Exploring Sustainable Urban Coexistence

Umeå Citizens' Preferences Regarding Policy Interventions to Balance Dogs, Wildlife, and Human Welfare

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60 ECTS MSc thesis

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A place for pets and wildlife in urban areas?

- Not really! Pets and wildlife are overlooked in urban planning [1]

- 88% of Swedish human population lives in cities [2]

- Densification > increased pressure on urban green spaces (UGS)

- UGS planning can potentially support the welfare of
  - *Humans* [3]
  - *Wildlife* [4]
  - *Pets (dogs)* [5]
 - *All together?*

- Citizens' preferences

The case of Umeå

- From 133 thousand to 200 thousand human inhabitants in 2050 [5]

- Growing human population > growing dog population!

- Currently 1 dog per 10 people [7] > 6 700 more dogs by 2050?

- Potential increase in conflicts between

- Humans <> wildlife <> dogs

- Dogs and wildlife overlooked in the comprehensive plan for Umeå municipality [6]

Research gap and aim

- Dog and wildlife welfare in urban planning and citizens' preferences

- Estimate Umeå citizens' **preferences** and **willingness to pay (WTP)** for policy interventions aiming to balance dog, wildlife, and human welfare
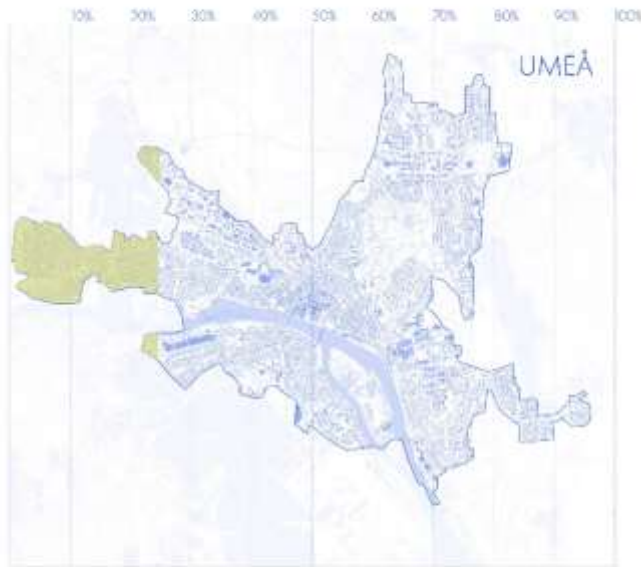
Methods

Literature review → Survey with discrete choice experiment (DCE)
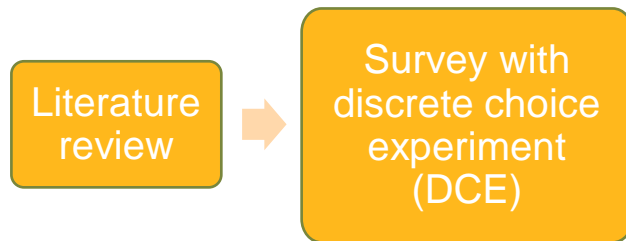
Attributes DCE

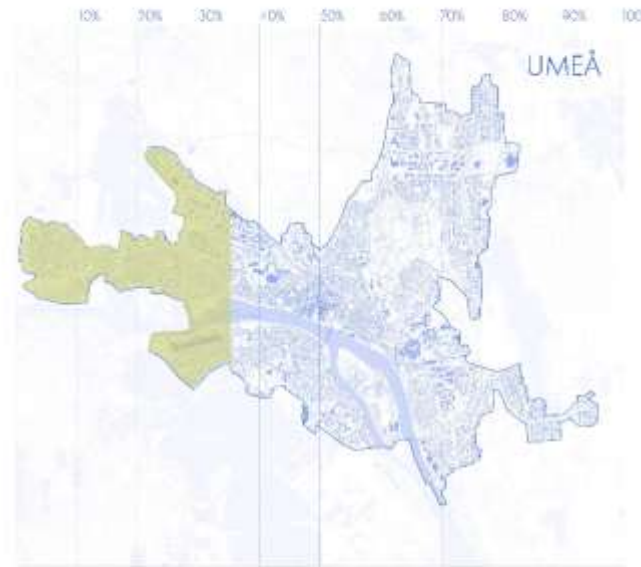| Attribute – policy interventions |
|---|
| UGS coverage |
| UGS connectivity |
| UGS user focus |
| Dog owner education |
| UGS governance |
| Tax |

UGS coverage – Human and wildlife welfare

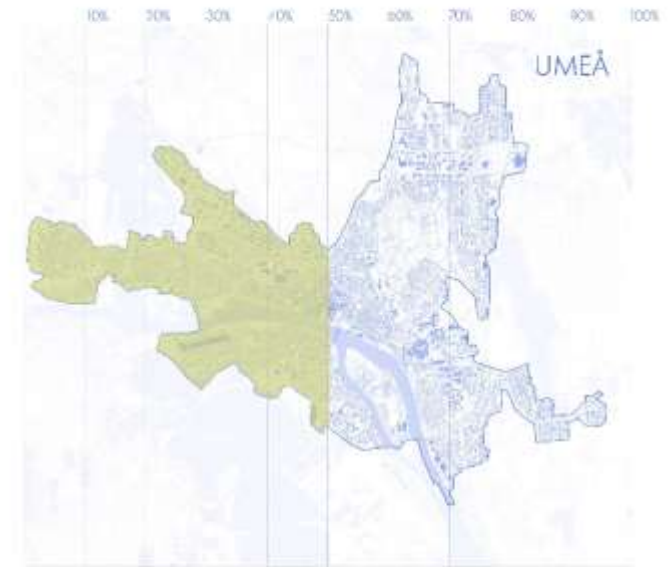Percentage of land cover of urban green space in Umeå overall urban area.

24% (current)

35%

50%

Illustrations by Emelie Aktanius (Architect and Urban Planner, Project assistant, The Department of Historical, Philosophical and Religious Studies, Umeå University)

UGS connectivity – Wildlife and human welfare

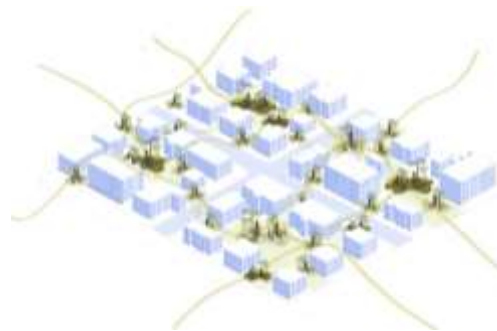Connectivity describes the degree to which urban green spaces are connected to one another. Connectedness increases distribution of wildlife species (plants, animals), and improves the accessibility of urban green spaces for people.

Fragmented (current)

Connected

Illustrations by Emelie Aktanius (Architect and Urban Planner, Project assistant, The Department of Historical, Philosophical and Religious Studies, Umeå University)

UGS user focus – Dog and human welfare

Urban green spaces can be designed for various purposes. Urban planners often have to choose a certain focus point, for example, human-oriented or human and dog-oriented.

Human-oriented (current)

Human and dog-oriented

Illustrations by Emelie Aktanius (Architect and Urban Planner, Project assistant, The Department of Historical, Philosophical and Religious Studies, Umeå University)

Dog owner education – Welfare for all

Umeå municipality would provide a compulsory course for dog owners in Umeå municipality. This can enhance dog welfare, as well as improve the welfare of others who interact with dogs and mitigate potential conflicts with others.
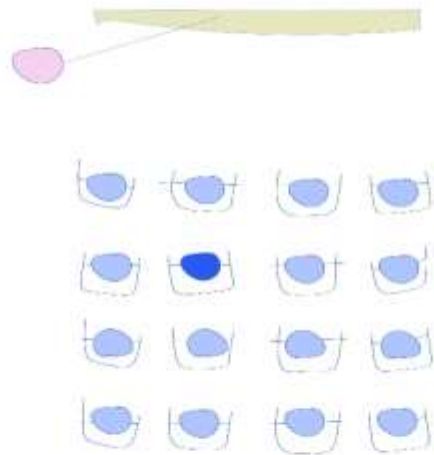
No course (current)   Compulsory online course for dog owners

Illustrations by Emelie Aktanius (Architect and Urban Planner, Project assistant, The Department of Historical, Philosophical and Religious Studies, Umeå University)
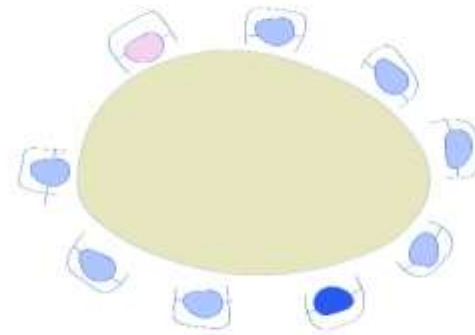
UGS governance – Human welfare

Participatory governance allows citizens to be involved in the decision-making, establishment, and maintenance of policy interventions.

Option to give feedback and attend lectures (current)

Actively engaged in co-creation

Illustrations by Emelie Aktanius (Architect and Urban Planner, Project assistant, The Department of Historical, Philosophical and Religious Studies, Umeå University)

Tax – Human welfare

Percentage of monthly income before tax, you would contribute (per adult) over a period of ten years additional tax on what we are currently paying

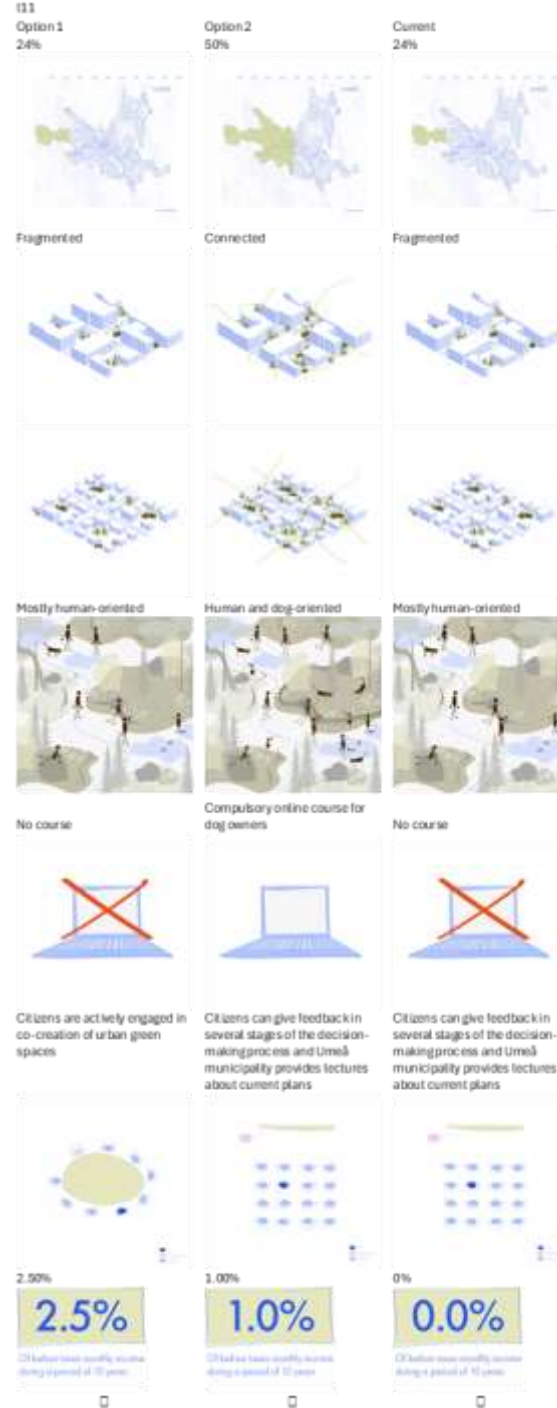| 0.0%	0.5%	1.0%	2.5%
Of before taxes monthly income during a period of 10 years	Of before taxes monthly income during a period of 10 years	Of before taxes monthly income during a period of 10 years	Of before taxes monthly income during a period of 10 years

Illustrations by Emelie Aktanius (Architect and Urban Planner, Project assistant, The Department of Historical, Philosophical and Religious Studies, Umeå University)
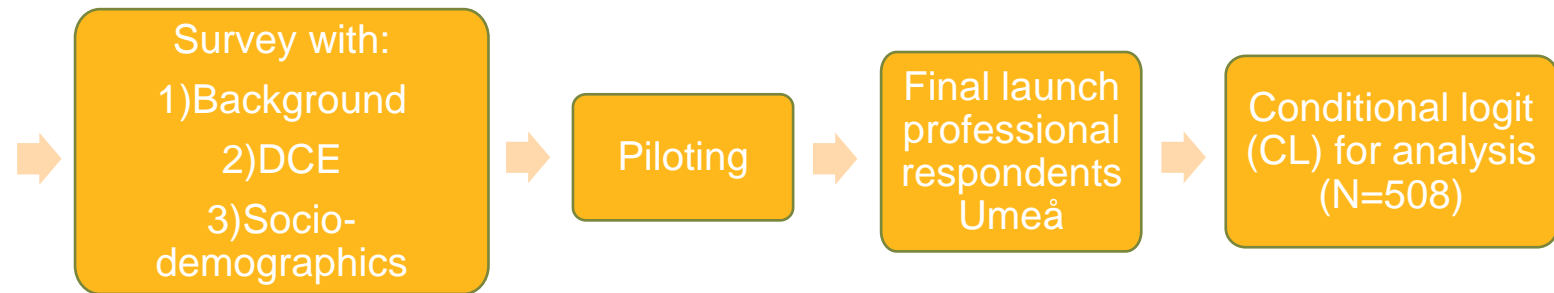
Example of a choice set

Hypotheses

- Positive WTP, except for engaged participation in decision-making for UGS

Methods

Survey with:
1)Background
2)DCE
3)Socio-demographics

Piloting

Final launch professional respondents Umeå

Conditional logit (CL) for analysis (N=508)

Findings – WTP in increase in tax

Policy intervention	WTP coefficient	WTP in increase in taxes scenario 24% UGS cover of Umeå overall urban area
WTP for UGS coverage	0.00588*	0.386%**
WTP for connected UGS	0.601	1.688%
WTP for human and dog-focused UGS	0.140	0.393%
WTP for compulsory dog owner education	0.594	1.669%
WTP for engagement in UGS decision-making	-0.211	-0.593%
Additional tax	-0.356	
Total WTP for UGS design with increased participation		**3.554%**
Total WTP for UGS design without increased participation		**4.146%**

*For 1% UGS
**For 24% UGS (current)

- Limitation: tested interventions far from the market

Implications for urban planning in Umeå

Policy intervention	Increase in taxes scenario 24% UGS cover	Total WTP per year Umeå*
Total WTP for UGS design with increased participation*	3.554%	**1.5 billion SEK**
Total WTP for UGS design without increased participation*	4.146%	**1.8 billion SEK**

*WTP for UGS planning in the city that covers 24% of the overall city surface area, is connected, is tailored towards human and dog needs, and comes accompanied by compulsory online education for dog owners.

- **7.98%** of local tax is allocated toward healthcare [8]

- High numbers compared to other studies [9]

- Around **11.6 million SEK per ha green** [10]

- This allows Umeå to construct **155 ha UGS** ← Equivalent to 63 football fields

Next steps

- Our next steps
  - Mixed logit (MXL) analysis
  - Propose findings to Umeå municipality
  - Repeat experiment in Virtual Reality

- Future research agenda
  - Study the effects of these measures on wildlife species
  - When, who, what should be included in dog owner education?
  - Repeat in other cities

Conclusion

- We report a **positive overall WTP** for policy interventions that aim to balance dog, wildlife, and human welfare in Umeå

- Indicating willingness to coexist

- We set a first step to bridge the gap on including dog and wildlife needs in urban areas, and citizens' preferences and WTP

- **Sustainable urban coexistence**

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Thank you! ☺

- Questions?

- Feel free to reach out

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*Images generated using Canva AI image generator. Generated May 21, 2024. Keywords used to generate: Sustainable urban coexistence between dogs, wildlife, and humans

SLU

SCIENCE AND EDUCATION **FOR SUSTAINABLE LIFE**

Appendix 1: CL output

	(I)
Choice	
UGS Coverage	0.00588**
	(0.00250)
Connected UGS	0.601***
	(0.0503)
Human dog-focused UGS	0.140**
	(0.0517)
Dog owner education	0.594***
	(0.0497)
Engaged in decision-making	-0.211***
	(0.0519)
Tax	-0.356***
	(0.0336)
Respondents	508
Number of choice sets	5
Alternatives	3
N	7620
r2_p	0.0756
ll	-2579.5
aic	5171.0
bic	5212.6

WTP coefficient

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.001$

Appendix 2: Extended WTP table

	WTP in % increase in taxes	WTP in SEK per person per year	Total WTP per year Umeå for scenario 24% UGS overall urban area
WTP for 24% UGS	0.396	2,160	172,892,859
WTP for connected UGS	1.688	9,152	736,313,833
WTP for human and dog-focused UGS	0.393	2,132	171,520,693
WTP for compulsory dog owner education	1.669	9,046	727,737,798
WTP for increased engagement in UGS decision-making	-0.593	-3,213	-258,506,187
Total WTP for UGS design with increased participation	4.146	19,266	1,549,958,995
Total WTP for UGS design without increased participation	3.554	22,479	1,808,465,182

Appendix 3: Sample

Umeå		Sample		
Population size	133,091	**N**	508
Mean age	40	**Mean age**	48
Women	50.07%	**Women**	53.30%
Men	49.93%	**Men**	45.90%
Age 20-64	60.45%	**Age 18-64**	77.30%
Single age >20	50.25 %	**Single age >18**	29.30%
Married age >20	36.05%	**Married age >18**	37.20%
Foreign-born age 20-69	15.18%	**Foreign-born age 18-64**	5.70%
Mean yearly income before taxes in SEK age >20	542,141	**Mean yearly income before taxes in SEK**	383,065
Mean yearly income after taxes	357,000		

Table 3. Summary of demographics Umeå citizens, and demographics of citizens in the survey sample. Data for Umeå collected from (SCB Statistikdatabasen, 2023b, 2023c).