

# Vad tycker Skånes medborgare om ekologisk kompenstation?

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EKOLOGISK KOMPENSATION MED KOMMUNPERSPEKTIV

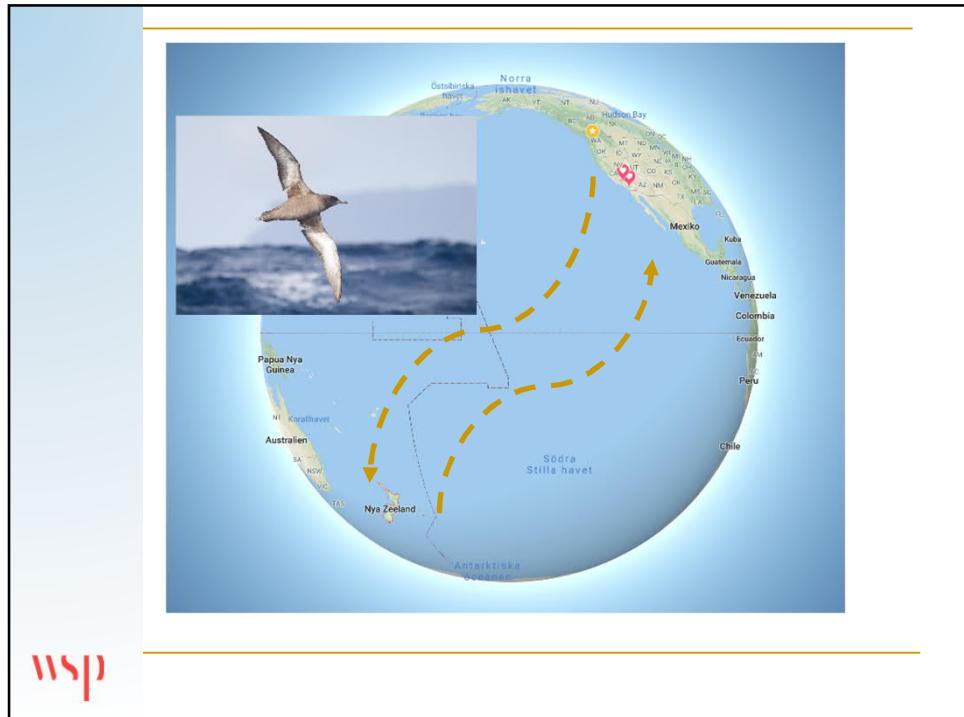


SWEDISH ENVIRONMENTAL  
PROTECTION AGENCY

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*Var går gränsen  
för flexibilitet i valet  
av kompensationsprojekt och  
går det att mäta?*

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## Vilka variabler kan man styra över?

1. Likhet i resurs mellan skada och kompensation
2. Kompensationsyta -- var?
3. Kompensationsyta -- hur stor?
4. Kompensationsyta -- hur används den idag?
5. Annat?

**Frågan** → vad är det bästa utformningen av ekologisk kompensation?

Vår forskning handlar om att mäta människors preferenser



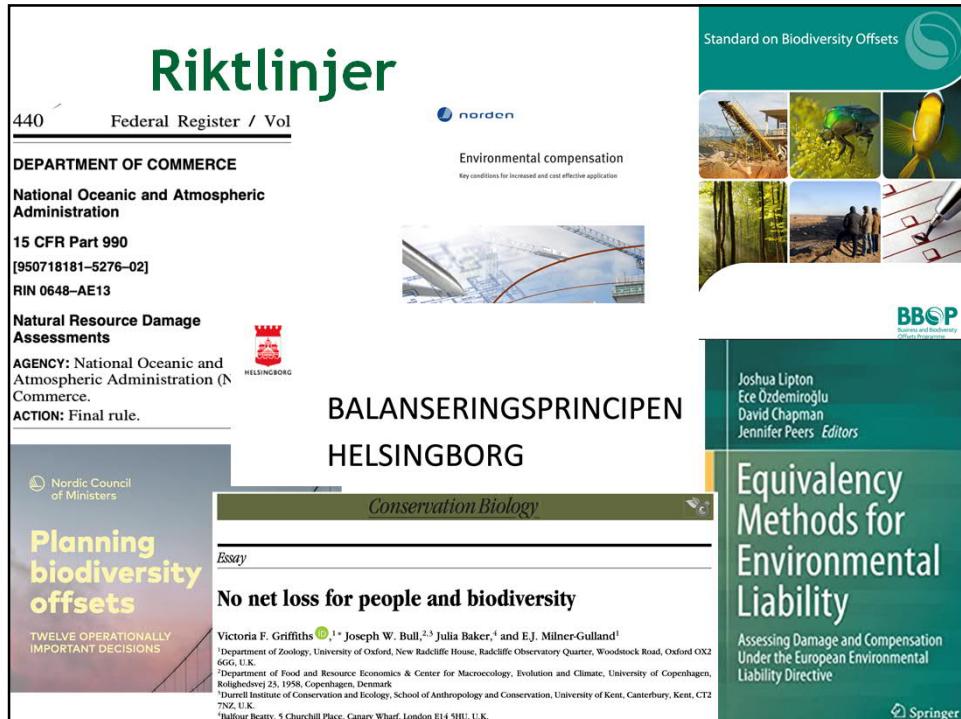
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## Game plan

- Kontext
- Vår enkät (Choice experiment)
- Resultat
  - Acceptans för kompensation
  - Utformning av ekologisk kompensation
- Slutsatser och implikationer



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## Guidelines suggest...

**(1) Compensation is a good idea**

**(2) A set of general principles ...**

- “nearby is best”
- “bigger is better” (e.g., 2:1 )
- Etc...

**(3) Specific recommendations for complex trade offs**

- Proximity more important for recreation (vs nature/biodiversity).
- etc

**Does the public agree?**

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## On-line survey in Sweden

**On-line survey focusing on respondents':**

- Attitudes toward nature & urban development
- Awareness/attitudes of compensation/offsetting
- Preferences regarding compensation design
- Sociodemographic info (age, income, etc)

**Compensation not required in Sweden, but...**

- 24 % of 290 municipalities work / plan to work with compensation (Mellin et al. in press).
- Government investigation (SOU 2017:34)
- Swedish EPA funded research 2018-2020

Skåne  
Maj 2020.  
Sample size N=1,005



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## Choice Experiment

Ekonomer studerar vad som påverkar en individs val.

En sätt att göra det är valmodeller

Valet beskrivs i termer av ett antal attribut

En s.k. "valmodell" (Choice Experiment)

	Car A	Car B
<b>BRAND</b>	BMW	Mercedes
<b>MILEAGE</b>	2 miles per gallon	10 miles per gallon
<b>COLOR</b>	British racing green	Metallic Green
<b>PRICE</b>	\$20,000	\$100,000
<b>which do you prefer</b>	<input type="radio"/>	<input type="radio"/>

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## Choice Experiment

1. Ställ frågan!
2. Observerar vilka val som görs av respondenten i enkäten
3. Skattar en statistisk modell – Hur påverkar attributen valet?
4. Drar slutsatser - vad som kan öka/minska chansen att en viss design väljs?

Valmodell på "Kompenstationdesign"

Vi undersöker attribut som är relevanta för ekologisk kompenstation

	Alt. A	Alt. b
BRAND	BMW	Mercedes
MILEAGE	2 miles per gallon	10 miles per gallon
COLOR	British racing green	Metallic Green
PRICE	\$20,000	\$100,000
which do you prefer	<input type="radio"/>	<input type="radio"/>

prev | next



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En hypotetisk miljöskada → Nya bostäder som tar ett grönområde i anspråk

"Detta kommer att påverka negativt både

### NATURVÄRDEN

+

möjligheten till **UTOMHUS-AKTIVITETER.**



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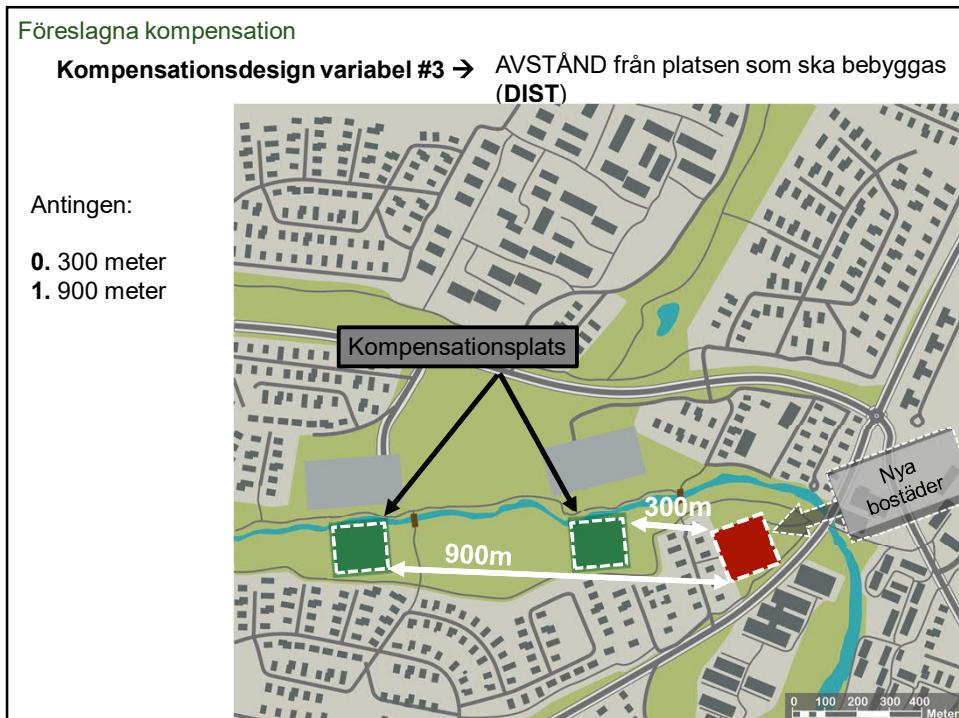
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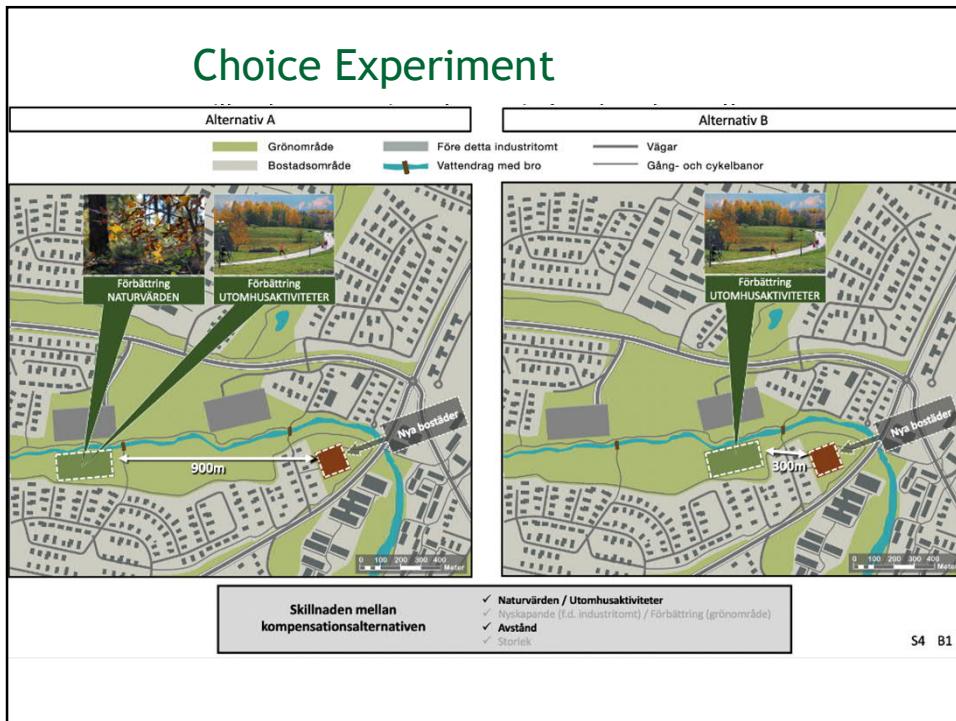
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## 3 Q's the model(s) can answer

**1) Which attribute had the highest absolute value?**

- (Marginal Effects)

**2) What about relative value of attributes?**

- (Marginal Rate of Substitution)

**3) What if combination of attributes matter in choice?**

- (Interaction Effects)

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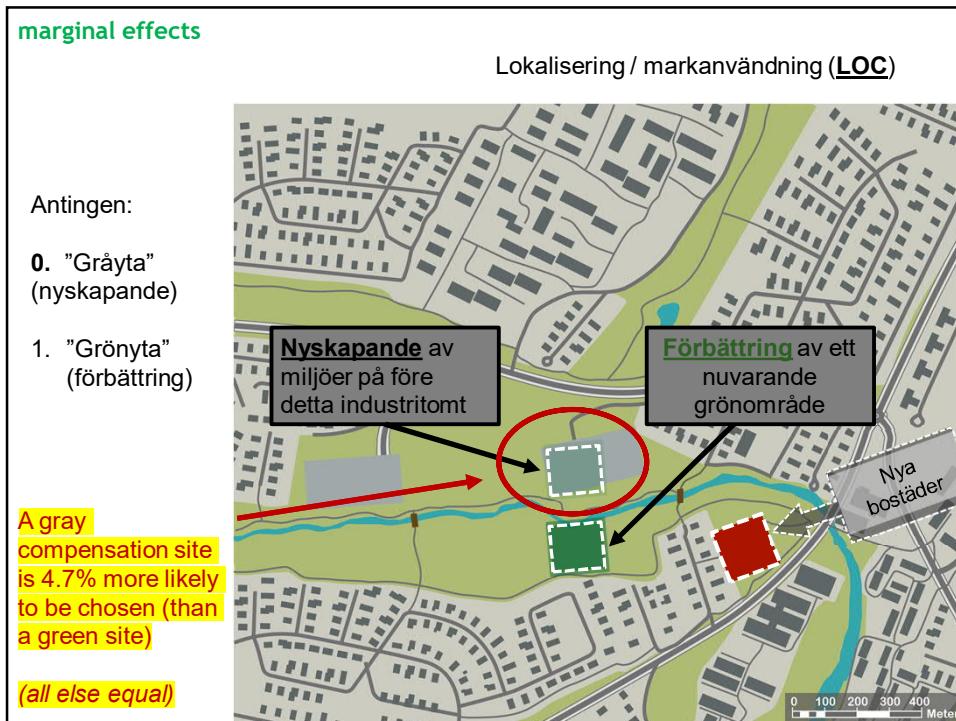
## 1) Marginal effects

How do changes in the **compensation variable** affect the likelihood of choosing a compensation alternative?

These "marginal effects" are best shown visually ...

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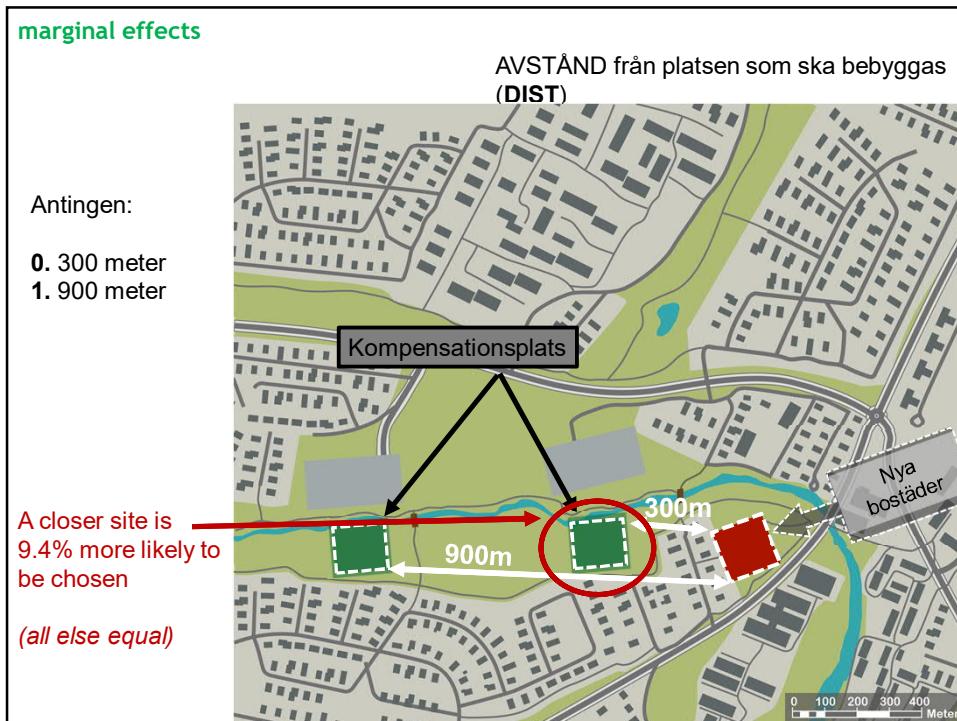
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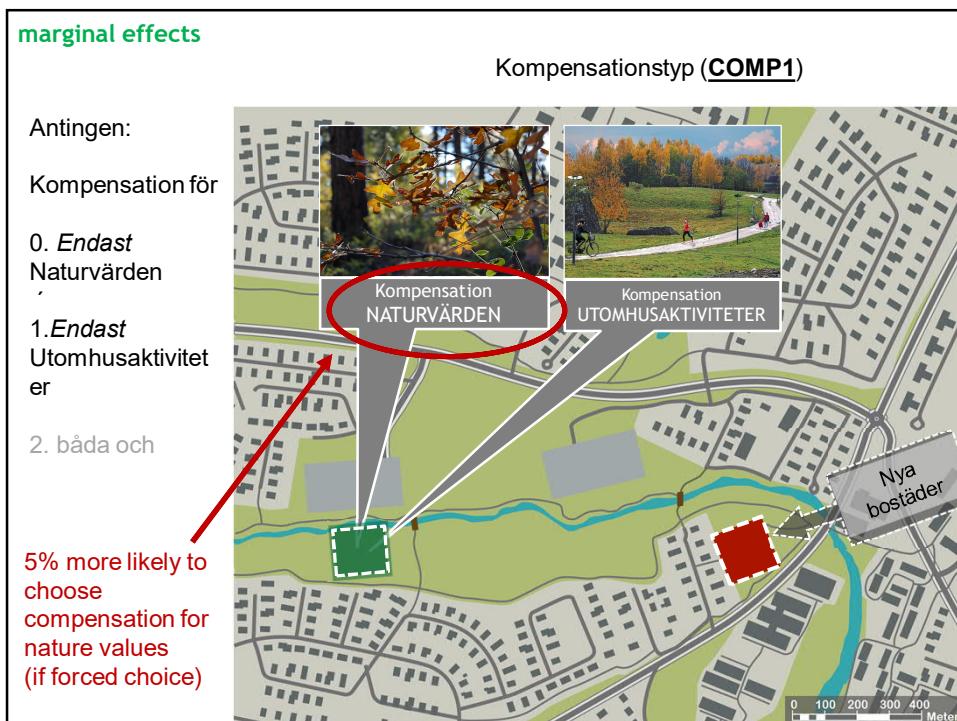
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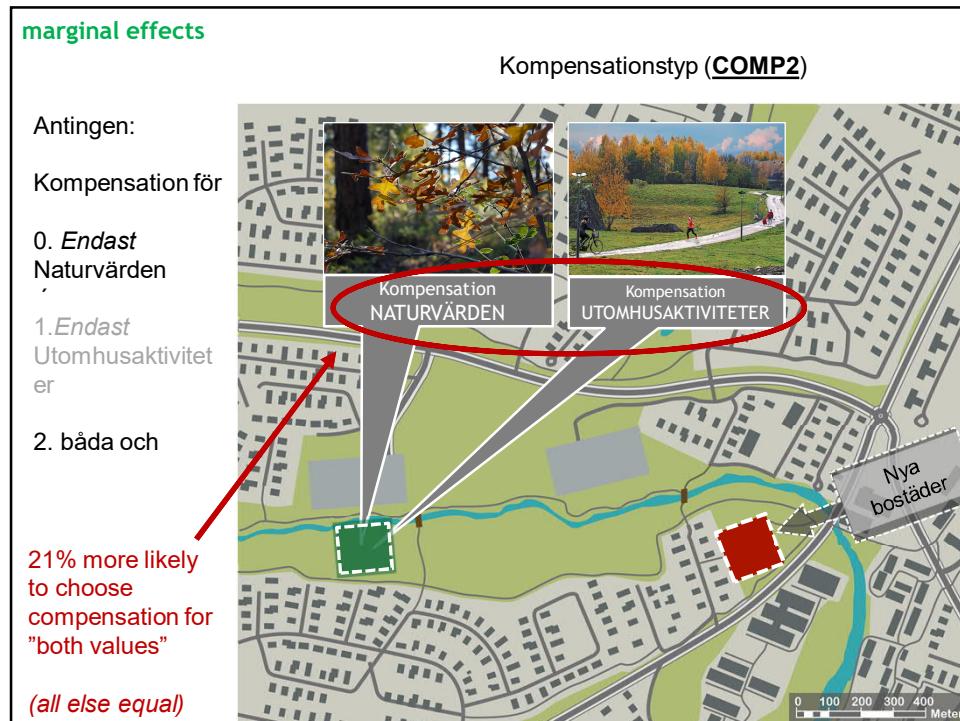
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### 1) Marginal Effects - (Summary)

How changes in the **compensation variable** affects the likelihood of choosing a compensation alternative?

Attribute	Average Marginal Effect (95% CI)	Z-value	p-value
LOC	.047 (.03 - .06)	5.85	<0.0001
SIZE	.230 (.21 - .25)	26.98	<0.0001
DIST	-.094 (-.11 - -.07)	-11.03	<0.0001
COMP1 (Nat-> Rec)	-.050 (-.07 - -.03)	-4.46	<0.0001
COMP2 (Nat-> Both)	.217 (.20 - .24)	20.76	<0.0001

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Estimated in R "Average Marginal Effects" (Leeper 2018)

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		SIZE	COMP2 (Nat->Both)	DIST	LOC	COMP1 (Nat->Rec)
SIZE	1.0	-.95	.42	-.22	.21	
COMP2 (Nat ->Both)		1.0	.44	-.23	.21	
DIST			1.0	.53	-.49	
LOC				1.0	.92*	
COMP1 (Nat ->Rec)						1.0

**SIZE has the highest relative value, too.**

- Increasing SIZE = 2x as valuable as decreasing DIST
- Increasing SIZE = 4x as valuable as compensating on gray site

\* not statistically different than 1. 95% Cis not shown in table

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3) Combination of attributes & choice		
Interaction we tested	Interaction Effect present?	Effect
Effect of size is <u>4.6% greater at 900m than at 300m.</u> (SIZE * DIST)	Yes	4.6 %
Effect of size is <u>5.6% greater for nature values than for both values.</u> (SIZE * COMP2)	Yes	5.6%
Effect of distance is <u>7.3% greater for recreation values than for nature values.</u> (DIST * COMP1)	Yes	7.3%
Effect of "gray" land use is <u>6.6% greater for recreation values than for nature values.</u> (LOC * COMP1)	Yes	6.6%

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## Public agreement with guidelines?

### (1) Compensation is a good idea

PUBLIC AGREES!

- As a general concept: 64 % thinks it's a good idea
- For urban development specifically: between 69-86%.
- Only 2 % disagree that we should compensate for urban development



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## Public agreement with guidelines?

### (2) A set of general principles ...

- Offset Ratios: “bigger is better” (e.g., 2:1)

PUBLIC AGREES! empirical support for SIZE scalars

Provides indirect support for scalars to address:

- risk (trees that are planted may actually die)
- time delays (trees take time to grow)

- Proximity: “nearby is best” (minimize distance)

- PUBLIC AGREES! Empirical support that closer is better  
- (but half as important as SIZE)



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## Public agreement with guidelines?

### (3) Specific recommendations for complex trade offs

- Offset size could be used adjust to account for distance
    - PUBLIC AGREES! willing to trade "further away" for "bigger"
  - Offset size could be used to adjust for lower quality
    - PUBLIC AGREES! (partially). If compensation ONLY provides for nature values, they require "bigger size" as additional compensation
  - Proximity more important for recreation (vs nature/biodiversity).
    - PUBLIC AGREES! "Further away is OK" when compensating for nature (but not when compensating for recreation)
- (very little guidance on "gray" vs "green" compensation sites)



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## Take-home messages

- It's possible to measure preferences
- SIZE matters a lot.
- Nature values/biodiversity important – even for recreational offsets (!)
- Generalizable results but ... local context matters:
  - priority species or habitat locally?
  - Prioritize welfare of certain (vulnerable) groups locally?



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## Questions?

Thanks to my co-author **Linus Hasselström!**

Further questions or want the paper?  
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## 3) Group differences

We interacted attributes with observable characteristics. Did some groups have different preferences?

- Demographics (age, income, gender, etc)
- Attitudes (previously affected by urban development, etc)

**Who had stronger preferences for DIST (300 m vs 900m)?**  
 ➤ Older people (don't want to walk so far?)

**Who had weaker preferences for SIZE (same size vs 2x size)?**  
 ➤ People living in bigger cities (used to compact urban living?)

**Stronger preferences for NATURE over RECREATION (COMPI)?**  
 ➤ Those previously affected by urban development



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