Is public spending on recreation services justified?

Yes, if it is welfare increasing.

But whose welfare are we talking about?

- We study the relationship between income and willingness to pay for collectively provided state-owned recreation and conservation areas in Finland and discuss distributional impacts of the subsidized recreation services.

- A point of departure for our analysis is that recreation services provided by the government have a *private good* component captured by the use of the services and a *public good* component determined, e.g. by preferences towards nature conservation.
Objectives of our study:

- to investigate preferences and demand for state owned recreation and conservation areas --- what do we know about the true nature of these goods?
- to study distributional aspects of public provision of recreation services:
  - income elasticity of WTP for the whole population and specific groups
  - consumer surplus for two income groups

Who benefits from these goods most? Would fees be welfare improving? (to whom?) What would be an optimal level of fee? (to whom?)

Previous economic research

- Economists have for a long time been concerned about whether government provision of public goods benefits all citizens but high income groups, despite the opposite initial political intention.
- In this context, outdoor recreation areas or, more generally, nature protection and other “environmental goods” are often classified luxury demand.
- However, there is little evidence that this is necessarily the case.
In the theoretical literature...

... it has been emphasized that a clear distinction between the income elasticity of demand and the income elasticity of willingness to pay (WTP) should be made (Hanemann 1991, Flores and Carson 1997, Ebert 2003).

- The income elasticity of WTP is an elasticity derived for a “virtual price” for environmental quality changes elicited in contingent valuation studies.
- The income elasticity of WTP ($\varepsilon_w$) indicates whether environmental benefits are distributed regressively ($\varepsilon_w<1$, “pro poor”), proportionally ($\varepsilon_w=1$) or progressively ($\varepsilon_w>1$, “pro rich”).

In empirical contingent valuation studies...

...the income elasticity of WTP for ecosystem services provided by the environment (clean air, water purification, pollination) is less than one (Kriström and Riera 1996, Hökby and Söderqvist 2003).

However, recreation services cannot be considered as rationed, pure public goods. Some empirical studies on the income elasticity of demand for public goods indicate that recreation is a luxury good (Boercherding and Deaton, 1972; Bergstrom and Goodman, 1973).
In fact, there is considerable evidence that recreation services are more often used by wealthy households (Cordell et al. 2002). An intuitive reason is the costs involved with the use of recreation services such as travel costs, equipment etc.

A counterargument is that as recreation is a time-consuming commodity, the opportunity cost of time is lower for households with lower income.

Evidence from travel cost studies indicates that income elasticity for changes in recreational consumer surplus is less than one. (Morey et al 1993)

In addition, funding alternatives of services have a strong influence on how recreation services are perceived. It is believed that “fees are regressive while at least some forms of taxes are progressive” (More 1999, p. 242).
Data used in our analysis

- An extensive national outdoor recreation survey carried out in Finland; Virtanen et al in Sievänen (ed.) 2001
- A representative sample of the whole Finnish population including both users and non-users of state owned recreation and conservation areas.

Methods

- In the demand analysis, willingness to pay for state owned recreation and conservation areas is estimated by a maximum likelihood interval estimation method (a variant of Tobit model, “grouped data” in LIMDEP); two payment vehicles, a recreation pass and a tax increase earmarked for outdoor recreation, used
- non-parametric Ayer estimator is applied for comparison of consumer surpluses in different income groups.
WTP question - sample A (N=916)

“Suppose that the users of recreation areas and national parks had to buy a personal recreation card, the sales revenues from which would be used for maintenance of these areas. The card would entitle one to access to the recreation areas and the use of basic services such as campfire sites, firewood, and waste disposal.

How much would you be willing to pay at most for an annual recreation card which would allow you to use state-owned recreation areas and national parks?”

WTP question - sample B (N=851)

“Suppose that a general tax increase would be needed to maintain the basic services in recreation areas and national parks and their provision free of charge. The basic services include the use of campfire sites, firewood, and waste disposal and other basic facilities.

How much more tax would you be willing to pay per year at most, if it were guaranteed that the additional tax revenues would be used for maintenance of the areas?”
### Mean WTP per year (FIM) by income group and payment vehicle (Total sample N=1767)

<table>
<thead>
<tr>
<th>Total sample</th>
<th>Mean WTP(FIM)/ Proportion WTP=0 (%)</th>
<th>Income</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Lower than median</td>
</tr>
<tr>
<td>Payment vehicle</td>
<td>Tax</td>
<td>FIM 90 / 40,2%</td>
</tr>
<tr>
<td></td>
<td>Recreation pass</td>
<td>FIM 94 / 31,2%</td>
</tr>
</tbody>
</table>

### Mean WTP per year by income group and payment vehicle:

**Non-users, N=1272**

<table>
<thead>
<tr>
<th>Non-users</th>
<th>Mean WTP(FIM) per year</th>
<th>Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment vehicle</td>
<td>Tax</td>
<td>FIM 78(^1)</td>
</tr>
<tr>
<td>Recreation pass</td>
<td>FIM 83</td>
<td>FIM 95</td>
</tr>
<tr>
<td>Both</td>
<td>FIM 87(^3)</td>
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</tbody>
</table>

**Users, N=396**

<table>
<thead>
<tr>
<th>Users</th>
<th>Mean WTP(FIM) per year</th>
<th>Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment vehicle</td>
<td>Tax</td>
<td>FIM 130(^2)</td>
</tr>
<tr>
<td>Recreation pass</td>
<td>FIM 116</td>
<td>FIM 103</td>
</tr>
<tr>
<td>Both</td>
<td>FIM 112(^3)</td>
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**Statistically significant differences:**

1. Among non-users: between income groups
2. Among lower than median income group: between users and non-users
3. Between non-users and users
The income elasticity of WTP from demand functions estimated by Tobit models

\[ \varepsilon_w = \frac{d(\ln \ WTP)}{d(\ln Y)} \]

In total sample \( \varepsilon_w = 0.09 \)

Among non-users \( \varepsilon_w = 0.11 \)

Tax as a payment vehicle \( \varepsilon_w = 0.21 \)

These estimates suggest that policies providing recreation areas are regressive, or favor “the poor”.

WTP distribution per visit by income group
Using the WTP data, we derive estimates on losses of consumer surplus by income group in a case that a fee is accepted by a median voter is imposed.

1) A referendum including both users and non-users as voters: An annual fee of FIM 84 per person would be accepted by a median voter. 
⇒ The current policy is regressive, or ”pro poor”.

However, a comparison between users and non-users in two income groups reveals that currently the ”rich” users benefit more than the ”poor” users!

2) A referendum including both users and non-users as voters, but WTP adjusted per average number of visits per year in population:
- An annual fee of FIM 63 per person would be accepted by a median voter including non-users.
- An annual fee of FIM 12 per person would be accepted by a median voter among users.

⇒ For a small increase in a recreation fee (from zero to FIM 12= €2), the low income group suffers in relative terms a larger efficiency loss than for a large increase in a recreation fee (from zero to FIM 63= €10), compared to the high income group.
⇒ Demand for recreation more elastic for a low income group!
Conclusions

- When non-use values are included, the loss in consumer surplus indicates that those with lower than median income would lose more than those with higher than median income
  - An interesting paradox for policy implications
- Non-use values seem to be at least equally important to the “poor” as to the “rich”
  - Contradicts a common assumption about the nature of environmental, public goods as luxury goods.

However, when it comes to the use values, the picture is different as policy may be progressive.

- If a fee is to be imposed, a higher fee should be considered for distributional reasons (necessitates a policy that recycles revenues from fees back to the poor, though)!
- Actually, majority voting would do the trick --- if the decision on fee were made by the users only, they would vote too low a fee from a social point of view!