

# **Workplace Cycling Cultures:**

## Adapting Qualitative Data for Modelling

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# The Project

- Title: Workplace Cycling Cultures, Modal Shift and Bicycle Design
- ESRC-funded within LINK Inland Surface Transport Programme, 1999-2001
- Partnered with:
  - Cambridge Cycle-Friendly Employers' Scheme (Cycle Challenge) and Travel for Work Partnership
  - 5-6 employers in Cambridge and Cambs
  - Dawes Cycles

# Research Questions

- Are there features of a workplace that affect the propensity to cycle to work?
- Does an employer's involvement in cycle promotion schemes have an influence?
- Intrinsic critique of simplistic and individualistic 'barriers' literature and both technological and policy determinism of travel behaviour
- Setting transport decisions within social/cultural/organisational context
- Questions in research proposal about bicycle design not really developed in the project
- Project not conceived as quantitative or as a means of developing data for subsequent modelling

# Methodology

- Semi-structured interviews with c20 people in 5 organisations
  - as far as possible involving different departments, statuses, and age/gender/race mix
- 1 focus group in each organisation, some repeated at least 6 months later
- Discussions with CFE and TfW scheme representatives, and focus group of CFE ‘cycling champions’
- Data coded in Nvivo (Version 1)

# Data and Analysis

- Bank of qualitative interview transcripts
- Complex Nvivo coding 'tree'
- Analysis related to organisational culture and the organisational dimensions of attitudes towards cycling and transport

But also ...

- 'Quantitative' data and categorisations drawn from qualitative interviews via Nvivo coding
- Might it be possible to develop some form of model that takes account of data usually absent from transport research, and provide a more sound basis from which to develop policy?

# Constraints on individual decisions on whether to cycle to work

Workplace/ Employment	Domestic	Personal	Vehicular	External
dress	childcare	fitness/health	security	weather
workplace facilities	leisure activities	costs	technical failure	pollution
'client-facing' responsibilities	access to shared family vehicle	personal hygiene	need to carry loads	geographical barriers eg. major roads
need for daytime mobility		environmental attitudes		municipal facilities
Workplace atmosphere/ organisational culture		enjoyment of cycling		
	← journey time →	←	safety →	
	← distance to work →			
		← flexibility →		

# Steps towards modelling the constraints

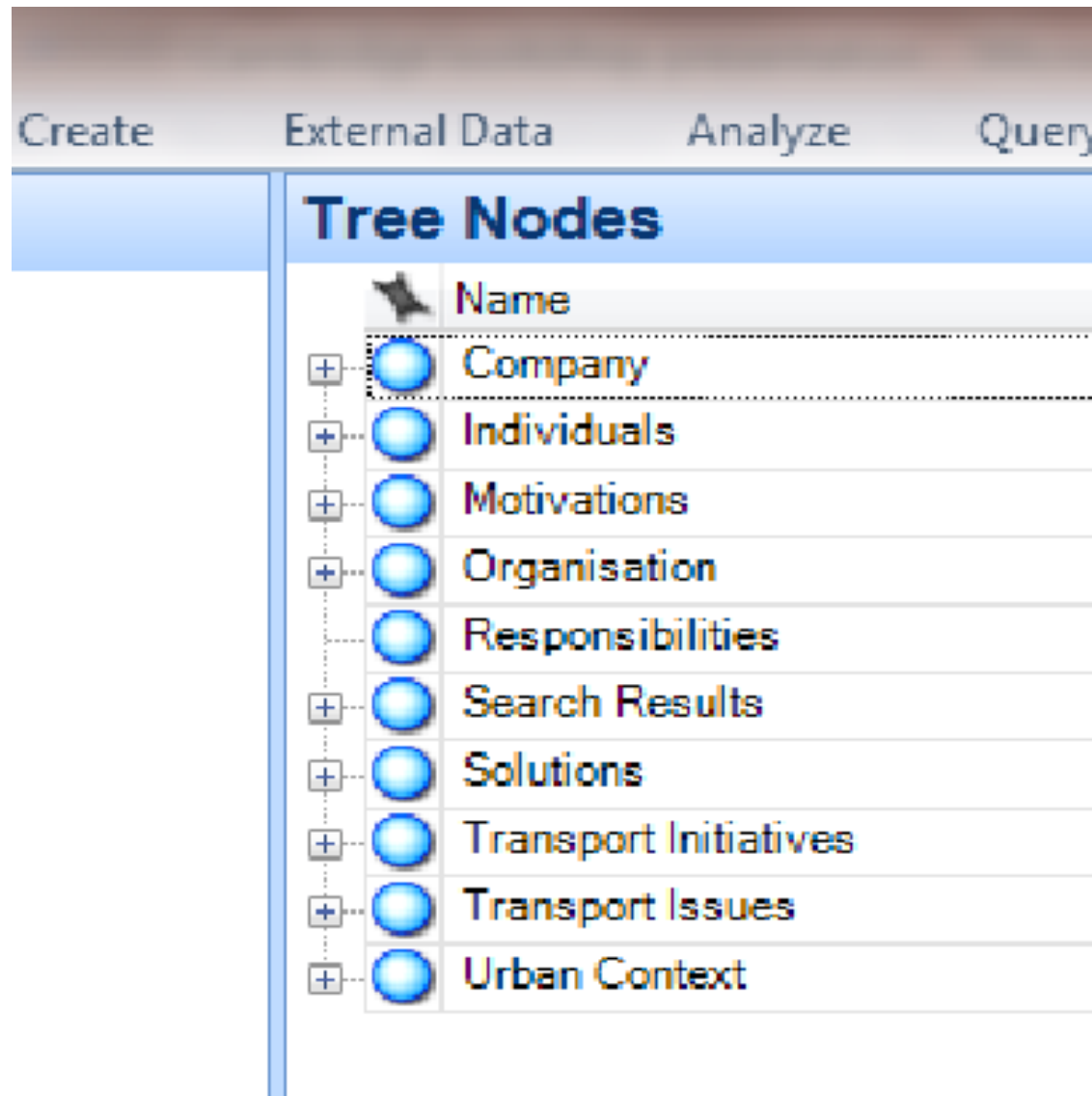
- Computer science contacts
- MSc project
  
- Translate the data from interview transcripts ...
- ... to codes / nodes ...
- ... to data that can be modelled

- PR: How far away do you actually live?
- KH: I imagine it would be something between a quarter and half a mile. I can walk it in around 10-15 minutes. I can cycle it in around 5-10.
- PR: Which methods do you normally use?
- KH: I use the bike every day unless there is an exceptional reason like I have a puncture, or very occasionally I would bring the car because I needed to carry something heavy home. That's very rare.
  
- PR: You've got a child or children?
- KH: 2 children.
- PR: Does childcare or any other family circumstances effect what transport you use?
- KH: Yes they can do, those are the things that perhaps most frequently would militate against my using a bicycle. Although that's less and less the case as they are getting older, they are now aged 7 and 4. As far as possible I still try to avoid using the car, if it is over a long distance, and by that I mean certainly more than a couple of miles, then I think at the end of the day it's a bit hard to expect my son to cycle, and then in those sorts of circumstances I would use the car. It's rare that I have to collect them from anywhere much over that distance.



- PR: I would like to ask you some detail about the vehicles that you use. I will start with the car, what car do you actually drive?
- ET: I drive an aged, and extremely dirty Honda Civic, with an engine the size of a lawnmower.
- PR: A big lawnmower or a small lawnmower?
- ET: A very small lawnmower.
- PR: Have you had that a long time?
- ET: Yes I've had it about 5 years now.
- PR: Why did you choose that model?
- ET: It was an ex-lease car going cheap and I quite liked the shape of it.

# Top Level Nodes in NVivo



# Tree Nodes

	Name	Sources	References
[-]	Company	0	0
	company history	21	32
[-]	Company Transport	0	0
	Company Transport Plans & P	33	72
	Cycle-friendliness	30	63
	Fleet	4	4
	Transport Problems	18	22
[-]	core business	18	33
	Environmental Impacts	2	3
[-]	Site Issues	0	0
	Bike access	12	17
	Building + Site Management	25	38
	Car Parking, Access & Facilitie	47	88
	Cycle facilities on site	77	226
	Local impacts	1	2
	location	54	122
	The Site	15	32
[-]	Staffing	12	20
	Attracting + retaining staff	28	44
	Conditions & Benefits	30	51
	Contracts	39	58

## Tree Nodes

Name	Sources
Individuals	0
Attitudes	0
Cycling	63
Drivers	20
Driving & cars	50
Gender	9
Other cyclists	26
Other People's Attitudes	31
Awareness	0
Policy & Transport Issues	24
Resources	23
constraints-influences	0
carrying stuff	30
distance	70
dress	59
flexibility+convenience	41
Freedom-open air-enjoyment	31
Health-fitness	57
laziness-inertia	14
other activities	33
planning-routines	13
pollution	4
safety	62
security	25

## Tree Nodes

Name	Sources	References
Domestic circumstances	33	49
Chauffeuring	17	32
Family issues	37	98
Domestic Location	75	147
Relocation	52	94
Individual Benefits	6	7
Job choice criteria	6	6
Transport criteria	17	23
job role-position-responsibilities	81	247
client facing	39	60
Cycle Coordinator	5	11
Managing	14	16
Other companies	29	58
sedentary work	4	4
Journey to work	62	111
Public cycle facilities	55	133
Roads & paths	19	31
Membership-Activism	1	1
Cycling + env orgs	45	45
general groups	9	10
Motoring Organisations	4	4
Professional or union members	46	49
Modal Choice	79	312
Behavioural change	25	43
Cost	60	115

# Next stage ...

- Create dataset that could be modelled by MSc student
- C4.5 - 'an algorithm used to generate a decision tree'
- Draft results led to feedback and further work
- Choice of how to approach this constrained by lack of knowledge

## Objectives

- Student's objective was to get experience / pass course
- mine was to see whether this was something worth taking further
- Computer scientist supervising him was hoping to get publications

Document	Age	Bike	Bike Brand	Bike Model	Car	Children	Company	Contract	Department	Distance
Danesbeck - TC	36-45	Hybrid	Dawes	Street Light	?	Yes	Danesbeck	Permanent	Strategic	4-5 miles
Danesbeck - TW	46-55	?	?	?	Partner has one	Yes	Danesbeck	Part Time	Admin	4-5 miles
Dowell - BD	26-35	MTB	Carrera	Vortice	?	No	Dowell	Permanent	Engineering	15 miles plus
Dowell - BR	16-25	MTB	Doesn't know	Doesn't know	Peugeot 306	No	Dowell	?	Admin	Under 3 miles
Dowell - DC	16-25	Motorbike	NA	NA	NA	No	Dowell	Permanent	Engineering	4-5 miles
Dowell - DD	36-45	Hybrid	Trek	Doesn't know	Peugeot 106 (commuting, +Audi)	Yes	Dowell	?	Admin	11-14 miles
Dowell - DR	26-35	Touring Bike	Dawes	Galaxy	Yes - not specified	?	Dowell	Permanent	Engineering	Under 3 miles
Dowell - DT	26-35	City bike	Orange frame	self-built	None	?	Dowell	Permanent	Business support	Under 3 miles
Dowell - DY	36-45	MTB	Doesn't know	Doesn't know	Landrover Freelander	?	Dowell	Permanent	Admin	15 miles plus
Dowell - KG	26-35	MTB	GT	Timberline	None	No	Dowell	Leaving	Engineering	Under 3 miles

Document	Attitude to cycling	Attitude to driving	Car type	Climate	Convenience of cycling	Cycle facilities - extras	Cycle for fitness/ exercise	Cycle racks	Cycling efficient/ economic
Greenwood ET	Positive	Enjoys	Family Saloon	Important issue	-	Yes	Yes	Locked cycle shed	-
Greenwood HE	Positive	Accepts need	Family Saloon	-	Less convenient	Yes	Yes	Locked cycle shed	Yes
Greenwood HN	Accepts benefits	No licence	None	Important issue	Yes	Yes	Yes	Locked cycle shed	Yes
Greenwood NS	Positive	Accepts need	Family Saloon	Important issue	Yes	Yes	Yes	Locked cycle shed	Yes
Greenwood NT	-	?	None	Not a problem	Yes	Yes	-	Locked cycle shed	-
Greenwood TI	Positive	Enjoys	Not known	Important issue	-	Yes	Yes	Locked cycle shed	Yes

Document	Cycle racks	Cycling efficient/ economic	Cycling environmentally good	Cycling in dark	Dress prefs	Luggage	Meetings	Organisational structure	Organisational transport framework
Greenwood ET	Locked cycle shed	-	-	Negative	Formal	Yes	Yes	Flat	CFE
Greenwood HE	Locked cycle shed	Yes	Yes	-	Presentable	?	Yes	Flat	CFE
Greenwood HN	Locked cycle shed	Yes	-	-	Presentable	Yes	No	Flat	CFE
Greenwood NS	Locked cycle shed	Yes	-	-	Formal	?	Yes	Flat	CFE
Greenwood NT	Locked cycle shed	-	-	-	Formal	?	Yes	Flat	CFE
Greenwood TI	Locked cycle shed	Yes	Yes	Not a problem	Presentable	?	No	Flat	CFE

# Results



> distance <= 9 :

> | cartype = none: Cycles\_always (8.0/1.3)

>

> | cartype = saloon:

>

> | | meetings = yes: Cycles\_sometimes

> (9.0/3.5)

distance > 9 :

| site = notapplicable:

| | liveswithpartner = yes:

| | | cycleforfitness = notmentioned:

Cycles\_never (8.0)

> | | safety = notmentioned: Cycles\_always

> (8.0/1.3)

# What next?

- Next step would have been to apply agent-based modelling to data – would this data have been sufficient?
- To be used for new ESRC project
- BUT potential of data not fully explored at time, for various reasons