Common methodologies to improve the quality of regulations and regulatory impact assessments

Federal Commission for Regulatory Improvement
(COFEMER)

Dealing with different variables

¿What if regulation affects non-market variables such as human health and ecological benefits?

In many cases, WTP cannot be easily measured by using market prices, because the policy's impacts are not traded in regular markets, e.g. an especific regulation that changes traffic patterns and reduces emissions from mobile sources.

One of the most used techniques are:

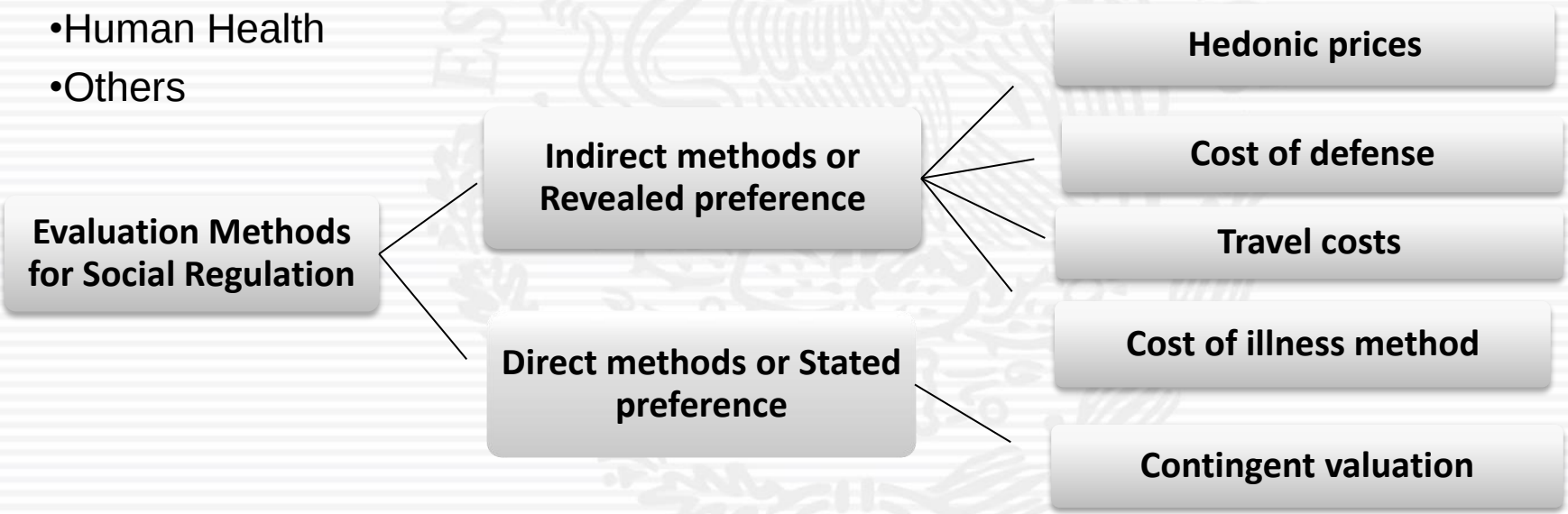
- **Contingent valuation method**
- **Value of statistical life (VSL)**
- **Travel cost methods**
- **Averting behavior method**
- **Hedonic pricing methods and**
- **Cost of illness method**

The different valuation methods are not mutually exclusive

Methodologies to quantify costs and benefits in social regulation

CBA needs to quantify costs and benefits in monetary terms, however, there are goods, characteristics or concepts included in regulation, particularly in social regulation, which value cannot be directly obtained in the market, as they do not have a monetary value.

- Value of human, animal and plant life
- Environmental value
- Pollution value
- Human Health
- Others



Direct methods or Stated preference

Contingent valuation: it is a valuation method used for goods that lack an established market for their trade. It uses the survey format to get the value of these assets by posing a hypothetical or "contingent" valuation scenario.

The success of this method relies on the appropriate design, but mainly on the correct application of the survey.

Determining the WTP and using the results in the CBA through

$$WTP_{average} = \frac{1}{n}\sum_{i=1}^{n} y_i$$

Other ways to measure WTP through Contingent Valuation Method are:

- **Truncated mean:** It is essentially an average from which a percentage of the outliers from the sample will be cut.
- **Turnbull method**: This method will give us an interval that shows a minimum value and a maximum value of the willingness to pay.

Indirect methods or Revealed preference

Hedonic price method: The main assumption of the method lies in the fact that the price of a private good depends on the inherent characteristics of the good. When there is a change in any of these characteristics, keeping the others without any change, the price of the private good will change. This change represents the value (WTP) that individuals assign to such characteristic.

- ***Step 1***.
- ***Step 2***.
- ***Step 3***.

Travel Cost Method: It **s**uggests that the travel costs that people spend to visit some place are directly related to the value of the natural resource in question. This is, the value of travel cost incurred by the visitor is translated into the value that he received from the use of the good.

- *)*

Indirect methods or Revealed preference

Defense expenses method: Also called avoided costs method; it assumes that costs incurred by a person in order to avoid damages in his welfare can be considered as the indirect valuation that the agent makes of the good in question.

Where

Cost of illness method: It is based on the willingness to pay of individuals to improve health reflected in direct medical costs, such as medical diagnosis, treatment and constant care incurred by individuals as a result of diseases.

Where

&

Methods for human life valuation in social regulation

Method of Human Capital or lost wages: The value of life is obtained by calculating the PV of lost wages (those wages that the individual cannot receive due to death or injury) as a result of damage or loss of life.

$$\text{Value of Human Capital} = \sum_{t=1}^{T} \frac{\text{expected salary}_t}{(1+r)^t}$$

Value of Statistical Life (VSL): Propensity to accept money for taking a risk and propensity to pay to avoid it. The value of life is measured by the maximum amount of money that people is willing to pay to reduce the risk of death usually through indirect actions.

$$\text{VSL}_{\text{WTP}} = \left(\frac{1}{p}\right) \times C$$

Quality adjusted life years (QALY):QALY provides an idea of how many months or years of additional quality life a person can get as a result of an improved lifestyle through a regulatory proposal. It is based on the estimated duration of the different states of health and their rating between 0 and 1 to assign then a monetary value to each state.

$$\text{Quality adjusted life years} = \sum_{i} v_i \times t_i$$

Disability adjusted life years (DALY):It is a composite indicator that combines the Years Lived with a Disability **(YLD)** and the Years Lost because of Premature Death **(YLL)**.

$$\text{DALY} = \text{YLL} + \text{YLD}$$

CB methodologies

Contingent valuation method

Survey–based approach → individuals report their willingness to pay (WTP).

It does not require the public goods or services to be linked to actual market transactions, because it asks respondents in a hypothetical market

Value of statistical life (VSL)

A value of statistical life (VSL) is an **economic value assigned to human life**, the metric is the **amount that a group of people is willing to pay for fatal risk reduction in the expectation of saving life.**

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Averting behavior method

It infers values from **observing → individuals change their behavior in response to changes in the quality of the environment, health, or safety.**

Hedonic pricing methods

It estimates the **value of a non-market good**, such as noise, by **observing behavior** in the market for a **related** good.

It relates the price of a marketed good with a bundle of characteristics or attributes associated with the good.

Cost of illness method

It estimates the e**xplicit market costs resulting from a change in the incidence of a given illness**.

It generally relies on direct costs such as medical treatment, rehabilitation, and accommodation. It does not account for indirect costs such as the loss of income or the loss of leisure time, pain and suffering.

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Growth/decrease rate	Index that measures the **increase or decrease of a variable for a given period** and is usually expressed in percentage.
Herfindahl-Hirschman Index (HHI)	Index that measures **economic concentration in a market**, the **lack of competition.** The higher the index, the more concentrated the market, thus the less competitive it is. The HHI ranges from **0 to 10,000**.
Incidence Rate	This rate measures the **number of new cases of an event occurring** in a **time interval**.

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Equivalent Annual Cost (EAC)

It is the **cost per year** of owning and operating an asset over its entire lifespan. This method is useful for comparing projects with net benefits equal but different amounts of investment →**take into account the lower EAC.**

Equivalent Annual Benefits (EAB)

It is the annual **annuity with the same value as the present value** of an investment project → take into account the project with the **greatest EAB.**

Risk Indexes

Indexes that help either to prevent or to enable local and national actors to carry out **effective risk management**. Risk indexes are generally a **dispersion measure** that indicates **how much an event is away from its average occurrence**.

CB methodologies

Immediate rate of return	Ratio that measures the **benefits of a project in the first period**→ Net profit (p1) / Investment (p1).
Doing Business Index	This index provides a **quantitative measure of regulations for starting a business:** dealing with construction permits, registering property, getting credit, protecting investors, paying taxes, trading across borders, enforcing contracts and closing a business—as they apply to domestic small and medium-size enterprises.
Dominance Index	This index focuses in determining the **degree of concentration** in an industry, it uses as input the **Herfindahl index** and **adjusts by isolating the extension of the definition of the industry**. It ranges from **0 to 10,000**, as applicable to a fragmented market or monopoly.

CB methodologies

Travel cost methods

Place a value on non-market environmental goods by using consumption behavior in a related market.

The costs of consuming the services of the environmental asset are used as a proxy for price. Costs can be estimated by the number of trips made by individuals and the amount of money they spent on them.

Human Capital Value

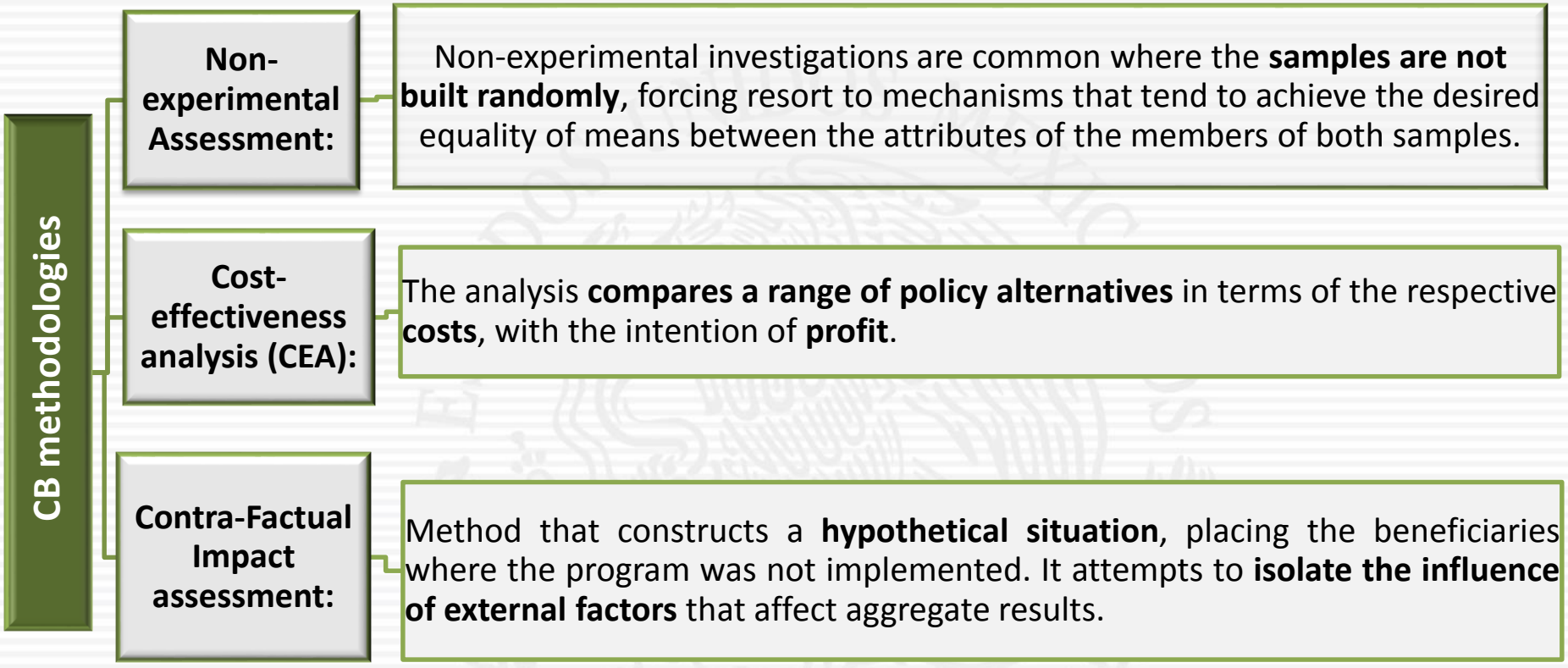
It is an economic measure of **the human capital stock** that can be calculated by thre different apporaches: in terms of **output**, in terms of **costs and through an income based** approach.

Quality-Adjusted Life Year (QALY)

It is a **measure of disease burden**, **including both the quality and the quantity of life lived.** It is used in assessing the value for money of a medical intervention. The QALY model requires utility independent, risk neutral, and constant proportional tradeoff behavior.

CB methodologies

Internal Rate of Return (IRR)	It is the **rate of return used in capital budgeting to measure and compare the profitability of investments.** It is also called the discounted cash flow rate of return or the rate of return. In the context of savings and loans the IRR is also called the effective interest rate.
Return/Effectiveness Indicator	It is an instrument that **measures the degree of compliance with the objectives that motivated the implementation of the regulation**.
Efficiency Indicator	This instrument that **evaluates and measures whether the objectives established by a regulation are met at minimum cost.**


CB methodologies
Non-experimental Assessment:
Non-experimental investigations are common where the **samples are not built randomly**, forcing resort to mechanisms that tend to achieve the desired equality of means between the attributes of the members of both samples.
Cost-effectiveness analysis (CEA):
The analysis **compares a range of policy alternatives** in terms of the respective **costs**, with the intention of **profit**.
Contra-Factual Impact assessment:
Method that constructs a **hypothetical situation**, placing the beneficiaries where the program was not implemented. It attempts to **isolate the influence of external factors** that affect aggregate results.

CB methodologies

Econometric method:

OLS method can be used to estimate demand functions when they are not known with certainty. So it can **quantify the welfare impact of changes in prices resulting from economic regulatory policies**.

Quantil Treatment Effect (QTE):

For the *p* percentile, **QTE is estimated as the difference in the treatment condition between the p percentiles of the distribution of treated with the same percentile of those not treated.**

For example, if you take the median of the distribution of the treated group and subtract the median of the distribution of the control group, it has the QTE in the 0.5 percentile.

Panel data model:

In a situation **where longitudinal data on study group is available for periods**, it may be possible to implement a dynamic panel model to estimate the impacts of policy.

CB methodologies

Computing General Equilibrium (CGE)

CGE models give a precise and explicitly computable result based on static, simultaneously solved, macro balancing equations. A CGE model consists of **equations describing model variables** – usually tend to be neoclassical- and a database consistent with that equations. These models are descended from the input-output models pioneered by Wassily Leontief.

Partial equilibrium analysis

The **partial equilibrium analysis studies the effects of an action in creating equilibrium only in that particular sector or market** which is directly affected, ignoring its effect in any other market or industry.

CB methodologies

Impact Assessment with a discontinuos regression:

Non-experimental methodology of impact assessment which **builds a control group that serves as a contra-factual approach to the treatment group**. The discontinuos regression takes the existence of a rule that excludes certain group of a program in order to build a control group.

Equivalent Variation

Amount of wealth that a consumer would pay to keep the same utility (same indifference curve or purchasing power) before a change in price (taken as reference the initial prices) is done or, in other words, how much money an agent would pay to avert the price change.

Marginal treatment effect:

An econometric method that **measures the effect of a treatment on the marginal individual entering in the treatment**→bridge between structural and treatment effect **parameters** and **allows us to understand the way they are related.** It is a willingness to pay measure when outcomes are values under alternative treatment regimes.

CB methodologies

Qualitative analysis

Is a method **of information evaluation that cannot be expressed in numbers.** This method uses **an idiographic conception of causality that identifies a bunch of events, actions of thoughts that leads to a particular event or outcome.** There are several methods of qualitative analysis, like: interviews, surveys, expert opinions, observational analysis, etc.

Survey: **Qualitative method which information is obtained from a sample of individuals** through their responses to questions about themselves or others.

Expert validity**:** In surveys, questions can be **tested and improved through review by experts**, like psychologists, a questionnaire design expert, and a general methodologist (Presser and Blair 1994).

Observational (qualitative) analysis:

In this method, the **researcher tries to see things as they happen, without actively participating in the events.** Its tries to identify the who, what, when, where, why and how of a certain phenomenon.

International examples on the use of different methods

The next table shows some examples of methodologies to calculate the CBA:

Country	What is the problem being addressed?	Regulation	Methodology	Results	
				Cost (Gov.)	Benefits (Soc.)
Australia	The excessive consumption of alcohol and the high costs on society by allowed substances abuse.	Licenses, special licenses, restricted areas, powers of entry, search and confiscation, and advertising control.	COI		USD$15,318.2 millions. Annual.
United States	Assigning a market to determine the amount that people are willing to pay for changes in the coasts' quality affected by the oil spill.	Determining the minimum requirements oil ships offshore can operate and updating costs for environmental damage.	CVS	USD$4.8 billions. PV	USD$4.9-7.2 billions. PV
Canada	Smokers' articles caused an average of more than 3,200 fires per year from 1992 to 2000	All cigarettes manufactured in Canada will have to meet the ignition propensity standard and all cigarette brands should perform annual toxicity testing.	VSL and HCC	USD$26-53 millions. Annual.	USD$114.1 – 228.1 millions. Annual

Cost-effectiveness analysis

When benefits cannot be expressed in monetary values in a meaningful way, a cost-effectiveness analysis (CEA) should be carried out to assist in making effective decisions.

The pure cost-effectiveness of a policy option is calculated:

$$\mathbf{CEA} = \frac{\textit{Present value of a non monetary quantitative measure of the benefits}}{\textbf{Present value of the monetary costs}}$$

The ratio is an estimate of the amount of costs incurred to achieve a unit of the outcome from a policy option.

The Standard Cost Model

In Mexico, any new regulation or review of existing regulations (PBMR) requires a proper assessment to ensure they will not impose excessive burdens on businesses that would reduce their international competitiveness. The Standard Cost Model can be useful to evaluate the whole regulatory system and not only an specific regulation.

The SCM measures the administrative burdens* derived from regulation imposed on citizens, businesses and non-profit organizations in order to identify and reduce these costs, and to promote economic growth and simpler processes.

The model estimates an economic cost of the regulation made up of two elements:

Administrative Costs + **Oportunity Costs** = **Economic Costs**

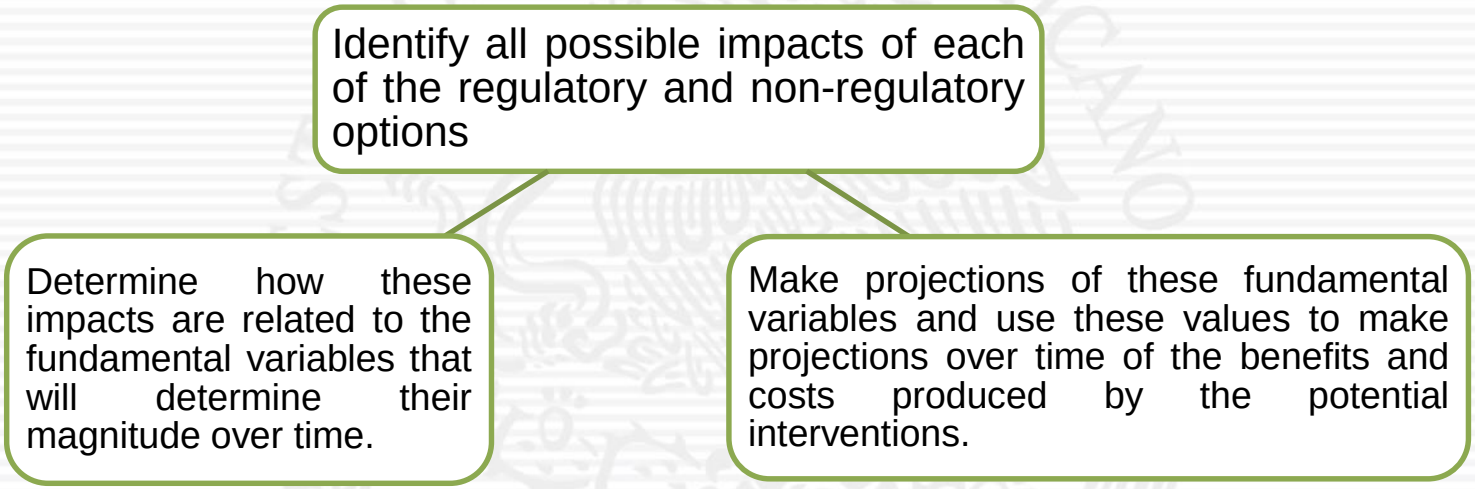
In 2010, this agency completed the administrative burden measurement which resulted in an estimation of the regulatory costs equal to **4.8% of the 2009 GDP**.

* The model measures the cost of the activities that a standard individual carries out in order to comply with the regulation, it does not incorporate monetary payments or other costs incurred by firms, individuals or organizations.

Preliminary Conclusions

I. Promote the use of methodologies to assess the effects of regulatory policies, qualitative evaluation is relevant.

II. Complete the following assessment triangle:



III. There are many variables that can be affected by a specific regulation. The cost-benefit analysis begins with the identification of direct effects and then it adjusts a number of goods and services affected by different distortions in the markets; so it is important to consider the impacts on stakeholders.

IV. There is a common path and some common methodologies, but depending on the specific kind of regulation (economic and social) there may be additional specific methodologies.

Preliminary Conclusions

V. Gather all the facts, source of information is important to get a good analysis.

VI. Public consultation is a relevant source of information to evaluate all the effects and provide useful options for regulators.

VII. It is important to communicate the impacts of regulatory proposals with a base on technical facts and estimations, but this should be translated in a language that is understandable for the public.

VIII. It is important to identify all the methodologies that we can use in a specific sector.

IX. The RIA must include Risk analysis (sensibility analysis)

X. The RIA must include Competition analysis

XI. The assessment process must consider the stakeholders.

XII. CBA must include private and public social cost.

XIII. Is important to have a framework reference to evaluate some regulations.

XIV. CBA must consider the risk and the distributional effects.

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Thank you!

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Australian Government
Department of the Prime Minister and Cabinet
Office of Best Practice Regulation

Case study: Value of Statistical Life

23-24 April 2015, Mexico City

Rob Reilly, OBPR

Outline of presentation

- Overview of value of a statistical life (VSL)
- Example – Graphic Warnings on Cigarette Packages

Value of a Statistical Life

- Example: policy that reduces the probability of death by one in a thousand (0.1%)
  - *How would we know the policy is worthwhile?*
  - *Costs of the policy generally easily quantified*
  - *Benefits are a reduction in the small risk for each person subject to the policy.*

Value of a Statistical Life

- Value of a Statistical Life (VSL) – estimate of the financial value that society places on reducing the average number of deaths by one.
  - *Based on 40 years of life for a young adult*

- OBPR prescribes VSL as A$4.2 million (2014 dollars) for use in Australian Government RISs

Value of a Statistical Life Year

- Value of a Statistical Life Year (VSLY) – value society places on reducing the risk of a premature death.
- VLSY is calculated as:

$$VSL = VSLY/(1+r) + VSLY/(1+r)^2 \ldots + VSLY/(1+r)^{40}$$

- Thus:

$$\$4.2m = \$0.182m/(1+r) + \$0.182m/(1+r)^2 \ldots + \$0.182m/(1+r)^{40}$$

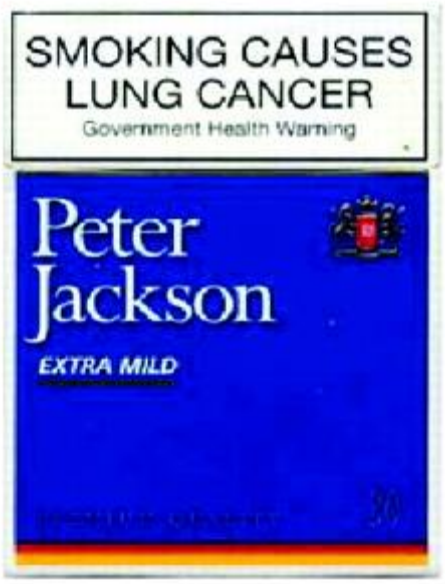
- OBPR prescribes VSLY as A$182,000 (2014 dollars) for use in Australian Government RISs

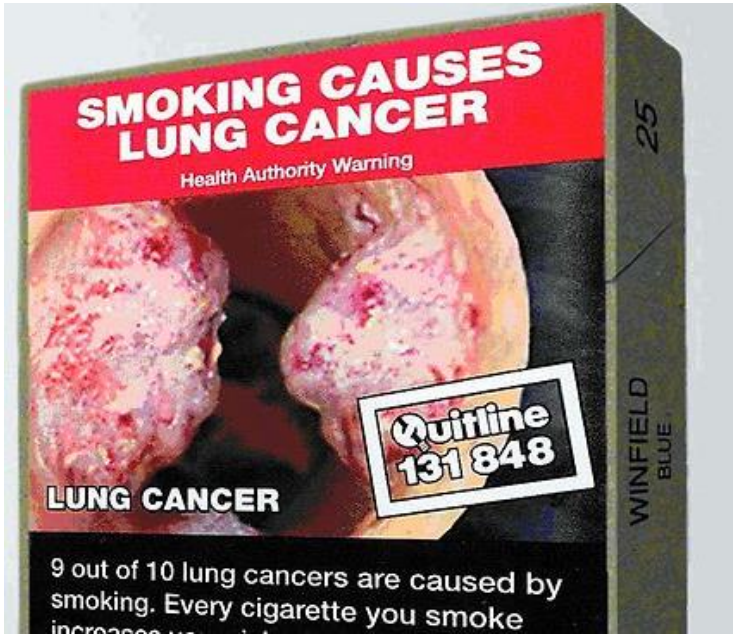
Benefit of extending lives

- Benefit of extending lives (per year) =
- VSLY (present value) x Number years life is extended x People affected

Example

- Changes to cigarette pack warning labels
- http://archive.treasury.gov.au/contentitem.asp?NavId=&ContentID=794





The costs

- Industry
  - *Compliance costs (capital costs, printing etc)*
  - *Net loss of income*
- Government
  - *Net loss of customs and excise revenue*
  - *Information programs*
  - *Extra long-term health costs*
- Ex-smokers
  - *Loss of benefits of smoking*

The benefits

- Ex-smokers
  - *Benefits of longevity and improved health*
- Government
  - *Savings in tobacco related health costs*
- Third parties
  - *Reduced fire risk*
  - *Reduced impacts of passive smoking*

The impact of the proposal

Literature review

- Australian and international studies examining the impact of health warnings
  - *Report assumed a 3 per cent reduction in cigarette consumption (sensitivity test 1 and 5 per cent)*
  - *Value of statistical life of $1.5 million**

*this was prior to OBPR prescribing a default VSL

Attach dollar values to the impacts

- Costs include:
  - *Profit foregone per cigarette: 4.6 cents*
  - *Tax/ excise foregone per cigarette: 21.8 cents*
- Benefits include:
  - *Value of life extended: A$622,000*
    - based on extending life by an average of 9 years @ $87,500 per life year (based on VSL of $1.5 million) using a 5% discount rate
    - this value was applied to 400 deaths avoided each year

Net present value

- Apply discount rate to the stream of estimated costs and benefits
  - *a 5 per cent discount rate was used in this example.*
- Subtract the costs from the benefits
  - ***NPV: A$2.85 billion***
- Sensitivity test on the key variables:
  - *Value of life*
  - *Reduction in smoking rates*

Sensitivity analysis

Net Present Value

Reduction in smoking rates	Value of avoided death (9 years of life extended)	
	$373,000	**$622,000**
1%	$311 million	$911 million
3%	$1,032 million	**$2,850 million**
5%	$1,753 million	$4,755 million

Note: 5% discount rate used

Useful CBA references

- Regulatory Impact Evaluation Guide (COFEMER)
- OBPR website (https://www.dpmc.gov.au/office-best-practice-regulation):
  - *Cost benefit guidance note and other information*
  - *Valuing a statistical life*
  - *Establishing a monetary value for lives saved: Issues and controversies - Dr Peter Abelson*

Gracias!

Questions?

https://www.dpmc.gov.au/office-deregulation
https://www.dpmc.gov.au/office-best-practice-regulation
www.cuttingredtape.gov.au

Methodologies for Assessing the Impacts of Social Regulation

Andrés Blancas Martínez
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Mexico City, April, 2015

Social Regulation and its Relevance

- **Social regulation** protects public interests such as health, environment, safety, security, social cohesion, education etc.
- It is common to think that economic effects of social regulations may be secondary concerns or unexpected, but they can be substantial.[1]
- What to expect about public intervention?
  - Rational allocation of financial and human resources
  - Achieving the best social return for public money.

1/ https://stats.oecd.org/glossary/detail.asp?ID=4640

Social Regulation and its Relevance

Social regulation may involve the measurement of intangibles.

Problem: There are not market prices for intangibles, therefore, an indirect valuation is needed.

- Noise of airports, medical treatments, malnutrition, education, willingness to pay etc.
- Are intangibles impossible to be measured?

What is the willingness to pay for a Monet?

  - If the art house sets a price at $50 MNX, how to extract the willingness to pay of a consumer?
  - Auction

Social Regulation: Example of Liconsa

- In Mexico, there is a substantial part of the population with malnutrition risk. Furthermore, it is recognized that malnutrition increases the **risk of various diseases**.
- Liconsa is a state company that sells milk with subsidized price in order to reduce the **risk of malnutrition of a targeted population**
- The price of Liconsa is about 1/3 of the average market price (PASL).
- The retail price has been fixed in $4.5 MNX per litre for almost a decade, which is lower than average financial cost of milk $7.6 MNX (2013)
- Therefore, the operation of Liconsa involves a financial deficit that has to be covered by fiscal resources.
- In 2013, the fiscal resources were about 2.7 billion pesos[1].

1/http://www.apartados.hacienda.gob.mx/contabilidad/documentos/informe_cuenta/2013/doc/t7/VST/VST.04.03.vd.pdf

Social Regulation: Example of Liconsa

Liconsa pretends to address the malnutrition issue of people below certain income threshold.

Does the governmental intervention achieve positive benefits?

- **There is a need for a Cost-Benefit Analysis**

Social Regulation: Liconsa Example

Empirical and academic evidence:

A. Information available

There is academic evidence that malnutrition has the following effects:

1. Increases the probability of diseases
2. Limits academic enrolment and performance.
3. Increases the probability of depression
4. Reduces the intellectual performance

B. Produce own evidence

We have to compare differences between similar beneficiaries and non-beneficiaries in two periods of time.

Social Regulation: Liconsa Example

Net benefit estimation of regulation / policy

1. Direct benefits (financial)

2. Indirect benefits (intangibles)

Cost Benefit Analysis: Liconsa

Net direct benefits in annual terms (1/1)

Direct benefits (sale of milk)	
1. Selling price per litre	$4.5 MNX
2. Number of beneficiaries	6,490,248
3. Average consumption (monthly)	12 Litres
Direct Benefits = (4.5) * (6,490,248) * (12 x 12) = **4,205 Million MNX**	
Direct costs (production and distribution of milk)	
1. Financial cost of 1 litre of milk	$7.6 MNX
2. Number of beneficiaries	6,490,248
3. Average consumption (monthly)	12 Litres
Direct costs = (7.05) * (6,490,248) * (12 x 12) = **-7,102 Million MNX**	

Net direct benefits = 4,205 – 6,588 = **-2,897 Million MNX**

Cost Benefit Analysis: Liconsa

Net indirect benefits in annual terms (1/4)

Remember the evidence

- Which are the effects of the malnutrition?

1. Malnutrition → Bigger risk to suffer diseases → **cost of diseases**
2. Malnutrition → Low cognitive abilities → bad performance in school → drop of school → **opportunity cost**
3. Malnutrition → Bigger risk to suffer depression → risk of suicide → **cost of life**

Therefore, we can compute the net benefits of malnutrition effects.

Cost of health

Net indirect benefits in annual terms (2/4)

To measure the cost of health, we can obtain the willingness to pay of the individuals to get rid of the disease (expenditure in doctors and medicines) or we can calculate the government expenses to treat these diseases for certain population.

Considering only one disease: anaemia

Cost of health	Number
1. Annual expenses to treat anaemia by individual	50,000 MNX
2. Probability of malnutrition in the targeted population	70%
3. Probability to get anaemia due to malnutrition	20%
4. Beneficiaries	6,490,248

Net benefits = (50,000) * (0.7) * (0.2) * (6,490,248)
= **27,259 Million MNX**

And the benefits?

Net benefits of school attendance / cost of withdrawal

Net indirect benefits in annual terms (3/4)

To measure the opportunity cost of school attendance, we can compute the difference between the average income of the schooling years with and without the program.

Category	Beneficiaries	Not beneficiaries
1. Average schooling	8.6 years	6 years
2. Average salary for XX years of schooling (monthly)	2,500 MNX	2,400 MNX
3. Average income for 9 average schooling (annually)	30,000 MNX	28,800 MNX
4. Probability of nutrition in the targeted population	70%	30%
5. Beneficiaries	6,490,248	

Net benefits = [(30,000)*(0.7) – (28,800)*(0.30)] *(6,490,248)
= **80,219 Million MNX**

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Cost of life

Net indirect benefits in annual terms (4/4)

We can measure the cost of life computing the value of the lost wages that a person with the damage will forego. An alternative is to measure the GDP *per-capita*.

Category	Beneficiaries	Non beneficiaries
1. Average wage of the average worker	$30,000 MNX	$28,800 MNX
2. Probability of malnutrition in the targeted population	30%	70%
3. Probability of nutrition in the targeted population	70%	30%
3. Probability of depression due to malnutrition	1%	
4. Probability of suicide due to depression	0.03%	
5. Beneficiaries	6,490,248	
4. Average age of suicide	35 years	
5. Average age of retirement	60 years	

Net benefits per year = [(30,000 * 0.7) - (28,800 * 0.3)] * (0.1) * (0.0003) * (6,490,248) **= 120 Millions MNX**

Global Benefits

Category	Financial Benefits	Total Benefits
Benefits	**$4,205**	**344,942**
Financial benefits	$4,205	$4,205
Benefits of health		-
School attendance		$136,295
Life		$204,442
Costs	**$7,102**	**174,550**
Financial costs	$7,102	$7,102
Cost of health		$27,259
School attendance		$56, 075
Life		$84,114
Net Benefit	**$2,897**	**$170,392**

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Key points

- Indirect effects of regulation or social policies can be essential for their implementation, in terms of the recognition of the net benefits.
- It is important to avoid double accounting for costs or benefits in the analysis.
- There is no a unique computation of indirect valuation of intangibles. The valuation can vary according to the objective of the regulation.
- What is next?

Methodologies for Assessing the Impacts of Social Regulation

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Mexico City, April, 2015

CASE STUDY:

DRAFT OF MEXICAN OFFICIAL STANDARD NOM-001-SESH-2014 DISTRIBUTION OF GAS PLANTS LP DESIGN, CONSTRUCTION AND CONDITIONS WITH ITS SAFE OPERATION

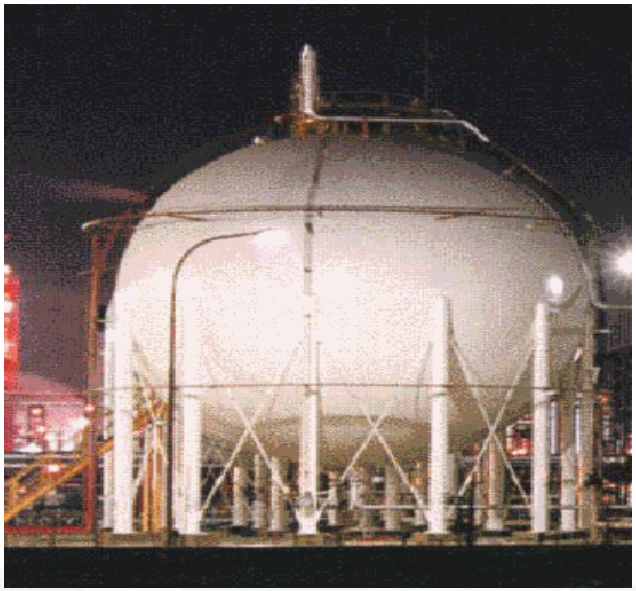
FEDERAL COMMISSION FOR REGULATORY IMPROVEMENT

GENERAL COORDINATION FOR REGULATORY IMPACT ASSESSMENTS

MEXICAN OFFICIAL STANDARD NOM-001-SESH-2014, DISTRIBUTION OF GAS PLANTS L.P. DESIGN, CONSTRUCTION AND CONDITIONS WITH ITS SAFE OPERATION

Goal:

Mexican Official Standard NOM-001-SESH-2014, provides technical and safety requirements for the design and construction of distribution plants for LP gas, which are in the country.



Regulated subjects

- Owners of licensees for LP gas distribution plants.

Problems about Mexican Official Standard NOM-001-SEDG-1996

- Does not distinguish between plants supply and warehousing and distribution.
- It does not provide the urban sprawl phenomenon that is the spread in a city and its suburbs to rural land on the outskirts of an urban area, an area where distribution plants settled L.P. gas.

Main objectives:

- Keep as a rule the minimum distance of 100 meters from buffer storage tanks plants to outside elements such as schools, residential homes, hospitals, among others.

- Improve the safety specifications of the plants reducing the possibility of incidents, using criteria for the maintenance of facilities (tanks evidence to determine whether they should be replaced, life of valves, hoses, etc.).

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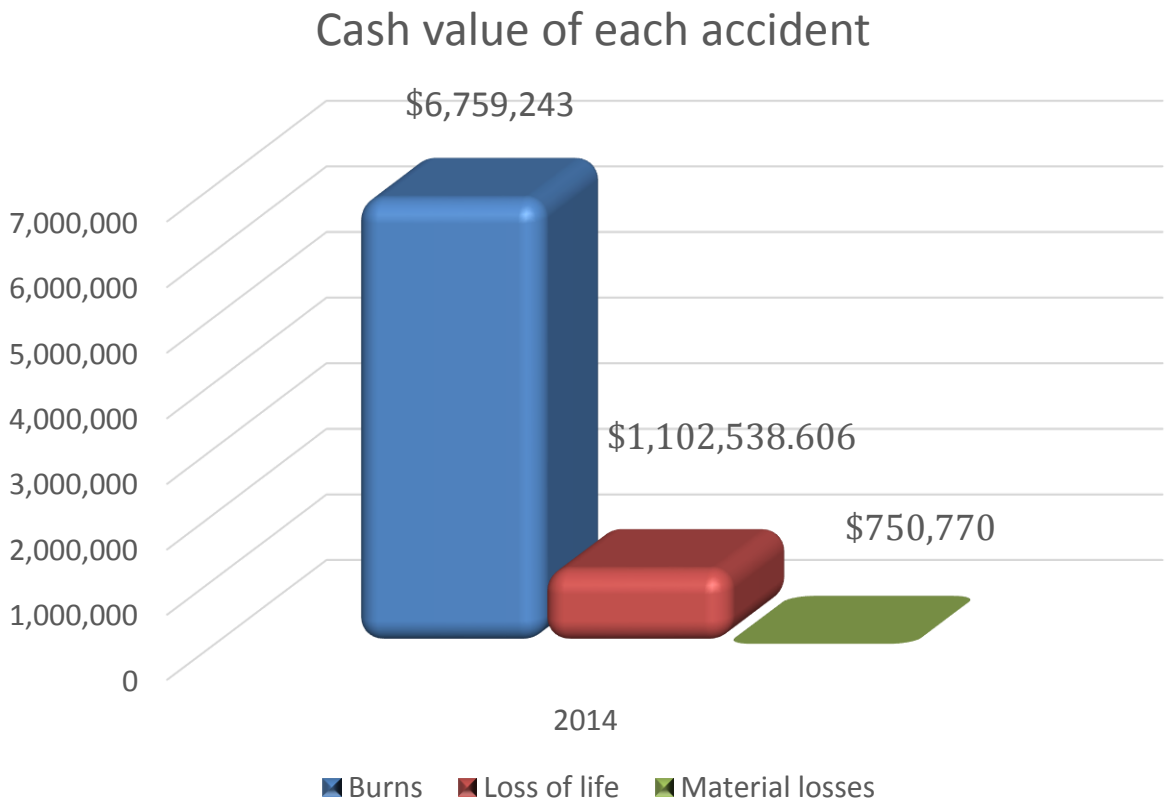
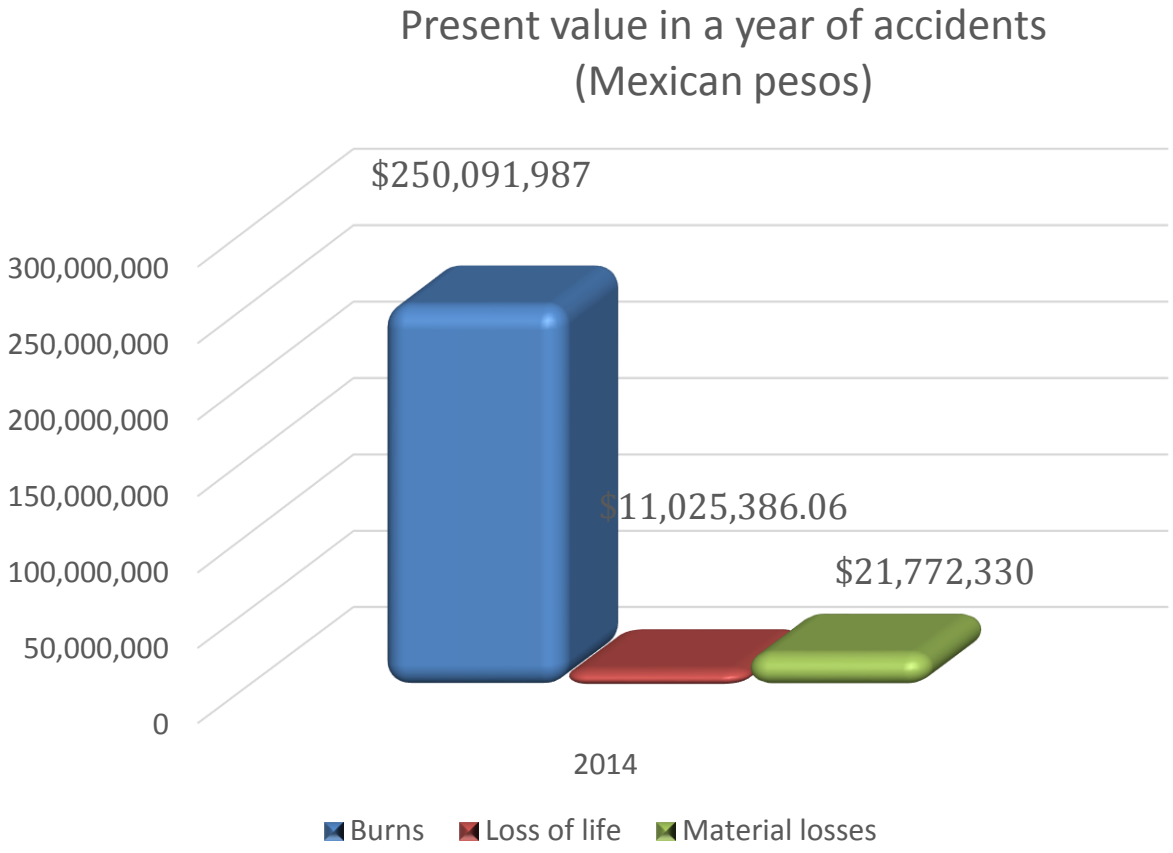
Costs-Benefits

Cost



The accidents estimated by the Ministry of Energy (SENER) includes:

- burns
- loss of life
- material losses



Number of accidents at year:

- 37 accidents burns
- 10 fatal accidents (loss of life)
- 29 material losses

Benefits

- SENER estimates that the security requirements established in the Mexican Official Standard would decrease the number of accidents by 50%.
- However SENER does not justify such defamation, so COFEMER suggested to made a Sensitivity Analysis, in order to strengthen the information in the Costs-Benefits analysis.

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Cost-Benefits

SENSITIVITY ANALYSIS

Sensitivity analysis

Whenever a draft requires the effects or impacts generated by the regulatory alternatives and this implies an estimation of what will happen in the future, it is necessary to have a margin of error. So, the risk factor should be incorporated into the analysis and it must be considered that the behavior of the variables defining the costs and benefits as other parameters such as the discount rate inflation.

So it can be concluded that the extent to which a variable can be modified to changes in the parameters that define it.

Sensitivity analysis

The sensitivity analysis includes the following steps:

- Identify the variables that are incorrect and possible values that can take
- Define the maximum and minimum values that each variable may assume
- Explore the sensitivity of earnings to each input variable values and identify to which can be reversed

- The variable that is wrong is the percentage in reduction of number of accidents
- The defined values are the depreciation rate of 10% and the inflation rate of 4.006816%
- The life expectancy of plants of LP gas distribution was taken that is 30 years

Example

In 2014, SENER estimated that 37 accidents occurred by burns, which can be estimated at a value of $ 6,759,243 Mexican pesos.

SENER assume that the life expectancy of a distribution plant is 30 years.

Then, it estimated the increase in the costs of accidents using an inflation rate of 4.006816%, so in 2044, the costs of accidents were estimated in $812,744,084.23 Mexican pesos.

However, in order to compare the costs in 30 years, SENER calculated the Present Value using a depreciation rate of 10%. In this way, we can say that the present value of the 37 burn accidents by year would be $3,781,925,189.30 Mexican pesos.

Example

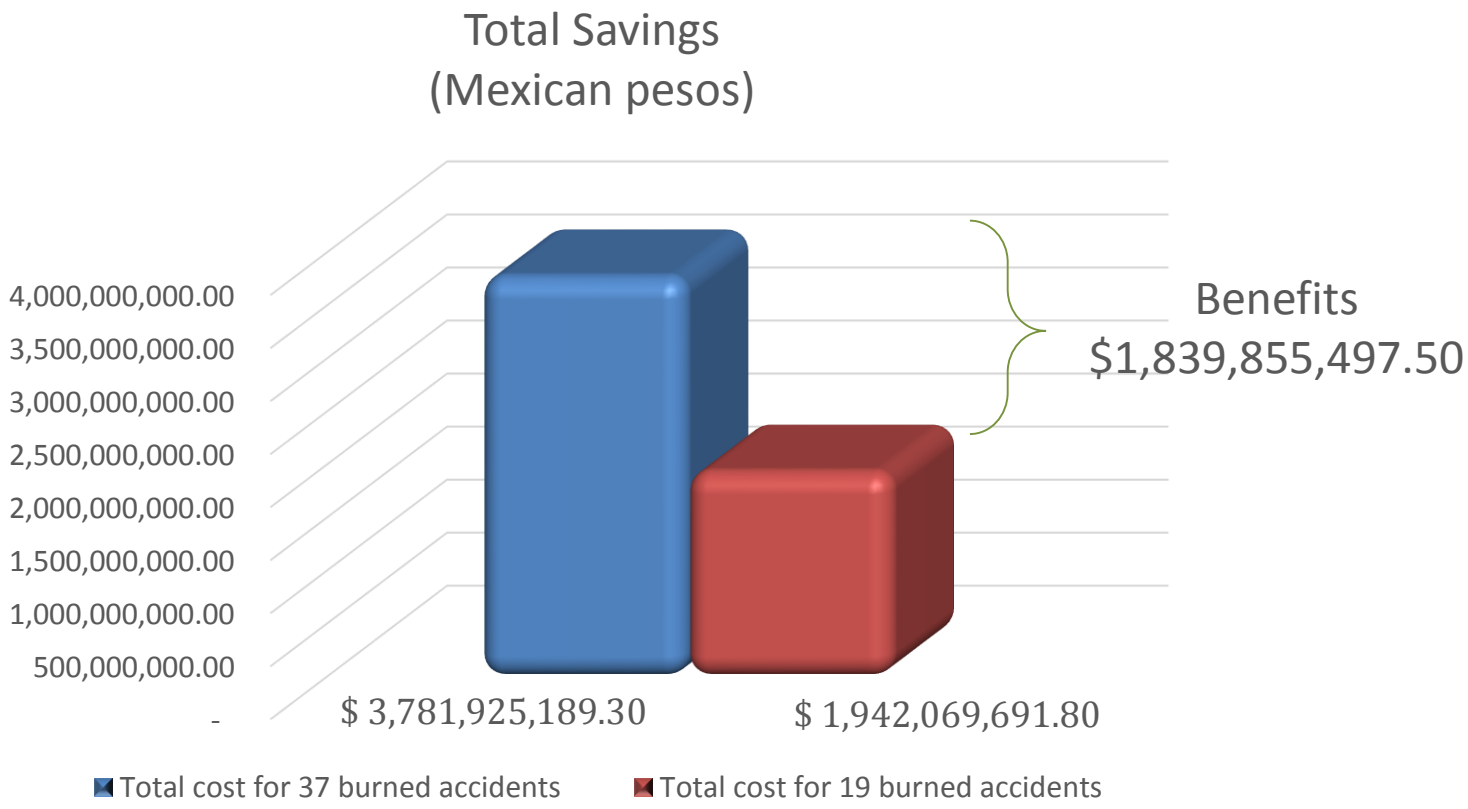
Then, SENER estimated costs for reducing accidents in 50%, that is 19 accidents occurred by burns by year during 30 years.

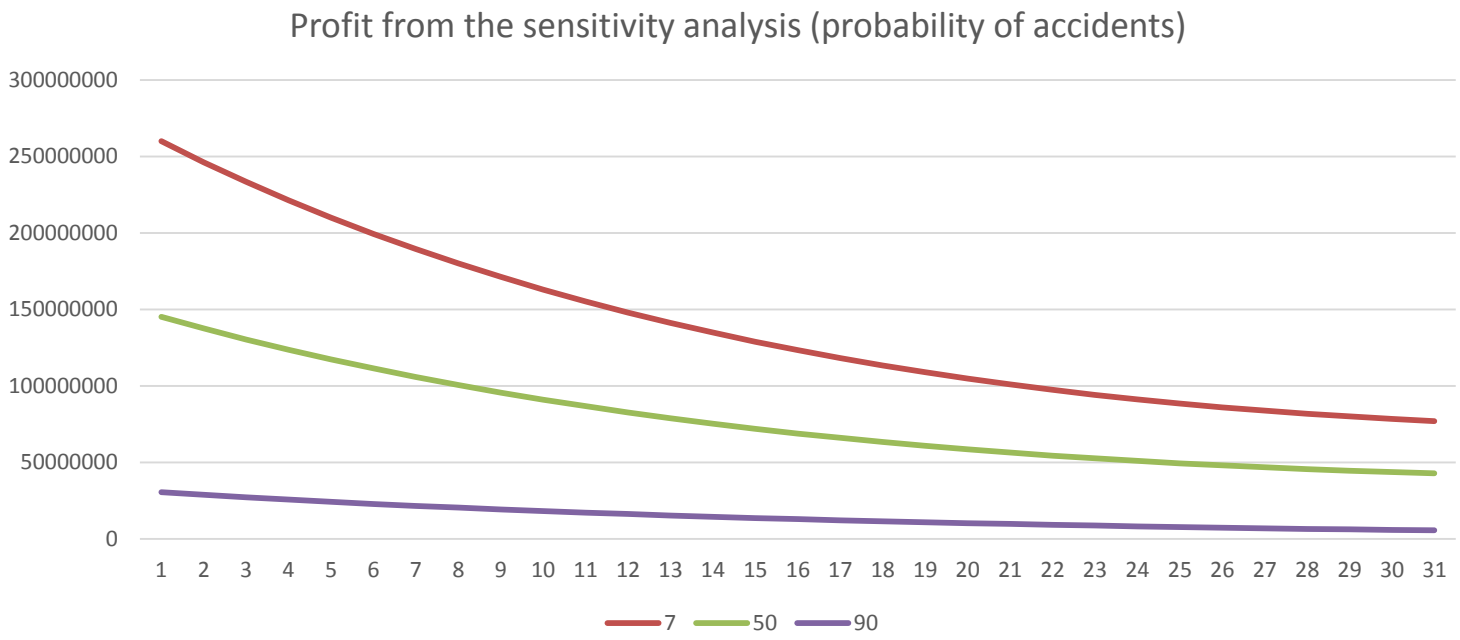
To do this, SENER used an inflation rate of 4.006816%, and a depreciation rate of 10%.

As a result, SENER found that the costs for treatment of 19 burned persons each year during 30 years would be approximately $1,942,069,691.80 Mexican pesos.

So, if SENER reduce the number of accidents by 50%, the standards requirements that must comply the owners of distribution plants of L.P. gas, the society would obtain benefits for $1,839,855,497.50 Mexican pesos.

PERCENTAGE OF REDUCTION IN ACCIDENTS	NET PROFIT FOR TREATMENT OF BURNS	NET PROFIT FOR LOSS OF HUMAN LIFE	NET PROFIT FOR LOSS MATERIALS	AGGREGATE	COST	BENEFIT IN NET PRESENT VALUE
0%	-	-	-	-	320,281,097.57	- 320,281,097.57
1%	-	-	-	-	320,281,097.57	- 320,281,097.57
2%	102,214,194.31	-	9,117,417.08	111,331,611.39	320,281,097.57	- 208,949,486.18
3%	102,214,194.31	-	9,117,417.08	111,331,611.39	320,281,097.57	- 208,949,486.18
4%	102,214,194.31	-	9,117,417.08	111,331,611.39	320,281,097.57	- 208,949,486.18
5%	204,428,388.61	-	9,117,417.08	213,545,805.70	320,281,097.57	- 106,735,291.87
6%	204,428,388.61	16,672,739.43	18,234,834.17	239,335,962.21	320,281,097.57	- 80,945,135.36
7%	306,642,582.92	16,672,739.43	18,234,834.17	341,550,156.52	320,281,097.57	21,269,058.95
...	...	...	...	...	...	...
50%	1,839,855,497.50	83,363,697.17	127,643,839.18	2,050,863,033.85	320,281,097.57	1,730,581,936.28
...	...	...	...	...	...	...
100%	3,781,925,189.30	166,727,394.33	264,405,095.45	4,213,057,679.08	320,281,097.57	3,892,776,581.51


Total Savings
(Mexican pesos)
4,000,000,000.00
3,500,000,000.00
3,000,000,000.00
2,500,000,000.00
2,000,000,000.00
1,500,000,000.00
1,000,000,000.00
500,000,000.00
-
$ 3,781,925,189.30
$ 1,942,069,691.80
Benefits
$1,839,855,497.50
Total cost for 37 burned accidents
Total cost for 19 burned accidents


Profit from the sensitivity analysis (probability of accidents)
300000000
250000000
200000000
150000000
100000000
50000000
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
7
50
90

Conclusions

From the above it follows:

If the number of accidents is low, this is reflected in economic benefits.

For this regulation to have more benefits than costs, it is necessary that the accident rate should be higher that 7%.

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Thank you

社會管制法規的影響評估方法

APEC Workshop: Methods and methodologies to evaluate the social impact on social regulations.

OFFICE OF INFORMATION AND REGULATORY AFFAIRS

- Methodologies for assessing the impacts of social regulation: Regulating Air Pollution

Any view expressed here are solely those of the presenter and do not necessarily reflect the position of the Office of Management and Budget or the Executive Office of the President

April 24, 2015
Mexico City, Mexico

AGENDA

Steps in Conducting Benefits Analysis

- Identifying Benefits
- Quantifying Benefits
- Monetizing Benefits
- Application: Regulating Air Pollution

Conceptual Framework

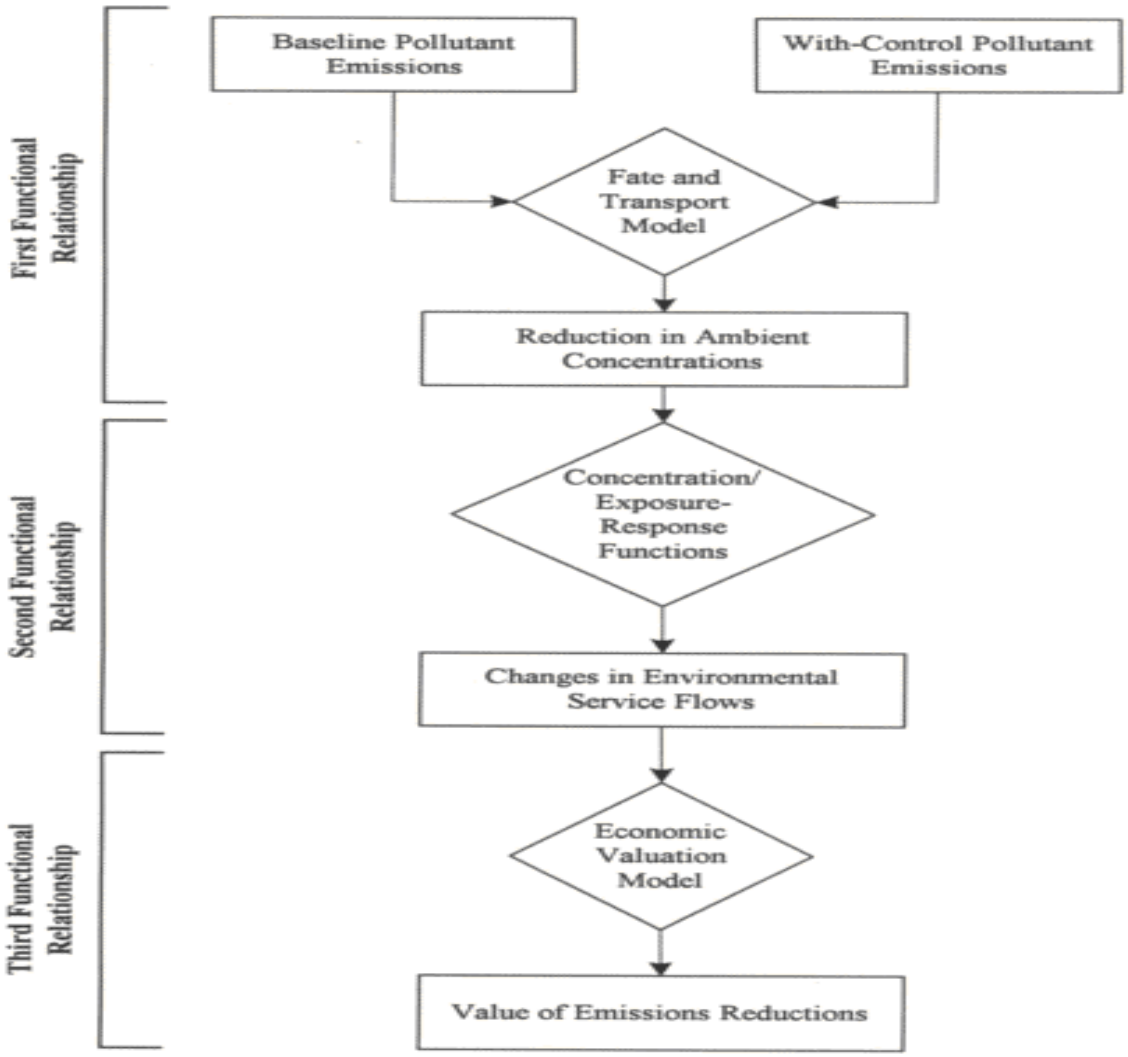


Figure 7-1. Functional Relationships in Benefits Analysis

Identifying Benefits

- Direct damages to *humans* including health damages and aesthetic damages
  - Health damages result from human exposure to pollutants: increases in the risk of death (mortality risk) or increases in the risk of adverse health effects.
    - Adverse health effects: acute (headaches, eye irritation) and chronic (asthma, emphsyema)
  - Aesthetic damages result from contamination of the physical environment: visibility, noise, odor
- Describing the relationship between changes in pollutant emission and ambient concentrations in environmental media then describing the relationship between those ambient pollution concentrations and the services provided by the physical environment.

Identifying Benefits

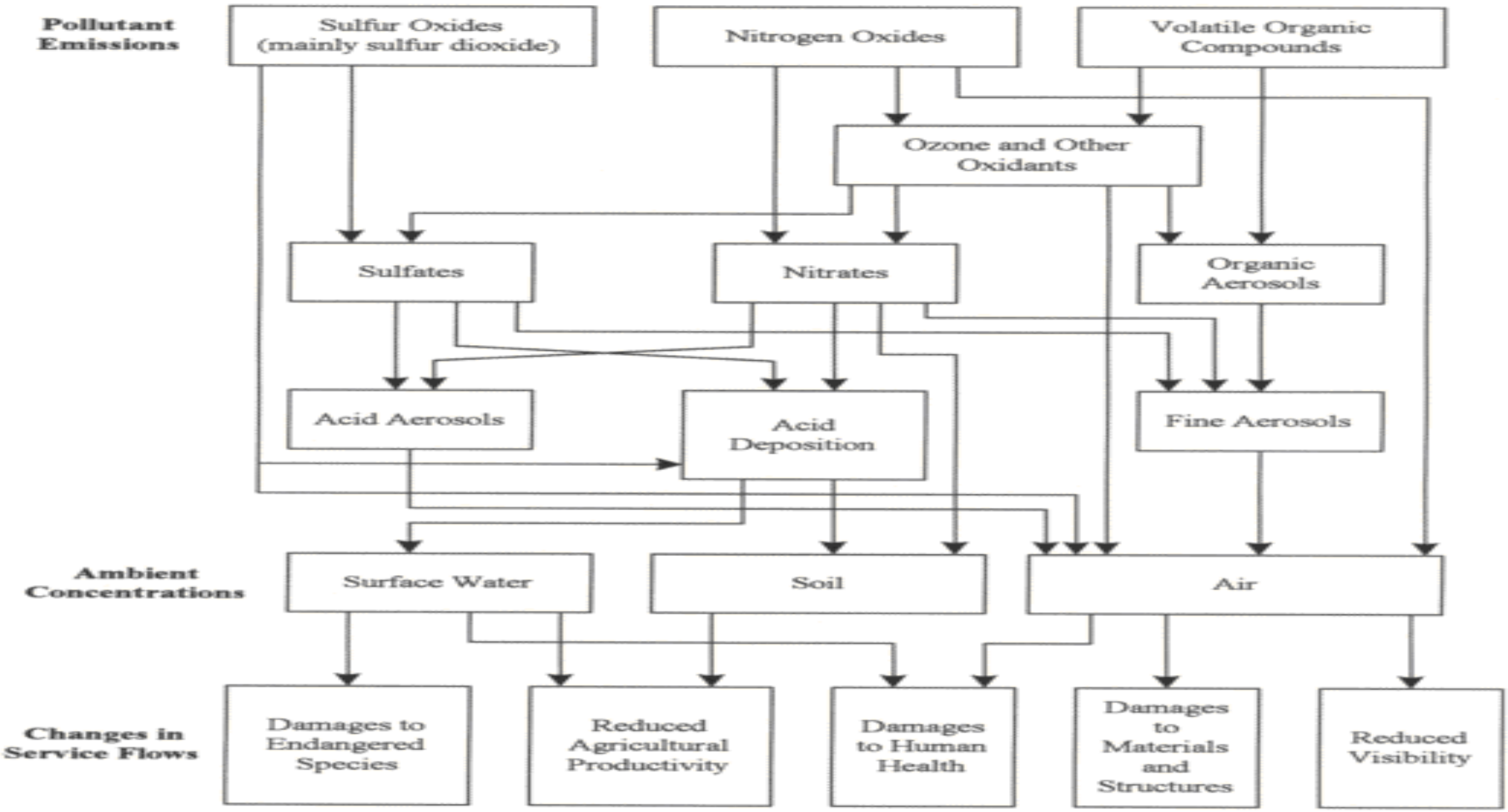


Figure 7-2. Functional Relationships Between NO_x Emissions and Environmental Service Flows

Based on a figure in DOE (1993).

Quantifying Health Benefits

Calculating the effects that changes in emissions have on environmental service flows.

- Quantifying changes in emissions
- Using modeling to estimate the corresponding changes in ambient concentrations of pollutants
- Estimating dose-response or concentration response relationships to translate these changes in ambient concentrations into quantitative changes in environmental damages.
  - Estimate of risk per unit of exposure to a pollutant

Quantifying Health Benefits

How do we quantify the impacts of regulatory interventions to improve human health?

1. Determine the dose-response relationship for each health effect,
   - Estimate of risk per unit of exposure to pollutant

2. Determine total exposure in the absence of the regulation,
   - Identify exposed populations, number of exposed individuals

3. Determine number of baseline cases for each quantifiable health effect,
   - Number exposed x Baseline exposure x Dose-response relationship

Quantifying Health Benefits

4. Determine total exposure with the regulation (for each regulatory alternative),
   - Estimate impact of option on exposure levels and expected post-regulatory level of exposure for that exposure pathway Quantified Health

5. Determine the number of cases for each quantifiable health effect with the regulation (for each regulatory alternative),
   - Repeat step 3 using post-regulatory estimates of exposure derived in step 4

6. Determine the number of cases avoided as a result of each alternative.
   - Quantified Health Effects = Baseline exposure Cases - Post-regulatory exposure cases

Estimating the Concentration Response Relationship

- Alternative to the 6 step process: estimating the extent of health effects as a function of ambient concentrations of pollutants in the atmosphere.
- Estimation of dose response relationship and exposure for each health effect for each regulatory alternative are combined into one step
- Useful when data may not be readily available

Estimating the Concentration Response Relationship

1. Determine the concentration response function for each health effect
2. Ambient pollution concentrations in the absence of the regulation
3. Ambient pollution concentrations with the regulation (for each alternative)
4. The number of cases avoided as a result of each alternative
5. The number of cases avoided as a result of each alternative

Monetizing Benefits

- Estimating society's willingness to pay (WTP) for quantified changes in environmental service flows
  - Measured as reduction in income required to return an individual to the level of utility he or she enjoyed prior to receiving the benefit
- Measuring Health Benefits
  - Non-fatal illness and injury (morbidity) and fatality (mortality)
  - Cost of Illness, revealed preference methods, averting action methods, hedonic wage and property value methods

Cost of Illness Approach

- Most common method employed in economic analyses of human health benefits
  - Difficult to generate or use WTP for reductions in risk of non-fatal illness or injury
  - Focus on avoided cost of injury
- Direct Costs: value of goods and services used to diagnose and treat
- Indirect Costs: foregone productivity (lost wages)
- Does not account for full range of costs (e.g. pain and suffering) so should be viewed as lower bound estimate

Case Study: National Ambient Air Quality Standard for Ozone

- What health effects are avoided by reducing ambient ozone levels to attain a revised ozone standard?
  - Human exposure to ground level Ozone (smog) contributes to acute and chronic respiratory health effects that contribute to mortality and morbidity
  - Use of “damage-function” approach to estimate changes in individual health endpoints (specific effects that can be associated with changes in air quality) and assigns values to those changes assuming independence of the values for those individual endpoints

Case Study: National Ambient Air Quality Standard for Ozone

- What is the economic value of these effects?
  - To assess economic values in a damage-function framework, the changes in environmental quality must be translated into effects on people or on the things that people value.
  - Use of cost of illness method to value impact associated with avoided morbidity and mortality associated with reduced ambient ozone levels

Case Study: National Ambient Air Quality Standard for Ozone

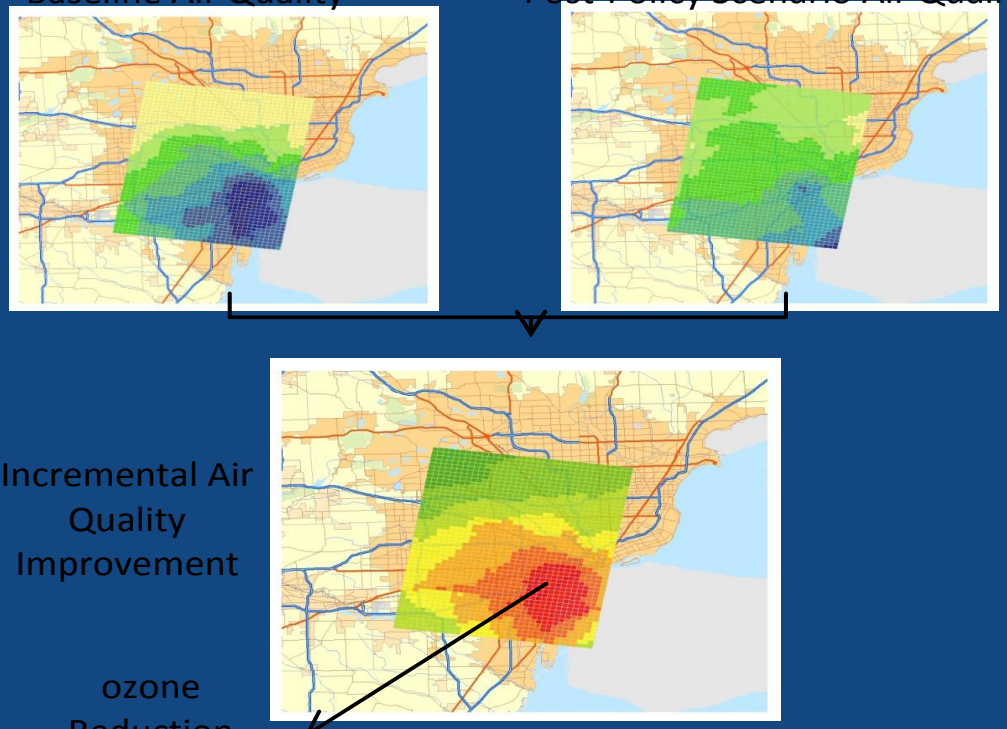
- Benefits Transfer Method
  - Adapt primary research from similar contexts
  - Adjust for level of environmental quality change, socio-demographic characteristics of affected population, other factors to improve accuracy and robustness
- Reliance on epidemiological studies that provide estimates of the relative risks of a particular health effect that is avoided because of a reduction in air pollution (WTP proxy)

Case Study: National Ambient Air Quality Standard for Ozone

- Existing Standard: 75 PPB
- Proposed revision: Analyze alternative levels of 70 ppb, 65 ppb and 60 ppb
- Benefits are estimated incremental to attainment of the existing standard of 75 ppb.

Benefits Category	Specific Effect	Effect Has Been Quantified	Effect Has Been Monetized	More Information
Improved Human Health				
Reduced incidence of premature mortality from exposure to ozone	Premature mortality based on short-term exposure (all ages)	✓	✓	
	Premature respiratory mortality based on long-term exposure (age 30–99)	✓	[a]	
Reduced incidence of morbidity from exposure to ozone	Hospital admissions—respiratory causes (age > 65)	✓	✓	
	Emergency department visits for asthma (all ages)	✓	✓	Section 5.6
	Asthma exacerbation (age 6-18)	✓	✓	
	Minor restricted-activity days (age 18–65)	✓	✓	
	School absence days (age 5–17)	✓	✓	
	Decreased outdoor worker productivity (age 18–65)	[b]	[b]	
	Other respiratory effects (e.g., medication use, pulmonary inflammation, decrements in lung functioning)	—	—	
	Cardiovascular (e.g., hospital admissions, emergency department visits)	—	—	ozone ISA [d]
	Reproductive and developmental effects (e.g., reduced birthweight, restricted fetal growth)	—	—	
Reduced incidence of premature mortality from exposure to $PM_{2.5}$	Adult premature mortality based on cohort study estimates and expert elicitation estimates (age >25 or age >30)	✓	✓	
	Infant mortality (age <1)	✓	✓	
Reduced incidence of morbidity from exposure to $PM_{2.5}$	Non-fatal heart attacks (age > 18)	✓	✓	
	Hospital admissions—respiratory (all ages)	✓	✓	
	Hospital admissions—cardiovascular (age >20)	✓	✓	
	Emergency department visits for asthma (all ages)	✓	✓	
	Acute bronchitis (age 8–12)	✓	✓	See section 5.6 and Appendix 5D
	Lower respiratory symptoms (age 7–14)	✓	✓	
	Upper respiratory symptoms (asthmatics age 9–11)	✓	✓	
	Asthma exacerbation (asthmatics age 6–18)	✓	✓	
	Lost work days (age 18–65)	✓	✓	
	Minor restricted-activity days (age 18–65)	✓	✓	
	Chronic Bronchitis (age >26)	—	—	
	Emergency department visits for cardiovascular effects (all ages)	—	—	
	Strokes and cerebrovascular disease (age 50–79)	—	—	
	Other cardiovascular effects (e.g., other ages)	—	—	PM ISA [c]

Case Study: National Ambient Air Quality Standard for Ozone



$$\Delta y = 1 - (e^{\wedge}(\beta \cdot \Delta x)) \, y_0 \cdot Pop$$

y_0 is the baseline incidence

Pop is the population affected by the change in air quality

Δx is the change in air quality

β is the effect coefficient drawn from the epidemiological study

Results

	Discount Rate	70 ppb	65 ppb	60 ppb
Ozone-only Benefits (range reflects Smith et al., 2009 and Zanobetti and Schwartz, 2008)	[b]	$2.0 to $3.4 +B	$6.4 to $11 +B	$12 to $20 +B
$PM_{2.5}$ Co-benefits (range reflects Krewski et al., 2009 and Lepeule et al., 2012)	3%	$4.8 to $11	$14 to $31	$25 to $56
	7%	$4.3 to $9.7	$12 to $28	$22 to $50
Total Benefits	3%	$6.9 to $14 +B	$20 to $41 +B	$37 to $75 +B
	7%	$6.4 to $13 +B	$19 to $38 +B	$34 to $70 +B

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Office of Best Practice Regulation

Regulatory costings in Australia

23-24 April 2015, Mexico City

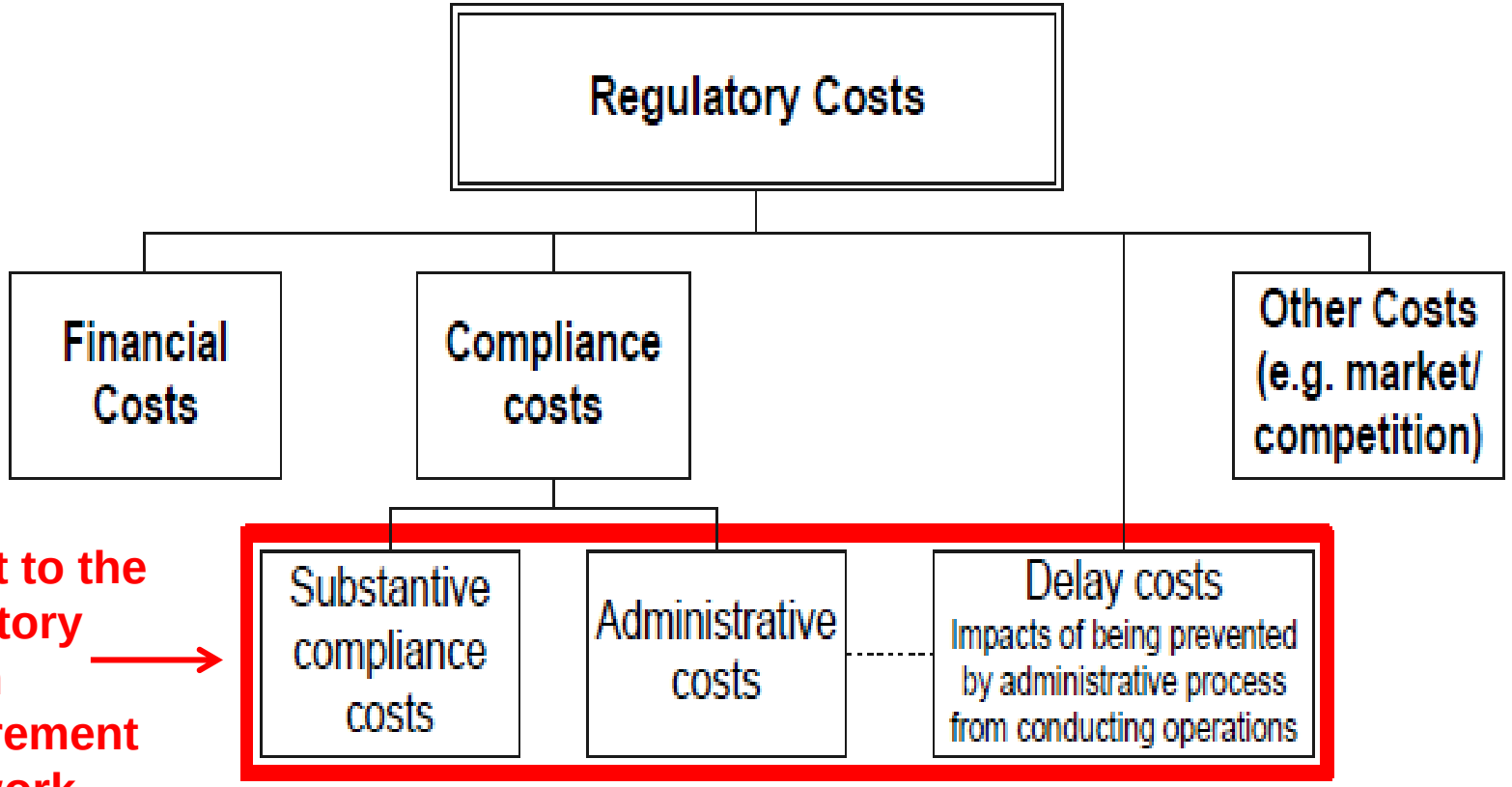
Rob Reilly, OBPR

Context

- Government has committed to reducing red tape by A$1 billion a year
- Cost burden of new regulation must be fully offset by reductions in existing regulatory burden

Regulatory Costs

What regulatory costs are quantified



Subject to the Regulatory Burden Measurement framework →

Regulatory Costs

- Exclusions from the Regulatory Burden Measurement (RBM) framework
  - *Opportunity costs (unless they relate to a delay)*
  - *Business-as-usual costs*
  - *The costs of non-compliance*
  - *Regulatory impacts related to the administration of courts and tribunals*
  - *Costs of international obligations imposed as a pre-requisite for participation in international markets*
  - *Internal Commonwealth Government red tape (except on Government Business Enterprises)*

See: https://www.dpmc.gov.au/office-best-practice-regulation/publication/regulatory-burden-measurement-framework-guidance-note

Scope of population

Relevant scope for the RBM framework is those businesses, community organisations or individuals that:

- Are subject to Australian law and whose activities have an impact in Australia and who either:
  - *interact with the Australian Government, or*
  - *are affected by an Australian Government regulation*

Grants, procurement etc.

- Government programmes in scope of RBM framework
  - *For example: grants, procurement and cost recovery arrangements.*
- The regulatory costs included are:
  - *application costs*
  - *ongoing costs of demonstrating compliance with the grant/procurement requirements.*
- Mutual Obligations excluded from RBM framework
  - *obligations imposed on stakeholders in return for a benefit (e.g. job seeker requirements)*

Costing model

- Standard cost model (SCM) is used to quantify administrative and substantive compliance costs
- Labour cost = (Time required × Labour cost) × (Times performed × Number of businesses or community organisations × Number of staff)
- Labour cost = (Time required × Labour cost) × (Times performed × Number of individuals)
- Purchase cost = (Purchase cost) × (Times performed × Number of businesses or community organisations)

Timeframe

- Proposals:
  - *Costed over a default 10 year period*
  - *Converted to an average annual impact*
  - *Annual regulatory costs (or savings from deregulatory proposals) accrue to the annual $1 billion red tape reduction target*
  - *No discounting of these regulatory costs/savings*

Australian Government
Department of the Prime Minister and Cabinet
Office of Best Practice Regulation

Improving Regulation

- Australia's Deregulation Agenda focussed on making compliance with regulations easier
- Efficiencies in complying with regulation accrue to the Australian Government's $1 billion target.
- Examples:
  - *Form simplification*
  - *Improving websites*
  - *Streamlining government interactions*
  - *Pre-populating forms*
  - *Removing unnecessary duplication*

Removing duplication - example

- One-Stop shop for environmental approvals
  - *Removal of duplication in environmental approvals*
  - *$400 million in annual regulatory savings*

- More information:

  http://www.environment.gov.au/epbc/one-stop-shop

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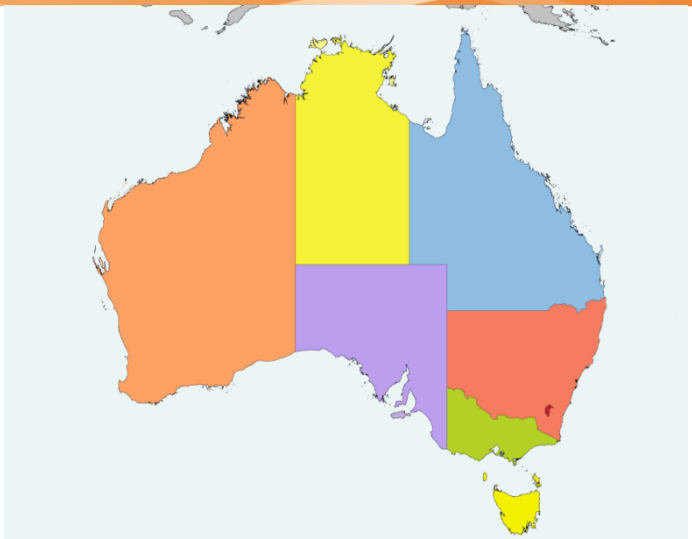
One-Stop shop Context



- Federal system of government
  - National government ('Australian Government'); and
  - sub-national (state and territory) governments
- Powers of the Australian Government are determined by the Australian Constitution
  - External affairs powers to Australian Government
  - Land and water resources left to States

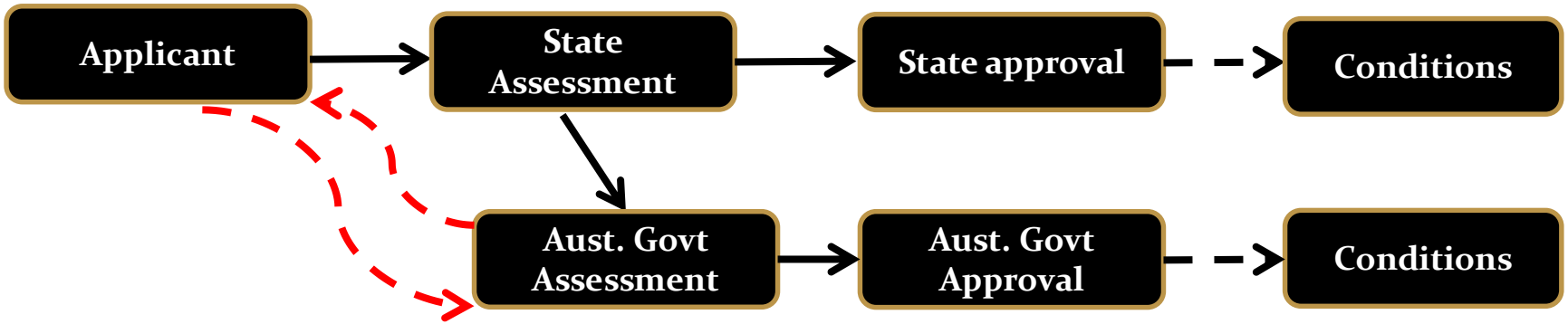
Environment protection laws

- Each state and territory has its own environmental protection framework
  - assessment, approvals.

- In 1999, Australian Government enacted the *Environment Protection and Biodiversity Conservation Act* (EPBC Act)
  - for matters of 'National Environmental Significance'
  - assessments, approvals

Pre-One-Stop Shop process

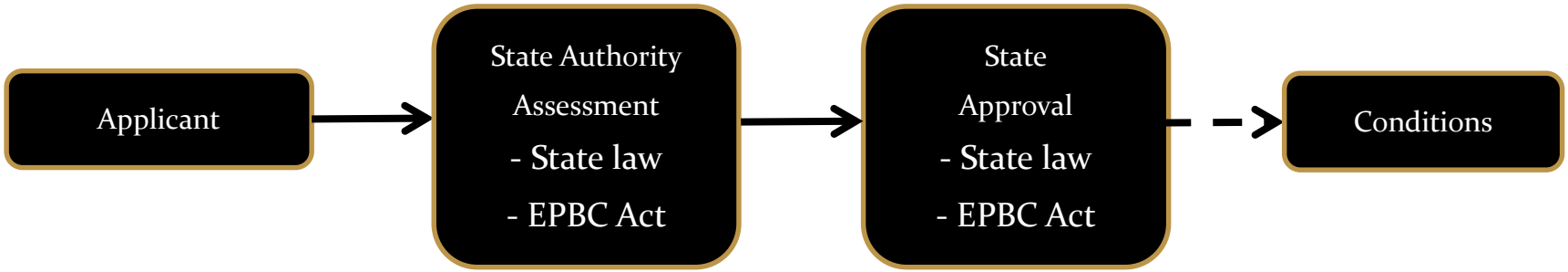
Pre-One-Stop Shop process



- Confusion
- Delay
- Inconsistency

One-Stop Shop

One-Stop Shop process



OSS - What are the savings?

- Cost of current system:
  - additional paperwork, negotiations
  - delay cost

- Delay cost: the cost of delaying the commencement of a project
  - measured by reduction in Net Present Value (NPV) of project caused by pushing project further into the future.

What are the savings?

$417.6m delay cost savings

Example 1: Redbank Copper Exide Leach Extension 2010-11

Project Life description	Original project net present value ($m)	Delay that would have been avoided for this project (days)	Change in net present value ($m)
Short term	23	382	2

Example 2: Warkworth Mine Extension 2012-13

Project Life description	Original project net present value ($m)	Delay that would have been avoided for this project (days)	Change in net present value ($m)
Medium term	1,426	186	56

Example 3: Cape Lambert Port B Development 2010-11

Project Life description	Original project net present value ($m)	Delay that would have been avoided for this project (days)	Change in net present value ($m)
Long term	2,810	175	104

Issues with RBM framework

- Offsetting requirements can be challenging
- Deregulatory initiatives sometimes lead to an increase in regulatory costs
- Valuing individuals' leisure time
- Defining mutual obligation requirements

References

- Available from the OBPR Best Practice Regulation website: http://www.dpmc.gov.au/office-best-practice-regulation/guidance
  - *Regulatory Burden Measurement (RBM) framework guidance note*
  - *Commonwealth Programmes guidance note*
  - *Individuals guidance note*

Gracias!

Questions?

https://www.dpmc.gov.au/office-deregulation
https://www.dpmc.gov.au/office-best-practice-regulation
www.cuttingredtape.gov.au

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REGULATORY IMPACT EVALUATION

Review of Regulatory Draft Projects

WHY IT IS IMPORTANT A REGULATORY IMPACT EVALUATION

It safeguards the public interest

It helps to identify, prevent and /or manage risks to animal, plant and human health; as well as ensuring security in several topics like: labor, consumer, economic, etc.

To ensure the effectiveness of regulations in order to achieve better social, environmental and economic outcomes.

To achieve a Whole of Government Approach through an Open Government strategy

MAIN AREAS OF OPPORTUNITY IN THE DEVELOPMENT OF A *RIA*

Some difficulties in correctly identifying costs of regulation	Lack of clarity in identifying the problem	Lack of empirical evidence
Lack of congruence between specific objectives and issues	Omission, lack of depth and/or completeness of a Cost-Benefit Analysis	Biased alternatives analysis.

WHAT DO WE REVIEW?

Determine the existence of a problem to solve	**Evidence & definition**
Ensuring that government intervention through a regulatory measure is justified.	**Alternatives Analysis**
Determining if the objective of government intervention seeks to solve the identified problem.	**Coherence between problem identification and objectives of regulation**
Ensuring that the main costs and benefits of regulation are identified	**Regulatory actions analysis**
Assessing if all costs and benefits of regulation identified are properly quantified and monetized	**Use of methods and methodologies for assessing the impact of regulation**
Determining if implementation and, if it is the case, inspection and enforcement of regulation mechanisms are foreseen.	**Compliance and Monitoring**
Ensuring that mechanisms and indicators are established to evaluate the performance of future regulation.	**Regulation performance (ex post evaluation)**

FINAL IDEAS

- The quality of regulation assessment is a public policy (it is not an exact science).
- We need to develop databases, in order to obtain empirical evidence and make ex post evaluations.
- Use the guide on Methods and Methodologies that we developed on 2013. It was developed with inputs from fifteen APEC economies and the technical skills and experience from COFEMER.
- Do not be afraid to measure and quantify the impacts of regulation. TRY.
- These measurements are useful for information that allows us to make decisions.

案例分析

Case Study Exercise: Designating Critical Habitat for Endangered Pacific Salmon

The Pacific Coast Salmon is an important economic, cultural and environmental resource for the Western United States. Loss of habitat and overfishing has depleted the stock of Pacific Coast Salmon species in the United States to levels where these species are in danger of extinction. The Endangered Species Act (ESA) requires the National Marine Fisheries Service to designate "critical habitat" for species that are threatened or in danger of extinction, to provide protections for lands that support life functions that are critical to the survival of the species. These protected lands must be designated "on the basis of the best scientific data available and after taking into consideration the economic impact, the impact on national security and any other relevant impact, of specifying any particular area as critical habitat."

Salmon are anadromous fish, meaning adults migrate from the ocean to spawn in freshwater lakes and streams where their offspring hatch and rear prior to migrating back to the ocean to forage until maturity. In general, Pacific Salmon migrate through a broad range of interconnected habitats. For that reason, designating critical habitat for Pacific Salmon has potentially large economic and other impacts. Economic activities that take place within areas that are designated as critical habitat must be modified if these activities have the potential to harm these species that are endangered of extinction. These modifications have economic costs and other negative impacts, ranging in magnitude from modest to hundreds of millions of dollars. To the extent that the modifications enhance salmon habitat, they also have beneficial impacts, to the fish species and possibly to other species and elements of the affected ecosystems.

The legal definition of "critical habitat" under the Endangered Species Act (ESA) is as follows:
(I) the specific areas within the geographical area occupied by the species, at the time it is listed . . ., on which are found those physical or biological features (I) essential to the conservation of the species and
(II) which may require special management considerations or protection; and
(ii) specific areas outside the geographical area occupied by the species at the time it is listed . . . upon a determination by the Secretary that such areas are essential for the conservation of the species

The ESA provides discretion to exclude any area from critical habitat if "the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat." This discretion to exclude areas is limited however, as a particular area may not be excluded from critical habitat if it's exclusion "will result in the extinction of the species."

For the purposes of this regulation, the National Marine Fisheries Services has determined that individual watersheds ("HUC 5 watersheds") within the State of Oregon are the unit of analysis corresponding to the standard of "specific areas" as established in the legal definition of critical habitat. These specific areas have varying degrees of biological conservation value to support the essential life functions of Pacific Salmon.

These parameters form the basis of the framework used to evaluate the geographic scope of "critical habitat" for the Pacific Salmon.

Key Questions

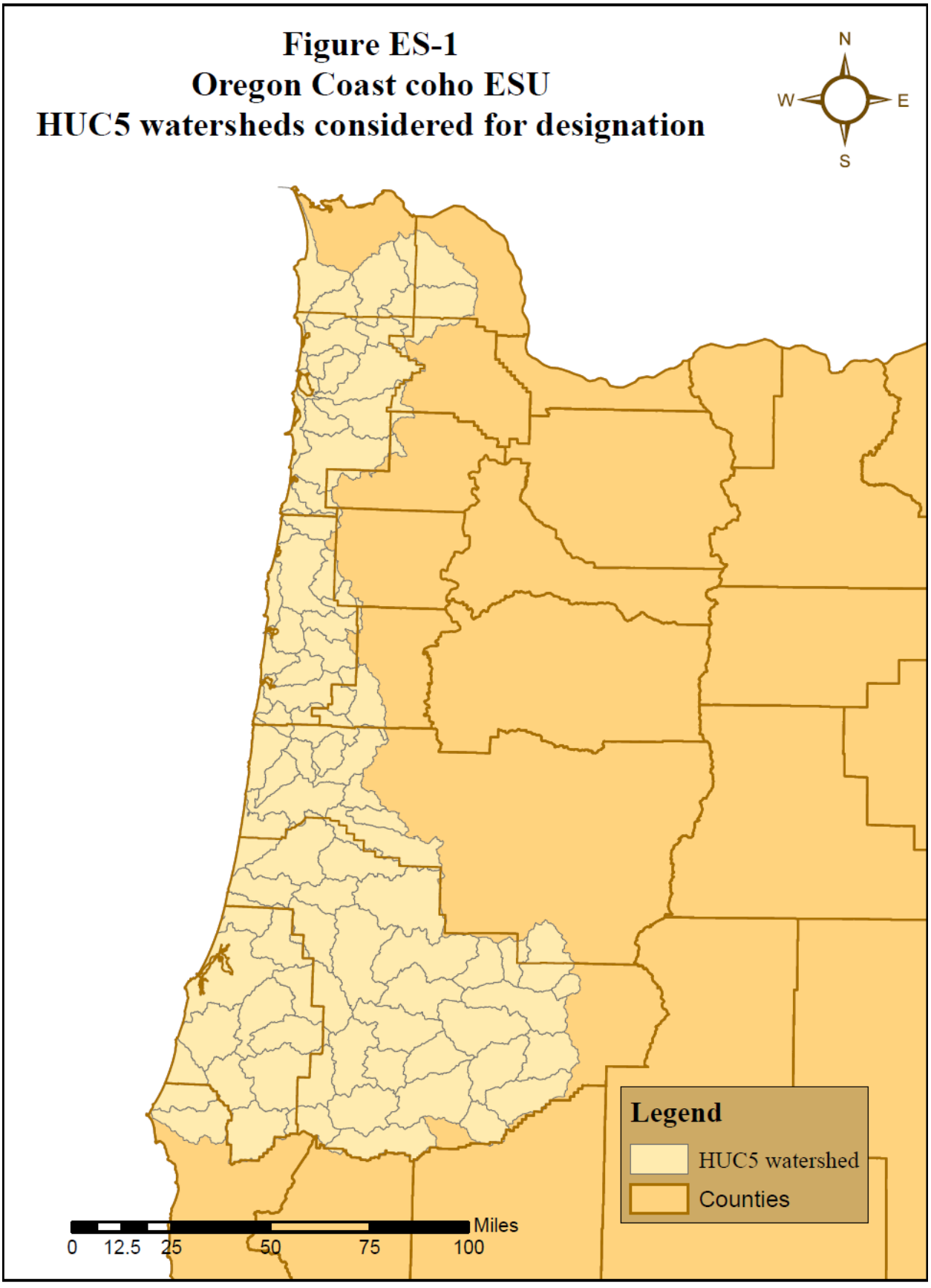
What is the problem that a potential regulatory intervention would address?

What information would you need to be able to evaluate the potential costs and benefits?

What would be the main potential costs and benefits of the regulatory action?

What method of evaluating costs and benefits would be most appropriate given the information that has been provided?

Figure ES-1
Oregon Coast coho ESU
HUC5 watersheds considered for designation



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Workshop on Methods and Methodologies to Evaluate the Impact of Social Regulation

Mexico City, April 2015

Practical Case

Escenario Base	
Habitantes	**100,000**
Consumo	30
Consumo total	3,000,000
Precio	5
Revenue	15,000,000
% causa obesidad	**20%**
Pacientes	20,000
Costo de paciente	**5,000**
Ingreso Gobierno	-
Gasto Gobierno	100,000,000
Ingresos Empresa	15,000,000
Ingresos Gobierno	-
Gastos Gobierno	100,000,000
Gastos Ciudadano	-
Total	(85,000,000)

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Practical Case

Escenario A	
Habitantes	**100,000**
Reducción	10%
Consumo	27
Consumo total	2,700,000
Precio	6
Revenue	13,500,000
Taxes	2,700,000
% causa obesidad	**20%**
Pacientes	20,000
Costo de paciente	**5,000**
Gasto Gobierno	100,000,000
Ingresos Empresa	13,500,000
Ingresos Gobierno	2,700,000
Gastos Gobierno	100,000,000
Gastos Ciudadano	2,700,000
Total	(86,500,000)

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Practical Case

Escenario B	
Habitantes	**100,000**
Reducción	50%
Consumo	15
Consumo total	1,500,000
Precio	6
Revenue	7,500,000
Taxes	1,500,000
% causa obesidad	**20%**
Pacientes	20,000
Costo de paciente	**2,000**
Gasto Gobierno	40,000,000
Ingresos Empresa	7,500,000
Ingresos Gobierno	1,500,000
Gastos Gobierno	40,000,000
Gastos Ciudadano	1,500,000
Total	(32,500,000)

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Tackling Overweight and Obesity in Mexico

Mexico ranked second highest for obesity among the OECD country members[1].The growing obesity rate in Mexico has been a concern for the federal government. On one hand it represents a health risk for the citizens. Medical studies have linked obesity with diseases such as diabetes and cancer.

On the other it has created budgetary pressures in order to attend citizens facing obesity health related issues. In order to reduce obesity and overweight, a tax reform with aim to disincentive the consumption of beverages with high concentration of sugar has been proposed.

A 20% special tax ad valorem on the sales price over beverages and products sweetened with sugar is to be applied. However, two research institutions have found contradictory results in the effect of the tax reform. One concluded that the rise in the sales price will significantly reduce the quantity purchased of the products—the level of consumption is very sensitive to price changes. While the other found that the rise in price will not decrease the demand in a considerable amount—the consumption has low sensitivity on price changes.

Responsible institution: Ministry of Finance**,** Congress**.**

Discussion case[2]

To attend the policy efficiency, three scenarios are presented: the baseline scenario before the tax reform and two possible outcomes. The first considers a low sensitivity of price changes on consumers and the second a high sensitivity.

Data:

- **20%** of people consuming sugar concentrated products have to be attended
- The cost of attending people distributes as follows:
    - For consumption higher than 20 lts per month: **$5,000**
    - For consumption between 10 and 20 lts per month: **$2,000**
    - For consumption between 0 and 10 lts per month: **$500**
- The additional tax is **20%**

Baseline Scenario:

- The population consuming sugar concentrated products is **100,000**
- The price is **$5** per liter
- Each person consumes **30** liters per month

Scenario A:

- The product has a new **20%** sales tax
- The price is now **$6**
- The population consumes **10% less** than the baseline scenario

Scenario B:

- The product has a new **20%** sales tax
- The price is now **$6**
- The population consumes **50% less** than the baseline scenario

Discussion

(1) What is the problem in the situation presented?
(2) What should the policy objective?
(3) How would you go about estimating the benefits?
(4) How would you go about estimating the costs?
(5) Is the policy addressing the problem in an effective manner?

References:

[1]OECD: Obesity Update Bulletin, June 2014

[1]The following case is built with fictional data; it is not intended to resemble any actual market.