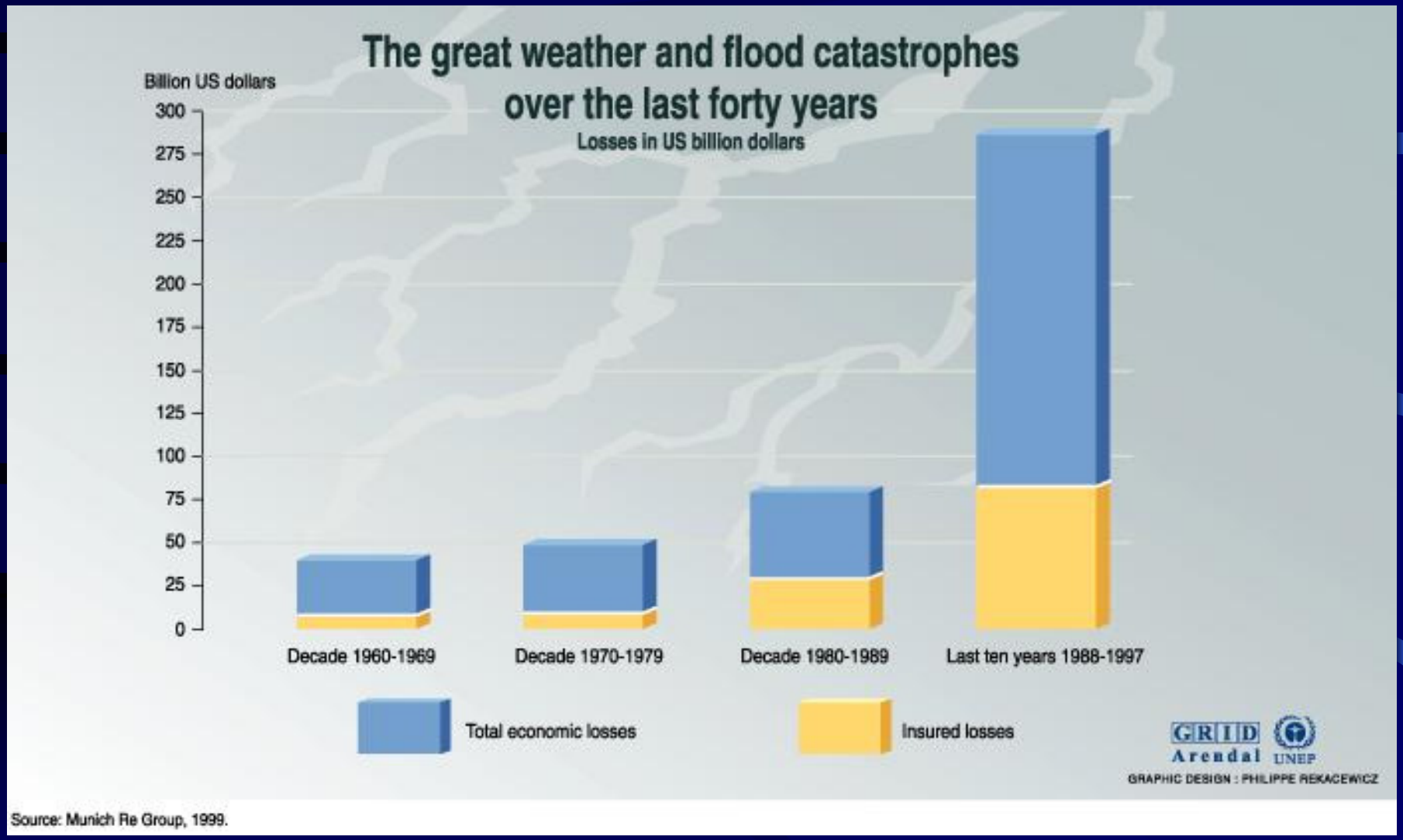
Experiencing Disaster: Effects on Household-Level Emergency Preparedness

Brenda L. Murphy, Ph.D.

Laurier Brantford

Enhancing Municipal Disaster Prevention

- ICLR funded project (July 2002 – 2004)
- Team members
  - Paul Kovacs, Leanna Falkiner, Gordon McBean, Holy Dolan
- Limitations of case study approach
  - Generalisable to population?



Source: Munich Re Group, 1999.

Comparative Analysis

- Pine Lake, Alberta (experienced tornado 2000; n=76) and North Dumfries, Ont. (no recent experience with any type of disaster; n=128)
- Communities
  - Comparable demographic, social and geographical landscape


MAPQUEST
0
40mi
40km
Whitecourt
Barrhead
Vega
Larkspur
Clyde
Newbrook
Thorhild
Smoky Lake
Ashmont
St. Paul
Mayerthorpe
Manola
Green Court
Sangudo
Morinville
Lamont
Willingdon
Peers
Edmonton
Mundare
Brosseau
Derwent
Niton Junction
Vegreville
Vermilion
Drayton Valley
Thorsby
Leduc
Beaumont
Holden
Mannville
Lodgepole
Mulhurst
Wetaskiwin
Bruce
Kinsella
Brazeau Dam
Alder Flats
Falun
Wainwright
Hoadley
Rimbey
Ponoka
New Norway
Heath
Bashaw
Forestburg
Hardisty
Rocky Mountain House
Lacombe
Eckville
Red Deer
Stettler
Hughenden
Sylvan Lake
Erskine
Halkirk
Coronation
Caroline
Wimborne
Big Valley
Olds
Veteran
Didsbury
Three Hills
New Brigden
Banff Natl. Park
Richdale
Youngstown
Acme
Drumheller
Cremona
Nacmine
East Coulee
Chinook
Cereal
Waiparous
Banff
Calgary
Standard
Finnegan
Big Stone
Harrogate
Canmore
Strathmore
Gem
Bragg Creek
Bassano
Jenner
Buffalo
Okotoks
Height Of The Rockies Park
High River
Milo
Brooks
Shuswap
Longview
Vulcan
Lomond
Scandia
Ralston
Parkland
Rainier
Whiteswan Lake Park
Stavely
Vauxhall
Medicine Hat
Elkford
Claresholm
Bow Island
Dunmore
Kimberley
Fort Macleod
Lethbridge
Grassy Lake
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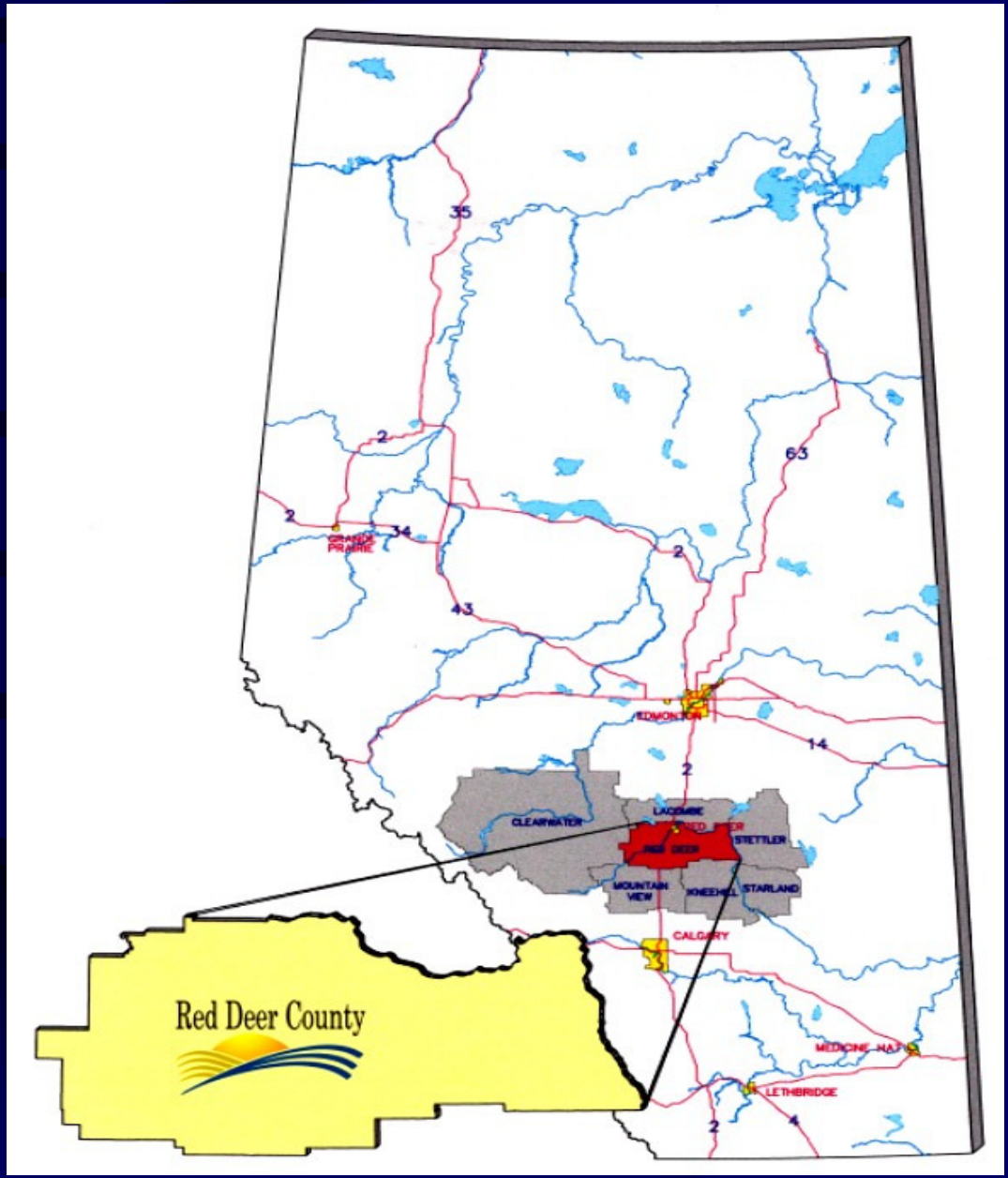
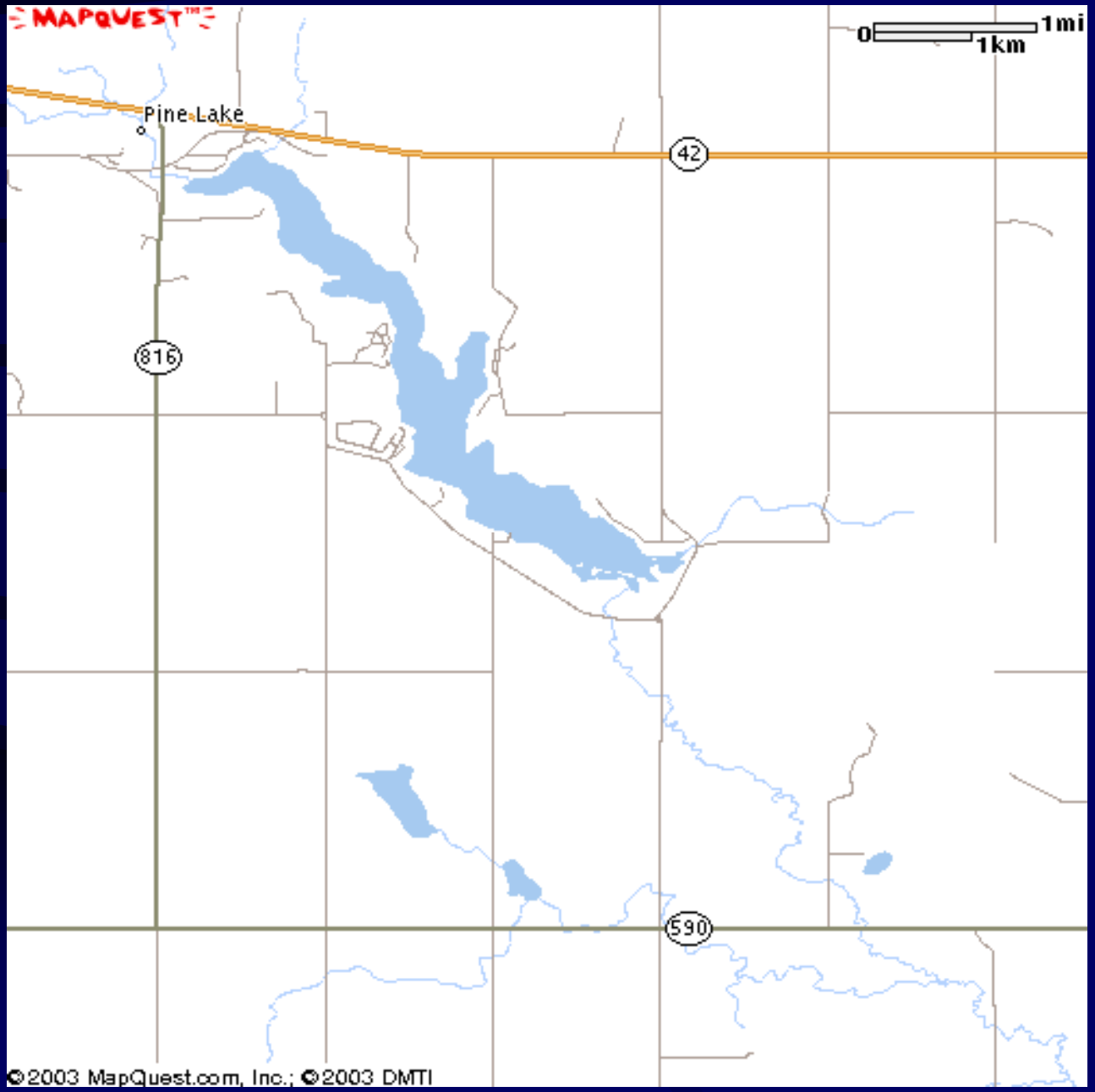

35
2
2
34
GRANDE PRAIRIE
63
2
43
EDMONTON
14
2
CLEARWATER
LACOMBE
RED DEER
STETTLER
MOUNTAIN VIEW
KNEEHILL
STARLAND
CALGARY
Red Deer County
MEDICINE HAT
LETHBRIDGE
2
4


MAPQUEST
0
1mi
1km
Pine Lake
42
816
590
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Background Information

- Tornadoes
  - 80/year in Canada (16 in Alberta)
  - Pine Lake - F3
  - July14, 2000
    - 12 deaths, 140 injuries, $15 million in damage


MAPQUEST
Meldrum Bay
Little Current
Grundy Lake Prov. Park
Port Loring
50mi
50km
Evansville
Kagawong
Byng Inlet
Magnetawan
Round Lake Centre
Fathom Five Natl. Marine Conservation Area
Michigan
Parry Sound
Kearney
Huntsville
Barry's Bay
Mactier
Lake St. Peter
Miller Lake
Gravenhurst
Silent Lake Prov. Park
Bala
Pike Bay
Penetanguishene
Kinmount
Harrisville
Sauble Beach
Owen Sound
400
Orillia
Bobcaygeon
Au Sable
Port Elgin
Barrie
35
Lindsay
Madoc
Collingwood
26
Kincardine
4
Peterborough
Belleville
Newmarket
Walkerton
Hanover
48
12
2
Pinnebog
Bad Axe
6
North York
Oshawa
Colborne
Goderich
Elora
10
Toronto
Bach
Forestville
Listowel
86
Kitchener
Argyle
Sandusky
Stratford
New York
Olcott
Applegate
Exeter
Ancaster
Hamilton
Rochester
Granton
78
Capac
Sarnia
London
St. Catharines
69
402
EW
Buffalo
19
390
94
St. Thomas
Port Colborne
Pontiac
401
West Seneca
Aylmer
Mount Vernon
Marine City
Springwater
Chatham
Long Point
Fredonia
219
Detroit
Hornell
Machias
24
Windsor
Blenheim
Erie
Jamestown
Alfred
Ohio
18
Leamington
Edgewood
Frewsburg
Olean
90
Painesville
6
Coudersport
49
79
Clarendon
Cleveland
Meadville
44
80
2
Sandusky
Ridgway
St. Marys
11
Jamestown
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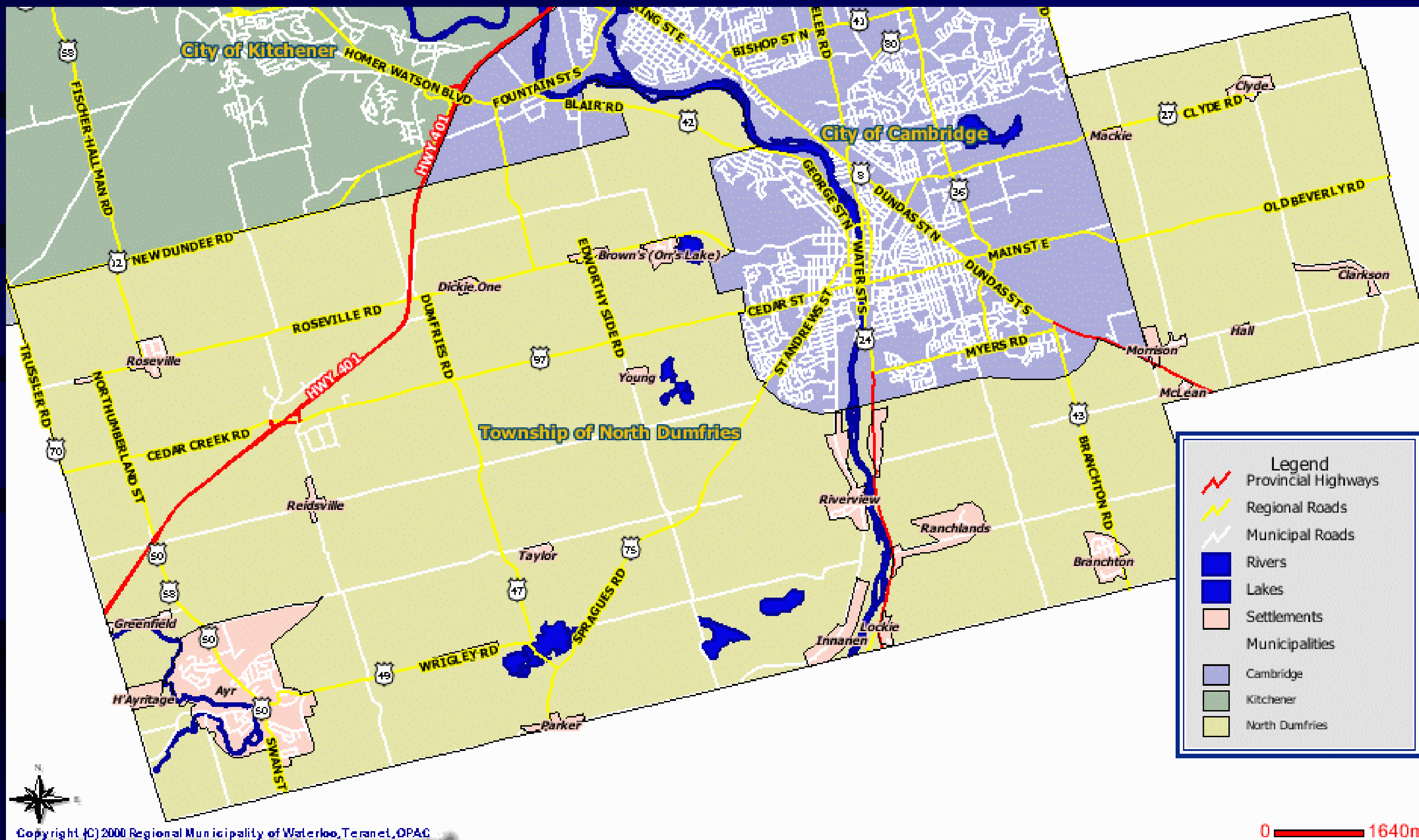

City of Kitchener
HOMER WATSON BLVD
FOUNTAIN ST S
BLAIR RD
HWY 401
FISCHER-HALLMAN RD
NEW DUNDEE RD
BISHOP ST N
City of Cambridge
CLYDE RD
Clyde
Mackie
GEORGE ST N
DUNDAS ST N
OLD BEVERLY RD
MAIN ST E
Clarkson
DUNDAS ST S
CEDAR ST
ST ANDREWS ST
WATER ST S
MYERS RD
Hall
Morrison
McLean
Brown's (Orr's Lake)
EDWORTHY SIDE RD
Dickie One
DUMFRIES RD
ROSEVILLE RD
Roseville
TRUSSLER RD
NORTHUMBERLAND ST
Young
CEDAR CREEK RD
Township of North Dumfries
Reidsville
Riverview
Ranchlands
BRANCHTON RD
Branchton
Taylor
SPRAGUES RD
Greenfield
WRIGLEY RD
Lockie
Innanen
Ayr
H'Ayritage
SWAN ST
Parker
Legend
Provincial Highways
Regional Roads
Municipal Roads
Rivers
Lakes
Settlements
Municipalities
Cambridge
Kitchener
North Dumfries
Copyright (C) 2000 Regional Municipality of Waterloo, Teranet, OPAC
0 1640m

Analysis: EP, Economics and Insurance

- Risk perception
- Attitudes towards economics and insurance
- Provision of information

Seriousness of Disaster

In terms of property damage, injury and fatalities, how serious was this most recent disaster? (p = .031)		
	Pine Lake	North Dumfries
Extremely serious	41.5%	14.3%
Relatively serious	10.8%	16.7%
Somewhat serious	10.8%	23.8%
Relatively minor	16.9%	21.4%
Extremely minor	20%	23.8%
Total	100%	100%

Perception of Disasters

Index: Perception of the Probability of Natural Disasters and Associated Damage (p = .015)		
	Pine Lake	North Dumfries
Somewhat Probable	5.6%	.8%
Moderately Probable	34.7%	51.2%
Quite Probable	51.4%	45.6%
Extremely Probably	8.3%	2.4%

Experience of Disaster vs. Perception of Probability

(p = .011)	Experience with Disaster	
Probability of disasters/damage	**Yes**	**No**
Not to somewhat likely	4%	1.1%
Moderately likely	35.6%	55.8%
Quite likely	60.4%	43.2%
Total	100%	100%

Emergency Preparedness (EP)

- Households should be self-sufficient for 72 hours following an event
  - Part of Alberta and Ontario policies
- Wide range of activities involved in EP
  - No consensus on range of activities
  - As indicators we chose radio, water, canned food, family evacuation plan and home owner insurance

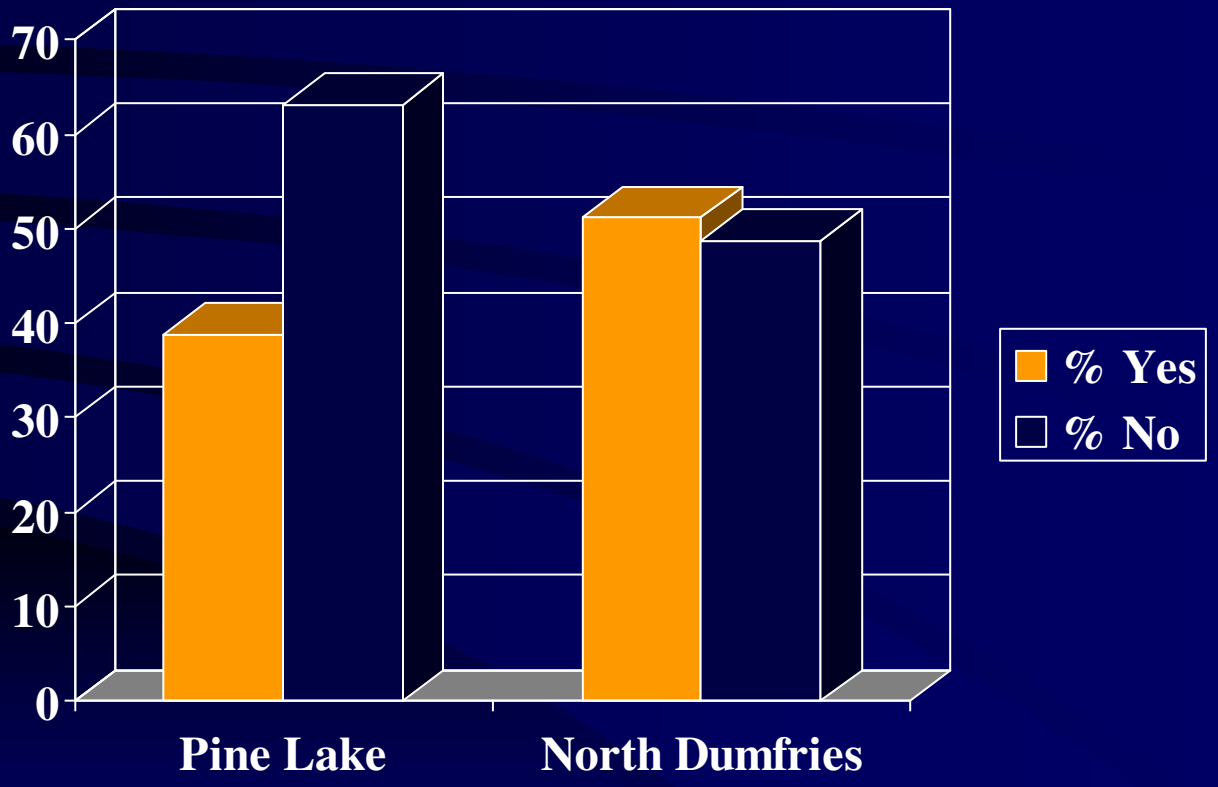
Emergency Preparedness

- High levels in both communities
  - Family evacuation plan PL 55%, ND 45%
  - Radios PL 67%, ND 53%
  - Food and water PL 77%, ND 50% (p = .013)
  - Home insurance PL 92%, ND 96% (p = .022)
- Overall preparedness levels
  - Similar in both communities

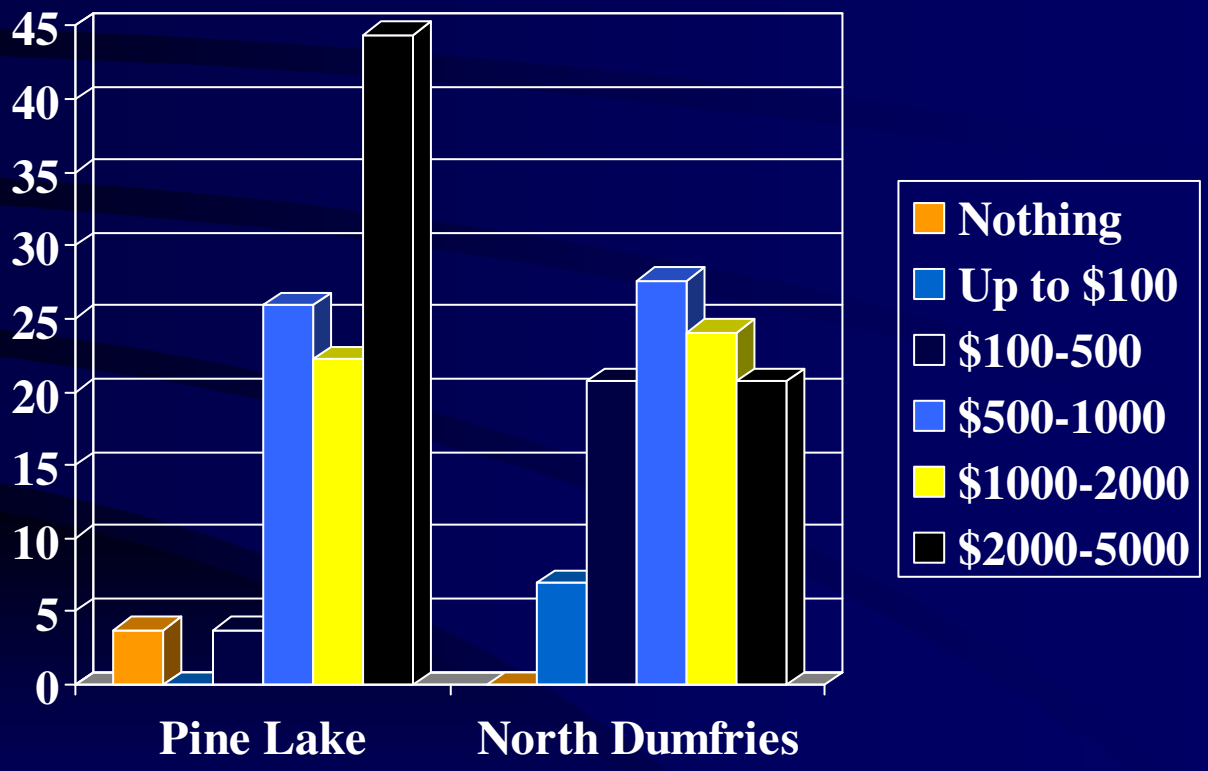
Economics/Insurance

- Canadian Household Responsibility
  - Shared contribution to disaster management
    - E.g. insurance, EP activities
  - Part of government/NGO led program
    - E.g. OCIPEP, EMO and Red Cross
- Insurance
    - Pine Lake: 468 property and 532 vehicle claims
      - $10 million

Invest in your home to increase disaster resilience? (p = .046)



How much would you be willing to invest? (p = .021)



Why would you be willing to invest?

	Pine Lake	**North Dumfries**
Protect family members (p = .011)	70.4%	91.1%
Peace of mind	63%	41.9%
Protect property	40.7%	33.9%

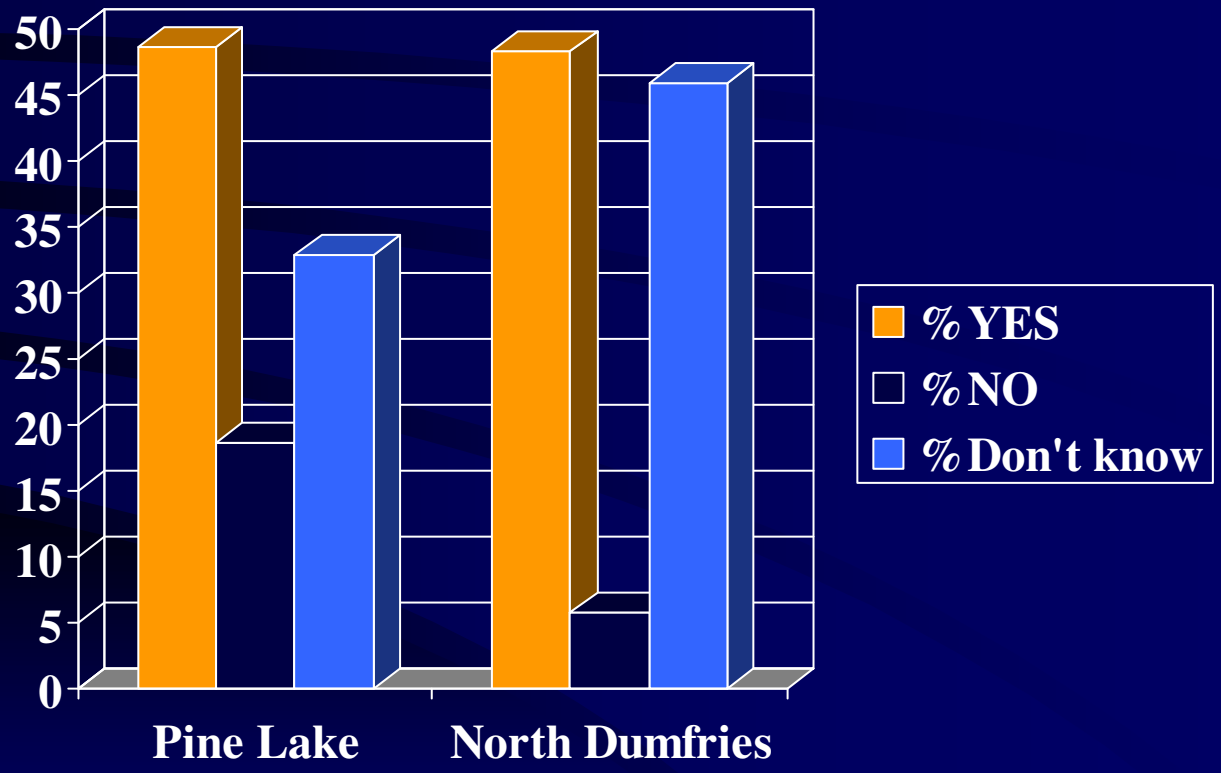
Why wouldn't you be willing to invest?

	Pine Lake	**North Dumfries**
Would not improve resilience	52.1%	46.9%
Too expensive ($p = .049$)	22.9%	9.4%
Don't know what to do	22.9%	26.6%
Area not prone to tornadoes	16.7%	29.7%

Insurance

- Insurance discount for disaster proofing
  - Pine Lake – 63.2%
  - North Dumfries 71.9%
- Time period for recovery of funds
  - 3- 5 years: PL – 41.3%, ND – 49.5%
  - 6-10 years: PL – 32.6%, ND – 28.6%

Does your insurance cover damage from tornadoes? (p = .014)



Information

- Barriers to Emergency Preparedness? (yes)
  - PL – 32%, ND – 51.6% (p = .006)
- Most important barriers
  - Don't have the time: PL – 14.7%, ND – 22.6%
  - Don't know what to do PL – 8%, ND – 28.2%
    - (p = .001)

Sources of Information About EP

	Pine Lake	North Dumfries
Radio	32.8%	40.7%
Official Organisations (p = .000)	32.8%	40.7%
Television (p = .001)	31.3%	57.6%
Internet (p = .005)	29.9%	12.7%
Library (p = .021)	19.4%	8.5%
Newspaper	19.4%	18.6%
Partner/Spouse	10.4%	19.5%

Information: Influence of Context-Gender

- Sources of Information about EP (PL)
  - Interested in obtaining information
    - Men 95%, Women 79.4% (p = .038)
  - Most Important sources
    - Men – Radio, official organisations, internet, television/newspaper
    - Women – Television, official organisations, internet/radio, newspaper

Information: Influence of Context - Stage in Hazard Cycle

- Information in Response/Recovery (PL)
  - Official Organisation, Neighbor, Radio, Television
- Information in Response/Recovery
  - Women
    - Neighbor, Official Organisation, Television, Radio
  - Men
    - Neighbour, Radio, Official Organisation, Television

Conclusions

- Relationship between exposure and risk perception
- Insurance incentives for increasing disaster resilience?
- Need for education and information
  - Through a variety of media