

Economic Benefits of NOAA's Navigation Services

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NOAA's Navigation Services

- ...are fundamentally **information to support decisions**
- ...support the nation's maritime transportation system, which includes:
 - Shipping operations
 - Port facilities
 - Spill prevention and response
 - SAR, law enforcement
- ...also generate value in other areas, including:
 - Recreational boating
 - Marine resource management
 - Weather forecasting

Economic Importance of the MTS

- Can be measured in many different ways:
 - Contribution to GDP of all cargo moved by water: about \$800 billion
 - Gross output (sales): \$35 billion
 - Value added (contribution to GDP) by water transportation in the U.S.: \$9 billion
- What is the “right” measure?

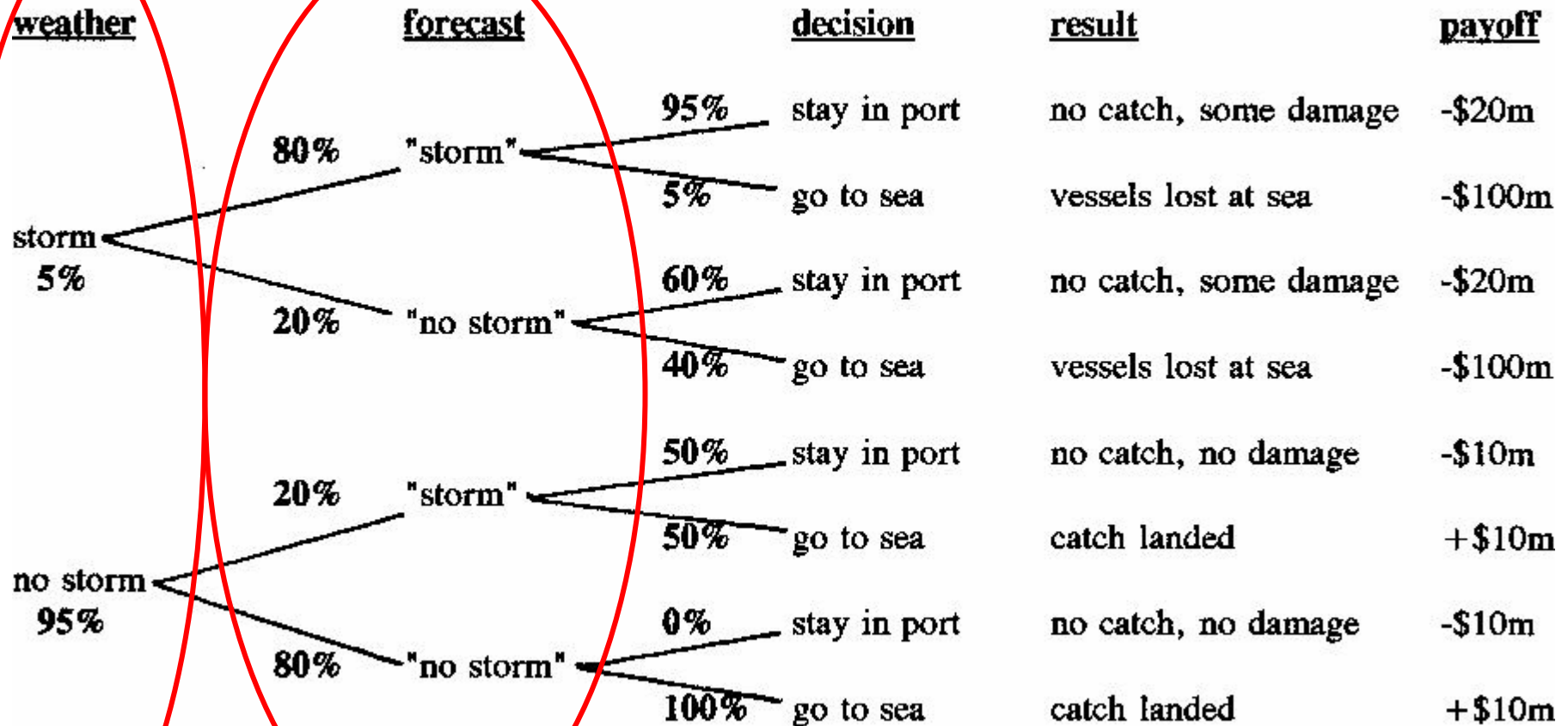
Source of Benefits

- The product is **information** about the environment in which ships operate
 - Chart data: topography/hydrography
 - Tides and currents: dynamic
- Information has value because it is used in economic decisions
- Better decisions lead to improved physical and economic outcomes

Value of information

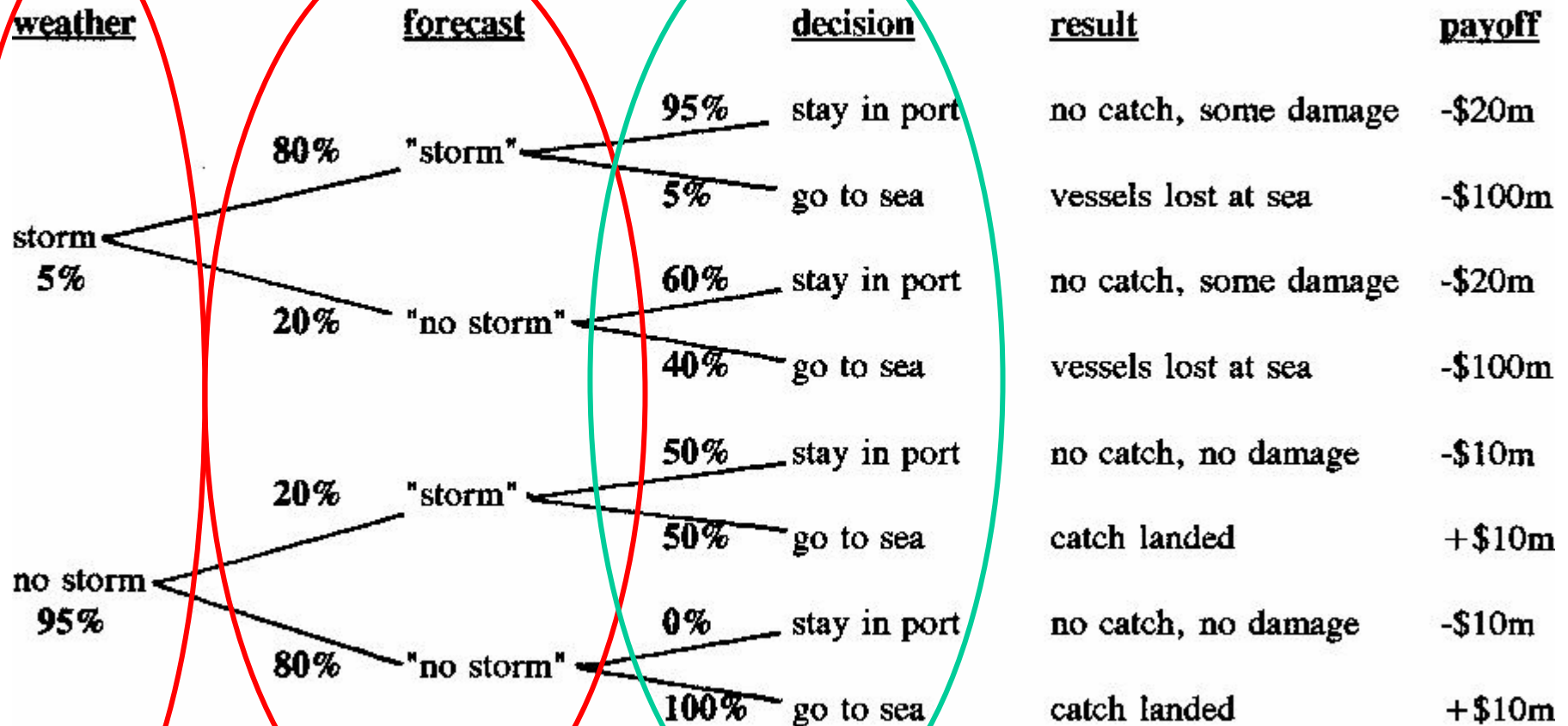
- information has value when it reduces uncertainty in decisionmaking
- contrast **base case scenario** and **new information scenario**
- Example: storm forecast & fishing fleet
 - Present (base case): 80% correct
 - Improved case: 95% correct
 - **What is this worth?**

Figure 1: Example Calculation of Value of Forecast Information: Baseline Case



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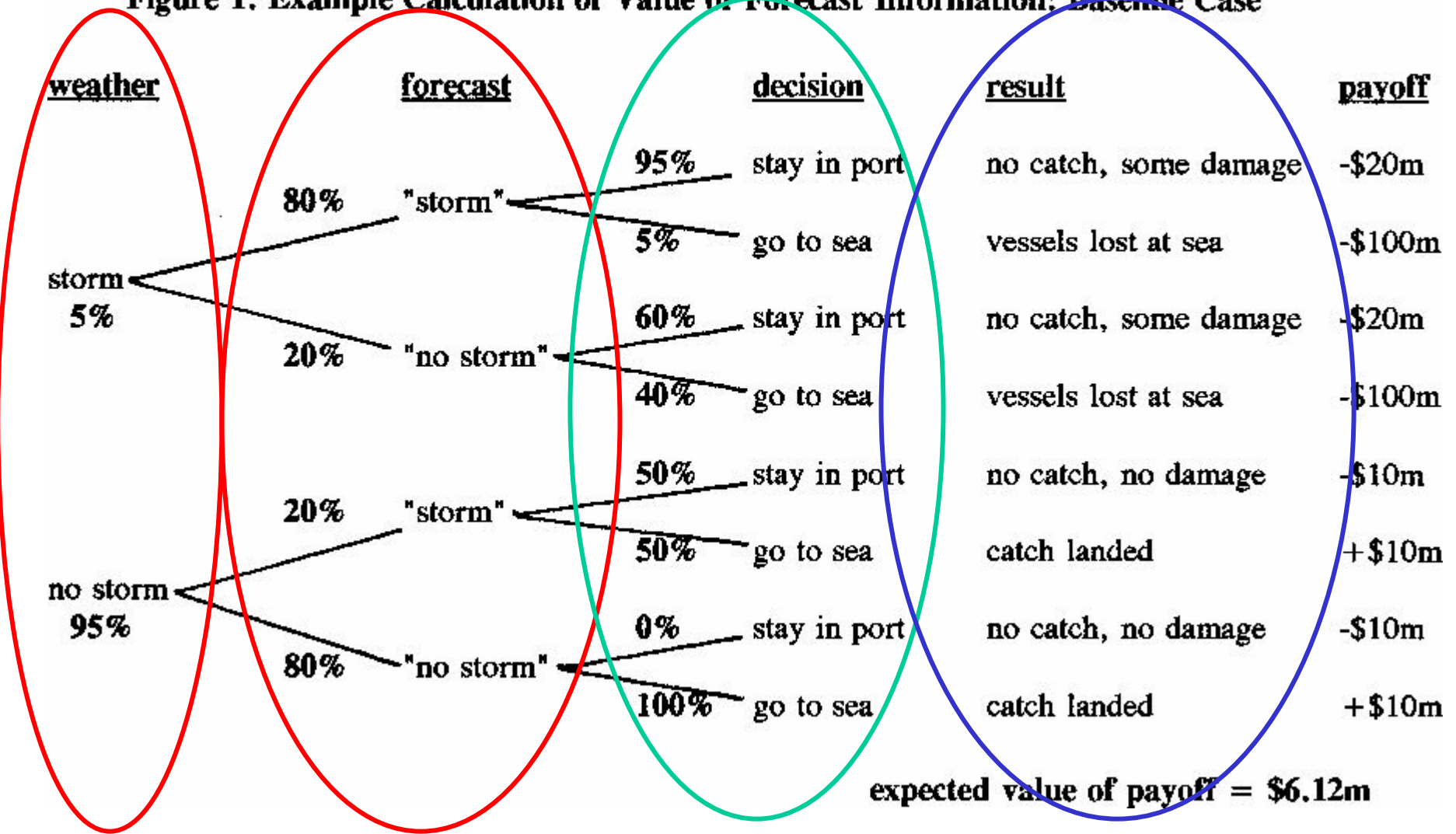


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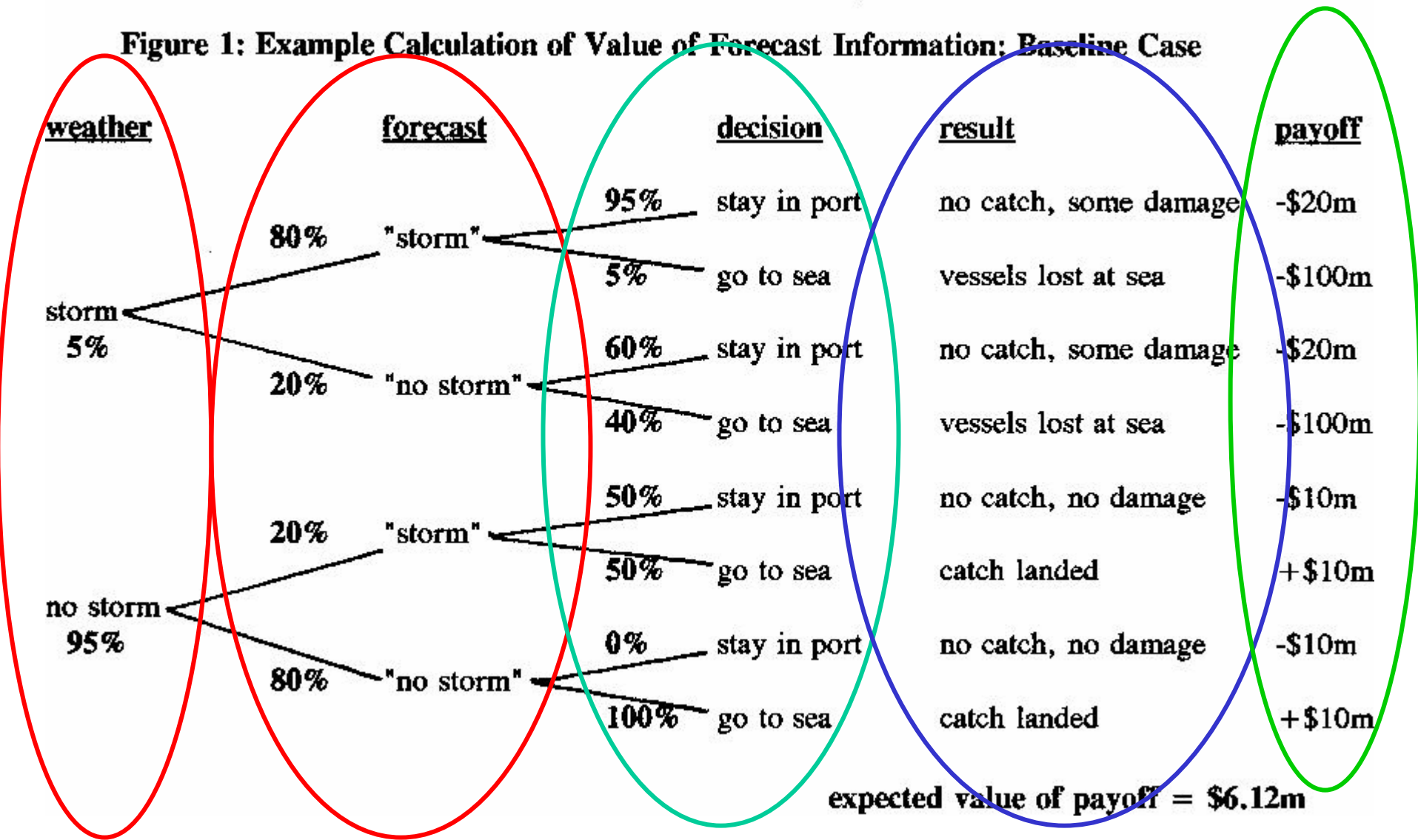
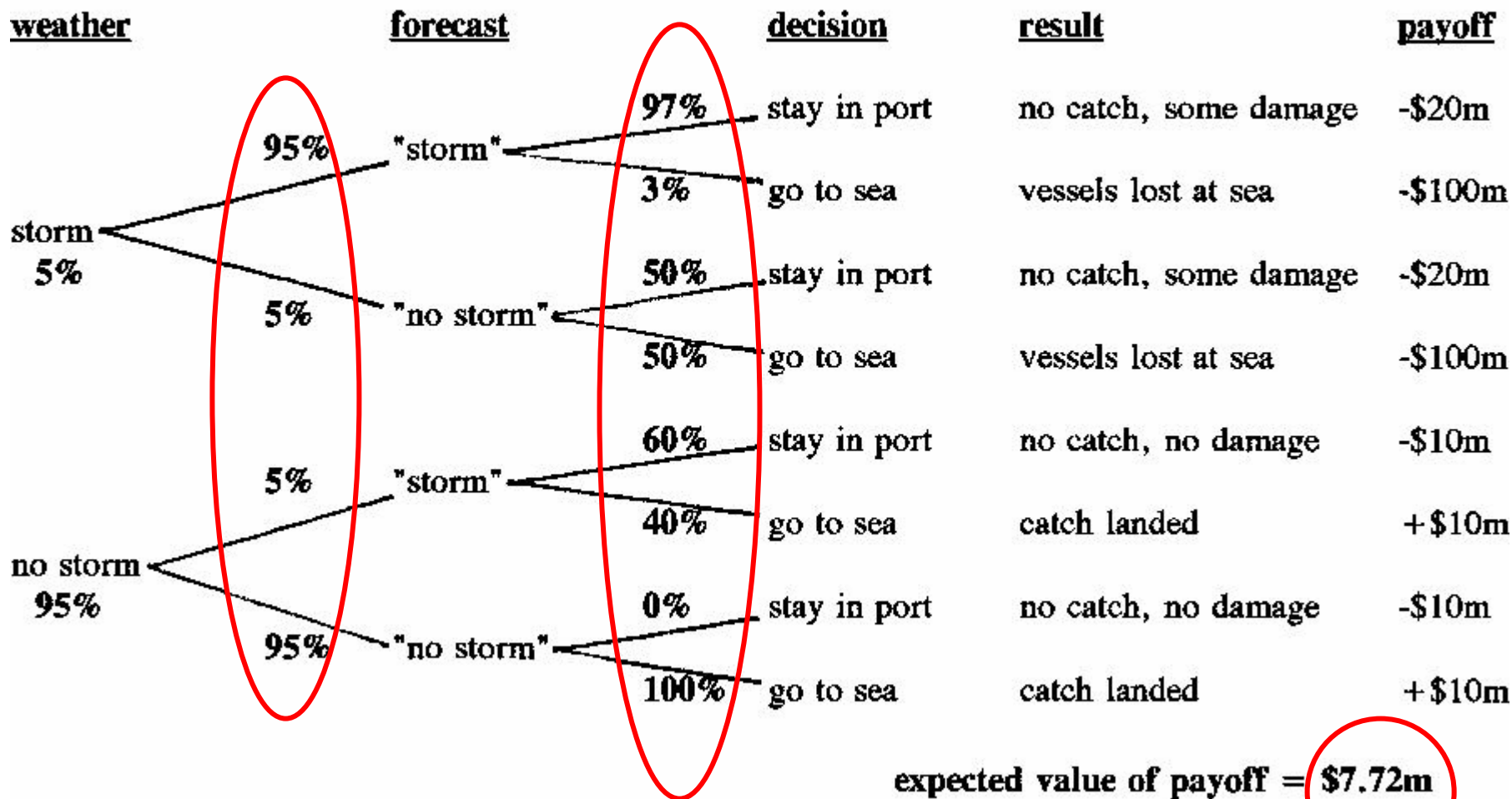


Figure 2: Example Calculation of Value of Forecast Information: CFS Case



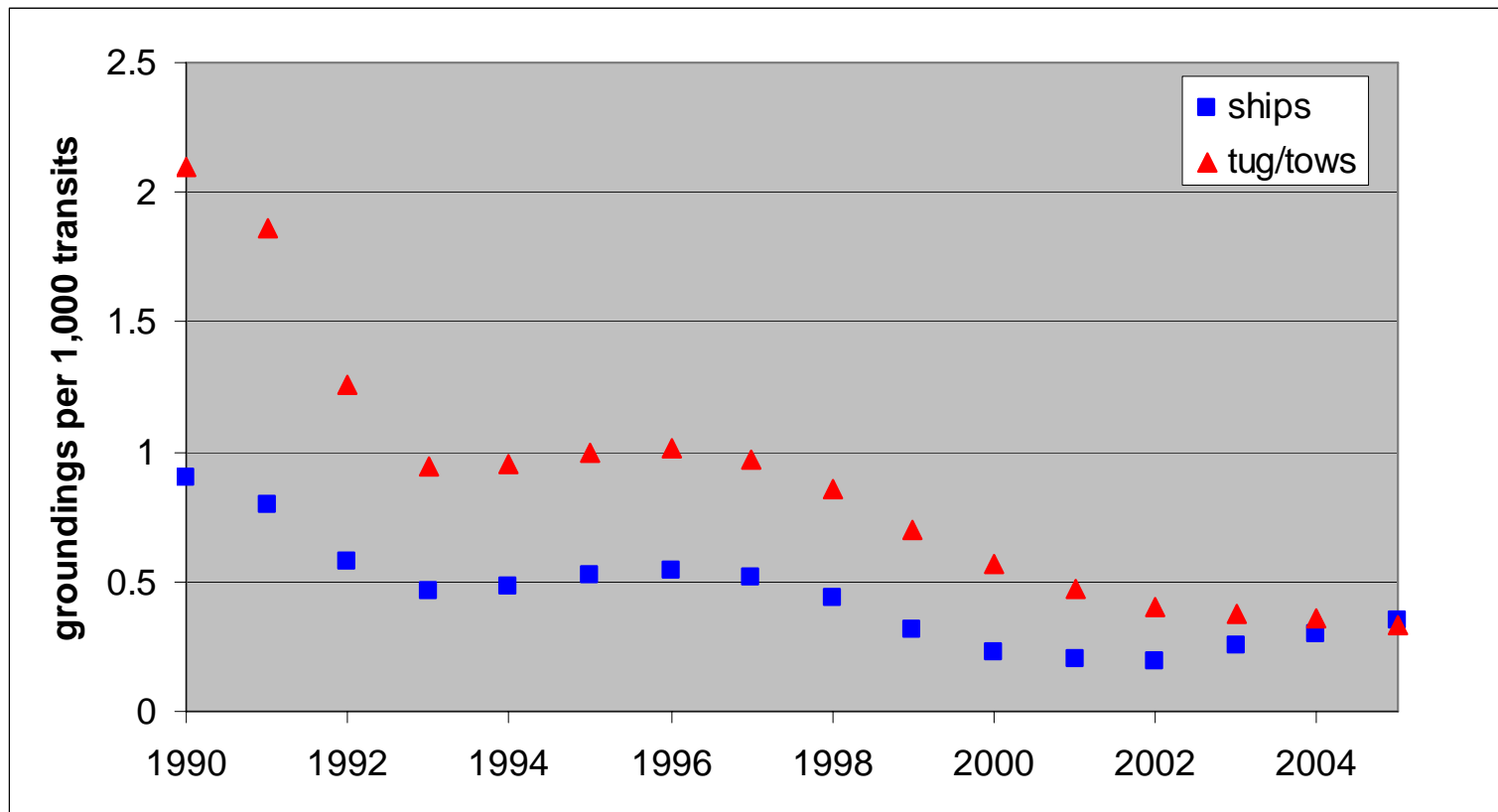
Estimated Annual Benefits: PORTS, in million \$/year

Category	Tampa Bay	Houston/ Galveston
Avoided accidents	1.1 – 2.8	10.5
Increased efficiency	1.1	0.4
Improved spill response	1.1 – 1.8	1.0 – 3.0
Subtotal – Maritime	3.3 – 5.7	11.9 – 13.9
Improved weather forecasts	2.0	2.0 – 3.5
Recreational use (boating, fishing)	1.5	0.9
Grand Total	6.8 – 9.0	14.8 – 18.3

Example: Grounding Rates, Houston/Galveston

PORTS introduced in late 1990s:

- ships: 50% reduction from baseline risk level (6/year)
- tug/tows: 60% reduction from baseline (90/year)



Estimated Benefits: Nautical Charts/Chart Data

- Consumer surplus estimates (preliminary)
 - Commercial shipping: \$27 million/year
 - Recreational users: \$14 million/year
- Potential safety benefits associated with digital chart data
 - Order of \$100 million/year
 - Now in use on 90% of ships in US waters

These are Lower Bound Estimates of Total Value

Uses not quantified in economic terms:

- Educational use
- Scientific research
- Environmental management & modeling
- Civil engineering projects
- Military/Homeland Security

Efficiency through Information

- Moving goods by water will always be a matter of concrete, steel, and dredges
- Contribution of NOAA Navigation Services to total MTS value: about 1 percent
- Key for NOAA NS: adding value through **improved efficiency** of the MTS

Questions

- How useful is this kind of economic information from your perspective?
- How can we improve these studies?
- What other kinds of information would you like to have to help you guide the work of NOAA Navigation Services?