



# Christening the Ground

Overview of Descriptive Analysis of  
Canadian Forces' Recruiting Environment  
Using GIS Tools

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Defence Research and  
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# Background

Director General Military Personnel Research and Analysis (DGMPRA) provides strategic decision support and advice to Chief Military Personnel .

DGMPRA provides national strategic decision support to Canadian Forces Recruiting Group which is responsible for military recruiting across Canada.

GIS is being used to describe the market and establish historical baselines:

- [Environmental Scan and Market Analysis Report](#)
  - Geographic integration of recruiting and demographic data
  - Geographic analysis of historical recruiting data
  - includes Virtual Recruiting Environment



# GIS Organization

- GIS capability is new, having been launched from concept to operations 2 years ago.
- Personnel involved include
  - Strategic Analysts,
  - Defence Scientists,
    - Economist, Mathematician, Geographer
  - Computer Scientist
- Software
  - ArcInfo, ArcMap, Business Analyst, Military Analyst, Network Analyst, Spatial Analyst, Tracking Analyst, plus
- Data
  - Vendor provided datasets, government data, in-house proprietary data, third party data



# Benefits of a Descriptive report

- Describes the market and operating environment to identify factors for strategic and operational planning.
- Provides 'at hand' Atl as / Encycl opaedia to answer common questions
- Mul ti-year data gives historical evidence that contextual izes the operating environment and market:
  - data is strong and anal ysis verifiabl e
  - Recruiting footprint is basel ined
  - changes can be tracked and forecasted
  - provides Commanders with 'change of command' briefing material



# GIS Applied

Integration of Demographic and Recruiting Data into 10 Summary Reports and a national executive summary

- 38 Individual 'Detachment Reports' comprised of
  - 8 unique sub-reports customized for each Recruiting Detachment:
    - geographic Applicant Summary
    - Distance Decay: temporal
    - Distance Decay: Directional Preference
    - Applicant Derived Areas of Responsibility
    - Family, Gender & Age Data
    - Census Profile reports
    - Military Geographic Profiles



# Insight Highlights from GIS

## New Situational Awareness:

- Distance Decay: Temporal
- Directional Preference
- ADAOR: Applicant Derived Area of Responsibility



## Distance Decay: Temporal

### What is this?

- one dimension of the recruiting footprint in an area
- volume of recruits varies inversely with the distance from a recruiting centre or with an increase in time or cost to an applicant.

### Lessons Learned

- temporal decay is a significant factor in recruiting
- 'natural' decay pattern has been identified: beyond 30 minutes, the percent of recruits generally declines with increased distance
- significant deviations from the nominal patterns may indicate location issues for a recruiting centre and warrant more research and analysis

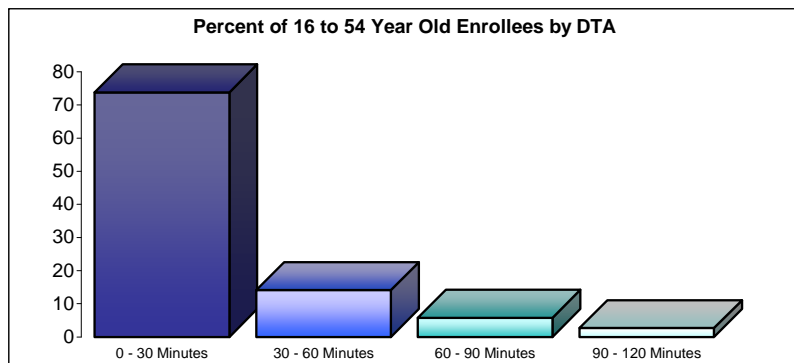


# Distance Decay Report: Temporal Drive Time Area (DTA) TORONTO (detachment)

30 Minute Increments

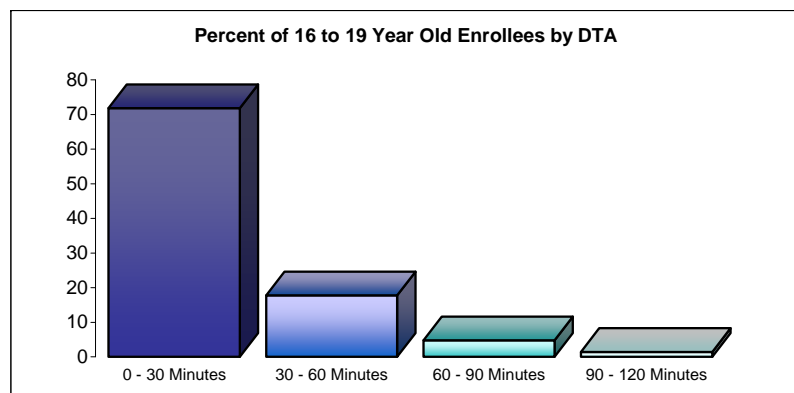
Recruiting Centre: 51 (TORONTO (detachment))

Analysis produced by Director General Military Personnel Research and Analysis, 2010



**16\* to 54 Year Old Enrollee Cohort**

Drive Time Area (DTA)	Total 16 to 54 Population in DTA	Percent of Enrollees from each DTA	Enrollees per 1,000 Population
			Annual Ave
0 - 30 Minutes	2,738,310	73.8	0.05
30 - 60 Minutes	1,094,527	14.1	0.02
60 - 90 Minutes	953,743	5.7	0.01
90 - 120 Minutes	417,284	2.6	0.01
<b>Total within 2 hours</b>	<b>5,203,864</b>	<b>96.3</b>	<b>0.30</b>



**16 to 19 Year Old Enrollee Cohort**

Drive Time Area (DTA)	Total 16 to 19 Population within DTA	Percent of Enrollees from each DTA	Enrollees per 1,000 Population
			Annual Ave
0 - 30 Minutes	295,403	71.8	0.10
30 - 60 Minutes	128,967	17.7	0.06
60 - 90 Minutes	107,455	4.8	0.02
90 - 120 Minutes	31,754	1.4	0.02
<b>Total within 2 hours</b>	<b>563,579</b>	<b>95.7</b>	<b>0.07</b>





## Directional Preference

What is Directional Preference?

- Preference of a population to go to a specific recruiting centre
- calculated by age cohort of recruit against the same age cohort in the areas around each recruiting centre

### Lessons Learned

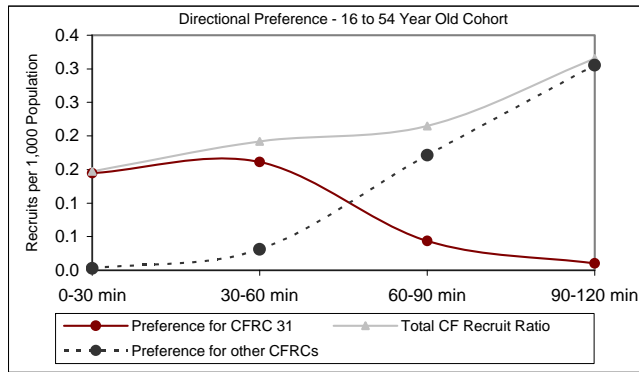
- preference is related to distance decay, but not identical
- use of 1:1000 ratios gives the ability to compare recruiting environments and populations
- Directional preference has significant implications for resource management, advertising strategy, intake planning, and performance measurement



# Distance Decay Report: Temporal Drive Time Area: Directional Preference MONTREAL (detachment)

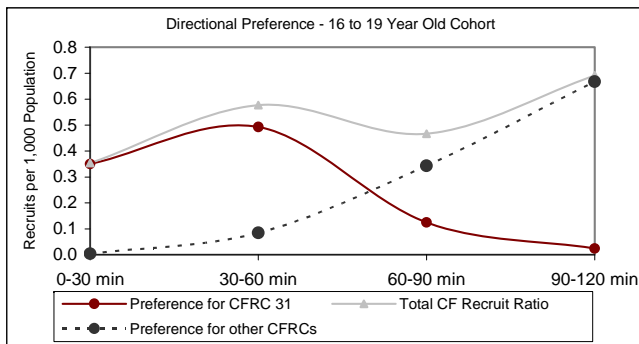
30 Minute Increments

## Recruiting Centre: 31 (MONTREAL (detachment))



### 16 to 54 Year Old Cohort

Drive Time Area (DTA)	Preference for this CFRC per 1,000 Population	Total Enrollee Ratio per 1,000 Population	Percent of All Enrollees going to other CFRCs	Percent of All Enrollees going to this CFRC
	Annual Ave	Annual Ave		
0 - 30 Minutes	0.14	0.15	2.0	98.0
30 - 60 Minutes	0.16	0.19	16.1	83.9
60 - 90 Minutes	0.04	0.21	79.7	20.3
90 - 120 Minutes	0.01	0.32	96.8	3.2
<b>Total</b>				



### 16 to 19 Year Old Cohort

Drive Time Area (DTA)	Preference for this CFRC per 1,000 Population	Combined Preference for All Recruiting Centres per 1,000 Population	Percent of All Enrollees going to other CFRCs	Percent of All Enrollees going to this CFRC
	Annual Ave	Annual Ave		
0 - 30 Minutes	0.35	0.35	1.0	99.0
30 - 60 Minutes	0.49	0.58	14.6	85.4
60 - 90 Minutes	0.12	0.47	73.3	26.7
90 - 120 Minutes	0.02	0.69	96.5	3.5
<b>Total</b>				



## ADAOR: Applicant Derived Area of Responsibility

What is this?

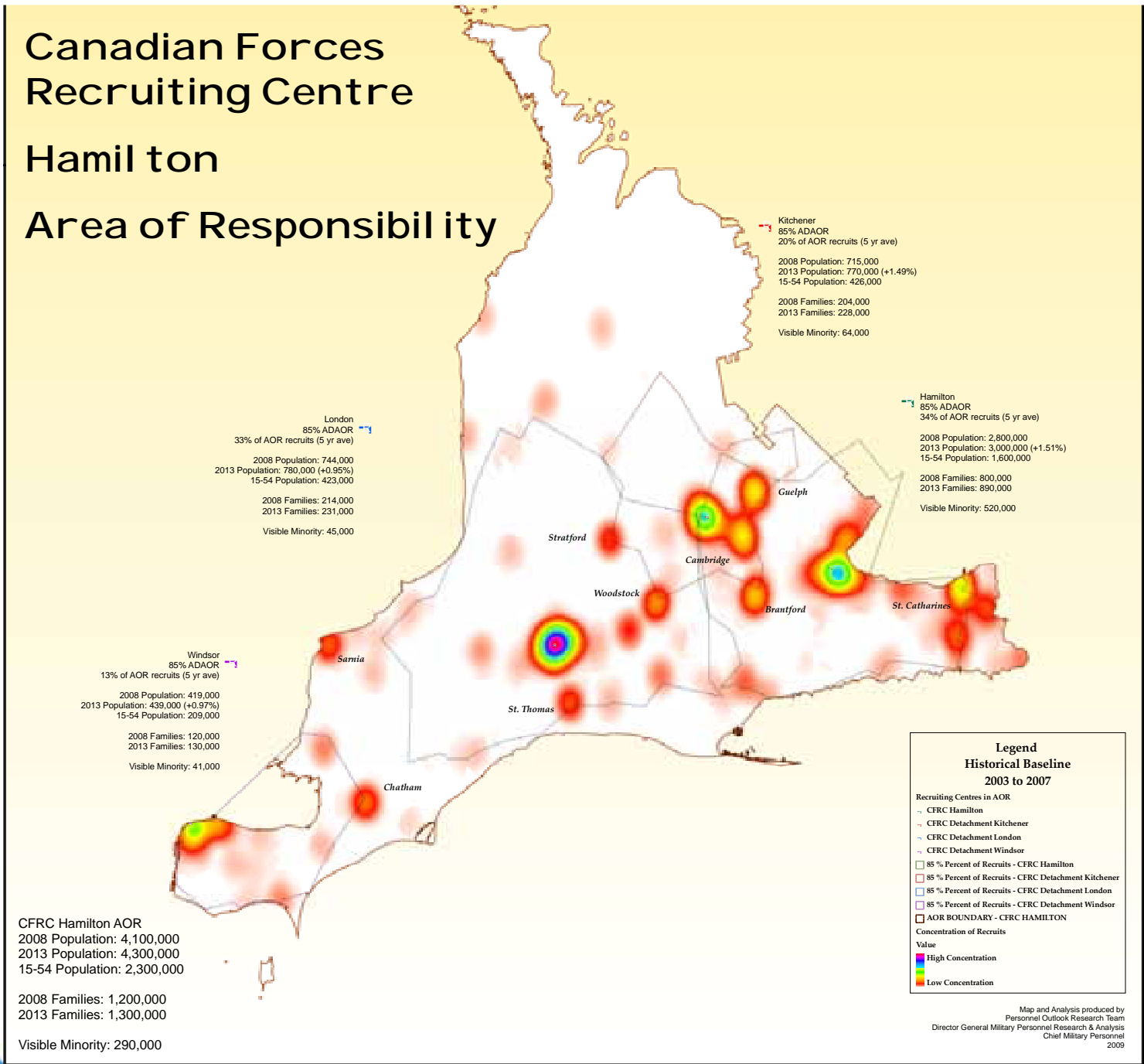
- Area from which a recruiting centre gets its recruits
- assessment of spatial proximity of recruits to a recruiting centre
- actual versus planned recruiting footprint

### Lessons Learned

- when ADAORs from multiple recruiting centres are overlaid, the overlap shows areas where more than one recruiting centre attracts recruits (coordination)
- allows custom demographic data that matches the area(s)
- Can indicate recruiting centres with challenges reaching population
- recruitable population counts for different recruiting centres cannot be added together – produces inaccurate conclusions



# Canadian Forces Recruiting Centre Hamilton Area of Responsibility





## What value has GIS added to military recruiting?

These new insights will help decision-making about

- Resource allocation,
- Strategic intake planning,
- Virtual recruiting,
- Marketing,
- better national policy development,
- better understanding of data and tool limitations,
- Coordination between commanders, and
- more accurate and persistent situational awareness



## Some high lighted Chal l enges

- Lack of Human Resources Business Anal yst model s / “pl ug-ins”,
- “Off-the-Shel f” crystal reports sometimes has buil t-in errors,
- Limited customizabil ity, and
- Compl ex software l icence and instal l ation especial l y in secure environments
- Merging data from disparate databases



Thank You

Questions?