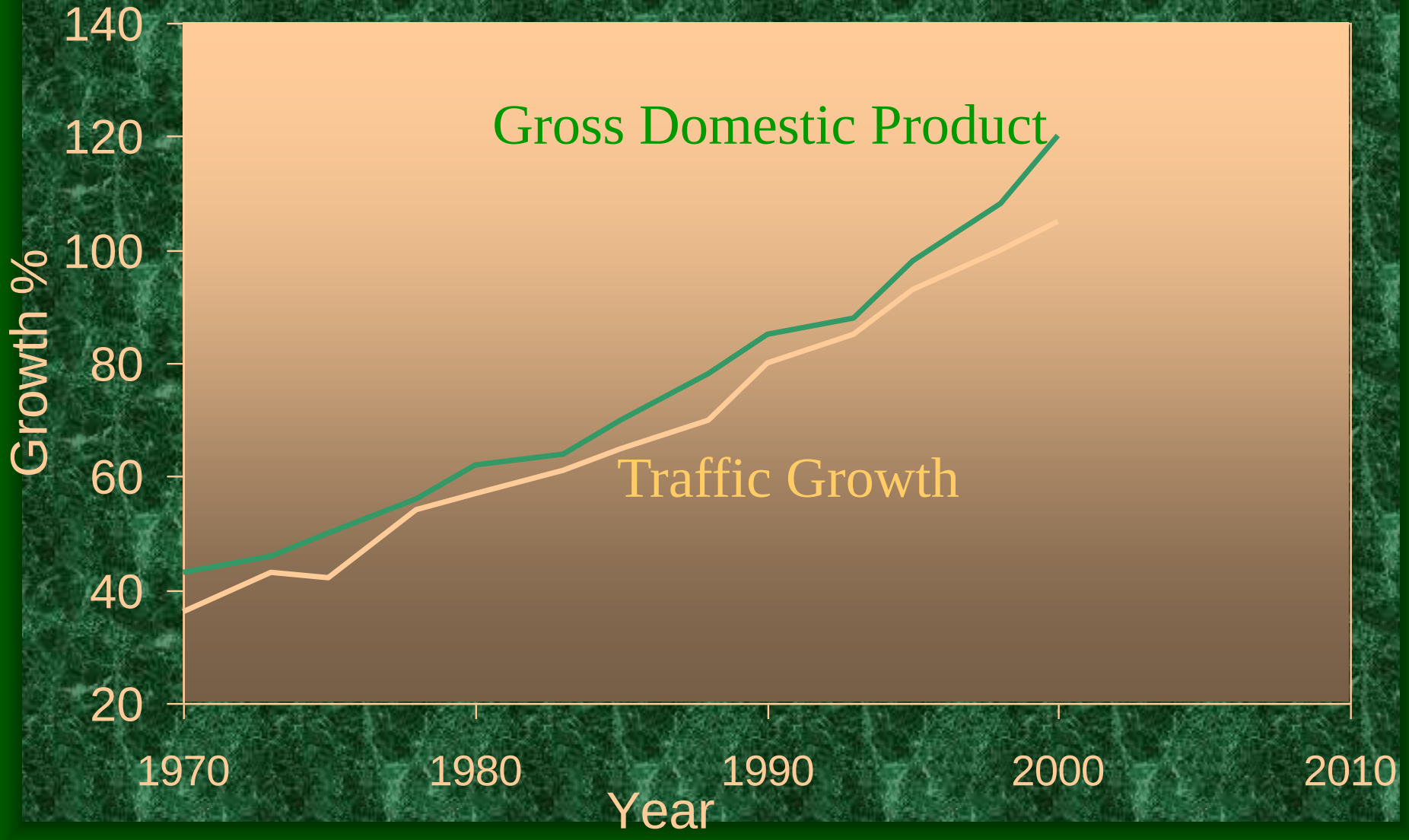


How to Win

- Recognize user delay is real money
- Make your product minimize delay

*Keep up the focus on quality

More Than Just Winning



"You weren't listening.
I said, 'DON'T fall.'"


HYPAC
F150


STOP
HYPAC


Blaw-Knox


ROAD
CONSTRUCTION
5 MILES

Life Cycle Cost Analysis

Life-cycle cost analysis is a process for evaluating the total economic worth of a project by analyzing initial costs and discounted future costs, such as maintenance, user costs, reconstruction, rehabilitation, restoration, and resurfacing costs over the life of the project.

Life Cycle Cost Analysis

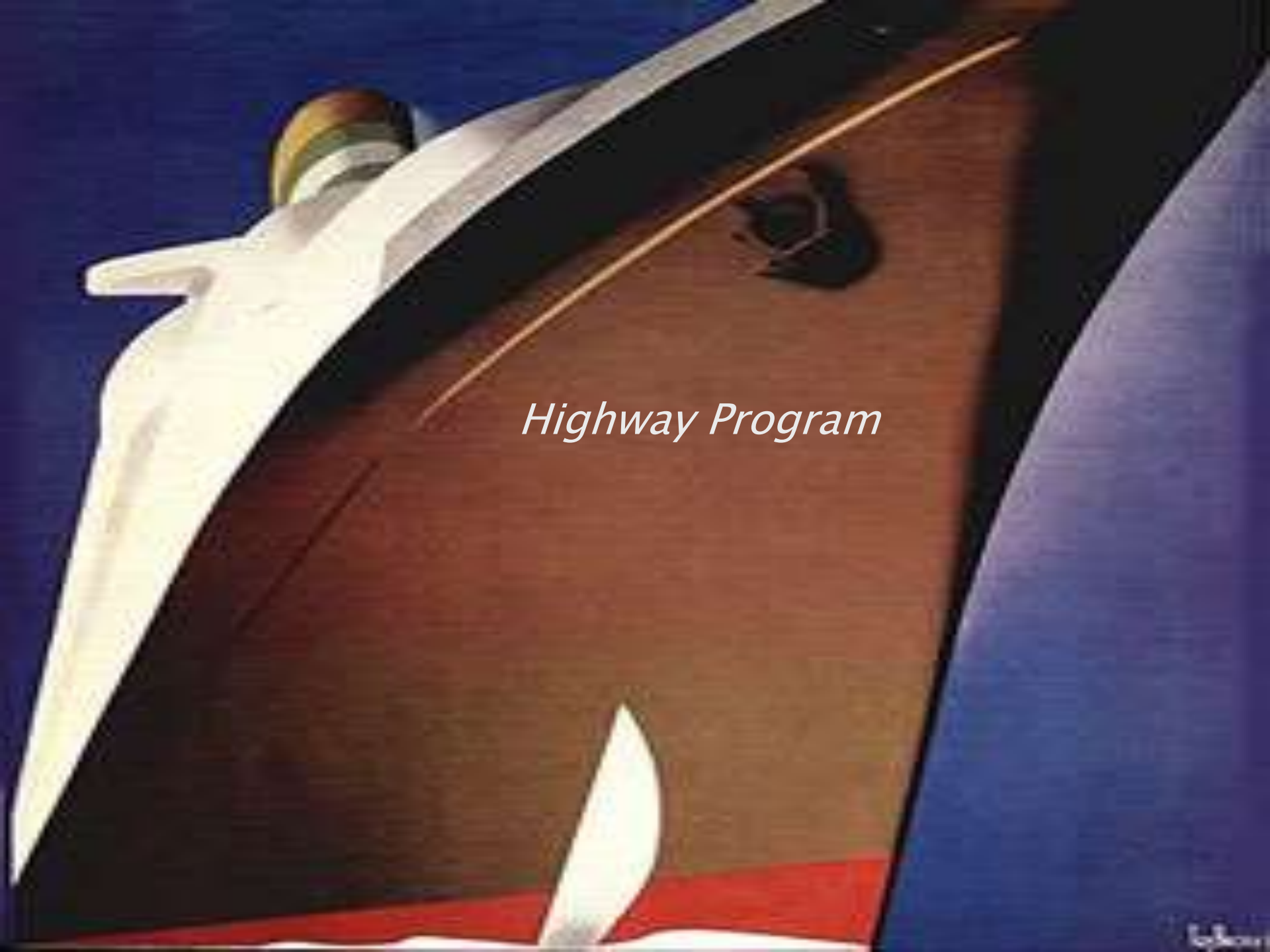
$$NPV = \text{Initial Cost} + \sum_{k=1}^{N} \text{Future Costs}_k \times \left[\frac{1}{(1+i)^{n_k}} \right]$$

i = discount rate

n = year of expenditure

Costs

- Construction
- Maintenance
- Rehabilitation
- Accident costs
- Increased fuel
- Increased pollution
- Circuitous travel
- Vehicular costs
- Delay to vehicles
- Etc, etc.


Highway Program

The Black Art of Asphalt Mixes

Funny Money