

FUGITIVE MIGRATION PATTERNS

by

Darcy Kim Rossmo

B.A., University of Saskatchewan, 1978

THESIS SUBMITTED IN PARTIAL FULFILLMENT OF

THE REQUIREMENTS FOR THE DEGREE OF

M.A. (CRIMINOLOGY)

in the School

of

Criminology

© Darcy Kim Rossmo 1987

SIMON FRASER UNIVERSITY

August 1987 .

All rights reserved. This work may not be reproduced in whole or in part, by photocopy or other means, without permission of the author.

APPROVAL

Name: Darcy Kim Rossmo

Degree: M.A. (Criminology)

Title of thesis: Fugitive Migration Patterns

Examining Committee:

Chairman: Robert J. Menzies

John Lowman
Senior Supervisor

Margaret A. Jackson

T.S. (Ted) Paly

John W. Ekstedt
External Examiner
Professor, School of Criminology

Date Approved: August, 1987

PARTIAL COPYRIGHT LICENSE

I hereby grant to Simon Fraser University the right to lend my thesis, project or extended essay (the title of which is shown below) to users of the Simon Fraser University Library, and to make partial or single copies only for such users or in response to a request from the library of any other university, or other educational institution, on its own behalf or for one of its users. I further agree that permission for multiple copying of this work for scholarly purposes may be granted by me or the Dean of Graduate Studies. It is understood that copying or publication of this work for financial gain shall not be allowed without my written permission.

Title of Thesis/~~Project~~/~~Extended~~/~~Essay~~

Fugitive Migration Patterns

Author: _____

(signature)

Darcy Kim Rossmo

(name)

87.08.07

(date)

ABSTRACT

The vast majority of accused adults in Canada are released through a variety of legal processes at some point prior to the final disposition of their cases. A significant percentage of non-remanded offenders fail to appear in court for their set hearings, with the result that the presiding justice issues a bench warrant for the absconding party's arrest. Theoretically, such warrants are enforceable anywhere within the province of issue for minor offences, and anywhere within Canada for major offences. In practice, however, the regional Crown Counsel sets policies delineating distances or radii of return; extant warrants are not in effect outside such radii. These policies are ostensibly established for economic reasons. In certain cases, however, it appears that they act as a means of informal banishment thereby encouraging fugitive migration.

Criminal fugitive spatial behaviour, ostensibly related to the regionally differential setting of arrest warrant radii, is examined in this thesis.

Fugitive migration is examined from two perspectives. A provincial origin analysis compares overall population migration flows to fugitive migration levels, while a city origin analysis uses the "attraction-constrained destination-specific gravity model" to assess the impact of population and distance on point-to-point fugitive migration. The residuals are compared to radius configuration and threat level (potential punishment)

which are treated as independent variables. Radius is found to have a significant inverse relationship while threat does not appear, at least in the form tested, to be influential. The implications of the displacement of criminal fugitives are discussed.

DEDICATION

Dedicated to all those working within an imperfect system.

QUOTATION

"I would to God they would either conform, or be more
wise, and not be caught!"

Samuel Pepys; Diary, August 7, 1664

ACKNOWLEDGEMENTS

I would like to thank and acknowledge: Dr. John Lowman, my Senior Supervisor; Dr. Margaret Jackson and Dr. Ted Palys, members of my Supervisory Committee; Dr. Robert Menzies and Dr. William Glackman, for their instruction; Insp. Jack Crich, Sgt. John Eldridge and Mr. Rick Anthony, for the first shove; Cst. John Grywinski and Ms. Jennifer Hall, for their research assistance; S/Sgt. Joe Fay, Dr. Ken Denike, Dr. Richard Routledge and Ms. May Chen, for their consultations; and Mrs. Aileen Sams, for her patient typing.

TABLE OF CONTENTS

Approval	ii
Abstract	iii
Dedication	v
Quotation	vi
Acknowledgements	vii
List of Tables	xii
List of Figures	xiii
I. INTRODUCTION	1
NOTES	12
II. THE GEOGRAPHY OF CRIME	14
Perception, Interaction and Behaviour	14
Displacement	18
NOTES	27
III. FRAMEWORKS	30
The Behavioural Framework	30
Spatial Interaction	30
The Gravity Model	36
The Legal Framework	49
Statute Law	49
The At-Risk Population	52
Regional Policy Variation	57
The Technological Framework	60
NOTES	68
IV. METHODOLOGY	77
Data Collection	77

Variable Construction	81
Origin Populations	81
Distances	84
Warrant Radii	85
Threat	88
Analyses	89
Provincial Level Analysis	90
City Level Analysis	95
NOTES	101
V. RESULTS AND STATISTICS	106
Descriptive Analysis	106
Criminal Record Information	106
Arrests	108
Offences	111
Warrant Entry Dates	113
Migrants by Place of Origin	115
Dependent and Independent Variables	118
Provincial Analysis	122
Correlation Coefficients	122
Provincial Border Impact	124
City Analysis	126
Correlation Coefficients	126
Multiple Regression Analysis	129
Percent Provincial Radii	135
NOTES	139
VI. CONCLUSION	141

NOTES	151
APPENDIX 1	153
Pre-trial Release: Applicable Criminal Code Sections ..	153
APPENDIX 2	156
Regional Fugitive Return Policies	156
APPENDIX 3	162
Estimation Procedure for Total Population Size	162
APPENDIX 4	165
Coded Variable Data	165
APPENDIX 5	167
City Radii: Calculations and Distances	167
APPENDIX 6	170
Provincial Radii: Calculations and Distances	170
APPENDIX 7	173
Threat Analysis	173
Methodology	173
Results	175
Threat Analysis: One-way Analysis of Variance Tests*	178
APPENDIX 8	180
Longitudinal Analysis	180
APPENDIX 9	183
Provincial Analysis: Multiple Regression Results	183
APPENDIX 10	186
City Analysis: Multiple Regression Results	186
APPENDIX 11	189
Gravity Model Scattergrams	189
APPENDIX 12	190

City Analysis (Percent Provincial Radii): Multiple Regression Results	190
BIBLIOGRAPHY	191

LIST OF TABLES

Table	Page
3.1 Percentage of Accused Persons Released Prior to Final Disposition of Case by Province	56
3.2 Percentage of Accused Persons Released Prior to Final Disposition of Case and Percentage of Failures to Appear in Court of Total Cases Released before Final Disposition of Case by Selected Urban Area	56
3.3 CPIC Warrants by Major Police Departments (as of July 29, 1984)	67
4.1 Offence Classifications	82
5.1 Fugitive Characteristics	107
5.2 Fugitive and Vancouver Gaol Arrest Figures	109
5.3 Vancouver Sheriff Escorts and Gaol Outside Holds	110
5.4 Offence Frequencies for Fugitive Warrants	112
5.5 Record Entry Dates	114
5.6 Fugitive Migrants by Province	116
5.7 Fugitive Migrants by City	117
5.8 Provincial Migration Comparison - Dependent Variables .	119
5.9 Mean Radius Configuration and Threat Variables by Province - Independent Variables	120
5.10 Mean Radius Configuration and Threat Variables by City - Independent Variables	121
5.11 Provincial Analysis Correlation Coefficients (Weighted)	123
5.12 Provincial Analysis Correlation Coefficients for Modified Radius Variables (Weighted)	127
5.13 City Analysis Correlation Coefficients (Weighted)	128
A.1 Numerical Scale for Sentencing Ranges	174
A.2 Offence Categories by Disposition	176

LIST OF FIGURES

Figure	Page
3.1 Speculative Curve of "Fugitive Maximum Efficiency" - Low Radius	47
3.2 Speculative Curve of "Fugitive Maximum Efficiency" - High Radius	48
4.1 Hypothetical Originating Jurisdiction with Distinct and Different East and West Radii	86

CHAPTER I

INTRODUCTION

The majority of adults accused of criminal offences in Canada are released through various legal procedures prior to the final disposition of their cases. A significant percentage of these non-remanded offenders fail to appear in court, resulting in the issuance of a bench warrant by the presiding judge. Theoretically, the absconding party can be arrested on the warrant anywhere within the province of issue for minor offences, and anywhere within Canada for major offences. In practice, however, the regional Crown Counsel's office sets policies delineating distances or radii of return outside of which the warrants are not enforceable. Such restrictions are ostensibly economic in nature and yet great disparities seem to exist in the actual radius distances prescribed by the various issuing agencies.

One belief commonly held by police officers concerns the link between the size of a warrant radius and the likelihood of an offender fleeing from the city in which he was charged.¹ Some of the radii seem so short (50, 25, and even 10 miles) that it would seem the jurisdiction responsible is not the least bit interested in having the charged party returned to face court proceedings but, instead, only desires the offender "to get out of town". The justification appears to be that escort expenses would not have to be paid, prosecution and incarceration costs would be reduced and, most important, the jurisdiction would be

rid of an active known offender who would then become someone else's problem. Naturally, this informal banishment is perceived by the police as raising the levels of fugitive migration. Hundreds of such juristic fugitives are routinely encountered in Vancouver each year by patrol officers.

The purpose of this thesis is the examination of the relationship between fugitive spatial behaviour and regionally differential policies of warrant radii. Observationally derived mathematical models, including the "gravity model formulation", are used to test the significance of the relationship. Fugitive migration is viewed from a geography of crime perspective, and the criminal justice and social control environments are seen as crucial variables to the understanding of this phenomenon. Consequently, the results of the research have certain policy implications on both provincial and national levels.

Richard Anthony of Police Services, Ministry of the Attorney General for British Columbia, has expressed a concern about the consequences of more criminals learning the advantages of flight, and the resultant decline in the level of respect shown towards the criminal justice system.² He feels that the fugitive problem probably does not affect all provinces equally and that it is unlikely that a single solution will solve the problem for all areas - assuming all areas want the situation "solved".

He discusses two proposals to control the phenomenon as it currently exists.³ The first concerns warrants of committal issued after the completion of an offender's trial. These

usually involve cases where the accused has been given an option of paying a fine or of serving a certain time in gaol. Upon default of payment of the fine, the judge issues a warrant of committal for the previously specified prison sentence. After being arrested, the remiss party automatically goes to gaol unless the fine can be paid. There is no necessity for the offender to appear in front of a judge as the trial has already been completed.

A small number of the non-returnable warrants outstanding for the fugitives in Vancouver are warrants of committal. Anthony mentions the possibility of having authority granted to allow local incarceration of these adjudicated offenders. Fines might be made collectable in British Columbia as well. Such a system presently exists for intraprovincial warrants of committal. Anthony also suggests the possibility of arrest and return in these cases, despite the limitations of the radius. Both these tactics would require policy, and possibly legal amendments. They would likely be expensive in the short run.

Anthony's second proposal concerns the feasibility of the formulation of a new law, the creation of an offence of "flight to avoid prosecution". This would allow the arrest and prosecution of those offenders granted judicial interim release, the venue for the offence being the destination province. Proof would be in the form of document evidence (bench warrant, recognizances), similar to the procedure used with alcohol breath tests. The maximum penalty would be equal to that of the

original substantive offence.

The proposed law is similar to the American Unlawful Flight Laws as contained in Title 18 of the United States Code, Ch.49 Fugitives from Justice, s.1073/1074: a person who moves or travels in interstate or foreign commerce with intent to avoid prosecution, custody, or confinement after conviction of a felony (\$5,000 fine and/or five years in prison).⁴

Concern has also been noted, however, by the Administrative Assistant of the Attorney General's office about the effects of such a new law on present caseloads and current budgets and resources.⁵ While policy is substantially influenced by the "economics of criminal justice", it is a commerce that seems at times to be overly concerned with short-term results.

An awareness and a certain understanding of the fugitive phenomenon and the legal situation developed for me from fieldwork at a grass roots level, a form of participant-observation in that routine contact, interaction and conversation took place between myself as a policeman, and the fugitive subjects.⁶ Although ethical considerations restrict the role of a person in authority acting as researcher, focused interviews with fugitives were conducted numerous times simply as part of basic police patrol work, street checks, and professional inquiry.

The majority of respondents interviewed stated that they had come to Vancouver primarily to escape prosecution. The viability

of the option of flight, and the restricted nature of the radius of the warrant, were pieces of information they had received from various sources: other offenders, defence lawyers, and even police officers. Some of these fugitives were wanted in multiple jurisdictions (up to five) across Canada yet not one of the warrants was enforceable in British Columbia. A common joke among the Vancouver Police upon the arrest of one of these "footloose" individuals was: "After this, the only place left for you to go will be the Yukon". The phenomenon was perceived as being a frustrating problem by those officers investigating fugitives for their possible participation in Vancouver-based crimes. Resentment was not usually directed towards the offender (whose actions were regarded as logical) but at the radius policies believed responsible for the offender's flight.

This phenomenon is a dramatic example of "displacement"⁷ on a provincial and regional level; a result held to be covertly intentional on the part of the originating jurisdiction to the detriment of Vancouver, or any other receiving city. The police constantly grumble that: "We should be doing the same thing back to them".⁸ It became obvious that the various systems' practices and policies might be critical variables in the analysis of this phenomenon.⁹

Participation in, and knowledge of the criminal justice system, as well as observation of, and interaction with hundreds of fugitives suggested that an inverse relationship existed between the level of fugitive migration from a jurisdiction and

the size of the warrant radius policy in place there. Although such a link seems commonsensical, this observation alone is not sufficient to establish the significance, strength and veracity of such a relationship.

Police-suspect interactions can be quite cordial at times and during my experience with them it was not uncommon for "street regulars", informants, and those with some vested interest, to have regular and amicable conversations with the police about a variety of topics. Consistency in relevant statements from several fugitives and other street people, along with a policeman's experience in discerning the truth, also suggested that radius of warrant return and fugitive migration were linked.

While many conversational topics would not require a fugitive to be deceptive, it should be remembered that the dialogues were between parties with often radically different viewpoints and goals. The impact on criminals of the authoritarian and control image inherent in the police role cannot be easily minimized.

Even assuming that total frankness might occur in an interview, an individual may not articulate or even be consciously aware of all the myriad factors prompting the selection of a certain behavioural choice. It is common for major decisions to be based on several factors, with each one influential to varying degrees.

As a further caution in analyzing the interviews, it has been suggested that commonly held beliefs, while important in the understanding of an actor's perception, may not be valid. Rumour, prejudice and memory can all erode the accuracy of "common knowledge".¹⁰ Spurious, intervening, suppressor, and distorter variable relationships may all warp commonly held perceptions of causal factors.¹¹

For the present study, data were collected from the field in the form of computer warrant checks, statistically analyzed, and then used in the building of appropriate mathematical models. The choice of variables, their construction, meaning and measurement, the assessment of their potential relationships, and operational and methodological considerations were all grounded when possible in extant research and theory, and the insights, experience and knowledge gleaned from my seven year career as a police officer.

The study's data were gathered over a 30 day period in Vancouver from police street checks conducted with the Canadian Police Information Centre (CPIC) computer system. Based upon the supplied information (usually name and date of birth), the CPIC system "runs" or checks its memory banks and may return one or more "hits" or "records" depending upon a probability scoring.

These replies are categorized in a variety of groups but the only one of interest to this study was the "persons wanted" class. Such records would list the personal characteristics of a subject, the details of a warrant including outstanding charges,

dates and originating jurisdiction, plus the radius attached to the warrant.

By grouping the raw data into both city and provincial origins, the fugitive phenomenon could be spatially analyzed using mathematical techniques borrowed from the discipline of geography. Population and distance effects had to be taken into consideration, and the potential impact of threat or impending and probable state sanctions assessed. Warrant radius policy was converted into a ratio level independent variable and then correlated with fugitive migration in two analyses based on city origin and provincial origin groupings.

The first analysis examined fugitive migration from the various origin provinces to British Columbia. To compensate for the different province sizes, the number of total adult accuseds from the respective origins was used to create per capita rates. A national average was computed, and each province's migration rate was then compared to this mean. The proportion of means allowed an easy assessment of a particular province's fugitive migration rate; how far, and in what manner it deviated from the mean (1.0) determined how comparably high or low its fugitive flow was.

This standardization allowed fugitive interprovincial migration to be compared to the overall population interprovincial migration, for which Statistics Canada collects data. By creating per capita rates from the overall population migration flows (by dividing by the respective provincial

resident population), calculating a national average and then the various proportions of mean, provinces could be compared directly. The ratio of the fugitive migration proportion of mean to the overall population migration proportion of mean established the relative size of the fugitive migration, all else being equal. This ratio could then be correlated to the warrant radius variable.

The second analysis examined fugitive migration from fifteen principal Canadian cities to Vancouver. As Statistics Canada does not record intercity migration flows, a direct comparison with the overall population on this basis was not possible. Instead, a "gravity model" formulation, a mathematical model linking destination, origin and separation vectors, was applied to explain the levels of fugitive migration from these origin cities. This approach allowed distance and population differentials to be accounted for, leaving residuals which could then be examined for any possible relationship with the warrant radius variable.

Such a statistical instrumentalist method was seen to be necessary; the previously discussed ethical and reliability questions notwithstanding, a survey approach would have critical methodological inadequacies. By only interviewing offenders who have taken on a fugitive status, *ipso facto*, the relationship would be shown to be significant.

Influences affect people to varying degrees and in different combinations. The extant spatial geography literature indicates

the importance of origin, destination and separation attributes in the understanding of migration. Consequently, a non-fugitive Vancouver criminal cannot be directly compared to a fugitive from another jurisdiction. Without a survey that included offenders, both wanted and not, still resident in the various origins across Canada, a proper comparison cannot be made. Such a survey would be very difficult to undertake.

The correct mathematical model should demonstrate more than the existence of a relationship; an estimate of the size of the influence produced by varying warrant radius policies and the subjective impact of a provincial-wide radius on fugitive migration may also be determined numerically. The extent of the influence is an indication, for policy reform, of the importance of the relationship.

The theoretical perspective of the geography of crime is discussed in chapter II. As this thesis investigates the relationship between warrant radius policy – a function of social control – and fugitive migration behaviour, the importance of the perceptions of, and interactions with the criminal justice system are stressed. Only by looking at the correct geographic, social and institutional context can behaviour be properly understood. The phenomenon of crime displacement attributable to criminal justice policy is examined with an emphasis on the geographic displacement of criminal behaviour.

Chapter III focuses on the frameworks and symbolic structures of fugitive migration behaviour. This section serves as the link between the theoretical and the methodological, as it informs the research approach. Spatial interaction, criminal mobility, mental maps and the gravity model are first discussed, followed by a presentation of the current legal environment including both statute law and criminal justice policy. Finally, the extant technology used to detect and collect information on the fugitive phenomenon is examined; awareness and knowledge of the "instrumental interaction" between researcher and methodology is vital.

The thesis methodology, data collection, variable construction, and the provincial and city level analyses are reviewed in chapter IV. The results of those analyses and related descriptive statistics are presented in chapter V.

The theoretical and institutional implications of these results are discussed in chapter VI. The control role of displacement, particularly interjurisdictional displacement, is examined from a national perspective. The importance is stressed of the mutual interaction between the institutional framework of the criminal justice system and its participants, both processed and processing. Consequently, social control is seen to be a necessary constitutive element of the geography of crime.

NOTES

1. For the past seven years I have been a police constable in the central core of Vancouver, British Columbia, assigned to the patrol division as a primary investigation unit. While operating as a practitioner within the criminal justice field, I was also interested in the ambient *milieu* from a sociological and criminological perspective. To the extent that the statistical instrumentalism employed in this thesis was based upon and grounded in my observations and experiences, the study "triangulated" quantitative and qualitative materials and employed more than one methodological angle. See Robert J. Menzies, "Doing Violence: Psychiatric Discretion and the Prediction of Dangerousness" (Ph.D. dissertation, University of Toronto, 1985), p.146.
2. Vancouver Police Department, Planning, Research and Audit Section (VPD P&R) File 84-27 (1984).
3. Ibid.
4. Ibid.
5. Ibid.
6. Kenneth D. Bailey, Methods of Social Research, 2nd ed. (New York: Free Press, Macmillan Publishing Co., 1982), p.248.
7. "Displacement can be provisionally defined as movement which would not have occurred had some legal or criminal justice policy not been enacted (formally or informally)". John Lowman, "Crime, Criminal Justice Policy and the Urban Environment", in Geography and the Urban Environment Progress in Research and Applications 5, ed. D.T. Herbert and R.S. Johnston (Chichester: John Wiley and Sons, 1982), p.327.
8. A step in this direction was taken on September 3, 1983. See chapter III, note 14.
9. "Geographic research has focused mainly on the criminal or the crime; little attention has been given to social control or to the operation of the criminal justice system on the development or configuration of crime patterns". John Lowman, "Conceptual Issues in the Geography of Crime: Toward a Geography of Social Control", Annals of the Association of American Geographers 76(1)(1986):82-83.
10. In this matter it was commonly held that Vancouver was infested with fugitives from "back East: Ontario and Québec". The bulk of the sample was actually from Ontario and Alberta, and upon eliminating population and distance

effects, Ontario alone stood out as the most significant contributor.

11. Bailey, pp.51-53. The impact of radius at second glance is not unproblematic: do longer radii deter migration or do they just "push" fugitives that much further away? VPD P&R File (1981).

CHAPTER II
THE GEOGRAPHY OF CRIME

Perception, Interaction and Behaviour

The geography of crime has tended to focus on criminals and crime, and has primarily employed positivist or instrumentalist theoretical perspectives.¹ Lowman criticizes this narrow view and discusses the implications of interactionist, phenomenological and critical approaches to the understanding of the spatial patterns of crime.² The argument advanced is that the geography of crime ought to become concerned with the study of social control processes.

This chapter is concerned with the perceptions and motives of criminal behaviour and focuses on the fugitive actors, their involvement and interaction with the criminal justice system, and the creation and operation of different policies within that system. All these factors are regarded as being of importance to the understanding of criminal spatial patterns in general, and fugitive migration patterns in particular. The actors under investigation in this study will be shown to be serious multiple offenders with long records extending over the majority of their adult lives. They appear to be committed to a moral career of crime for the foreseeable future. Additional convictions are probably of little consequence to most fugitives but interactions with the criminal justice system, both past,

present and anticipated, may be of significant ongoing concern to them. As long as future choices are constrained by the ever present possibility of re-arrest, institutional involvement cannot be said to be terminated.

Continuous involvement with an institution provides an actor with additional experience and knowledge of the system. This range of experience is unique to offenders and often involves contact with several different criminal justice system agents, each with a specific and limited role. Institutional weaknesses and techniques for manipulating the system may become apparent to an experienced offender. These problems may be unknown to the institution's agents, controllers and architects, and may decrease the "real" power they hold over offenders.

An actor's response to institutional processing may not always be what was predicted or desired. Over time, the system may be modified to account for the responses of the actors who, in turn, will re-respond to the new policies.³ This ongoing process can affect and alter deviancy in often unanticipated, though not necessarily unpredictable, ways.⁴

Without presupposing the strength and form of this mutual interaction, it is reasonably safe to say that in general, "law is a system of social engineering".⁵ Lowman notes that "little attention has been given to social control or to the operation of the criminal justice system on the development or configuration of crime patterns".⁶ Ericson expresses a concern

for "social forms that are supportive of deviant phenomena in any type of social context".⁷

Spatial patterns of behaviour are informative when it is realized that "[o]ne of the striking things about criminals, often forgotten, is that most of them behave as ordinary people most of the time".⁸ If control activities shape the spatial geographic outcome of criminal behaviour, then differences may be attributable to unique situational characteristics such as criminal justice system interactions. Knowledge of these interactions is important to the understanding of offender behaviour, both spatial and otherwise.

An actor's behaviour is directed and influenced by his/her subjective perception of the environment. Yet the effect of objective forces, especially on future action, cannot be negated. For example, a belief that an establishment is not alarmed may bring about a decision by a burglar that the target is "easy" and suitable for breaking and entering. If in fact it is alarmed and the offender is arrested, then his subsequent actions are drastically influenced and constrained by the objective reality of the situation. However, a premise with an "alarmed" warning on the front door will have a real deterrent effect whether an alarm system is actually in place or not.

Perceptions and external conditions are both determinants of action, especially when behaviour is viewed over time; a certain relationship exists between the corporeal world, experience,

knowledge, and *Weltanschauung*. Perceptions are not static – they change over time as externalities and impressions are altered.

Social control organizations and their agents hold perceptions as well: of themselves, offenders, and the criminal justice system. These perceptions are shaped by reality, economics, ideology and politics.

For example, operational organizations such as the police or courts choose not to observe more than they can process with given resources, and they selectively screen observations to fit organizational goals, strategy, and tactics.⁹

The content and the meaning of the law given these influences is problematic – "the law in the statutes should not be taken for granted as supplying the meaning of law enforcement in practice, even though it may create the formal boundaries of crime control activity".¹⁰ If the law requires explanation then it is necessary to move beyond how the criminal justice system is commonly perceived by society, to how it is created and how its image is maintained.

Ericson discusses the "hierachy of credibility" present in most organizations;¹¹ differing definitions of "reality" exist among levels of an organization and the higher the level, the more acceptance given to that definition of reality. An institution's services, however, are usually delivered from the bottom end of a bureaucracy and it is the base level groups that often have the most knowledge of the results and utility of the policies they are following – i.e., their perceptions of situations may be the closest to those of the consumers of the

system.

While it is true that the management level of an organization is privy to certain information and knowledge ("the big picture"), upper echelons may also be more concerned with bureaucratic maintenance and more sensitive to political influences. Much insight can be gained from analyzing the discrepancy between the professed and the actual purpose of the system and by "examining what criminal control agencies actually do rather than what they ideally are designed to do".¹²

The police may negotiate rather than enforce social order, and they sometimes "maintain order at the expense of upholding law".¹³ Control measures, governed by the informal goals of criminal justice institutions, produce results often, but not always, unanticipated. If "space itself [is] used as a form of control"¹⁴ then it is possible that the operations of the criminal justice system vary geographically. The results of social control practices, and both overt and latent criminal justice policies, are often manifested spatially.

Displacement

[W]hen there was a quarrel among them the other night, a policeman came up and drove them through the Bar, saying, 'Ye shant stand here; go into the City with your rows!' Sir Peter Laurie said that he had heard that a police magistrate had directed the policeman to drive all bad characters into the City. If there was any truth in this, it was an imprudent - an improper observation. He desired the watchman present to drive all the bad characters out of the City instead of apprehending them in future. 'We can play at tennis-ball' said the Alderman in an undertone.¹⁵

Rumbelow's illustration of the increase in the number of undesirable persons within London after the formation of the New Police outside the City, illustrates geographic displacement as an intended result of the magistrate's criminal justice policy.

Gabor defines displacement "as the reappearance of criminality along some dimension(s) following the implementation of an ostensibly effective prevention program".¹⁶ Lowman's definition is more general: "Displacement can be provisionally defined as movement which would not have occurred had some legal or criminal justice policy not been enacted (formally or informally)".¹⁷

Repetto lists and describes five possible outcomes of displacement: territorial (geographic), temporal, target, tactical, and functional (activity).¹⁸ Geographic displacement is the focus of this study:

In response to a reduction of opportunity and/or an increased risk of apprehension with respect to a particular offence, an offender may relocate his activity.¹⁹ [Emphasis added].

Temporal displacement concerns a shift in activity to another time period, most likely when risk (such as police patrolling) is minimized. It could be of importance in this study if absconding but nonfleeing offenders were found to put off their criminal activities and "lay low until the heat died down"; keeping a low profile would reduce the risk of attracting police attention and subsequent arrest. Target displacement occurs when an offender starts selecting different premises,

subjects or objects as the targets of the criminal endeavours. Tactical displacement involves the use of alternate strategies to accomplish the previously sought criminal ends. Functional displacement is the engagement in a different form or type of criminal behaviour. Gabor also mentions statutory displacement,²⁰ which on closer inspection would appear to be a cause of, rather than a type of crime displacement involving change or movement prompted by shifts in sentencing severity or certainty. He noted that intraurban sentencing variations led to a geographic displacement to nearby suburban areas. This potential cause of fugitive migration is discussed in chapter IV in the section on "Threat". Inadequate data unfortunately precluded its use in the analysis.

Hakim and Rengert use the broader concept of "crime spillover"²¹ for all interjurisdictional criminal movement ("negative externalities"), whether attributable to destination "pull" factors (increased attraction), or origin "push" factors (increased risk). Crime displacement is seen as a special case of crime spillover, caused by such push influences as the increase in police patrolling or the implementation of crime prevention strategies (target hardening) in certain areas. The impacts of spillover are almost always discussed in terms of contiguous police zones or neighbouring jurisdictions.

Gabor criticizes "the assumption in the geographic studies, that displacement is localized. Studies have not considered that a widespread and, perhaps, equally distributed dispersion of

crime results from displacement, rather than a mere transfer to contiguous communities".²² Even so, he seems to think in local terms, probably due to the reasonable assumption that criminals "tend to commit offences in proximity to their residences".²³ Nevertheless, his discussion raises the possibility of a metalevel or regional displacement. Such a geographic shift in criminal activity is certainly possible when it is accompanied by a change of residence from one city to another, prompted by a very real "increased risk of apprehension".²⁴ An outstanding warrant is such an increased risk, and this study will attempt to show that regional variations in warrant radius policies occasion certain kinds of displacement.

Lowman relates criminal justice strategies to displacement types using both unintentional and intentional consequences. These "mechanical strategies" include suppressive law enforcement techniques designed to increase the risk of detection, preventative tactics such as target hardening and crime prevention through environmental design, punitive policies established to deter offenders by punishment, and eliminative strategies aimed at geographic movement of the offender.²⁵

He finds that suppressive, preventative and eliminative measures all may spatially displace crime, both intentionally and unintentionally; Lowman does not recognize statutory spatial displacement here.²⁶ What is usually desired with the introduction of a mechanical strategy is the reduction of crime in the jurisdiction originating the tactic; what often happens

is the movement or displacement of the problem to another area.

Lowman warns that "we must not forget that certain types of policy may consciously attempt to relocate unwanted activities".²⁷ He cautions, however, that:

The distinction of intended and unintended displacement effects is complicated by the possibility that other purposes may underlie the stated intentions of various laws or law enforcement policies; the covert intentions of certain policies may reflect the desire simply to displace certain behaviours in *lieu* of their prevention or suppression. Of course, any assertion to this extent would be enormously difficult to prove.²⁸

The evidence supporting the conscious use of low warrant radii to displace criminals to outside jurisdictions is discussed and debated in chapters V and VI. The modification of a warrant radius policy may be a function of extant policy, economic and budget factors, and a desire to displace some of the problems to someone else's bailiwick. Cost constraints may prompt a change in policy, but the extent of that change could be influenced very easily by other informal aims.²⁹ While some cooperation exists between various criminal justice agencies, they are often uncoordinated and may act in a contradictory manner.

What utility functions and ethical considerations are associated with geographic displacement of criminal activity? There does not seem to be much comment on these points in the literature, although Lowman notes that consequences may be viewed as either positive or negative depending on the observer's value-judgements.³⁰ The recipients of a displaced

problem will likely regard it with the same negative view as those now rid of the undesired activity.

The advantages of displacing crime to a different political jurisdiction are questionable. A more desirable result is achieved by each social control agency effectively managing its area of responsibility. Criticism should not be levied against those departments that allocate more resources, are more effective and prove more efficient, provided there is no covert policy to move rather than deal with their problems. Underhanded tactics can only result in Peter Laurie's "tennis-ball" policies and bring about inter-jurisdictional conflicts.

The political-legal implications of crime spillovers from one jurisdiction to another may be profound. Non-reciprocal spillovers from one jurisdiction to another may produce antagonistic relations between the two areas.³¹

Interneighbourhood displacement within a single jurisdiction may also be undesirable to the extent that an unprepared community can be afflicted with a new and problematic phenomenon. Certain areas may be inherently more vulnerable and provide better opportunities for criminal activity. Local neighbourhood characteristics could increase the impact of the displaced problem and the possibility exists that the zones of criminal activity could be enlarged. Anti-prostitution campaigns by the police can cause a hydraulic effect dispersing prostitutes into surrounding new areas. To the extent that the soliciting problem is amplified by "trick traffic", noise and potential harassment, the resultant increase in the area of

customers' searches for prostitutes can only aggravate the problem.

Conversely, displacement recognized and properly controlled could be effectively utilized by the police. It was a common ploy used by those who would kick undesirables "off their beat". Moving prostitution from residential to industrial areas may mitigate the surrounding concerns of disturbances, visibility and traffic. The exact extent of the functionality and utility of displacement is under-researched. Does relocation have any impact on criminal activity? In what way? Does a sort of "maximum inconvenience" effect occur where the displaced offender is unsure of himself and not familiar with suitable targets, aids, escape routes and accomplices?³² To what extent does the introduction of new and unfamiliar offenders into an area impact on police effectiveness? Is there an advantage to "knowing where your problems lie"? Does a criminal learn new areas and targets more rapidly than the police become aware of new offenders? High criminal mobility would indicate the long-term fatuousness of intentional interjurisdictional displacement, a tactic that may only exacerbate the problem of criminal activity. Instead, offender migration should be responded to by close cooperation between the concerned law enforcement jurisdictions.³³

A short term benefit is derived by the agency banishing offenders, but only to the detriment of other cities; such strategies simply encourage reciprocal policies, reduce police

accountability and erode respect for the criminal justice system. If low warrant radius policies are used to move offenders, then a tremendous waste of resources in terms of police investigation and initial court proceedings occurs, not to speak of the feelings and frustrations of victims and witnesses. Equalization of these low radius policies across Canada would produce a situation where jurisdictions trade each other's offenders. Instead of having a person accountable to the criminal justice system, they end up with *ex juris* fugitives who have an "immunity by policy". This is hardly an acceptable function of criminal justice.

Such a phenomenon lends new meaning to the label applied to the secondary deviant by Ericson: "in the community's terms he has become an outcast, a member of another world, of a different reality".³⁴ Though the practice is not recognized as a punishment in Canadian law, the offender has been banished and has become a *de facto* exile. While the state has not "created this condition", it has either unintentionally or consciously put into effect the institutional structure to facilitate such a condition, making it both possible and rational for the actors involved.

A labelling theorist could debate that such policies have created "crime" by encouraging an abscondment from court. It could also be argued that "crime", or at least "criminals", have been reduced. One jurisdiction has managed to rid itself of a wanted criminal, an offender who for all practical purposes no

longer "exists". Instead, the fugitive has migrated to a new jurisdiction, an area where he/she cannot be arrested and is no longer legally a "wanted criminal". The offender has been "unlabelled" and has become "untouchable" in a mutation of innocence.

NOTES

1. Lowman, "Conceptual Issues", pp.81-82, 86-88.
2. Ibid, pp.81-82 passim.
3. Ian Taylor, Paul Walton and Jock Young, The New Criminology (London: Routledge and Kegan Paul, 1973), p.138.
4. See Lowman, "Urban Environment", pp.307-341, for an examination of "the unintended or unanticipated consequences of a range of social control policies, particularly criminal justice policy" (p.309).
5. Lowman, "Urban Environment", p.309.
6. Lowman, "Conceptual Issues", p.82.
7. Ericson, Criminal Reactions, p.93.
8. Paul J. Brantingham and Patricia L. Brantingham, eds., Environmental Criminology (Beverly Hills: Sage Publications, 1981), p.35.
9. Albert D. Biderman and Albert J. Reiss, Jr. "On Exploring the 'Dark Figure' of Crime", The Annals of the American Academy of Political and Social Science 374 (November 1967):9; see also Thomas Gabor, "Crime Displacement: The Literature and Strategies for its Investigation", Crime and Justice 6 (1978): 100.
10. Lowman, "Conceptual Issues", p.84.
11. Ericson, Criminal Reactions, p.53.
12. Ibid., p.108.
13. Jason Ditton, Contrology: Beyond the New Criminology (London: Macmillan Publishing Co., 1979), p.33; see also Richard V. Ericson, Reproducing Order: A Study of Police Patrol Work (Toronto: Universty of Toronto Press, 1982).
14. Lowman, "Conceptual Issues", p.90.
15. D. Rumbelow, I Spy Blue: The Police and Crime in the City of London from Elizabeth 1st to Victoria (London: Macmillan, 1971), p.114, cited by Lowman, "Urban Environment", pp.324-325.
16. Gabor, p.101.
17. Lowman, "Conceptual Issues", p.86. It should be cautioned that behaviour may not have a single cause, and Lowman

discusses "the complexity of the problem of making causal inferences about displacement phenomena". John Lowman, "Geography, Crime and Social Control" (Ph.D. dissertation, University of British Columbia, 1983), p.253. Where some overwhelming force decidedly initiates action, several other factors may influence its direction and course.

18. Thomas A. Reppetto, "Crime Prevention and the Displacement Phenomenon", Crime and Delinquency 22 (April 1976): 168-169.
19. Gabor, p.101.
20. Ibid., p.103. See Daryl A. Hellman, "Criminal Mobility and Policy Recommendations", in Crime Spillover, eds. Simon Hakim and George F. Rengert (Beverly Hills: Sage Publications, 1981), p.148, for a comment on the importance of other criminal justice system components on crime spillover attributed to differential policing. Statutory changes may cause displacements other than spatial. Police in Vancouver attribute an increase in the criminal activities of juveniles, particularly those under 12 and exempt from prosecution, to the new Young Offenders Act.
21. Hakim and Rengert, pp.14-15.
22. Gabor, p.105. He also asks for future studies that will "provide further knowledge regarding the extent of offender flexibility, mobility and opportunism". This thesis is designed to do just that.
23. Ibid. See Brantingham and Brantingham, Environmental Criminology, pp.30-32, for a list of empirical studies substantiating this point and a discussion of the phenomenon.
24. "Rational criminals, it is presumed, operate in locations that lessen their chances of capture, prosecution, conviction, and sentencing. Perhaps they also realize the limitations of the police power and use jurisdictional boundaries to hide behind... If criminals operate in the suburbs, they probably relocated there". John P. McIver, "Criminal Mobility: A Review of Empirical Studies", in Hakim and Rengert, pp.42-43.
25. Lowman, "Geography, Crime and Social Control", pp.230-231.
26. A dramatic illustration of the intentional and unintentional spatial displacement consequences of a punitive strategy occurred in Vancouver, British Columbia. In July 1984, the Attorney General of the province sought (and was subsequently granted) an interlocutory injunction to prohibit prostitution from the West End area, bringing about a displacement to certain downtown streets and to the

residential neighbourhood of Mount Pleasant, as the prostitutes sought out new territory free from the risk of civil penalty. (Attorney-General for British Columbia v. Couillard et al.) Jamie Cassels, "Prostitution and Public Nuisance: Desperate Measures and the Limits of Civil Adjudication", The Canadian Bar Review 63 (1985):766-767,786. "[M]obility itself is the most important adaptive strategy available to the prostitute in circumventing the problems posed by various laws and both formal and informal law enforcement strategies". Lowman, "Geography, Crime and Social Control", p.254.

27. Lowman, "Urban Environment", p.329.
28. Lowman, "Geography, Crime and Social Control", p.228.
29. Ditton warns that "increasing statistical sophistication has improved the power of the analyst to bend the data to fit any theory", and questions the possibility of the very existence of correlations (n.25, p.43). While this may be an extreme position, it is a useful caution when dealing with complex statistical analysis; model construction must be carefully considered and should be backed up when possible by interviews or participant-observation. An interactionist perspective can assist in the appropriate determination of pertinent variables, and results contrary to common sense must be closely re-examined.
30. Lowman, "Urban Environment", p.329.
31. Thomas Gabor and Ellen Gottheil, "Offender Characteristics and Spatial Mobility: An Empirical Study and Some Policy Implications", Canadian Journal of Criminology 26 (July 1984): 268.
32. Both Reppetto (pp.173-174) and McIver (pp.22-23) discuss the importance to criminals of "knowing their turf".
33. Gabor and Gottheil, p.279.
34. Ericson, Criminal Reactions, p.48.

CHAPTER III

FRAMEWORKS

This chapter lays out the behavioural and geographic frameworks important to comprehending and analyzing spatial action. The legal structure necessary to create a juristic fugitive is then examined and appropriate and comparable base populations of accused persons are established. Finally, the technological framework necessary for the discernment and observation of the fugitive phenomenon is discussed. These structures and frameworks are seen to be critical for the proper analysis and understanding of fugitive migration behaviour.

The Behavioural Framework

Spatial Interaction

There is a dearth of studies on migration in the criminological literature. The spatial analyses that have been done are usually microlevel approaches focusing on neighbourhood crime displacement or on criminal "mobility".¹ This is not to say that there is no value or application of microlevel research to mesolevel studies, but only that much is still unknown about the extent of criminal migration.

Spatial interaction describes the "movement over space that results from a human process".² It is important to realize that for any level of analysis, "[t]he spatial mobility patterns of

offenders, in all likelihood, are not radically different from those of non-offenders of similar socio economic status".³ This will be a basic tenet of this thesis, bearing in mind certain unique situational circumstances (such as involvement with the criminal justice system) applicable to offenders and their perspectives on those circumstances.

Peter Gould, invoking a geographic Ockham's Razor suggests:

...it may be very fruitful to assume that man's behavior is relatively simple, and that the complexity we observe is due to the complexity of the environment within which the behavior takes place.⁴

He speaks of "information environments" and "geographic information" being important determinants of spatial behaviour, concluding that location in information space is critically related to the "acquisition of spatial information – and perhaps other forms of knowledge as well, particularly if we conceive of information spaces in much broader terms than just the geographic".⁵ Spatial interaction studies should then consider the actor, his/her situational location (both geographic and social), and the knowledge or perception of viable movement options.

Gould further states: "The human landscape...is...the spatial expression of the decisions of men".⁶ Actors form mental maps based on information flows; conversely, ignorance exists within the information environment and barriers based on linguistic, political, natural, religious and cultural differences can form.⁷

Variation in mental images may be related to environment and biography, geographical location and social class. These images exist for neighbourhood conceptualizations, impressions of other parts of the country, and foreign nations. Yet it is suggested that people's mental images have a lot in common. In the forward to On Mental Maps, it is claimed that the residuals from Gould's components analyses, the "personal idiosyncracies", could not account for more than 50% of his data variability (and often much less). Group homogeneity (in terms of age, sex, race and experience) increases mental image congruence and the validity of homomorphic mapping studies.

As perceptions of topology affect behaviour, mental maps are important in understanding and predicting spatial interaction. It is not often possible, however, to look directly into the mind of a human being, and although my position as a police officer allowed a unique access to the fugitive population, ethical considerations prevented any possibility of research interviewing or survey questioning. That information which could be garnered legitimately about fugitives through preliminary participant-observation suggested the following points of interest to this study:

1. awareness by almost every fugitive of the existence of the outstanding warrant;
2. knowledge of the non-returnable status of the warrant;
3. imprecise information about the exact distance of the radius of the warrant;
4. knowledge about warrants was gleaned from either fellow

offenders, defence lawyers, police officers or from previous experience;

5. homogeneity of fugitive characteristics: age (mid-twenties), sex (male), current socioeconomic status (low);⁸
6. migration was primarily to avoid prosecution (often coupled with other personal reasons); and
7. travel was by hitchhiking, automobile, bus, sometimes train, but almost never by airplane. (This is consistent with the low socioeconomic status mentioned above.)

Gabor and Gottheil state:

By identifying those areas most prone to attract (import) and those most prone to expel (export) crime, we can also determine the factors associated with offender movements. The identification of these 'push' and 'pull' factors can illuminate offender motivation and, consequently, aid in theory development.⁹

Although their article was concerned more with intracity mobility, some of their suggestions and findings are worth examining to the extent that they may be applicable to mesoanalysis and offenders' mental maps and information sets.

Gabor and Gottheil suggest the presence in offenders of some degree of articulated decision-making with high mobility being associated with rationality and selectivity. Crime-trip destination selections were proposed as being precise and sensitive to risk levels, target vulnerability and socio-physical environments (location, accessibility, design). They link movement and discrimination with displacement, and indicate the importance of the assessment, decision-making and adaption processes of criminals in the understanding of their

behaviour and responses.

Gabor and Gottheil found little evidence connecting offender characteristics and mobility. The only variable found to be statistically significant in predicting mobility was that of prior record. This is linked to the conclusion that "a person with a prior record is almost five times as likely to be a transient (i.e., no fixed address) than one with no record".¹⁰ They note that younger, inexperienced and minority group criminals are less mobile than their older, more experienced colleagues.¹¹

Gabor and Gottheil found that of the offenders they studied:

- 90% were male;
- 62% had prior records;
- 81.8% were unmarried;
- 23.6% were out-of-towners or had no fixed address; and
- 25.1 years was the mean age.

The data in the present thesis comprised age, sex, and prior criminal record. The results matched the Gabor and Gottheil biographic data quite closely and are presented in chapter V. Fugitives were chiefly male, mid to late twenties, and had extensive prior records. By definition fugitives can be considered, to varying extents, "out-of-towners" and in my experience the proportion of them with no fixed addresses is high (though what is meant by "fixed" is moot). This all suggests that the experienced criminal uses mobility as a tool; the offender consciously makes appraisals, decisions and

movements.

This study suggests that the fugitive population consists in the main of highly experienced offenders with lengthy criminal records. Such serial offenders, with a chronic level of institutional influence, may view distance and "push" and "pull" variables in a different light than most other people. This thesis compares interprovincial migration data from Canadian census reports with fugitive data on a provincial origin-destination basis, *mutatis mutandis*. The comparative study of fugitive migration with overall population migration is helpful in determining the exact effect of warrant radius policy, and while such a course is attractive in its simplicity, certain problems emerge which cannot be addressed adequately.

By including the effect that distance and certain "push" factors have on the Canadian population at large in the explanation of the spatial mobility patterns of fugitives, an assumption is made: the influence these variables have on each group is, within limits, the same. How tenable is this assumption? On the one hand, the similarity between offender and non-offender behaviour has been emphasized; on the other, it has been conjectured that institutional involvement and certain unique goal/risk scenarios may affect offender spatial behaviour. The differing effect of such destination attributes as educational opportunities, climate, affordable housing, unemployment, cost-of-living, *inter alia*, is not known and the assumption remains just that.

The Gravity Model

The second half of the analysis examines intercity fugitive migration within a mathematical spatial interaction model. If the effect of warrant radius policies upon fugitive migration levels is to be examined, two variables must be accounted for: population and distance. A large city will usually have a greater at-risk population than a small town simply because of the population differential. The impact of this variable can be further refined by using a carefully constructed base population as discussed later in this chapter. At its simplest, division of the fugitive count by the size of the accused population from the respective origin creates a *per capita* number.

Two thorny issues are raised in dealing with distance: its measurement and its effect. Straight line measurement may be fine for birds and airplanes but most human movement is neither that direct nor that simple. Parameters of cost and time form behavioural, political, technical and social distances different from traditional Euclidean measures. Grid or Manhattan distances restrict route measurement to orthogonal travel such as is seen in a city block layout. The perception of distance, as distinct from the objective reality, becomes the important criterion in movement.¹² Gould, in a discussion of information barriers, suggests that the cultural and linguistic differences between French and English Canada are equivalent to adding a certain number of kilometers to the distance between the two zones.¹³ It is as if the social span causes a fault line at the boundary

between Québec and the rest of Canada that acts as a perceptual escarpment.

For the purposes of this thesis, distance in the intercity migration analysis was calibrated as follows:

1. Travel between cities was assumed to be along highways and was measured as such. This is supported by the previously mentioned offender traits (low socioeconomic status, travel by hitchhiking, car, bus or train).
2. Only primary and secondary roads were used. This was felt to be most consistent with travel mode, knowledge of strange areas and concerns for anonymity and security from police suspicion.
3. Travel was restricted to routes within Canada. While consideration of movement through the United States would not have greatly affected distance measurements (and then only for two cases), it seemed logical that the international border with its immigration and customs agents, crossings, checks and guards presented a significantly increased risk to a fugitive. The effect of this geographic-political fault line would have made any "short cuts" through the United States very "long" indeed.

These distance considerations reduce travel to an analysis of nodes and routes; origins and destinations are the nodal points and the acceptable highways the routes along which the trip distance is measured. This is similar to the "wheel distance" used by Rhodes and Conly.¹⁴ Another possibility

considered, but not employed, was the use of bus ticket costs or a similar economic variable as a measure of intercity separation.

The effect of distance is even more complicated than its measure. People tend to interact more often, all else being equal, closer to home. Parsimony of time, money and energy encourage this behaviour. If a subject is engaged in a search, he/she is more likely to choose the closer target and there is a strong bias towards short trips.¹⁵ The decline in spatial interaction with the increase in distance is termed distance decay, the exact nature of which is usually empirically determined.

It must be realized that as the range from an origin increases, so do the possibilities for spatial interaction. Even if the resistance to higher distances was nil, the travel density would be reduced by the enlargement of the destination potential. It can be shown that for any given radius, the number of theoretical destinations is directly proportional to that radius.¹⁶ Interaction density would, therefore, decline as a function of the inverse of the radius. There is often a large gap, however, between the number of theoretical destinations and those considered viable in reality.

Added to this is the natural resistance to travel, the decreasing probability of movement as distance increases. Such a "friction of distance" is situational depending upon the actors and the terrain involved, and must be measured by empirical

studies which consider several pertinent factors.

The gravity model provides a mathematical formulation to address these problems of scale and distance. It is widely used to analyze and forecast spatial interaction patterns in such diverse fields as transportation, development, planning, marketing, retailing, urban analysis, history, linguistics, anthropology and archæology. Brantingham and Brantingham feel that, despite its being "almost uniformly ignored in criminology", the gravity model has "great potential in research on crime patterns".¹⁷ Its concern with destination, origin and distance impacts could have applicability to predicting and controlling the direction of displacement phenomena.

The classical form is derived from Newton's Gravitational Law, hence its name:

$$T_{ij} = \frac{kP_i P_j}{d_{ij}^2}$$

where: T_{ij} is the number of trips between points i and j
 P_i is the population of point i
 P_j is the population of point j
 d_{ij} is the distance between points i and j
(this is a relative distance concept)
 k is a constant.

The basic form is not without its problems, beginning with the deterministic nature of the original model. Haynes and

Fotheringham describe its evolution from the flawed social physics paradigm of the latter half of the 19th century through a series of theoretical developments and interpretations to an individual decision theory framework more in touch with modern social science and mathematical statistical theory.¹⁸ They state Dodd's interactance hypothesis¹⁹ in 1950 substituted a probabilistic base for the model's original deterministic approach, and Huff's consumer behaviour application²⁰ and the intervening opportunity concepts of Stouffer²¹ provided theory related to human behaviour. Haynes and Fotheringham also describe how Niedercorn and Bechdolt used economic principles of utility maximization²² to derive the gravity model, but it was not until Wilson applied statistical mechanics and entropy concepts²³ that the dilemma of using individual level behavioural explanations for an aggregate level outcome model was solved. This approach allowed aggregate interaction to be viewed as a basic estimation problem in information theory, linking the model to Bayesian inferential concepts and the extremal theory basis of optimization methods.

Geographers found other limitations to the basic gravity model and continued to modify it. The origin and destination population variables were raised to empirically derived exponents reflecting the non-linear interaction levels between varying sized population centres. As the gravity model became more sophisticated, the constraints of population measures as surrogates of "push" and "pull" forces were recognized and these terms were replaced with vectors of destination-attracting and

origin-generating flow attributes (w_i and v_j respectively) which included population, climate, social, and economic variables. The existence of autocorrelation between the "mass" terms (origin and destination) was recognized as these variables are seldom spatially independent since large urban conurbations tend to be geographically concentrated in certain areas.

Distance decay expressions began to express the complexities of the real world and the squared distance exponent was substituted with an empirically determined value. The problem of division by zero when dealing with the study of interactions at the point of origin was solved by formulations with more complex expressions:

$d_{ij} = e^{\theta t_{ij}}$	an exponential function
$d_{ij} = (\epsilon + t_{ij})^{\beta}$	a Pareto function
$d_{ij} = (\epsilon + t_{ij})^{\beta} (e)^{\theta t_{ij}}$	a combined Pareto-exponential function.

Where ϵ , β and θ are all determined constants, and t_{ij} is a measure of distance between points i and j . Pareto functions fit situations where there are a disproportionate number of short trips, exponential functions are more appropriate when there are fewer interactions close to the origin, and Pareto-exponential functions can be applied to a variety of complex spatial interaction patterns.

In certain circumstances, however, geographers and others found limitations even with these increasingly complex expressions of distance. The presence of alternative destinations and intervening opportunities was realized to have a significant influence and competing destination models were developed.²⁴ These attempted to account for such factors as: cluster and agglomeration effects increasing interaction; relative isolation producing higher recognition and interaction (the absence of an "overshadowing effect"); competing destinations affecting travel to a given point; and the presence of two-stage (macro and microlevel) selection decision-making.

More generally, modellers speak of behavioural distance functions and vectors of separation attributes (\underline{s}_{ij}).²⁵ The study of the spatial relationship pattern and the location influence of the fixed points in the interaction set is complex and probably separate from the issue of the friction of distance.²⁶ Johnston declares that it is important to eliminate "map pattern" effects (the influence of the actual spatial structure) and suggests that the range of distances and the distance from origin to nearest neighbour are probably influential.²⁷

Clark and Ballard discuss an idea relevant to this thesis. Most migration models simultaneously use origin and destination attributes, whether they are derived from human capital theory or the Hicksian macroadjustment approach.²⁸ Migration, however, is felt to be a two-step process: the first stage is a decision

to move and the second, the choice of destination. This conceptual approach separates the two levels with first push variables, and then pull variables being analyzed. A bi-decisional model by Gustavus and Brown is mentioned by Clark and Ballard.²⁹ While the data were not available for such a sophisticated analysis, it would be interesting to examine the fugitive migration phenomenon from such a perspective.

The approach taken in this thesis is the appropriate application of an attraction-constrained destination-specific gravity model. Data are only available on inflow totals³⁰ for destinations, and hence a model bounded by this information is termed attraction-constrained. Production-constrained (only outflow information present) and doubly constrained (inflow and outflow data available) specific models also exist. Since the interaction system consists of flows from several origins to a single destination (Vancouver), the destination-specific model is employed. Not only is this choice dictated by data and methodological considerations but also behaviour unique to the origins can be studied. "Much more information can be gained on the system under investigation if...destination-specific parameters are estimated".³¹ Exponent and constant estimations are also more exact and some researchers have debated the uni-directionality and dominance of migration flows between two points.³²

Urban settlement in Canada is spread along a relatively narrow band just north of the American border; Vancouver is

situated at the western edge of this population corridor. Vancouver's position as a peripheral destination reduces the impact of intervening opportunities and map pattern effects, and consequently gravity model formulations tend to work quite well. These effects are further mitigated by the absence, due to their small size, of any Atlantic province (the eastern periphery) origins in the intercity analysis. The potential for under-prediction of the "edge" Alberta and Québec located cities should be noted. Relative nearest neighbour distance and origin trip range are both large and autocorrelation would appear not to be a concern.

The form of the model used to examine the variables in this thesis is:

$$C_{fj} = k \underline{v}_j | f(d_j)$$

where: k is a constant;
 C_{fj} is the fugitive migrant count from origin j ;
 \underline{v}_j is the vector of origin attributes (total adult accuseds and warrant radius policy) from j ; and
 $f(d_j)$ is a Pareto or exponential function of the distance (highway mileage) from origin j to Vancouver.

A vector of destination attributes is not required in a destination-specific gravity model.

Some of the more recent work on spatial interaction behaviour has taken a slightly different approach through "choice theory" or "choice behaviour". This presupposes that such behaviour should be viewed as probabilistic, rather than algebraic in nature.³³

Luce discusses the issue of knowing when an actor decomposes a decision into two or more stages, of knowing how he/she conceives alternatives.³⁴ He terms irreducible decisions "elementary choices" and states there are data showing that the maximum number of categories humans can cope with at any one time is seven (plus or minus two).³⁵

The stages of decision-making employed by a fugitive may be important to the understanding of the resultant behaviour. After the institutional framework defines the potential population by first charging a party, and secondly by pre-trial release, several options are open. If an actor decides to not show up for court he/she then may go through a stochastic process of deciding:

- should an active attempt to avoid re-arrest be made?
- will this involve moving?
- will the move be out of the immediate police area within which the fugitive is potentially familiar?
- will it be to another city?
- will it be outside the perceived radius of return on the warrant?
- if so, how far out?

- and what resultant moves at a future point in time might be made?

All prior outstanding warrants from other jurisdictions effectively inhibiting travel to those destinations will influence the final outcome.

This thesis must be limited to analyzing the volume of migration flow outside the radius of return. It cannot address the effect of warrant radius policy on the percentage of "fail to appears" (though it begs the question), only on what fugitives do after having made that decision. The nature of movement within the radius is unfortunately not known. It may be similar to that shown in figures 3.1 and 3.2. These migration figures demonstrate curves of "fugitive maximum efficiency" but are only speculative.

The gravity model is temporally static and as data are not available for intermittent fugitive movements not institutionally precipitated, or for instances in which interregional migration was instigated by the perceived (but mistaken and hence not recorded) probability of arrest, the degree of stepping stone migration by stages or steps cannot be assessed. Nor can chain migration, in which members of a group follow each other to certain destinations (contagion diffusion modelling), be examined.³⁶ How nomadic the lifestyle of these "floaters" is and the impact of initial uprooting on their transiency and future movements, may be pertinent questions for the understanding of the total impact of forced or induced

Figure 3-1: SPECULATIVE CURVE OF "FUGITIVE MAXIMUM EFFICIENCY"
LOW RADIUS

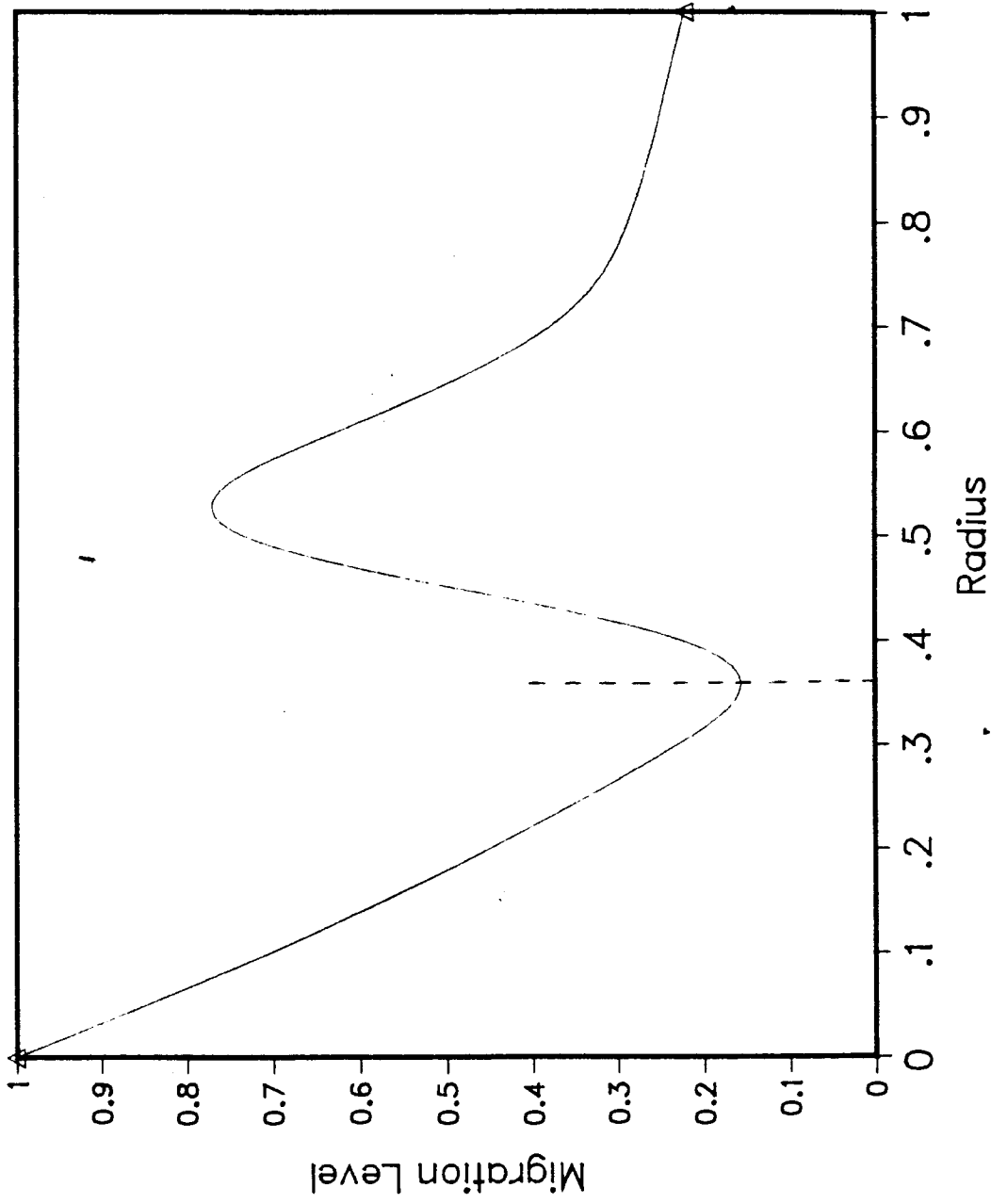
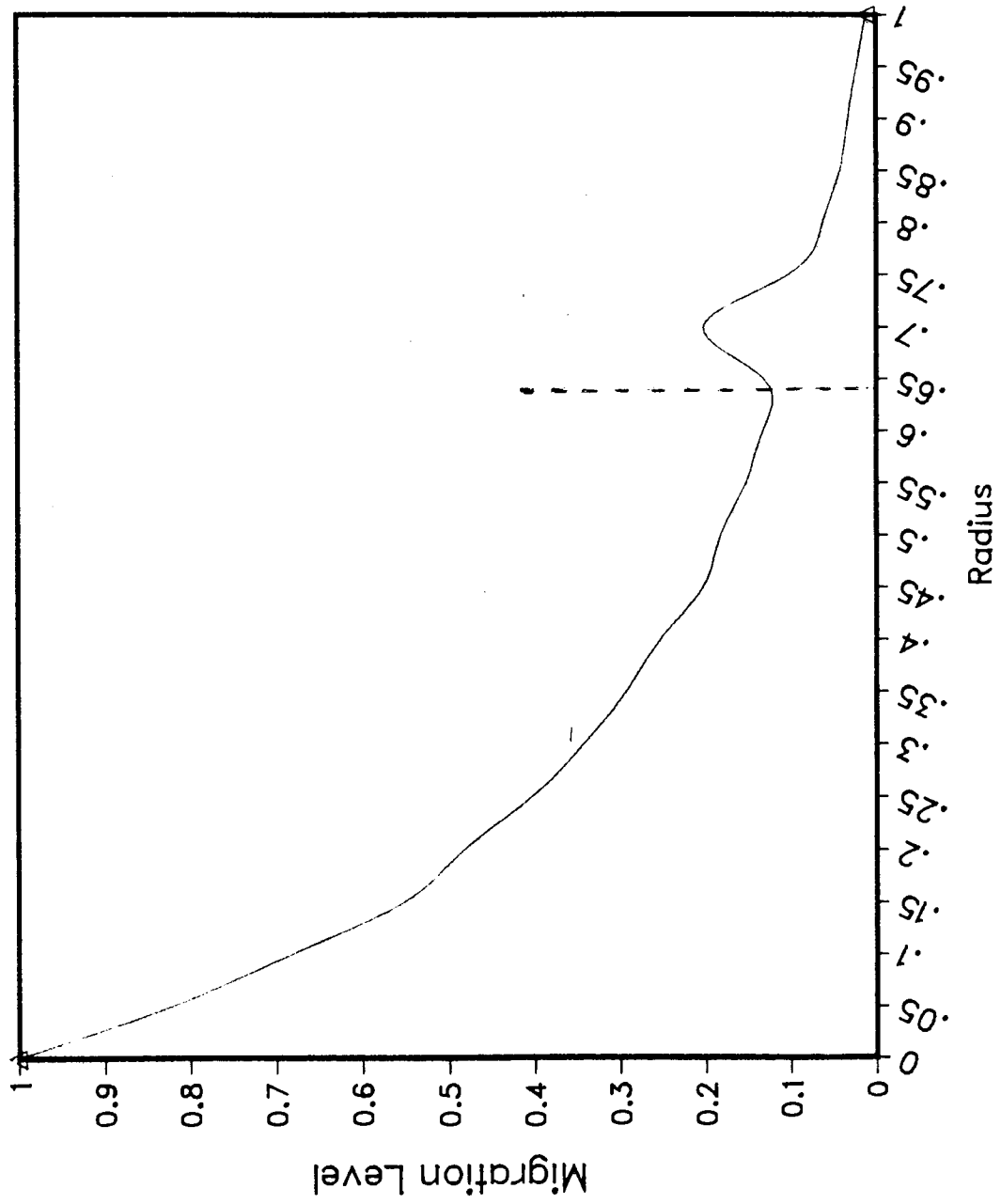


Figure 3-2: SPECULATIVE CURVE OF "FUGITIVE MAXIMUM EFFICIENCY"
HIGH RADIUS



migration on future decision behaviour.

"A decision problem is defined by the acts or options among which one must choose, the possible outcomes or consequences of these acts, and the contingencies or conditional probabilities that relate outcomes to acts."³⁷ Assuming a first-stage choice to not attend court, a second-stage choice to not move involves the relatively high risk of apprehension within the original police jurisdiction. This is followed by a risk of conviction (61.6% national average, 67% or higher fugitive average – see chapter V), and the risk of moderate to severe sanctions (probable considering the criminal records of most fugitives). A choice of fleeing reduces or eliminates these risks.

Tversky and Kahneman find a pattern of risk aversion in choices involving gains and risk seeking in choices involving losses.³⁸ The creation of a decision frame stressing the risk upon staying can influence an actor into perceiving fleeing from the law as being risk aversion rather than risk seeking. "[T]he deliberate manipulation of framing is commonly used as an instrument of self-control"³⁹ – or perhaps social control.

The Legal Framework

Statute Law

The juristic notion of "fugitive" must be set within the legal framework which gives it meaning. Part XIV of the Criminal Code of Canada, "Compelling Appearance of Accused Before a

Justice and Interim Release", contains the majority of the relevant statutory sections applicable to warrant procedures.

The most significant paragraph for the purposes of this study lies in s.450(1):

A peace officer may arrest without warrant... (c) a person for whose arrest he has reasonable and probable grounds to believe that a warrant is in force within the territorial jurisdiction in which the person is found.⁴⁰

Conversely put, if the warrant is not valid for the area in which the fugitive is located, there is no power of arrest.

A variety of sections describe the various forms of release and types of warrants possible in Canadian criminal law. They are listed and described in appendix 1.

The main essence of these sections explains that an accused person may be released initially by the police (either the arresting officer or the officer in charge of the gaol), or subsequently by a justice (at the first appearance of the accused or after a period of detention). A variety of forms of release exist: summons, appearance notice, promise to appear, undertaking to appear, recognizance. If a charged person fails to appear for any of the steps in the criminal justice process (fingerprinting, interim hearing, preliminary trial, trial and continuation, sentencing) a justice may issue a warrant for the arrest of that person. It is also possible to obtain a warrant for a party suspected of a crime but not yet brought into official contact with the criminal justice system. My experience as a police officer suggests that this latter procedure

contributes to a very small proportion of the total number of warrants. The vast majority are for those who have already been charged and who have failed to meet a condition of release such as a court appearance. Occasionally an offender escapes from lawful custody or violates a parole condition. Warrants for arrest will then be issued, but again these situations are relatively rare.

Pre-trial release in Canada is controlled primarily by the Bail Reform Act (1970-71, c.37) which became effective on January 3rd, 1972.

The general objects of these guidelines are to avoid unnecessary arrest; if the accused is arrested, to ensure early pre-trial release; if the accused is not released, to avoid a long delay in bringing him to trial; and, if he is convicted at trial and appeals, to encourage release pending appeal.

To achieve these objects the amendments introduce the concepts of police duty not to arrest; police duty to release; statutory preference of summons to warrant for arrest; automatic consideration of bail by a justice; release on written undertaking; limited statutory grounds for detention; statutory recognition that the onus is on the Crown; virtual abandonment of "cash" bail; and statutory formulation of the grounds for release pending appeal.⁴¹

The Bail Reform Act (BRA) attempts to reduce the number of accused persons remanded in custody and s.457(7) C.C. stipulates a primary and a secondary ground under which a judicial custody order is permitted. The primary ground is met when there is a reasonable probability that the accused will not attend court. The secondary ground is based on the preservation of public interest (protecting public safety, preventing the commission of another offence and deterring interference with the

administration of justice). Recognition of the provisions of the Bail Reform Act is essential to the proper formulation of the "at-risk population" from which the fugitive population is drawn.

The At-Risk Population

Webster's dictionary defines "fugitive" as "one who flees or has fled from danger, justice."⁴² An operational definition for this study must be placed within a legal framework and be sensitive to instrumental technological considerations. A fugitive will be defined as "a person for whom an outstanding criminal warrant is in effect and who leaves the territorial jurisdiction of that warrant."⁴³ The at-risk population from any given point comprises all those who could abscond and consequently have a criminal warrant, originating from that jurisdiction, issued for their arrest. The total at-risk population in Canada is, therefore, the sum of all such persons from every jurisdiction in the country.⁴⁴

Canadian criminal warrants can be divided into two groups:

1. warrants requested by peace officers where a party has not yet been brought before a justice (s.455 C.C.); and
2. warrants issued by a judge after the interim release of an accused party (bench warrants).

As previously mentioned, the first type of warrant is quite rare in comparison to the second. Additionally, relatively few accused persons kept in remand escape and their contribution to the at-risk population is insignificant. A summation over an

established time period of all non-remanded accused persons would therefore provide a reasonable estimate of the at-risk group size. Unfortunately, these data are not available. Statistics on the numbers of accused persons per year are kept for most police jurisdictions but interim release information, and data on the court services function in general, is relatively sparse in Canada. Only one relevant study, completed in 1974, was found: "Bail Reform Act Survey: Analysis".⁴⁵

In addition to being 13 years old, this survey was beset with numerous problems and only limited inferences should be drawn. Lack of uniformity in the information collection, limited confidence in the data, concerns about the questionnaire, possible sample bias, and inadequate survey methodology all contribute to the doubtful validity and reliability of the study.⁴⁶ The survey was conducted only one year after the implementation of the Bail Reform Act, a rather short period in which to assess its effect on court and police practices. No comparative data for the pre-BRA period are available and a longitudinal analysis was not possible. This prevents an assessment of the Bail Reform Act's relationship to the current fugitive phenomenon.

Pre-trial release procedures were changed drastically in 1972 and this could have had some effect on the fugitive at-risk population.⁴⁷ Veteran police officers suggest, however, that the impact was not large as most of those charged were still released at some point prior to the final disposition of their

case, albeit more often by a justice rather than an arresting constable or an officer in charge of the gaol. It is possible, however, that the characteristics of the fugitive group (discussed in chapter IV) could increase the probability of their being remanded in custody. There was a vast reduction in cash bail requirements after the introduction of the Bail Reform Act, and a different attitude seems to exist towards release by a police officer as opposed to a justice.⁴⁸

With these caveats in mind, the 1973 BRA survey is perhaps better thought of as a source for insight rather than a foundation for analysis. It concludes:

...there may be significant differences in the way in which the provisions of the Bail Reform Act are being applied. It appears that differences may exist between different provinces, urban areas, types of police forces, etcetera.⁴⁹ [emphasis in the original]

Other findings of note include, out of 12,698 cases in the survey sample:

- 17.4% resulted in police detention.
- 91% (11,549) were released at some point prior to the final disposition of their cases.
- of those released, 6.3% (731) failed to appear at some point (and possibly more than once); this percentage is likely underestimated due to data problems.⁵⁰
- bench warrants were issued in 660 cases (and were still outstanding in 117 cases, rescinded in 114, executed in 402 and action was not known in 27 cases).
- a s.133 C.C. fail to appear charge was recorded in 327 cases (86 found guilty, 141 not guilty or charge withdrawn, and

disposition not known in 100 cases); this does not include other misconducts which were reported in 102 cases (including 73 instances involving the alleged commission of a federal offence during a period of interim release).

Table 3.1 presents the percentage of accused persons released at some point prior to final trial disposition by province. The figures range from 84.5% (Alberta) to 98.9% (Yukon and Northwest Territories). Table 3.2 presents (by selected urban areas) the percentage of persons released from custody and the percentage of persons who fail to appear. Release figures range from 72.7% (Calgary) to 97.9% (Ottawa), failure to appear from 1.9% (Winnipeg) to 21.7% (Saskatoon). It certainly appears that area variations exist; to what extent they still exist 13 years later is not known.

The fugitive at-risk population used in this study was constructed from the total adults charged in each of the target areas (see chapter IV for details). The BRA survey's findings, while demonstrating interregional variation in remanding practices (over a period of a few months), suggest that such variation is in the order of +10% or -10% of the mean. While not perfect, data for total accused adults are available and do appear to reasonably estimate the population from which the fugitive set is drawn.

Table 3.1: Percentage of Accused Persons Released Prior to Final Disposition of Case by Province

Province	Percentage
Newfoundland	94.4
Prince Edward Island	92.7
Nova Scotia	95.7
New Brunswick	95.4
Québec	86.3
Ontario	93.5
Manitoba	88.4
Saskatchewan	94.8
Alberta	84.5
British Columbia	87.1
Yukon and Northwest Territories	98.9
Canada	91.0

Source: Simmie Magid, "Bail Reform Act Survey: Analysis" (Ottawa: Statistics Canada, 1974), table D-20, appendix D.

Table 3.2: Percentage of Accused Persons Released Prior to Final Disposition of Case and Percentage of Failures to Appear in Court of Total Cases Released before Final Disposition of Case by Selected Urban Area

Selected Urban Area	Released %	Failure to Appear %
Montréal	78.3	3.0
Ottawa	97.9	9.0
Toronto	88.6	12.6
Winnipeg	86.2	1.9
Regina	92.9	16.3
Saskatoon	93.3	21.7
Edmonton	87.4	3.1
Calgary	72.7	8.9
Vancouver	89.2	12.9

Source: Simmie Magid, "Bail Reform Act Survey: Analysis" (Ottawa: Statistics Canada, 1974), tables D-21, D-23, appendix D.

Regional Policy Variation

The second crucial element in the definition of "fugitive" is the area within which the outstanding warrant is in effect. Theoretically, this can include the whole of Canada for indictable offences and anywhere within the originating province for summary conviction, dual, and s.483 offences. In practice, however, regional authorities set limits or "radii" within which their warrants are in force or are "returnable". These policies vary from jurisdiction to jurisdiction and it is the impact of the differing warrant radius policies on the migration levels of fugitives with which this thesis is concerned.

For purposes of the present analysis, radii figures were obtained from the individual warrants comprising the survey data. More general information was obtained from the police departments in selected cities, who were asked:

1. What was the jurisdiction's policy regarding the setting of the radius of return on indictable, dual and summary offences?
2. Who determines this policy?
3. Who is responsible for the costs of returning parties arrested by outside jurisdictions on their warrants?

The answers as received⁵¹ are listed in appendix 2.

Radius policy appears to be controlled by the respective provincial Attorney General, Crown Counsel Offices and to a much lesser extent, by the local police departments. Examination of the data reveals great variability in the actual radii attached

to the warrants, ranging from 10 miles to 300 miles, from city or local area to province or nation-wide. Regional differences are apparent and no national policy, either suggestive or binding, exists.

The provincial variations in warrant radius policy undermine the principle of uniform application of the law and in March, 1983 the Deputy Solicitor General indicated his awareness of the situation and its associated financial problems.⁵² He agreed that the adoption of uniform national standards was desirable but declined to research the matter and instead, canvassed the provincial Attorneys General to ascertain their practices, policies, financial and administrative problems, and the level of support for the development of uniform policies. The issue was to be discussed at the June, 1983 Federal/Provincial Deputy Attorneys General meeting and was then to go to the Uniform Law Conference that summer.

The British Columbia Deputy Attorney General, who expressed concerns over the impact of this problem in many areas, including the possible negative impact on criminal case clearance rates, suggested Federal funding should be made available to achieve uniformity in warrant return policies.⁵³ He proposed two options:

1. Canada-wide return for all indictable offences except those listed in s.483 C.C., and province-wide return for all other offences (summary conviction, dual, and s.483 C.C. indictable offences).

2. Canada-wide return for a core group of offences, and province-wide return for all other offences unless extended on merit (considering seriousness of crime, availability of witnesses, evidence to support charge, community concern, and location of wanted person).

He also suggested that the Canadian Association of Chiefs of Police and the British Columbia Association of Chiefs of Police discuss the problem.

Almost none of these proposals was put into effect. On February 7, 1984 the Deputy Solicitor General of Canada advised the Deputy Attorney General of British Columbia that none of the other provinces (there were seven respondents to the survey) supported the recommendation of a Canada-wide policy on warrant radii, since it was felt such a policy would reduce their existing discretion.⁵⁴ They claimed not to have a problem of similar magnitude to British Columbia (although no studies were ever conducted), and were not interested in returning fugitives to their own jurisdictions. The matter was never tabled at the Federal/Provincial Deputy Attorneys General meeting, nor did it ever reach the Uniform Law Conference.

The British Columbia Attorney General's Office felt that Ottawa was taking a "distant approach" to the problem and that the situation was likely to worsen as criminals gained insight into a developing weakness of the justice system, a situation that did not bring respect for the law from either the offender or the victim.⁵⁵ It was suggested that greater incentive to take

flight existed than to show up for court, possibly due in part to the level of punishment imposed in s.133 C.C. (fail to appear) prosecutions.⁵⁶

In 1984 all police forces in British Columbia were requested by the Assistant Deputy Minister, Police Services Branch to conduct a survey during the normal course of their duties of all persons encountered who were wanted by another jurisdiction, but were non-arrestable. This would be the third such survey undertaken by the Vancouver Police Department and provides the base data for this thesis.

The Technological Framework

Without a means of detection of a fugitive status any analysis of the situation becomes problematic if not meaningless. Concern with the phenomenon appears to be relatively modern, more so because of recent technological advances.

The Canadian Police Information Centre (CPIC) was first proposed in 1963, approved in 1967 and made operational by 1972.⁵⁷ It is a nation-wide computer repository and disseminator of selected police information and intelligence. Although it is operated by the Royal Canadian Mounted Police (RCMP), all municipal, regional, provincial and federal police forces have access to its data bases via on-line computer terminals, allowing them to directly communicate with Ottawa, Ontario

(where CPIC is based). Individual departments can either add information according to stipulated guidelines and rules, or access existing records previously entered by themselves and other agencies.

The Vancouver Police Department has a series of CPIC terminals distributed in its Communications Centre, Warrant Squad, Investigations Section and CPIC room. A police officer wishing to conduct a check on CPIC could contact one of the trained and qualified CPIC operators stationed at these various terminals, either by telephone or direct visit. Most commonly, however, the officer would use the police radio (car or portable) linked to the appropriate radio dispatcher situated in the Communications Centre. These operators would run the check on the terminal and then advise the requesting member of the results of the response.

During July 1980 the Mobile Radio Data System became operational in the Vancouver Police Department.⁵⁸ This system allowed patrol officers to directly access CPIC by using a special computer located within certain police cars. An on-board terminal linked by radio via the Vancouver Police CPIC system directly to Ottawa, allowed the officers in the vehicle to perform most of the standard checks as well as additional functions.

A variety of information checks are possible on the CPIC system; of main importance to this study is the "persons" category. By entering a name (surname and given names if

available, aliases, nicknames) and a date of birth (or estimated age), the computer will conduct a search of its data banks and will indicate any possible "hits". A "hit" is a previously entered "record" of information that matches, within established probability limits, the queried party. The record could be in a variety of categories: e.g., persons wanted for outstanding warrants, on probation, bail, parole, charged, missing, on observation, for notation of location, elopes from mental institutions, and criminal record information. It is only the first category that is of concern here.

The police officer may not have perfect information concerning the object of his query: variations in spelling, typographical errors, missing middle names, incorrect information volunteered from the person under investigation, nicknames or common abbreviations, the intermittent use of foreign names, ages that are only estimated, and so on, can make it more difficult to locate a previous CPIC record. The computer consequently scans its data files and makes comparisons with the supplied information. If a first, middle and last name coupled with a complete date of birth is submitted there will be more information supplied than there would be with only a first initial, surname and age, and the computer's responses will be more precise.

CPIC makes a numerical comparison expressed in the form of a ratio, between the records in its files and the queried party information. Thus, each returned hit will have a "score" (a

number computed from how closely it matches the supplied facts) which is compared with the "maximum possible score" (a maximum number representing the amount of supplied information). Several records may be returned as the computer scans its data banks and those with the highest "score" to "maximum possible score" ratio are more likely to constitute accurate hits.

There is no guarantee of this, however, especially in the case of minimal initial information or more commonly used names. "John T. Smith", age 25, may appear several times in the files, each record belonging to a unique individual. Obviously, the more information supplied, the higher the maximum possible score and the more meaning the score ratio has. Combined with field investigation, descriptions, experience and common sense, the CPIC system can provide the "reasonable and probable grounds" necessary to justify an arrest under s.450(1)(c) C.C. Absolute identification, however, can only be accomplished by a comparison of fingerprints.

When a warrant is issued for the arrest of an accused party, the originating jurisdiction automatically enters the fact with a "want" record in the persons category on CPIC. This record might include such information as: the person's name, date of birth, sex, description, aliases, place of birth, address, point of origin of warrant (originating jurisdiction), cautions, case number, type of warrant, additional remarks, date of entry of record on CPIC, outstanding charge(s), and radius of return of warrant.⁵⁹ The radius defines the limits of the "territorial

jurisdiction" within which the warrant is in force. It will be followed by a request to advise in cases where an arrest cannot be made (e.g., "RADIUS ALBERTA ONLY. OTHERWISE ADVISE.") The sheer volume of responses routinely encountered practically preclude this act of notification in almost all non-arrest situations. Theoretically, the checking agency could notify the originating jurisdiction of the location of the party and that department could extend the radius of the warrant to allow arrest and return. This is extremely rare and in the few instances of which I am aware, it involved a request by the checking agency to the originating police department for a radius increase because of situational circumstances (for example, a suspected rapist in Vancouver was returned to Toronto to face an outstanding break and entry charge).

The record will also include a demand to: "Confirm all hits with originating agencies." This is to allow a check of the status of the case and to verify the details of the CPIC warrant. A decision may be made at this time by the originating jurisdiction not to return the wanted party.⁶⁰

When a warrant is entered on the CPIC system, the originating agency selects a response area which determines the area within which a querying CPIC terminal will get a response. Strict guidelines, which prevent every outstanding traffic bench warrant across the country being returned whenever and wherever a party is checked, are established by the RCMP CPIC manual:

(CW) Canada-wide: wanted persons (Criminal Code; federal statutes)

(PW) Province-wide: wanted persons (provincial statutes; minor federal statutes; family relations act).

Needless to say, an entry with a PW response code would never have an associated warrant radius extending outside the province.

There was some concern that jurisdictions could hide their outstanding warrants by the use of PW response codes, preventing their discovery in British Columbia. Conversation with RCMP "E" Division Field Operations personnel indicated, however, that regular audits are held across the country and the above mentioned policy is closely followed.⁶¹ Where deviations are found, they tend to be PW classed offences mistakenly entered with CW response codes.

Another problem concerns expiry dates associated with CPIC entries. As part of routine housekeeping of the system and in an effort to keep the data banks to a reasonable size, records are reviewed periodically and a decision made to maintain them on file as is, reduce the radius, or purge the warrant altogether. In British Columbia, Crown Counsel makes these decisions after reviewing their files, and purge dates are usually set at 2, 4, 5 or 7 years depending upon the seriousness of the offence.⁶² Federal Statute warrants are never purged from CPIC.

Purging could possibly cause some methodological problems for this study and it affects the criteria for the selection of the base population. This issue is examined in chapter IV.

Table 3.3 gives the number of warrant records in the CPIC persons category originating from six major municipal jurisdictions. In addition to Criminal Code and federal statute warrants, these include provincial liquor act offences, traffic infractions, family court and mental health act warrants. Regional policies and practices vary greatly in the manner of enforcement of provincial acts, their inclusion on CPIC, and their purge dates.⁶³ The information consequently cannot be used for purposes of analysis in this study.

Since the implementation of the CPIC system, national data dissemination is now routinely achieved. Police officers conducting street checks, investigational searches and administrative queries are, as a matter of course, apprised of the status across Canada of the queried party. Prior to 1972, warrant checks were manual and police would not even be advised of a non-returnable warrant from another department. Consequently, the awareness of the fugitive migration phenomenon did not occur until the implementation of a national police computer system, a relatively recent event.

Table 3.3: CPIC Warrants by Major Police Departments
(as of July 29, 1984)

Police Department	No. of CPIC Warrants
Vancouver	11,567
Edmonton	21,047
Calgary	17,409
Winnipeg	5,907
Toronto	203,747
Montréal*	62,759
Québec Provincial Police**	11,800

Source: Kim Rossmo, "Non-Returnable Warrants Survey"
(Vancouver, 1984), p.20, table 5.

* As of September 2, 1984

** Approximate only. Estimated that less than 2% of these warrants have a Canada-wide radius.

NOTES

1. "Spatial analysis at the macro- or mesolevel is deficient and is underexplored in criminology. More spatial analysis has been done at the microlevel or intracity level". Paul Brantingham and Patricia Brantingham, Patterns of Crime (New York: Macmillan Publishing Co., 1984), p.247. Franco Ferracuti and Graeme R. Newman in the Encyclopaedia Britannica, 15th ed., s.v. "Crime and Delinquency" mention an early interest in criminal population mobility centered on migratory groups (both rural to city and international movements) stating that migration itself has no significant effect on crime, but that migrators tend to be "young, adult males, the group most prone to high rates of criminality". Franco Ferracuti in "European Migration and Crime", Collected Studies in Criminological Research 3 (1968):9-12, again touches on this issue dealing with the problem of anti-social behaviour of migrant workers in Europe. He states that, public opinion to the contrary, objective studies have shown that migrants are not involved in high levels of crime, and excepting certain crime types and groups, and "some countries such as, for example, Israel, Australia and Canada, [where] the problem is still very important", the topic holds no current practical interest. He also finds that migrators will often show "some selective traits associated with greater aggressiveness, dominance, instability, intolerance", and that attachment to the local community and the value on reputation will be weakened, and secondary group ties and contacts with divergent value systems will be increased. Ferracuti's comments, however, seem confined to the effect of migration on criminality. This thesis is concerned with the effect of criminal justice system involvement upon migration.
2. Kingsley E. Haynes and A. Stewart Fotheringham, Gravity and Spatial Interaction Models, Scientific Geography Series, vol. 2 (Beverly Hills: Sage Publications, 1984), p.9.
3. Thomas Gabor and Ellen Gottheil, "Offender Characteristics and Spatial Mobility: An Empirical Study and Some Policy Implications", Canadian Journal of Criminology 26 (July 1984):267. See n.11, chapter II. In an article entitled "Florida Officials Fear Northward Crime Migration", Law Enforcement News, February 22, 1982, pp.3-6, county sheriff office statistics show a criminal migration following "an historic pattern in which population flows from a state's largest city to the next largest areas", illustrating the similarity in migration behaviour.
4. Peter Gould, "Acquiring Spatial Information", Economic Geography 51 (April 1975):87.
5. Ibid., p.99.

6. Peter R. Gould, On Mental Maps, Michigan Inter-University Community of Mathematical Geographers Discussion Paper Series, no. 9 (Ann Arbor, Michigan: University of Michigan, 1966):2.
7. Peter Gould and Rodney White, Mental Maps (New York: Penguin Books, 1974), p.143. William M. Rhodes and Catherine Conly, "Crime and Mobility: An Empirical Study", in Brantingham and Brantingham, Environmental Criminology, p.168, discuss offenders (like nonoffenders) constructing "cognate maps" from environmental cues in urban areas. Brantingham and Brantingham in their work, "Notes on the Geometry of Crime", from the same volume, p.29, examine the construction process of decision making "templates" from learned environmental cues.
8. The first two points are borne out by the data set. In an attempt to further study the third item, a subset of names consisting of approximately ten percent of the total survey population was submitted to the British Columbia Ministry of Human Resources, Strategic Planning. It was felt, and still is, that a sizeable number of fugitives are on welfare (estimated by myself and other police officers at about 90%). The initial response was that the proportion of the subsample on assistance was "significant". I was later told that "all future correspondence will be on a ministerial level", and no exact percentage was ever forthcoming.
9. Gabor and Gottheil, p.369.
10. Ibid., p.276.
11. Ibid., pp.270,272.
12. Brantingham and Brantingham, Patterns in Crime, pp.346-349.
13. Gould, Mental Maps, pp.190-191.
14. Rhodes and Conly, p.178.
15. Brantingham and Brantingham, Patterns in Crime, p.237.
16. Interaction in a ring (r_2-r_1) with inner radius r_1 and outer radius r_2 will be spread over an area of:

$$\pi r_2^2 - \pi r_1^2 = \pi(r_2^2 - r_1^2) = \pi(r_2 + r_1)(r_2 - r_1).$$
 Dividing this into the area of ring (r_4-r_3) gives:

$$\frac{\pi(r_4+r_3)(r_4-r_3)}{\pi(r_2+r_1)(r_2-r_1)}$$

If the rings' width are set at some unit incremental level, i , the ratio reduces to:

$$\frac{\pi(r_3+i+r_3)(r_3+i-r_3)}{\pi(r_1+i+r_1)(r_1+i-r_1)} = \frac{\pi(2r_3+i)i}{\pi(2r_1+i)i} = \frac{2r_3+i}{2r_1+i}$$

Since i can be made as small as desired, the limit approaches the ratio of the rings' inner (or outer as they meet) circumferences, or more simply the ratio of their radii:

$$\lim_{i \rightarrow 0} \frac{2r_3+i}{2r_1+i} = \frac{2r_3}{2r_1} = \frac{r_3}{r_1} = \frac{r_4}{r_2}$$

17. Brantingham and Brantingham, Patterns in Crime, p.240.
18. Haynes and Fotheringham, pp.16-18.
19. S.C. Dodd, "The Interactance Hypothesis: A Model Fitting Physical Masses and Human Groups", American Sociological Review 15 (1950):245-257, cited by Haynes and Fotheringham, p.17.
20. D.L. Huff, "Geographical Aspects of Consumer Behavior", University of Washington Business Review 18 (1959):27-37, cited by Haynes and Fotheringham, p.17.
21. A. Stoufer, "Intervening Opportunities and Competing Migrants", Journal of Regional Science 1 (1960):1-20, cited by Haynes and Fotheringham, p.17.
22. J.H. Niedercorn and V.B. Bechdolt, Jr., "Economic Derivation of the 'Gravity Law' of Spatial Interaction", Journal of Regional Science 9 (1969):273-282, cited by Haynes and Fotheringham, p.17.
23. A.G. Wilson, "A Statistical Theory of Spatial Distribution Models", Transportation Research 1 (1967):253-269, cited by Haynes and Fotheringham, p.17-18.
24. Haynes and Fotheringham, pp.18-20.
25. One common formulation for an origin (j) - specific model in a network of n nodes is the distance ratio:

$$f(d) = \frac{d_{ij}^{\beta}}{\sum_{i=1}^n d_{ij}^{\beta}}$$

Connectivity matrix measures from graph theory such as the gamma index, the beta index, the accessibility index, or an association number could also be used.

26. R. J. Johnston, "On Frictions of Distance and Regression Coefficients", Area 5 (1973):187.
27. R.J. Johnston, "Map Pattern and Friction of Distance Parameters: A Comment", Regional Studies 9 (November 1975):282-283.
28. C.L. Clark and K.P. Ballard, "Modelling out-migration from depressed regions: the significance of origin and destination characteristics", Environment and Planning 12 (July 1980):799,802.
29. S.O. Gustavus and L.A. Brown, "Place attributes in a migration decision context", Environment and Planning A9 (1977): 529-548, cited by Clark and Ballard, p.802.
30. Technically, exact totals are not known, only estimated. A sample is adequate as this thesis is primarily a comparative analysis.
31. Haynes and Fotheringham, p.43.
32. Vancouver enjoys a unique Canadian climate blessing possibly causing it to act as a strong attraction pole. Several researchers have used climate as a "pull" variable including Clark and Ballard; Alagar Dabestani, A Model of Interprovincial Migration Between British Columbia and Other Canadian Provinces (Vancouver: B.C. Telephone Co., 1975); and Trien Tien Nguyen, "Differential Migration towards Canadian Census Metropolitan Areas", M.A. Essays (Simon Fraser University, 1975). Multiregional feedback effects are not addressed by the "uni-directional" concept.
33. A choice paradigm for single behaving units among several spatially distributed potential interaction opportunities is used to explain microlevel spatial interaction behaviour. Probabilistic choice theory can be shown to be consistent with the gravity model hypothesis and even completely

characteristic under certain conditions.

Tony E. Smith, A Choice Theory of Spatial Interaction, RSRI Discussion Paper Series, no. 74 (Philadelphia: Regional Science Research Institute, 1974), abstract. From p.20: Gravity Hypothesis [general definition]: "There exists a behavioral distance function d on X [a space of locations] and an attraction function α on Ω [universe of opportunities] such that for every spatial interaction situation $\langle I, C \rangle$ [where I is an opportunity set, i is an opportunity in I , and C is a configuration for I] in S [a spatial interaction structure], a's [an actor's] interaction probabilities are representable by":

$$P_{\langle I, C \rangle}(i) = \frac{\alpha(i) | d(Ca, Ci)}{\sum_{j \in I} \alpha(j) | d(Ca, Cj)} ; i \in I$$

There are three behavioural assumptions of choice theory:

1. Independence Axiom - relative opportunity probabilities are not changed by reducing alternatives;
2. Separability Axiom - if the relative distance between two opportunities is unaltered by a change in their configuration, their relative interaction probabilities are unchanged; and
3. Accessibility Axiom - the interaction probability of an opportunity (i.e., a destination) is not reduced by the reduction in distance to that opportunity. This axiom could be violated by fugitive migration behaviour if the opportunity was moved to a point within the warrant radius jurisdiction.

In discussing the problem of studying aggregate behaviour with choice theory, Smith indicates the feasibility of the agglomeration of individuals into homogeneous groups that exhibit similar spatial interaction behaviour. (Ibid., p.71). This suggestion supports the use of a spatial interaction model to analyze the migration behaviour of the relatively homogeneous group of serial offenders. Choice behaviour also handles the problem encountered in classical gravity models with the accretion of various numbers of actors into single points, all treated equally in the analysis (regardless of actual size or importance). This was dealt with in the current study by the use of weighting factors.

34. R. Duncan Luce, Individual Choice Behavior (New York: John Wiley and Sons, 1959), p.3.
35. Ibid.
36. The relative viability (for whatever reasons) of various destinations, and the communication of that information is

critical to an encompassing understanding of the fugitive migration process. The scope of this thesis is unfortunately limited to an examination of origin attributes. Certain models have incorporated information flow processes (shown to be an important aspect of labor migration processes) and choice set restraints into their frameworks in more sophisticated attempts at analyzing spatial interaction. Terence R. Smith and Paul B. Slater, "A Family of Spatial Interaction Models Incorporating Information Flows and Choice Set Constraints Applied to U.S. Interstate Labor Flows", International Regional Science Review 6-1 (1981):15-19.

37. Amos Tversky and Daniel Kahneman, "The Framing of Decisions and the Psychology of Choice", Science 211 (1981):453.

38. Ibid.

39. Ibid., p.458.

40. Edward L. Greenspan, annotator, Martin's Annual Criminal Code 1985 (Aurora, Ont.: Canada Law Book, 1985). This was the edition current at the time of the study and is the reference throughout the thesis.

Subsequent to this study, paragraph (c) was re-enacted by 1985, c.19,s.76, and now reads, "(c) a person in respect of whom he has reasonable and probable grounds to believe that a warrant of arrest or committal, in any form set out in Part XXV in relation thereto, is in force within the territorial jurisdiction in which the person is found." Part XXV merely deals with the content of the legal forms prescribed for warrants, informations, orders, etcetera.

41. John A. Scollin, The Bail Reform Act: An Analysis of Amendments to the Criminal Code Related to Bail and Arrest, 1972, quoted in Simmie Magid, "Bail Reform Act Survey: Analysis" (Ottawa: Statistics Canada, 1974), p.1.

42. Webster's New Twentieth Century Dictionary of the English Language Unabridged, 2nd ed., s.v. "fugitive".

43. This interpretation is problematic. It excludes those who have committed an offence and who believe, wrongly, that the authorities are attempting to arrest them. It also avoids the issue of why the fugitive left the territorial jurisdiction and his/her level of knowledge about the limits of that jurisdiction. Individual intent and knowledge cannot be known in every case by the researcher. Obviously, there will be individuals who will fall into the stated definition who have migrated for reasons other than flight from justice. And there will be those who have attempted to escape yet have not gone beyond the reach of the law,

whether real or potential. I have dealt with hundreds of parties wanted on non-returnable warrants. In conversations with them and with other police officers it has been learned that in almost every single case, the person was aware of the existence of the warrant and of the fact they they could not be arrested on it. Their knowledge about the radius of the warrant was roughly accurate. Most admitted that they had left the city originating the charge to avoid prosecution, but their migration was also influenced and directed by other, non-judicial considerations. This is no different from non-criminal population migration. A central theme of this study is the treatment of the behaviour of fugitives as similar to that of non-criminals, except where special interests or concerns can be justified.

44. The restriction to Canadian fugitives is based on several considerations: the study is meant to be mesolevel in scope; international fugitives are relatively few; data problems exist with the construction of appropriate and comparable base populations; with the exception of a small number of Interpol targets, the presence of a warrant originating in another country is not readily determined with existing technology; and great hazards exist for a fugitive at international border crossings and customs points (including an increased probability of a computer police check).
45. Magid.
46. Ibid., pp.4-10 passim.
47. "In some instances the police have not exercised their discretion as wisely as they could have, sometimes resulting in hardship to the person charged. The methods by which this philosophy of avoiding unnecessary arrest and detention is to be realized are dealt with in the new provisions of the Criminal Code". Manual Respecting the Authority and Duties of Peace Officers in Relation to Arrest and Pre-trial Release and Detention of Accused Persons (Ottawa: Information Canada, 1971), pp.1-2.
48. A study dated July, 1981 conducted by the Planning, Research and Inspections Section of the Vancouver Police Department statistically analyzed "Fail to Appear Offences" for the months of May and June, 1979, 1980, 1981 and concluded: "It appears that the courts treat a Fail to Attend after release by a Justice more seriously than a Fail to Attend after release on an Appearance Notice or by an Officer in Charge." It found that s.133(5) C.C. charges (failure to appear after release by a police officer) were being dismissed much more often than were s.133(2) charges (failure to appear after release by a justice). A gaol term is much more likely in instances of a conviction under s.133(2) than under s.133(5). However, in very few cases were the fail to appear

sentences in excess of those for the original charge and in all instances the sentences were concurrent. Fail to appear cases comprised 9.8% of the total cases for May and June 1981 (though not every bench warrant results in an s.133 C.C. charge), and 21.6% of those accused of failure to appear, failed to show up for their trials. VPD P&R File 81-46 (1981).

49. Magid, p.56.
50. Cf. n.10 above. The only other data found regarding fail to appear percentages derive from unofficial figures kept by a B.C. Provincial Court clerk for October 1984. During a 30 day period she typed up 238 bench warrants from a total of 4,244 court appearances (i.e., 5.61%). As of December 31, 1983 British Columbia courts had 4,661 Criminal Code and Federal Statute bench warrants outstanding. This does not include the warrants executed throughout the year as these data are not available (thus precluding an estimate of the total bench warrants issued). "Court Activity Summary Report" (Victoria: British Columbia Ministry of Attorney General, Court Services, 1983).
51. Kim Rossmo, "Non-Returnable Warrants Survey" (Vancouver, 1984), pp.4-6.
52. Response to a suggestion by the British Columbia Deputy Attorney General dated January 1983 that a study conducted by the Vancouver Police, Planning and Research Section in 1982 (and a similar study done in 1981) be replicated on a Canada-wide level. This would be done prior to the evolution of national standards which would be in the interest of the entire country.
53. VPD P&R File 84-27 (1984).
54. Ibid.
55. Ibid.
56. Ibid.; cf. n.10 above.
57. T.S. Palys, E.O. Boyanowsky, and D.G. Dutton, A Behavioural Evaluation of the Vancouver Police Department's Mobile Radio Data System (Burnaby, B.C.: Criminology Research Centre, Simon Fraser University, 1983), p.8; published as "Mobile Data Access Terminals and Their Implications for Policing", Journal of Social Issues 40 (1984):113-127; also conversation with Staff Sergeant Joe Fay, Field Operations, RCMP "E" Division Headquarters.
58. Ibid., p.1.

59. As the vast majority of these records originate from bench warrants where the person has already been arrested and in the custody of the police and/or courts, the bulk of this information is usually available and included on the entry.
60. Cf. n.14 above.
61. Rossmo, p.10.
62. Ports Canada Police, Vancouver list in July 1984 an arrest for rape from a CPIC hit. It was further noted that the charge was "Stayed by Crown due to policy of No-Proceedings after (5) years". VPD P&R File 84-27(1984).
63. Calgary purges traffic bench warrants six months after entry, while some jurisdictions keep them on file for a year or more. Toronto counts warrants of committal for parking tag summonses.

CHAPTER IV
METHODOLOGY

Data Collection

The data in this study were compiled in the first instance for a provincial survey requested by the Assistant Deputy Minister, Police Services, Ministry of Attorney General for British Columbia. Under the auspices of the Vancouver Police Department Planning, Research and Audit Section, I collected and collated the data originating from the jurisdiction of the City of Vancouver. The information was to be gathered in two stages: from August 1 to August 15, 1984 inclusive; and September 1 to September 15, 1984 inclusive. A record was to be kept of each incident in which a party checked during routine police work was wanted by an outside jurisdiction, but not legally returnable.

The Vancouver Police Department (VPD) Communications Centre and Canadian Police Information Centre (CPIC) personnel were instructed to retain the computer hard-copy printout of all such cases and to note whether the queried party had been arrested (for an additional matter). The Mobile Radio Data System (MRDS) printouts for these time periods were also collected and examined for relevant information. It was not possible to tell from the MRDS records if the checked party was arrested (unless an additional check was conducted by a CPIC operator). Confirming the validity of the MRDS responses was also

problematic. As earlier discussed, CPIC identifies hits on the basis of a probability scoring. Often the returned records were not associated with the correct party and the terminal operators were asked to discard such cases for the purposes of this study. Such a procedure was not possible with the MRDS format and another approach had to be taken.

Score/maximum possible score ratios were calculated for those CPIC hits known to be confirmed. The quotient mean was .80 and it was decided that an MRDS hit would be counted "confirmed" and included if the score/maximum possible score was equal to or greater than 0.90; CPIC personnel felt that only a small number of legitimate hits would be lost this way and the inclusion of non-valid records would be negligible.

An arrested person would likely be run at least twice on CPIC during his processing by the police, with the non-returnable warrant records coming back each time. A person who was not arrested (or who was eventually released) could be checked more than once on the street by different patrol officers during the study period. Duplications were consequently identified and marked as such. Cases eliminated included two non-returnable British Columbia warrants (intraprovincial movement was not under study), and a very small number of traffic bench, provincial offence and minor federal statute warrants. Most of these were mistakenly assigned Canada-wide response codes when they were originally entered on CPIC.

The number of different individuals was divided into the total volume of checks, and the resulting quotient went from 1.47 in August to 1.64 in September, averaging 1.54 (1,167/757).¹ This indicates that an individual in the sample was checked approximately one and one-half times. A slight saturation effect appears to have occurred with fewer "new" fugitives being found, and this leads to the matter of total population size estimation. If the sample size is known and the number of duplicates within that sample determined, then it should be possible to estimate, within certain confidence intervals, the total population size. Using capture-recapture analysis techniques borrowed from wildlife abundance sampling procedures, Dr. Richard Routledge and May Chen of the Mathematics and Statistics Department, Simon Fraser University found the maximum-likelihood estimate of the Vancouver fugitive population to equal 1,243. The procedure is discussed in appendix 3.

The initial data were obtained by pure random sampling with replacement and no unique selectors.² While sampling techniques are rarely perfect in the social sciences, no overwhelming origin bias appears to exist.³

The origin city to Vancouver analysis uses only the non-duplicate data collected in Vancouver. As not all the other police departments involved in the Police Services survey noted duplications, it was necessary to employ data with duplicates for the origin province to British Columbia analysis. It is

possible to use the number of distinct sampling units for the sample size without creating bias in ratio estimates ($f=x/y$).⁴ Variance is reduced by the discarding of duplicates; generally a sample of $n+d$ unique elements has a smaller variance than a sample of n unique elements, which in turn has less variance than a sample of n unique elements + d duplicate elements.⁵

The calculations in this analysis are based on the concept of a fugitive "trip" (derived from confirmed CPIC hits or records) as the unit of analysis. However, a person may have two or more outstanding warrants originating from distinct cases or separate jurisdictions listed in the CPIC system, resulting in multiple records. Indeed, the records/person mean ratio (the number of different cases pending against each accused) was found to be 1.29 (757/586). It becomes extremely difficult to determine "origin" for the instances of multiple hits and to calculate the effect of opportunity reduction, as those cities with outstanding warrants for the party would probably be eliminated from his/her potential destination set. While not a perfect choice, the use of distinct "records" as the basic fugitive datum provides the most appropriate population, comparable with the at-risk group, "total accuseds" (which counts individuals more than once if they are charged with separate crimes).

Variable Construction

The relevant variable information was recorded from the CPIC hard copy printouts, put on standard computer coding sheets and then entered on a magnetic computer tape. All analyses were done using the SPSS^x (Statistical Package for the Social Sciences) Batch software system on the Simon Fraser University IBM 3081 GX mainframe computer.⁶

The coded variable data included date of CPIC entry, whether arrested, type and extent of warrant radius, originating jurisdiction, and description of outstanding offences. Appendix 4 describes in detail the recorded data used in this thesis. Table 4.1 presents the classification used for the offence(s) variable, and comparable Statistics Canada, Adult Criminal Court Statistics categories.

Origin Populations

The base offender populations of the origin jurisdictions were calculated by adding together the number of adults charged for total Criminal Code, Narcotic Control Act and Food and Drug Act offences (based on Canadian Centre for Justice Statistics computer run data). These in turn were summed for the time period from January 1978 to June 1984 inclusive. This total was felt to give a better estimation of the at-risk population size than strict city population. These numbers may count an individual more than once if he/she was charged on multiple

Table 4.1: Offence Classifications

Offence Classification	Other Included Offences	Offence* Category
Theft under \$200		Theft and Like
Impaired Driving	Failing to Blow, Blow Over .08	Impaired Driving, Over 80 mgs. Alcohol
Fail to Appear	Abscond Bail, Breach Undertaking/ Recognizance/ Restraining Order, Surety Warrant	Fail to Appear
Break and Enter	Personation, Double Doctoring, Credit Card Fraud	Break and Enter
Breach of Probation		Breach of Probation
Fraud		Forgery, Fraud
Possession Narcotics		Possession Narcotics
Theft over \$200		Theft and Like
Mischief	Willful Damage	Mischief
Assault	Common Assault	Assaults and Harm
False Pretences	False Statement, Obtain Meal/Lodging/Transportation False Pretences	Forgery, Fraud
Disturbance		Morals, Conduct
Possession Stolen Property under \$200		Possess Stolen Goods
Assault Causing Bodily Harm		Assaults and Harm
Robbery		Robbery
Obstruct Peace Officer	Public Mischief	Obstruct, Mislead
Forgery		Forgery, Fraud
Theft Auto		Theft and Like
Weapons	Point Firearm, Restricted/Concealed/Prohibited/ Dangerous Weapon, Possess Explosives	Offensive Weapon
Drug Trafficking		Other Drug Offences
Possession Stolen Property over \$200		Possess Stolen Goods
Uttering		Forgery, Fraud
Possession for the Purposes of Trafficking		Other Drug Offences
Keep Common Bawdy House	Live off Avails of Prostitution	Morals, Conduct
Threatening	Threatening Phone Calls	Assaults and Harm
Assault Peace Officer	Assault to Resist Arrest	Assaults and Harm
Gross Indecency		Morals, Conduct
Hit and Run	Sexual Assault Level I	Other Driving
Indecent Assault		Sexual Offences
Obstruct Justice	Unlawfully at Large, Revoke Parole	Obstruct, Mislead
Escape Custody	Aggravated Assault	Other Criminal Code
Trespass by Night		Morals, Conduct
Wounding		Assaults and Harm
Kill an Animal	Soliciting, Found in Common Bawdy House	Assaults and Harm
Prostitution	Aggravated Sexual Assault, Sexual Assault Level I	Morals, Conduct
Rape		Sexual Offences

Indecent Act					
Accessory					
Possession House-Breaking					
Instruments					
Dangerous Driving					
Kidnapping					
Conspiracy					
Unknown					
	Conceal Criminal				
	Criminal Negligence in Operation of Motor Vehicle				
	Driving Under Suspension				
	Abduction				
				Other Driving	
				Other Criminal Code	
				Attempts, Conspiracy	
				Total Mean	

 *Categories from Bill McDonnell, Margaret Mathews and Stan Currie, Adult Criminal Court Statistics 1980 (British Columbia and Québec)(Ottawa: Statistics Canada, n.d.), cross-tabulations addendum.

occasions.

Juveniles were not included as their movement is usually more restricted than that of adults.⁷ Only persons accused of criminal offences (i.e., no municipal, provincial or minor federal charges) were counted, as the lesser offences were not entered on CPIC with a Canada-wide response code, were not likely to result in sanctions grave enough to stimulate migration, and were low in total number. The chosen time period was picked after examining the yearly breakdown of the warrants (see table 5.7). Charges after June 1984 were not likely to come to court prior to the data collection period.⁸ Warrants issued before January 1978 account for only 3.3% of the total sample and purge dates become problematic beyond this point. This time length was felt to give a reasonable and balanced estimate of the base population (51.1% of the cases are dated 1983 or 1984).

Distances

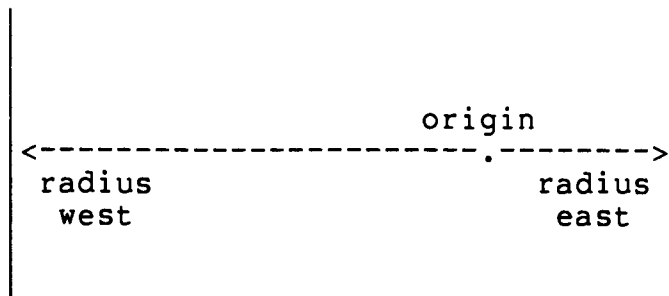
Intercity distances were calculated on the previously mentioned criteria using "Mileage between Principal Cities" atlas charts⁹ and employing an Alvin 1112 ipsometer for the more minor jurisdictions. The location of the main CPIC terminal was defined as the jurisdiction's centre for the regional police forces of Waterloo (Kitchener), Peel (Brampton), Hamilton-Wentworth (Hamilton), and Halton (Oakville).

Warrant Radii

The conversion of warrant radii into a metric variable was complicated. The first problem encountered was the translation of areal radii (e.g., "Saskatchewan only") into some numeric form. The perimeter of a regionally described "radius" (catchment net), unless it happens to be a perfect mathematical circle with the point of issue at the centre, will be described by varying radii from the origin dependent upon direction. With travel into the United States discounted and circuits through northern regions unlikely, the warrant breaks down into a radius extending along routes to the east and another radius, possibly different in magnitude, for the westward direction. Consequently, three separate configurations arise, each with credible justifications supporting their use.

In figure 4.1, a hypothetical originating jurisdiction with separate and different east and west radii is shown, the smaller of which is the east radius. Not knowing the intervening behaviour of the fugitive between the point of fleeing and the time of being checked in Vancouver, it is difficult to determine the most appropriate and influential radius configuration measure. Since the fugitive has reached Vancouver on the West Coast of Canada, the use of the west radius bears consideration. However, it is certainly possible that the fugitive initially chose the shorter, east radius as the first direction in which to flee, making the way to Vancouver by a less direct route. The zone of risk may have been passed through after a period of time

Figure 4.1: Hypothetical Originating Jurisdiction with Separate and Different East and West Radii



had elapsed, or in some cases avoided altogether by a circuitous path. This supports the use of the minimum radius configuration regardless of its direction. Finally, certain fugitives may flee in either direction depending upon a variety of factors; this suggests the suitability of the average radius calculated from the east and west distances.

The resolution of this problem requires more detailed and intimate knowledge of the study group's behaviour than was available. Indeed, the assumption that a single, prevalent mode of thought exists within the sample may not be justifiable. Therefore, all three configurations – west, minimum and average – were tested in the analyses.

An additional conceptual difficulty arises when dealing with a province-wide radius; an assessment must be made of the subjective effect of crossing a political boundary. Such a move can introduce slight cultural changes and several different bureaucracies must be dealt with including welfare, medical, and

motor vehicle departments. This causes resistance to the crossing of provincial borders. Consequently, the analyses conducted here included the percentage of province-wide warrant radii as part of the radius variable. The coefficient of the "percent provincial radii" variable measures its impact and establishes the added "distance effect" of crossing a provincial border.

The warrant radius policy for each of the cities was converted into a metric variable by summing the various radius distances and then calculating the mean. This process becomes more problematic when attempting to determine a single radius for a province as a whole, with no obvious centre point from which to measure; with a total of 167 originating jurisdictions, individual calculations were not always practical. The variable was constructed from totalling west and east radii measures respectively for all cities and towns within a province and then using averages. Major city radius measures were calculated as described in appendix 5 and more minor jurisdictions were dealt with as indicated in appendix 6.

The data were carefully examined for extremes whenever provincial origins were collapsed into "central points", to establish the validity of such generalizations, and no problems were noted. Due to the small number of cases from the Yukon and the Northwest Territories, these areas were combined into a region termed "North". Similarly, New Brunswick, Prince Edward Island, Nova Scotia and Newfoundland were collapsed into an

"Atlantic" region.

Threat

The last independent variable considered in this study was "threat" – a measure of the potential punishment anticipated by the fugitive from the impending prosecution of his/her outstanding charges. The impact of a potentially severe sentence on an accused's decision to flee is intuitively compelling, and such a threat variable would represent an additional influence of the institutional framework surrounding offenders.

It is speculated that if there is a relationship between migration and potential punishment, it is a positive one. Threat then acts as a push variable stimulating fugitives to flee from the origin city. There are at least two potential causes for uneven punishment severity: (1) differential regional sentencing patterns; and (2) varying city crime mixes.

Although many criminal justice system professionals and academics suspect that sentencing varies from judge to judge and possibly from area to area, there is little statistical research on the subject in criminological literature.¹⁰ McDonnell, Mathews and Currie gathered data for British Columbia and Québec which could allow a comparison of sentencing patterns, but they shy away from interregional analysis because of data limitations.¹¹ No study was located which would allow full calibration of the regional differences or temporal variations that might impact on fugitive migration.

Data do exist for an examination of the varying crime mixes and one-way analysis of variance tests were employed to determine differences between both provincial and city origins. There were no statistically significant differences and the variable was not used in any subsequent analysis. The testing procedure and the one-way analysis of variance results are present in appendix 7.

Analyses

The recorded and derived variables were tabulated and examined for any findings or inferences applicable to the fugitive phenomenon. To obtain more information on the characteristics of the fugitive migrant population, criminal record checks for a subsample¹² of 59 fugitives were examined for more detailed personal statistics.

As of September 15, 1984 their age, sex, years of criminal activity (from first charge to last charge),¹³ and number of different cities and provinces in which they had been charged were listed, and then pertinent statistics calculated from the data. The criminal record checks were done on January 29, 1986 and any charges prior to that date but subsequent to September 15, 1984 were noted. This information helped to test the observational impression of fugitives as active offenders, highly involved with the criminal justice system.

Migration flows into Vancouver were examined from two perspectives: that of provinces as origins, and that of cities as origins. Different mathematical frameworks and methodological considerations were employed as necessary for each analysis, allowing more than one approach to the testing of the impact of warrant radius policy.

Provincial Level Analysis

The first analysis compares fugitive migration rates with overall interprovincial migration rates as calculated from Statistics Canada census data. This source provides information on province to province migration, but does not provide province to city, or city to city figures. For comparison purposes, the results of the total British Columbia Police Services survey, conducted province-wide, were used. All duplicates were included, and it was necessary to eliminate a few cases that did not meet the previously mentioned criteria (i.e., criminal or drug offences only).

Since the survey queried all municipal police forces and the RCMP "E" Division detachments in British Columbia,¹⁴ the province as a whole can be taken as the destination in order to provide a direct comparison with census data. Fugitive migrants to British Columbia were categorized by province of origin.¹⁵ Total adult accuseds for 1978 to mid-point of 1984 (the base population) for each province were calculated and then divided into the fugitive count to obtain fugitive migrant per capita

rates.

Overall interprovincial migration rates were computed from Statistics Canada, Demography Division, Population Estimates Section data on annual (June 1 to May 31) interprovincial migrants by province of origin and destination.¹⁶ These numbers were divided by the base population of the origin province during the start year.¹⁷ This was done for eight consecutive years (1978 to 1985) thereby corresponding roughly to the time span of the record entry dates for the fugitive warrants.

The advantage of directly comparing per capita migration rates lies in the incorporation of distance influences and various push and pull factors into the analysis, without the need to articulate and express them mathematically. The assumption is that the influence of these variables is taken into account by the overall interprovincial population migration and any residual differences can be examined and possibly explained by circumstances unique to the fugitive group. The disadvantage to this approach is that very assumption: there is no guarantee that push and pull variables such as employment, climate, housing, or even distance have the same influence on serial offenders as they do on other migrants. It has already been suggested that their travel modes rarely include air flight, a finding not consistent with the behaviour of the overall population.

Direct comparison between groups was not possible due to the disparity of the total migration volumes. Instead, overall population proportions of means were constructed by dividing each provincial rate by the mean migration rate for that year. The fugitive proportion of mean rates were also calculated for each province. This figure is merely a measure or a ratio of a single flow to the average flow and eliminates the problem of differential total migrant volumes.

Since the fugitive migration data represent an average of several years, it was compared, province by province, to the mean for the eight annual overall population migration proportion of mean rates. This stabilized temporal variations. The difference was then divided by the standard deviation for the respective province, calculated from the eight annual overall population migration proportion of mean rates. This resulted in a Z-score, the probability of which measured the likelihood of the fugitive migration rate being different from the overall population migration rate. Expressed more succinctly:

$$z_q = \frac{1}{S_q} \left[\frac{1}{8} \left(\frac{\sum M_{qyP} \sum P}{\sum y P \sum M_{qyP} \sum P} \right) - \frac{F_{qP} \sum A_P}{A_{qP} \sum F_P} \right]$$

where:

- Z is the Z-score (for the province in question)
- S_q is the overall population interprovincial migration rate proportions of means standard deviation for the eight year period (for the province in question)
- y is any given year
- p is any given province
- M is the number of overall population interprovincial migrants (to British Columbia) from any given province in any given year
- P is the base population of any given origin province for any given year
- q is the province in question
- F is the number of fugitive migrants from any given province
- A is the base accused population for any given province.

An additional measure was constructed by dividing, for a given province, the fugitive migration rate proportion of mean by the total overall population interprovincial migration rate proportion of mean for the same province, or:

$$R_q = \frac{F_{qp} \sum A_{py} \sum P_{qyyp} \sum M_{py}}{A_{qp} \sum F_{py} \sum M_{qyyp} \sum P_{py}}$$

where:

R is the ratio measure (for the province in question),
q
and all other symbols are as above.

It should be noted that the ratio measure computes the "average" overall population migration rate (used to establish the proportions of means), by dividing total migrants by total base population for a given province. This is the method most compatible with the fugitive migration figures. The Z-score measure, however, calculated "average" overall population migration rate proportions of means by first computing a proportion of mean for each individual year, for a given province, and then taking the arithmetic mean from the eight years. This approach was necessary to allow the derivation of standard deviations, Z-scores, and probability measures. The methods are distinct but produce very similar results.

The Z-score measure and the ratio measure dependent variables were compared to the radius (west, minimum, average, and province-wide percentage) independent variables using Pearson correlation coefficients and multiple regression analysis. The regression analysis is discussed in detail in chapter V.

The dependent variables were weighted by the size of the origin province accused population.¹⁸ Weighting was done to minimize the impact of the combined Yukon-Northwest Territories area ("North"), an origin with few migrants but high Z-score and ratio measures. This issue is further discussed in chapter V. There were no missing cases for any of the tested variables.

City Level Analysis

The second half of this study focuses on fugitive migration examined from a city origin level, and attempts to bolster some of the discussed weaknesses inherent in the first approach. A weighted destination-specific attraction-constrained gravity formula was used as the mathematical model with which to examine the interrelationships of the pertinent variables. The weighted version was chosen to reduce the impact of a specification error in Eastern Ontario.¹⁹ The history and geography of Canada's growth have established a disproportionate number of cities and towns based in the St. Lawrence Seaway-Niagara Peninsula area and a resultant population imbalance in favour of Central-Eastern Canada. An isodemographic map of the country, with a demographic scale in thousands of people, shows "half" of Canada lying between Montréal and Windsor.²⁰

The large clustering of origin points within a relatively narrow band produces difficulties with the gravity model and with regression analysis, by tending to disproportionately rotate the line of least squares about a centre located within

this narrow range. The gravity model formulation treats all cities as uniform points regardless of population size or significance. This is a problem that choice theory eliminates.

By using the standard weight of origin population size (total accused adults), smaller cities were allotted less influence than larger ones so as to reduce some of the unavoidable impact of Canada's population distribution without totally eliminating the contribution of these sources.

The principal cities were chosen using the criterion that a minimum of ten fugitive warrants must have originated from that jurisdiction. Out of 167 cities and towns, 15 were selected: (1) Toronto, Ontario; (2) Calgary, Alberta; (3) Edmonton, Alberta; (4) Winnipeg, Manitoba; (5) Montréal, Québec; (6) Waterloo Regional, Ontario; (7) Ottawa, Ontario; (8) Hamilton-Wentworth, Ontario; (9) London, Ontario; (10) Peel Regional, Ontario; (11) Regina, Saskatchewan; (12) Thunder Bay, Ontario; (13) Windsor, Ontario; (14) Saskatoon, Saskatchewan; (15) Halton Regional, Ontario. Only the Vancouver sample, without duplicates, was used in this analysis as it was necessary to have a "pin-point" destination.

An attempt was made to discover other cities that could have been, but were not included in the study, and what possible reasons that might exist for their omission. A large jurisdiction close to Vancouver found with less than ten fugitive migrants in the survey, could have a profound impact on

the validity of the analysis.

As the origins are defined by police jurisdiction, a Statistics Canada computer printout, "Police Administration/ Police Strength of 40 Largest Municipal Forces-1984" was used to locate possible omissions. None of the missing cities, based on population, distance and warrant radius criteria, would have been expected to have high fugitive migration rates.²¹ The lack of any unexplained omissions is encouraging for this approach.

The general form of the gravity model is:

$$T_{ij} = f(\underline{v}_j, \underline{w}_i, \underline{s}_{ij})$$

where:

T_{ij} =
the number of trips between origin j and destination i =
the number of fugitive warrants from an originating
jurisdiction j found in Vancouver (M_j);
 $f(\underline{v}_j) =$
a vector of origin attributes = the accused population (A_j)
raised to an empirically determined exponent (a),
divided by the warrant radius variable ($R = r+n\%$)
raised to an empirically determined exponent (c);
 $f(\underline{w}_i) =$
a vector of destination attributes = a constant,
as only a single destination (Vancouver) is used
in this analysis;

$f(\underline{s}_{ij}) =$

a vector of separation attributes = the

highway mileage between an origin j and Vancouver (D_j) raised to an empirically determined power ($-b$).

$$A_j = \sum_{y=1978}^{1984.5} A_{jy}$$

R_j has three configurations (west, average, minimum).

The gravity model formulation can now be expressed as:

$$M_j = \frac{Kf(\underline{w}_i) \left[\sum_y A_{jy} \right]^a}{D_j^b (r+n\%)^c} = \frac{kA_j^a}{D_j^b R_j^c}$$

where K and k are constants.

To establish the empirically determined powers and constants, it is necessary to convert the above formula into a logarithmic equation. Natural logarithms to the base of e were used:

$$\ln M_j = \ln k_j + a \ln A_j - b \ln D_j - c \ln R_j$$

This representation can be treated as a multivariate linear equation:

$$Y_i = B_0 + B_1 x_1 + B_2 x_2 + B_3 x_3 + e_i$$

This form is suitable, providing the necessary assumptions are met,²² for multiple linear regression analysis. There were no missing cases for any of the tested variables.

The multiple regression equation was built using the stepwise selection method with the default criteria provided by SPSS^x: probability of *F*-to-enter = .05; probability of *F*-to-remove = .10; tolerance = .01; maximum number of steps = twice the number of independent variables. Pearson product moment correlation coefficients were computed between the variables and multicollinearity was monitored by examining tolerances. Both Student's *t* statistics and analysis of variance *F* values were calculated. A normal probability plot of standardized residual values, a scatterplot of standardized predicted values versus standardized residuals, and the worst standardized residual outliers were also obtained.

The dependent variable was $\ln M_j$ and the dependent variables were $\ln A_j$, $\ln D_j$ and the three forms of $\ln R_j$. By simultaneously entering the different radius variables it was possible to determine their relative power.

The regression coefficients (B values) could then be interpreted as the empirically determined exponents (a,b,c) for the independent variables (A_j,D_j,R_j) and the anti-log of the regression constant or y-intercept regarded as the gravity model constant (k). This completed the formulation of the function. The impact and degree of influence of the radius variable could be assessed once population and distance effects had been determined.

The establishment of the constant for the percent provincial radii variable (n) within the radius function was difficult as it could not be separated from the radius configuration variable when in logarithmic form:

$$\ln R_j = \ln(r+n\%).$$

A cyclical reiterative estimation procedure²³ was used to determine the value of n in each of the three radius variables.

NOTES

1. A problem appears to exist with the size of the September sample which was about half the volume of the August sample. Hard-copy queries from the operator controlled terminals dropped off while MRDS hits appeared to be about equal for the two periods. Discussion with Staff Sergeant J. Fay, RCMP Field Operations, confirms that CPIC volume is relatively constant in large urban areas. In smaller detachments, January and February are quiet with July to October as the busy months. Conversation with CPIC and Communication Centre personnel indicates that the diligence in data collection waned appreciably towards the end of the study. They also estimated a 25% loss in both months due to unavoidable factors such as time constraints and hard-copy loss. Additionally, a problem with the MRDS computer tape caused a segment from Wednesday 21:18 hrs September 5 to Thursday 15:52 hrs September 6 to disappear. The Pallys, Boyanowsky and Dutton MRDS evaluation found strong day-of-the-week volume variation (pp.62-63), so data from a comparable time period, Wednesday 21:18 September 19 to Thursday 15:52 September 20 was transplanted into the sample. This included only 13 hits. A further 105 minutes of MRDS data appeared to be missing from various other time periods but this was not felt to be a long enough time period to be significant. The volume caveats are only a concern when longitudinal studies are attempted; origin comparison analyses should not be affected if the sample is large enough.
2. Arrested subjects in most situations, as previously discussed, would not be remanded in custody despite their extensive records.
3. It could be argued that migrants from a province whose inhabitants were visually distinctive – as with racial differences – might be checked by the police more often. What small Canadian regional ethnic differences that may exist are inconsequential in comparison to the multicultural background of Vancouver.
4. W. Edward Deming, Sample Design in Business Research (New York: John Wiley & Sons, 1960), pp.384-385.
5. Leslie Kish, Survey Sampling (New York: John Wiley & Sons, 1965), p.39. In a comparative analysis, either sample will do.
6. The only exceptions were the calculations of the personal descriptive statistics for the fugitive sub-sample which were done on a Texas Instruments TI-56 programmable calculator, and the initial provincial fugitive migration and overall interprovincial migration rates which were computed on an IBM personal computer.

7. Prior to the full implementation of the Young Offenders Act in Canada (April 1, 1985) a juvenile was, depending on which province, anyone under the age of 16 or 17 years. A young offender is now nationally uniformly defined as anyone under the age of 18 years. See Reppetto (p.173) for a discussion of the limitations of youth on offender mobility.
8. Monthly breakdowns of offenders charged by area are not available from Statistics Canada. The total number of adult accuseds for 1984 was halved to estimate the volume to June 1984.
9. Rand McNally Road Atlas (Chicago: Rand McNally & Co., 1984), pp.107 (Canada), 112 (Ontario). Mileages were derived by following the shortest practical route (authorized highways or those practical for truck travel) between centrally located urban points. All travel was assumed to be within Canadian borders.
10. T.S. Palys and Stan Divorski, "Explaining Sentence Disparity", Canadian Journal of Criminology 28 (1986):347-362; L. Paul Sutton, Variations in Federal Criminal Sentences: A Statistical Assessment at the National Level, Utilization of Criminal Justice Statistics Project, Analytic Report 17 (Albany: Criminal Justice Research Centre, 1978); Bill McDonnell, Margaret Mathews and Stan Currie, Adult Criminal Court Statistics, 1980 (British Columbia and Québec) (Ottawa: Statistics Canada, n.d.). Palys and Divorski noted (p.357) that "judicial demographics...in explanatory power...were clearly secondary overall".
11. Ibid., chapter 6.
12. Specifically, the first 59 appropriate cases from the Vancouver survey data were used. A case was inappropriate if: (1) it was from MRDS data (as it lacked the definitive confirmation of the CPIC and Radio cases); (2) the name was too common (determining the correct "Smith" could be problematic); or (3) the case was a duplicate. This systematic sample frame was felt to be representative as there was no bias associated with order (street checks were random and the CPIC hard-copies were shuffled prior to collection).
13. Charges included parole revocations and prison charges but not deportation and immigration offences. Convictions do not include those cases where the accused is found guilty but given an absolute or conditional discharge.
14. In addition to Vancouver and the various RCMP detachments responsible for municipal, provincial and highway duties, respondents included the departments of Victoria, Central

respondents included the departments of Victoria, Central Saanich, Saanich, Port Moody, West Vancouver, Delta (who only provided data for the September 1-15 period due to receiving the Police Services request after the August 1-15 date), Oak Bay, Matsqui and New Westminster (who noted that they felt their fugitive totals were low as manpower was down during the study period). Esquimalt and Nelson did not respond to the survey and it appears that Ports Canada Police, Canadian Pacific Police, Canadian National Police, Burlington Northern Police, and the RCMP federal enforcement branches were not contacted to take part in the survey. These omissions are not important as the size of the departments in question are all quite small. See VPD PR File 84-27 (1984).

15. As mentioned above, the Yukon and the Northwest Territories were grouped into the "North" area, and Newfoundland, Prince Edward Island, Nova Scotia and New Brunswick were classed as the "Atlantic" area.
16. Statistics Canada, International and Interprovincial Migration in Canada by Age and Sex, June 1st, 1976-77 to December 31st, 1982, Publication No. 91-208; Statistics Canada, Postcensal Annual Estimates of Population by Marital Status, Age, Sex and Components of Growth for Canada and the Provinces, June 1, 1982 and 1983, Vol. 1, Publication No. 91-210. Also updates. Statistics Canada does not present interprovincial migration by age cohorts, and counts all adults and children over five years of age.
17. Statistics Canada, Annual Elements of Population Growth, Canada, 1955-6 to 1982-3. Publication No. 91-201. Also updates.
18. Specifically, the provincial area measures (Z-score and ratio) were weighted by:

$$\frac{7A_g}{\sum_p A_p}$$

for province g (where all symbols are as defined previously). Dividing the accused population of the given province by the mean provincial accused population prevents an artificial increase in the significance level of the correlation.

19. The weighting factor was similar to that used for the provincial analysis:

$$\frac{15A_j}{\sum_j A_j}$$

(where $\sum_j A_j$ is the total of all accuseds across the jurisdictions involved).

20. "Isodemographic Map of Canada", Perspective Canada (Ottawa: Information Canada, 1974), p.xxvi.
21. Of the 25 cities not included, six were from British Columbia and ten were too small. The remaining nine are as follows:
 Niagara Regional, Ontario; 559 police, 9 fugitives
 Durham Regional, Ontario; 388 police, 7 fugitives
 Laval, Québec; 386 police, 0 fugitives
 Québec City, Québec; 368 police, 1 fugitive
 York Regional, Ontario; 345 police, 8 fugitives
 St. John's Newfoundland; 319 police, 0 fugitives
 Halifax, Nova Scotia; 267 police, 7 fugitives
 Sudbury Regional, Ontario; 209 police, 3 fugitives
 Saint John, New Brunswick; 190 police, 1 fugitive.
 Distance and warrant radius policy would predict the absence of these jurisdictions.
22. The model and data do not appear to violate seriously any of the regression assumptions: linearity, independence of observations, normality, and equality of variance for the distribution of the dependent variable. Residual analysis, discussed in chapter V, was conducted in a search for possible violations.
23. It was necessary to make an initial estimate of the constant (n), run the regression with that estimate to determine all the gravity model exponents, construct the gravity model, and then solve for radius and percent provincial radii.

$$(r+n\%)^c = R_j^c = \frac{kA_j^a}{D_j^b M_j}$$

$$r+n\% = \left[\frac{KA_j^a}{D_j^b M_j} \right]^{\frac{1}{c}} = \gamma$$

The right hand of the above equation (γ) could now be treated as a dependent variable, and r and $\%$ as independent

variables in a new regression analysis. By dividing the coefficient of r into the coefficient for $\%$, a new, more significant estimate for n could be determined. This replaced the initial estimate and then the logarithmic regression was re-run to determine second generation, more accurate exponents for the gravity model. New γ values could then be calculated, followed in turn by a third estimate for n . This cyclical process was reiterated until neither exponents nor n value changed. This state of equilibrium indicated a maximization of the significance of the empirically determined constants and powers.

CHAPTER V
RESULTS AND STATISTICS

Descriptive Analysis

Criminal Record Information

The subsample of 59 names analyzed for fugitive characteristics and criminal records confirmed the repetitive criminality of these offenders. Table 5.1 presents the details derived from the Canadian Police Information Centre (CPIC) criminal record history. The resultant low standard errors of the subsample means allow confidence in the application of these findings to the total sample and to the population.

All but two of the cases in the subsample were male (96.6%), all but two had been previously charged (96.6%), all but three had prior convictions (94.9%), and all but 13 had served time in prison (78%). In the 16-1/2 months between the end of the study period and the date when the CPIC record checks were conducted, 42 of the fugitives had been charged with new offences (71.2%). Dividing the mean number of convictions by the mean number of charges gives a 67% conviction rate (compared to a 61.6% conviction rate computed from the crosstabulation addendum data in McDonnell, Mathews and Currie's study). Average prison time is 2.35 months per conviction and 1.58 months per charge.

Subtracting 17 (the age when a juvenile previously became an adult in British Columbia) from the mean age of 28.8 leaves 11.8

Table 5.1: Fugitive Characteristics

Characteristic	Mean (N=59)	Standard Deviation	Standard Error of Sample
Age	28.8	8.45	1.11
Years active*	8.15	6.96	.914
Convictions	10.1	9.73	1.28
Charges	15.0	13.1	1.72
Prison time (months)	23.7	33.9	4.45
Number cities in which charged	3.86	2.35	.308
Number provinces in which charged	2.44	1.06	.139

*Defined as the time between first adult charge and most current charge.

years of adult life. An average length of 8.2 years (69.5% of adult life) exists between the initial and the current criminal charge, and a mean of 2.0 years (16.9% of adult life) has been spent in prison (or on parole). The vast majority of fugitives have prior records, usually involving several charges and convictions; consequently these "serial offenders" can realistically anticipate a gaol term for their current outstanding charges. Good reasons exist for such offenders to migrate to avoid state sanctions. A high degree of mobility was exhibited; fugitives had been charged previously in a mean of 3.86 cities and 2.44 provinces. It is not possible to tell from these data the number of additional locations in which uncleared crimes had been committed.

Arrests

In table 5.2 the percentage of checked fugitives arrested by the Vancouver Police on charges other than those relating to their unreturnable warrants is depicted (30.4%). Arrested fugitives comprised 12.3% of the total number of adults booked into the Vancouver Police Gaol during the period August 1-15 and September 1-15, 1984.

It appears that a relatively high percentage of fugitives are re-arrested on new charges. This raises the question of what fraction of the total crime in Vancouver can be attributed to fugitives from other areas. The extensive criminal records associated with fugitives suggest that they probably are responsible for more than 12.3% of Vancouver's crime. There are no direct data to confirm this suggestion, but it is clear that fugitive in-migration has a deleterious effect on Vancouver's crime situation. This must be balanced against the unknown level of fugitive out-migration from Vancouver.

Table 5.3 depicts out-of-province "holds" and "escorts" by jurisdiction. "Holds" are those parties being detained in custody by the Vancouver Police for another department - fugitives arrested on warrants issued by other jurisdictions where the radius extends to Vancouver (i.e., "returnable").¹ "Escorts" are pick-ups by provincial deputy sheriffs for subjects arrested by outside agencies on returnable warrants. The cumulations were calculated over an eight and one-half month

Table 5.2: Fugitive and Vancouver Gaol Arrest Figures

Survey Population	757
Fugitives Arrested	230

Percentage Arrested 30.4%

Adult Arrests*

Summary Conviction Offences	652
Indictable (Dual Offences)	1,217

Total Arrests	1,869	(62 per day)
Fugitives Arrested	230	

Fugitive Percentage of Total Arrests 12.3%

*Based on persons booked into the Vancouver Police Department Detention Annex during the study period (30 days). Summary conviction offences include arrests for public drunkenness.

period as the monthly averages were low.

It appears from table 5.3 that more returnable fugitives from other areas are picked up in Vancouver than *vice versa*. These figures do not allow an exact estimation of the out-flow from Vancouver, although the relatively strict warrant radius policy in British Columbia and the results of this thesis would predict more in-migration than out-migration. It would be useful to compare these findings to patterns in other cities, but such data are not available.

Table 5.3: Vancouver Sheriff Escorts and Gaol Outside Holds*

Jurisdiction	VPD Outside Holds	Sheriff Escorts
Alberta	43	27
(Calgary)	(15)	(15)
(Edmonton)	(13)	(12)
Saskatchewan	4	8
Manitoba	10	4
(Winnipeg)	(9)	(4)
Ontario	18	12
(Toronto)	(10)	(11)
Québec	2	1
(Montréal)	(1)	(1)
Atlantic	5	0
(New Brunswick)	(0)	
(Prince Edward Island)	(1)	
(Nova Scotia)	(2)	
(Newfoundland)	(2)	
North	0	0
Other**	1	0
	<hr/>	
Total	83	52
Monthly Average	9.8	6.1

* For outside British Columbia. Taken for an eight and one-half month period from January 1, 1984 to September 15, 1985.

Based on Vancouver Police Department Detention Annex records.

**For Sacramento, California, U.S.A.

Long distance escorts can be expensive. The cost breakdown of a typical escort to Toronto for one British Columbia deputy sheriff is as follows:

\$833.00 return airfare for one deputy sheriff
\$417.00 one way airfare for prisoner
\$210.00 wages (including overtime) for two days
100.00 average expenses for two days
\$1,560.00 total.² Distance = 2,820 miles (highway)

These costs must be weighed against the negative effects of fugitive migration. Unfortunately, those negative effects impact on the destination jurisdiction, and not on the originating jurisdiction which establishes the warrant radius policy.

Offences

Many of the fugitive warrants listed more than one offence (269/757 = 35.5%), and some had as many as 16 distinct charges. This listing could represent several cases being simultaneously solved (such as a string of break and entries or a series of frauds), separate criminal acts committed during one incident, or agency comprehensive/multiple charging. Table 5.4 lists the frequencies and predominate classes (indictable, dual, summary conviction) of the 43 offence groups used in the study. Most prevalent were the dual offences of fail to appear (182) theft under \$200 (157), and impaired driving (127).³

Table 5.4: Offence Frequencies for Fugitive Warrants

Offence	Class	Frequency
Theft under \$200	D	157
Impaired Driving	D	127
Fail to Appear	D	182
Break and Enter	I	60
Breach of Probation	S	56
Fraud	D	68
Possession Narcotics	D	45
Theft over \$200	I	42
Mischief	D	41
Assault	D	30
False Pretences	D	36
Disturbance	S	25
Possession Stolen Property under \$200	D	36
Assault Causing Bodily Harm	I	19
Robbery	I	16
Obstructing Peace Officer	D	14
Forgery	I	19
Theft Auto	S	13
Weapons	D	15
Drug Trafficking	I	7
Possession Stolen Property over \$200	I	16
Uttering	I	14
Possession for the Purposes of Trafficking	I	6
Keeping a Common Bawdy House	I	3
Threatening	D	7
Assaulting a Peace Officer	D	6
Gross Indecency	I	2
Hit and Run	D	3
Indecent Assault	D	4
Obstruct Justice	D	5
Escape Custody	I	5
Trespass by Night	S	2
Wounding	I	3
Kill an Animal	S	1
Prostitution	S	2
Rape	I	1
Indecent Act	S	3
Accessory	D	2
Possession House-Breaking Instruments	I	4
Dangerous Driving	D	5
Kidnapping	I	1
Conspiracy	I	1
Unknown		137

Total

1,241

Table 5.4: Offence Frequencies for Fugitive Warrants (continued)

Class	Frequency	Percentage	Percentage for Known Cases
Summary Conviction Offences (S)	102	8	9
Dual Offences (D)	783	63	71
Indictable Offences (I)	219	18	20
Unknown	137	11	
Total	1,241		

Several serious offences were noted: rape, kidnapping, robbery, wounding, forgery, drug trafficking, and conspiracy.⁴ Hybrid crimes dominate (percentage for known cases - 71%), which is not surprising given these comprise the bulk of the offences in the Criminal Code. Indictable offences constitute the next largest group (percentage for known cases - 20%), followed by summary conviction offences (percentage for known cases - 9%).

Warrant Entry Dates

The frequencies and percentages of the record entry dates are listed by year in table 5.5. The period January 1978 to June 1984 was chosen for the establishment of the base population (total adult accuseds) since it comprises 96.7% of the entry dates. The selected time frame is comprehensive and current enough to dismiss purging concerns. The yearly percentages rise with time, peaking in 1983 (25.9%) and the first half of 1984

Table 5.5: Record Entry Dates

Year	Frequency (N=757)	Percentage	Cumulated Percentage
1984	191	25.2	25.2
1983	196	25.9	51.1
1982	115	15.2	66.3
1981	95	12.5	78.9
1980	54	7.1	86.0
1979	44	5.8	91.8
1978*	37	4.9	96.7
1977	15	2.0	98.7
1976	6	.8	99.5
1975	1	.1	99.6
1974	1	.1	99.7
1973	2	.3	100.0

* Cut-off date for base population estimates.

(25.2%).⁵ Whether this imbalance is due to fugitive migration flows increasing with time, or other factors, is not known. (There has been a general rise of 18% in the total number of adults charged in Canada from 1978 to 1983.)

Migrants by Place of Origin

The present Vancouver survey collected 1,167 fugitive warrants of which 757 were unique (non-duplicate) cases. These represented 586 individual persons and 1,241 separate charges. Within British Columbia as a whole, the Police Services study found 1,760 fugitive warrants. Table 5.6 presents the breakdown of fugitive migrants by province of origin. The 1984 survey results for numbers of fugitives found in Vancouver, and in British Columbia are listed, as well as Vancouver results from the two prior Vancouver Police Department Planning and Research surveys. A longitudinal analysis is presented in appendix 8.

Despite some differences in the data collection procedures for these surveys, the provincial origin percentages are very similar. Ontario consistently contributes almost half of the fugitives with Alberta being the next highest province of origin. Ontario, however, is a large, populous province while Alberta is British Columbia's eastern neighbour; both population and distance are important variables that must be considered carefully.

The numbers of fugitive migrants to Vancouver from the 15 study cities are presented in table 5.7 along with the total

Table 5.6: Fugitive Migrants by Province

Province	1984 Vancouver	1984 British Columbia	1982 Vancouver	1981 Vancouver
Alberta	218 (28.8%)	569 (32.3%)	317 (25.3%)	30 (19.6%)
Saskatchewan	38 (5.0%)	102 (5.8%)	81 (6.5%)	13 (4.0%)
Manitoba	64 (8.5%)	143 (8.1%)	97 (7.7%)	10 (6.5%)
Ontario	350 (46.2%)	754 (42.8%)	618 (49.4%)	77 (50.3%)
Québec	51 (6.7%)	105 (6.0%)	80 (6.4%)	5 (3.3%)
Atlantic*	31 (4.1%)	71 (4.0%)	44 (3.5%)	15 (9.8%)
North**	5 (0.7%)	16 (0.9%)	15 (1.2%)	3 (2.0%)
TOTAL	757	1,760	1,252	153***

Source: VPD P&R Files 84-27A (Constable K. Rossmo, 1984), 81-46 (Sergeant H.K. Hutchinson and Constable G. McCaffery, 1981), 81-46A (Constable W.R. Ward, 1982).

*Break down for the 1984 Vancouver and 1984 British Columbia columns: New Brunswick 6 and 18, Prince Edward Island 2 and 12, Nova Scotia 22 and 39, Newfoundland 1 and 2.

**Break down for the 1984 Vancouver and 1984 British Columbia columns: Yukon 3 and 6, Northwest Territories 2 and 10.

***The 1981 study collected 549 cases, but used indictable offences only (153 cases) in the provincial break down.

Table 5.7: Fugitive Migrants by City

City	Fugitive Count	Accused Population	Distance (Miles)
Toronto	122	321,000	2,820
Calgary	96	95,227	652
Edmonton	77	90,447	766
Winnipeg	49	57,481	1,526
Montréal	24	148,138	3,014
Waterloo	21	30,224	2,866
Ottawa	22	29,542	2,886
Hamilton-Wentworth	17	70,183	2,846
London	15	36,417	2,912
Peel	14	49,699	2,818
Regina	13	27,702	1,131
Thunder Bay	12	13,533	1,952
Windsor	12	32,455	3,024
Saskatoon	10	32,306	1,036
Halton	10	21,000	2,823
TOTAL	514 (67.9%)		

accused populations of those cities, and the highway mileages to Vancouver. Toronto is the largest single source, followed by Calgary and Edmonton.

Dependent and Independent Variables

Table 5.8 presents the fugitive counts and the accused populations for the origin provinces. The migration rate proportions of mean – based on the fugitive population (FPM), the averages for the overall population (APM), and the total overall population (TPM) – are listed, as well as the APM standard deviations, the FPM-APM differences, those differences expressed as Z-scores, the one-tailed probabilities,⁶ and the FPM/TPM ratio (see chapter IV, "Provincial Level Analysis").

The two measures of migration disparity, the Z-score and the ratio, are highly correlated ($r=.9584$, $p<.0005$). These are the dependent variables in the provincial level analysis. The rankings in each case are almost identical: Ontario has the highest relative fugitive migration rate; Québec is next highest; Manitoba exhibits no difference between its fugitive and its overall migration rates; the Atlantic region has a somewhat lower level of fugitive migration; Alberta and Saskatchewan have fugitive migration rates about half that of its overall population; and the North appears to have a fugitive rate less than a tenth of its overall rate.⁷

Tables 5.9 and 5.10 present the independent variables for the provinces and cities calculated from the Vancouver data

Table 5.8: Provincial Migration Comparison - Dependent Variables

Province	Alberta	Saskatchewan	Manitoba	Ontario	Québec	Atlantic	North	Canada*
Fugitive Count (British Columbia)	569	102	143	754	105	71	16	1,760
Accused Population (1978-1984.5)	349,205	150,177	110,769	1,098,970	459,319	230,031	26,466	2,424,937
Fugitive Proportion of Mean (FPM)	2.245	.9358	1.779	.9453	.3150	.4253	.8330	1.000
Total Proportion of Mean (TPM)	4.016	1.638	1.776	.6796	.2275	.6208	9.838	1.000
Ratio (FPM/TPM)	.5590	.5714	1.001	1.391	1.385	.6851	.08467	
Average Proportion of Mean (APM)	4.021	1.632	1.750	.6769	.2288	.6239	9.886	1.000
Standard Deviation (of APM)	.3286	.0894	.2113	.0718	.0502	.0895	1.024	
Difference (FPM-APM)	-1.776	-.6966	.0287	.2684	.0861	-.1986	-9.053	
-Score (Diff/S.D.)	-5.406	-7.788	.1357	3.739	1.715	-2.220	-8.844	
Probability (1-tailed)	.0000	.0000	.4466	.0001	.0432	.0216	.0000	

*Does not include British Columbia

Table 5.9: Mean Radius Configuration and Threat Variables by Province - Independent Variables

Province	West	Radius Configuration (Miles)			Percent Provincial Radii	Threat Measure (Years)			Risk Maximum
		Minimum	Average	Maximum		Sentence Total	Sentence Maximum	Risk Total	
Alberta	165	135	175	100.0	.474	.284	.303	.186	
Saskatchewan	217	177	210	100.0	.428	.310	.296	.213	
Manitoba	111	75	99	54.7	.375	.317	.257	.219	
Ontario	115	89	102	2.9	.502	.329	.333	.224	
Québec	73	73	164	82.4	.474	.395	.309	.262	
Atlantic	129	105	117	67.7	.427	.307	.291	.212	
North	116	116	116	100.0	.516	.308	.349	.220	

Table 5.10: Mean Radius Configuration and Threat Variables by City - Independent Variables

City	Radius Configuration (Miles)			Threat Measure (Years)				
	West	Minimum	Average	Percent Provincial Radii	Sentence Total	Sentence Maximum	Risk Total	Risk Maximum
Toronto	47	47	47	0	.454	.314	.295	.209
Calgary	100	100	157	100.0	.285	.232	.190	.155
Edmonton	239	155	197	100.0	.768	.354	.481	.226
Winnipeg	99	52	84	42.9	.416	.343	.288	.241
Montréal	50	50	175	91.7	.365	.265	.217	.159
Waterloo	133	133	133	0	.497	.336	.328	.228
Ottawa	28	28	28	0	.495	.382	.336	.268
Hamilton-Wentworth	45	45	45	0	.706	.279	.476	.185
London	176	114	145	6.7	.492	.305	.322	.201
Peel	219	219	219	0	.700	.387	.478	.282
Regina	265	147	206	100.0	.487	.455	.343	.321
Thunder Bay	113	113	113	0	.618	.519	.445	.389
Windsor	434	200	317	25.0	.604	.522	.415	.358
Saskatoon	165	165	214	100.0	.237	.216	.164	.151
Halton	253	160	206	10.0	.336	.246	.209	.158

without duplicates: the three mean radius measures (west, minimum, average); percentage of warrants with provincial radii; and the four threat variables (sentence total, sentence maximum, risk total, and risk maximum).⁸

The province and most of the cities of Ontario have low (or nil) provincial radius percentages, while all the warrants in Alberta, Saskatchewan, the North, and their jurisdictions have provincial radii. Toronto, Ottawa, Hamilton-Wentworth and Winnipeg stand out as having low radii – under 100 miles – on all three configurations.

The threat variables show a reasonably high expectation of incarceration, and suggest a strong institutionally created influence, or "push" to migrate. These figures represent means, and as most fugitives have extensive criminal records, they are probably conservative estimates of punishment.

Provincial Analysis

Correlation Coefficients

Pearson product moment correlation coefficients between the weighted Z-score and ratio measures of fugitive migration disparity and the four radius variables are presented in table 5.11. The radius variables are all highly negatively correlated to both the ratio and Z-score measures (excepting radius average with ratio), but surprisingly the strongest negative association is found with the percent provincial radii variable. These

Table 5.11: Provincial Analysis Correlation Coefficients (Weighted)*

	Ratio	Radius West	Radius Minimum	Radius Average	Percent Provincial Radii
Z-Score	.9584 ($p < .0005$)	-.7453 ($p < .027$)	-.8496 ($p < .008$)	-.7388 ($p < .029$)	-.8310 ($p < .010$)
Ratio		-.7488 ($p < .026$)	-.8070 ($p < .014$)	-.5303 ($p < .110$)	-.7107 ($p < .037$)
Radius West			.9649 ($p < .0005$)	.4037 ($p < .185$)	.3007 ($p < .256$)
Radius Minimum				.5983 ($p < .078$)	.4880 ($p < .133$)
Radius Average					.8819 ($p < .004$)
Percent Provincial Radii					

*Degrees of freedom= 5

correlations indicate an inverse relationship between the level of fugitive migration and the size of warrant radius of return.

An important question requiring further analysis arises from these findings: considering the highly significant correlations of the percent provincial radii variable with the fugitive migration measures, what is the exact numerical impact of a provincial border on a radius?

Provincial Border Impact

This question addresses a previously discussed issue concerning the social/cultural gap of a political border, which can "add" mileage to a distance. To assess its impact, multiple linear regression analysis was used.

With ratio and Z-score measures as the dependent variables, percent provincial radii was alternately combined with radius west, radius minimum and radius average to create the independent variables for the analyses. The default criteria provided by SPSS^x for the stepwise method were used: probability of F -to-enter=.05; probability of F -to-remove=.10; F -to-enter=3.84; F -to-remove=2.71; tolerance=.01; maximum number of steps=twice the number of independent variables.

Two methods were used – stepwise selection with the default criteria, followed by the forced entry method (if necessary). Although statistically significant results were desired, it should be noted that the regression analysis was primarily used

as a tool to determine the relative effect of percent provincial radii, in an effort to construct an improved modified radius variable incorporating the subjective impact of a border crossing. Consequently, residual analysis was not required. Six analyses were conducted and the results are presented in appendix 9.

The regression equations based on the radius average variable did not appear to be significant. An examination of the four remaining equations' beta values shows an approximately equal contribution from both independent variables. Default tolerances were never reached and the adjusted R square was significantly increased by the inclusion of the second independent variable. The ratio of the *B* coefficients - (percent provincial radii)/(radius) - gives the added impact of a warrant radius extending to a provincial border in numeric form. In other words, if the radius is measured in miles, then this ratio is the incremental mileage representing the provincial border's subjective influence and is added to the distance of the radius variable. For regression equation 6 this can be written as follows:

$$MRM_1 = (\text{radius minimum}) + 61.80(\text{percent provincial radii})$$

where MRM_1 is modified radius minimum (one). It follows then that for regression equations 5, 2 and 1 respectively:

$$MRM_2 = (\text{radius minimum}) + 45.40(\text{percent provincial radii})$$

$$MRW_1 = (\text{radius west}) + 105.44(\text{percent provincial radii})$$

$$MRW_2 = (\text{radius west}) + 78.11(\text{percent provincial radii})$$

It would appear that the impact of crossing a provincial border is tantamount to adding an additional 45 to 105 miles to the radius. These figures are all in the same range and appear to be reasonable in magnitude.

With a better understanding of the spatial meaning of a province-wide radius, and a more accurate set of radius variables, correlation coefficients can be recalculated and compared with the previous set. Table 5.12 presents the Pearson's correlation coefficients associated with the modified radius variables. Significant increases in concomitant variation with the migration measures can be seen. It appears that a relationship exists between interprovincial fugitive migration and warrant radius, particularly when more sophisticated radius measures employing the subjective impact of provincial borders are used. The relationship is theoretically and observationally asymmetrical, with radius as the causal variable.

City Analysis

Correlation Coefficients

The city origin analysis is somewhat more complicated than its provincial counterpart as the relationships are not straightforward and linear. Table 5.13 presents the correlation coefficients between the pertinent variables. At this intermediate level the following was noted:

- the single most important predictor of fugitive migrant

Table 5.12: Provincial Analysis Correlation Coefficients for Modified Radius Variables
(Weighted)*

	MIRW ₂	MIRM ₁	MIRM ₂	Score	Ratio
MIRW ₁	.9940 (<i>p</i> < .0005)	.9952 (<i>p</i> < .0005)	.9914 (<i>p</i> < .0005)	-.9800 (<i>p</i> < .0005)	-.9001 (<i>p</i> < .003)
MIRW ₂		.9874 (<i>p</i> < .0005)	.9932 (<i>p</i> < .0005)	-.9742 (<i>p</i> < .0005)	-.9055 (<i>p</i> < .003)
MIRM ₁			.9961 (<i>p</i> < .0005)	-.9744 (<i>p</i> < .0005)	-.8814 (<i>p</i> < .004)
MIRM ₂				-.9706 (<i>p</i> < .0005)	-.8849 (<i>p</i> < .004)

*Degrees of freedom=5

Table 5.13: City Analysis Correlation Coefficients (Weighted)*

	Accused Population	Distance	Radius West	Radius Average	Radius Minimum	Percent Provincial Radii
Fugitive Count	.8453 ($p < .0005$)	-.0924 ($p < .372$)	-.3973 ($p < .071$)	-.5730 ($p < .013$)	-.4104 ($p < .064$)	-.2298 ($p < .205$)
Accused Population		.3782 ($p < .082$)	-.5715 ($p < .013$)	-.6383 ($p < .005$)	-.5954 ($p < .010$)	-.3955 ($p < .072$)
Distance			-.3402 ($p < .107$)	-.3301 ($p < .115$)	-.3844 ($p < .079$)	-.6671 ($p < .003$)
Radius West				.7986 ($p < .0005$)	.8971 ($p < .0005$)	.2377 ($p < .197$)
Radius Average					.8047 ($p < .0005$)	.6234 ($p < .007$)
Radius Minimum						.2419 ($p < .193$)
Percent Provincial Radii						

* Degrees of freedom=13

- count is the accused population of the origin city
- radius size may be weakly negatively related to fugitive migrant count
- accused population appears to be negatively related to radius size.

Any conclusion at this point would be premature as spatial interaction theory suggests the nonlinearity of these relationships; the gravity model supplies a framework within which the independent variables can be properly analyzed. Employing multiple linear regression analysis techniques with the natural logarithms of the variables allows the exponents and constants of the model to be empirically determined. Default criteria were used with the stepwise selection method and the weighted principal city data (comprising 67.9% of the total Vancouver survey).

Multiple Regression Analysis

The dependent variable was the logarithm of the fugitive migrant count from the principal origin cities. Independent variables included the logarithms of accused population, distance, and radius (west, average, minimum and percent provincial radii). The impact of a provincial border crossing is an additive function, the coefficient determination of which was not readily handled by logarithmic manipulations. A cyclical process was used to establish the optimal percent provincial radii constant for each of the three structures:

1. modified radius west = mrw = (radius west) +
1,218(% provincial radii)
2. modified radius average = mra = (radius average) +
430(% provincial radii)
3. modified radius minimum = mrm = (radius minimum) +
257(% provincial radii)

These constants, much higher than their provincial analysis counterparts, actually behave very similarly, as will be seen below.⁹ The logarithms of these modified radius variables were used in the regression analysis.

The final three multiple regression equations obtained are presented in appendix 10.

Assumptions are required with regression analysis in order to draw inferences, based on the sample, about population values:¹⁰

- for any given point X , the distribution of Y has a constant variance. This would appear to have face validity. An examination of the residuals plots (standardized residuals against standardized predicted values) shows an increase in variance in the -0.5 to -1.5 standard deviations range of the independent variable. This is the zone within which lies the specification error inherent in the population distribution of Canada. Variance is lower at the positive end due to the "outlier" impact of the cities at the tip of the regression line.

- for any given point X , the distribution of Y is normal. Again, this would appear to have face validity. Normal probability plots (observed standardized residuals against expected standardized residuals) show almost a "square wave" rather than a "sine wave" or bell curve. This is likely caused by the low number of residuals.¹¹ A list of outliers shows the majority of the cases falling between two standard deviations either way (with the exception of Saskatoon which lies just over two negative standard deviations from the mean).
- all y 's are statistically independent. The data were not recorded sequentially and any given observation should not be significantly influenced by other observations.
- the model should be linear. Logarithms were used to "straighten out" the relationships and an examination of scatterplots (observed values against predicted values) confirms the appropriateness of this tactic.
- multicollinearity between independent variables cannot be excessive. Default tolerances were never exceeded.

Three important issues must be considered in regard to the appropriateness of multiple regression techniques for this analysis. First, regression techniques are only a means to an end in this study – the empirical determination of the constants and exponents of the gravity model. Second, the derived equations may not be appropriate and applicable if the present magnitudes of the variables are exceeded. In other words, within

the realm of the selected city sizes (accused populations), distances from Vancouver, and warrant radius policies, the model is applicable. How it would behave outside these latitudes (which are actually quite wide and encompass the majority of points in this country) is not known.

The third issue is the establishment of what exactly is the "population" from which the sample is drawn and for which the parameters are estimated. If the study population concerns only the fugitive migrants in Vancouver during the survey period, then a very large proportion of the population¹² was being examined in these regressions and more confidence can be attached to the estimates for the coefficients and constants. If the population is comprised of all potential cities and all possible future situations, then more caution is required.

The results from the three regression equations uniformly show:

- the stepwise selection method included all three independent variables
- high correlations and adjusted R squares
- significant regression equations
- similar B (coefficient) values
- accused population is the most important predictor, followed by distance and then radius
- the beta value of radius was about half that of the accused population
- the partial correlation coefficient (the correlation between

fugitive migration and radius when the influence of the other independent variables has been removed) of radius was in the range of -.66039 to -.67400

- the F change caused by the addition of a radius variable to the regression equation was significant at a $p < .05$ level
- the t statistics for all three independent variables (but not the constant) were significant at a $p < .05$ level.

The three corresponding gravity formulations derived from the multiple linear regression analyses for the different radius configurations are:

$$M_j = \frac{48.4 (A_j)^{.818}}{(D_j)^{1.04} [r_a + 430 (\%)]^{.305}}$$

$$M_j = \frac{112 (A_j)^{.800}}{(D_j)^{1.07} [r_m + 257 (\%)]^{.401}}$$

$$M_j = \frac{38.4 (A_j)^{.829}}{(D_j)^{1.06} [r_w + 1,218 (\%)]^{.233}}$$

where:

M_j is the number of fugitive migrants from origin city j to Vancouver

A_j is the number of total accused persons for city j

D_j is the distance (miles) from city j to Vancouver

$r(a/m/w)$ is the radius variable (average/minimum/west)

% is percent provincial radii.

The gravity models were examined using a scattergram procedure (plotting observed values versus predicted values). Intercepts were predicted at equalling zero and slopes at equalling one. The values for the constants (k) in the gravity models were derived from multiplying the slopes of the scattergrams by the antilogs of the constants for the regression equations. The scattergram results are presented in appendix 11.

The similarity of the exponents and constants of the different models allows confidence in the validity of this technique.

The radius variables, while not the most important predictor of fugitive migration, all seem to play a significant part. The population exponents indicate that fugitive flows are, all else being equal, slightly lower from larger origin cities. This could be attributed to the ability to more effectively "hide" within a populous urban area. Distance seems to have almost an inverse linear effect, perhaps partially due to the spatial configuration of the country's urban centres, and the choice of

a peripheral point (Vancouver) as the destination under study.

A comparison of the impact of radius between the provincial origin migration analysis and the city origin migration analysis illustrates the similarity of their influences despite the different coefficients for percent provincial radii.

<u>Province</u>	<u>City</u>
$MRW_1 = [r + 105(\%)]$ w	$mrw = [r + 1,218(\%)]$ w
MRW ₁ (Ontario) = 118	mrw (Toronto) = 2.45
MRW ₁ (Alberta) = 272	mrw (Calgary) = 5.33
Ratio = 43.4%	Ratio = 46.0%

Similar ratios hold between other origins and other modified radius configurations. The different mathematical form in which the variables are expressed explains the disparate values for the percent provincial radii coefficient.

Percent Provincial Radii

The importance of the percent provincial radii variable suggests that it should be analyzed in isolation from the other radius variables. A logarithmic transformation prior to multiple regression entry was not possible as the variable's values can reach zero. Instead, it was entered unaltered giving it an

exponential form in the gravity model: $e^{\frac{\%}{100}}$. Stepwise selection entered the variable on step no.3; the regression results are shown in appendix 12 and the scattergram results in appendix 11.

The gravity model formulation is:

$$M_j = \frac{16.2(A_j)^{.929}}{(D_j)^{1.23} e^{.928(\frac{\%}{100})}}$$

This expression has a slightly higher correlation (multiple $R=.96223$) than the other proposed gravity models, shows the largest partial correlation coefficient ($-.76689$) of all the radius expressions, and it effectively limits the impact of radius policy. Percent provincial radii can only vary between 0 and 1, therefore, $e^{\frac{\%}{100}}$ can only range between 1 and 2.53. This is intuitively more acceptable than an indefinite and unending effect which could predict very high or very low fugitive migrant levels from extremes of radius policies.

A simplified form of this model works well with the exception of the rather high intercept point (see scattergram results in appendix 11):

$$M_j = \frac{A_j}{D_j e^{(\frac{\%}{100})}}$$

An examination of the percent provincial radii values in table 5.10 hints at the possibility that the variable behaves dichotomously, with only Winnipeg and Windsor lying in the mid-range. When a less sophisticated preliminary model was constructed with unweighted data, using 14 origin cities and a dichotomous variable for radius policy (low=1, high=2.95), significance was obtained and the extracted power values were very similar to those previously presented in this chapter: population exponent=.932; distance exponent=1.29. The range of e (1 to 2.53) is such that, if it were dichotomized at its end points (which the data in table 5.10 would suggest), the last gravity model discussed would be virtually identical to the preliminary formulation.

What this means is unclear. Distance measures are not usually broken down effectively into a dichotomy, and these results may just be an artifact of the statistical analysis with no real meaning. Everything considered, however, the notion that this division represents not just articulated warrant radii, but an underlying attitude towards fugitive migration and towards banishment and offender displacement, cannot be easily dismissed. There may be a policy stage that some jurisdictions have reached where such tactics are desired and are consciously implemented through small radius distances, and overt communication and "informal publicization" of the flight and banishment option. It is certainly hard to believe that 25 mile and even 10 mile radius warrants for Criminal Code offences were

constructed because of economic concerns regarding escort costs. In these extreme cases, an offender residing in the suburbs would not even have to move from home in order to thwart the "long arm of the law".

NOTES

1. As discussed in chapter III, some of the holds may have to be released when the originating department refuses to return them. Consequently these figures may be slightly inflated as they are not confirmed returns. The escort figures are confirmed. Conversation with Vancouver Sheriff J. Connolly indicates that the average monthly number of escorts, prior to the aforementioned reduction in Vancouver's warrant return radii, was approximately 15 (almost 2-1/2 times what it currently is).
2. 1984 dollars. Rossmo, p.15. Policy dictates that when travelling east of Winnipeg two deputy sheriffs will provide an escort because of security and other concerns. Two prisoners will often be transported back together, however, to minimize costs.
3. Bill C-18, an Act amending the Criminal Code, became law on December 2, 1985, and s.294(a) was re-enacted by 1985, c.19, s.44(1) raising the dividing line between theft over (indictable) and theft under (dual) charges from \$200 to \$1,000. Possession of stolen property under/over was accordingly modified and slight changes occurred in the definitions of threatening and impaired driving. Soliciting (prostitution) was amended by Bill C-49.
4. I once received a returned CPIC record (not a case in the present study) for an attempted murder warrant, radius Ontario only.
5. Many of the fugitives who have had a warrant issued for them in a given year will have been charged in previous years.
6. One-tailed probability estimates were used as the direction of the relationship had been predicted in advance.
7. These results raise two pertinent questions to this study relating to the concept of distance:
 - 1) Does the cultural gap that exists at the border of Québec have a greater or lesser impact on serial offenders than on members of the overall population?
 - 2) What effect does the uninhabited northern hinterland, lying between Vancouver and the Yukon and the Northwest Territories, have on migration?

There are no data, either statistical or observational, on the first point. A plausible answer to the second question, bearing in mind the typical modes of travel employed by fugitives and assuming that the majority of the overall population migration from the North would be by air, might consider the notion of a distance differential caused by the harsh Northern geography and the sparse population

distribution. In other words, the North would probably be relatively "further" away from Vancouver for fugitives than for the overall population. This may explain the very low levels of fugitive migration from the North.

8. The threat variables represent the mean sentence expected on an outstanding charge. The figures indicate years of incarceration. The derivations of the threat variables are presented in appendix 7.
9. The relative impact of the percent provincial radii variable was found to be stronger for the modified radius variables in the city analysis. This point is discussed later in the chapter.
10. Maria J. Norušis, SPSS^x Introductory Statistics Guide (New York: McGraw-Hill Book Co., 1983), p.138.
11. Ibid., p.149. Residuals analysis does not seem to work well with weighted data.
12. Multiplying Routledge and Chen's estimate of 60.9% (the population fraction collected in the survey) by 67.9% (the proportion of the data used in the city origin regression analysis) equals 41.35% (the percentage of the population studied in the city analysis).

CHAPTER VI

CONCLUSION

Long term observation of the fugitive phenomenon, and numerous interactions with the fugitives themselves, led to a commonly held belief in the Vancouver police community of the existence of a negative relationship between the size of a warrant radius and the probability of an offender fleeing.

To overcome the bias associated with interviewing only those offenders from other jurisdictions who have already assumed the fugitive role, two mathematical models based on province-to-province and city-to-city migration were constructed. Within the theoretical context of the geography of crime, the analysis tested for geographic displacement attributable to the policies of the systems and institutions of social control. It was necessary to consider the behavioural and legal (both formal and informal) frameworks in order to understand and interpret the actions under analysis. The methodological testing medium or technological framework was also seen as an important determinant of the study; awareness of how perceptions of the phenomenon under investigation are being "filtered" to the researcher should guide the construction of the methodology and the interpretation of the analysis.

The research found 1,167 instances (757 unique cases) in which a non-returnable fugitive was checked by the police in Vancouver, and the total fugitive population size was estimated

at 1,243. The provincial survey included 1,760 cases. This is a dramatic example of interprovincial displacement, and when the extensive criminal records of the majority of fugitives are considered, the phenomenon has serious implications. This is borne out by the high re-arrest figures (see chapter V, "Arrests").

That fugitive migration exists is obvious; there will always be a certain percentage of non-remanded accused parties who choose to abscond and flee from the area holding jurisdiction. But how those volumes and patterns of flight are influenced by the policies of social control is a different question. Whether such displacement is intentional or not is a third issue, and perhaps the hardest one to resolve.

This thesis examined the relationship between warrant radius of return policy and fugitive migration flows, from several origins to Vancouver and to British Columbia. The first analysis compared migration rates of fugitives to those of the overall population, on a province origin level. The residuals were correlated to a metric radius policy variable and a significant negative relationship was found. Of the three warrant radius configurations tested, radius-west and radius-minimum had the highest Pearson product moment correlations.

The percent provincial radii variable was also a strong predictor of the measures (Z-score and ratio) of migration disparity and improved results were seen when modified radius

variables, incorporating the percent provincial radii, were developed. This indicates the additional "distance" subjectively experienced when a trip is made across a political border.

One of the attractions of this approach is also its weakness – by incorporating the spatial separation effects with a direct migration to migration comparison, an assumption is made that the impact these effects have on the two groups is equal. Another problem with this form of analysis is the small number of origin provinces available for comparison.

The second analysis used a gravity model formulation to separately and simultaneously assess the influence of attraction, production and distance variables. The attraction variables were held constant, and the warrant radius policy and accused population comprised the production variables. Logarithms were used to convert the gravity model into a linear equation which was then submitted to multiple regression analysis to test for significance.

Population and distance, as expected, explained the majority of the variance in fugitive migration. Warrant radius (particularly in the form of percent provincial radii) was significantly correlated to the residual fugitive migration, and the model as a whole worked well. Given a proper observationally derived structure, the gravity model appears to be a suitable formulation within which displacement and criminal migration and mobility patterns can be analyzed.

Aggregation of hundreds of cases into a small number of origin or destination points has an impact on statistical significance, and is a problem present with many spatial interaction models. It must also be remembered that explanations derived from mathematical models and statistical analyses may not be applicable to individual human beings. Models may be misspecified, spurious relationships may exist, ecological fallacies can pertain, and most important, individual motives are unique and varied. Personal observation and interaction is often necessary when moving from the social to the psychological. The extent of contact I have had with fugitives and their behaviour allows more confidence in the conclusions of this research.

A significant inverse relationship appears to exist between warrant radius and fugitive migration levels. A minimal warrant radius policy seems to induce fugitive migration levels approximately three times greater than that found with a maximal policy. Upon the decision to not attend court, an offender must choose between staying in town and risking arrest, or fleeing. That the minimum distance travelled should take the fugitive safely outside the perceived radius of return attached to the outstanding warrant would seem to be a logical condition of flight. The temptation to leave town is much greater when the "escape zone" is only one hour drive away. After making the decision to move, fugitives appear to follow typical behaviour patterns reflecting the friction of distance, albeit, with a

high degree of mobility. It has not been possible to test the effect of warrant radius on the decision to abscond from court in the first instance.

A minimum of a province-wide radius is legally possible for all criminal offences. Policies that dictate shorter radii of return tend to be local or municipal in extent. Most jurisdictions appear to be grouped at polar extremes – either all province-wide, or all local-wide. This point is substantiated by the strength and dichotomous behaviour of the percent provincial radii variable. It seems odd that such a grouping would occur, and suggests the possibility of intentional displacement beyond mere economic concerns. As it is the perception of the radius size held by the offender that is important, dissemination of that knowledge is a critical foundation for behaviour. The polar groupings may be attributable to regional differences in social control attitudes towards informal publicization of the possibility of flight.

The fugitive migrants were found to be serial offenders with extensive criminal records. McIver cautions that the "more mobile criminals are the most effective (dangerous) and most evasive".¹ While some researchers have questioned the significance of crime spillovers, this study found hundreds of displaced offenders in Vancouver, many of whom were still active in crime.²

Repetto suggests that mechanical prevention programs are not without value in reducing crime in certain situations, but he limits his discussion to intracity displacement.³ There is an ethical concern present as well, as "most people are not aware of the import/export activities of anti-crime programs".⁴ How tenable would the public view a policy that was designed to provincially shift crime? Varying warrant radius policies displace offenders on an intranational level, and they then have to be dealt with by resources at a city level. It makes common sense then, that policies should be nationally uniform and more concerned with corrective prevention programs. Hakim and Rengert suggest that federal taxation and subsidization measures could control and reduce the effect of local displacement programs.⁵

Is this displacement effect intentional on the part of the originating jurisdiction? While it is hard to discern the mixed motives involved in the establishment of policy, it seems reasonable to conclude that:

- small warrant radii produces displacement of serial offenders
- the fugitives know that they are not arrestable and state several sources of that knowledge, including police officers and lawyers
- many provinces show a lack of concern about the phenomenon and are not interested in studying it
- Vancouver police hold a common knowledge or belief that "Toronto's (amongst other jurisdictions) warrants policy is

often little more than an order to get out of town - that town" ⁶ and that criminal suspects on the run can find a safe haven in Vancouver. As noted, commonly held knowledge is not sufficient to rigourously determine causes and effects

- certain jurisdictions employ unreasonably low warrant radii such as 50 miles, 25 miles, and even 10 miles
- the almost dichotomous nature of the percent provincial radius variable suggests the existence of two strategies: 1) a reasonable maximization of fugitive return; 2) a maximization of displacement.

If warrant radius policy is being used to displace offenders then an unofficial system of banishment is presently operative. While not currently practiced in Canada, exile was used in times past as an alternative to the death penalty.⁷ Transportation methods were employed in the 17th, 18th and 19th centuries by various countries which shipped their prisoners off to Australia, the Americas, Africa, New Caledonia, French Guiana and Siberia; nowadays, "[r]ather than expelling the criminal, society has found it more convenient to imprison him".⁸ Apparently this is not necessarily so in Canada.

Area restrictions imposed in Vancouver criminal courts are actually a form of banishment. Usually restricted to drug traffickers, prostitutes, shoplifters and domestic violence offenders, they are designed to limit the accused's access to vulnerable target areas. Specified streets, neighbourhoods and

even the entire city are temporarily put "off-limits".⁹ Informal exile of unadjudicated serial offenders, however, while effective at a local level, is detrimental to the country as a whole.

Anthony's policy proposals, discussed in chapter I, seek to reduce the migration generating impact of low warrant radii. The gravity model, however, suggests at least two avenues of approach for policy: (1) reduction of origin-generating characteristics; and (2) reduction of destination-attraction characteristics. Future research should examine fugitive migration flows to other destinations, and seek to determine and assess the impact of destination-attraction variables in an attempt to more fully conceptualize a fugitive migration gravity model.

Within the limitations of this research, and from a nation-wide, long-term policy perspective, certain proposals suggest themselves:

1. a uniform warrant radius policy, established by the Solicitor General, should exist across Canada;
2. the return distances should be reasonable and perhaps kept at a minimum level of province-wide for all but the most trivial offences;¹⁰
3. the limitations on return should not be disseminated to those being processed by the system;
4. the situation should be regularly monitored.

Regional variations in warrant radius policies and police practices are critical concerns for the study of fugitive migration patterns; the geography of fugitive migration cannot be separated from the geography of social control. The interaction between offenders and the criminal justice system is an important determinant of spatial behaviour.

Displacement can be viewed as the synthesis of offenders' goals and desires, and criminal justice institutional policies and practices. While it is essential to understand what these goals and desires are, it is of equal importance to investigate the structure of social control and the perceptions held by offenders of this structure.

The geography of crime must...acknowledg[e] that social control is not simply reactive to deviant behavior but is constitutive of it.¹¹

If spatial action is influenced by the mental map held by an actor, then it is obvious that the total environment, both physical and institutional, must be examined. Traditional or positivistic criminological approaches, focusing only on the offender, will be deficient to the extent of the influence of social control on criminal behaviour. Fugitive migration has been shown to be impacted on by local criminal justice policy and, consequently, the aims of these policies. As these aims and purposes may be both overt and latent, the social control reaction may take on more than one form.

Interactions between institutions and offenders are a matter of significant ethical concern to the criminal justice system. Unintentional consequences, especially in the area of displacement, should be avoided and intentional displacement tactics affecting other jurisdictions should be prohibited. The consequences of criminal justice policies should be carefully planned and directed, and ethical methods used and responsible objectives sought. Such tactics as the creation of *ex juris* fugitives does little to enhance the functioning of, or the respect for, the criminal justice system in Canada.

NOTES

1. McIver, p.43; see also Reppetto, p.171.
2. Hellman, p.147.
3. Reppetto, p.177.
4. Ibid., p.168.
5. Hakim and Rengert, p.16.
6. Statement by reporter Terry Glavin in a special report, "City a haven for warrant evaders", Vancouver Sun, 13 December, 1984, sec.A, p.3. The same article quotes Staff Sergeant Ken Miles, Warrants Squad, Vancouver Police Department: "I don't think much of Toronto's (policy). They just shove these guys out of their jurisdiction. This is just a personal opinion, but I think it ends with us getting their hoods, and we can't do anything about it." It then goes on to state the comments of Staff Superintendent Donald Banks, Toronto Metropolitan Police Department who "disputed the view of many Vancouver police officers that Toronto's warrants policy often amounts to little more than a modern version of the Wild West's get-out-of-town-by-sunrise orders. 'That may be perceived by people, but I don't think it's all that factual,' he said." Staff Superintendent Banks felt "the matter comes down to a question of cash: 'It's the cost of a person - the airfare and a paid escort.'" Staff Sergeant Miles agreed that "'[t]here's no point in going all over hell's half-acre just to bring back a shoplifter.'" The problem, according to Glavin, seems to lie in the inconsistency in the way the police departments set their warrant radius policies. While "[t]here are few 'serious offence' warrants a suspect could evade by leaving the Lower Mainland" according to Glavin, Banks in turn, stated "Toronto authorities rarely issue Canada-wide warrants, or even Ontario-wide warrants, for suspects wanted for crimes as serious as sex offences, aggravated assault, and criminal negligence". Cf. n.14, chapter 3.
7. Encyclopædia Britannica, 15th ed., s.v. "Exile and Banishment".
8. Encyclopædia Britannica, 15th ed., s.v. "Prisons and Penology", by Gresham M'Cready Sykes.
9. A News Services article from Cohasset, Massachusetts described the sentence handed down to a 24 year old male convicted of two counts of breaking and entering: \$4,000 restitution, a two-year suspended sentence for each charge, three years probation, and a three-year banishment. The order prohibits the man from living in or entering the town

except in extenuating circumstances. "Leave town, thief told", Vancouver Province, 27 June, 1986, p.10.

10. To some extent this suggestion conflicts with the first proposal - the varying shapes and sizes of Canada's provinces prevents the implementation of similar warrant radius policies based solely upon this criterion. There is much room for improvement, however, in the existing system.
11. Lowman, "Conceptual Issues", p.91.

APPENDIX 1

Pre-trial Release: Applicable Criminal Code Sections

- s.451 offences and conditions where a peace officer shall not arrest; if a peace officer is satisfied that the person will attend court and that public interest (the identify of the person is established, evidence is secure, the person will not repeat or commit another offence) is met, he shall not arrest without warrant for offences mentioned in s.483 (minor charges), dual offences and summary conviction offences.
- s.451 peace officer to issue an appearance notice in circumstances described by s.450(2).
- s.452 release from custody by peace officer via summons or appearance notice.
- s.453 release from custody by officer in charge via summons, promise to appear, or recognizance with or without sureties.
- s.454(1) taking accused before justice.
- s.454(2) release after six days of an accused arrested on an indictable offence originating from outside the province, if no warrant is executed.
- s.457 judicial interim release via undertaking to appear with or without conditions, recognizance with or without sureties and with or without the deposit of money or other valuable security; impose conditions on the accused during a release including "(4)(b) remain within a territorial jurisdiction specified in the order", detention of accused and, reasons thereof.
- s.457.4 release of detained accused upon him complying with order.
- s.457.5(1) review of order of justice upon application by accused.
- s.457.6(1) review of order of justice upon application by prosecutor.
- s.457.6(5) judge may issue warrant for arrest of accused who does not show up at review hearing.
- s.457.6(6) judge may issue warrant for arrest of accused when a detention order is made.
- s.457.6(7) warrant issued under the above two paragraphs may be enforceable anywhere in Canada.
- s.457.8(1) appearance notice, promise to appear, summons, undertaking, or recognizance continues in force until trial completion.
- s.457.8(2) justice may vacate any release or detention order upon cause being shown.

- s.458 arrest of accused on interim release upon violation of summons, appearance notice, promise to appear, undertaking, or recognizance, or the commission of an indictable offence after release.
- s.456.1(1) justice may issue warrant for arrest of released accused if he believes it necessary in the public interest.
- s.456.1(2) justice may issue warrant for arrest of accused when summons cannot be served or accused fails to attend court in accordance with summons, appearance notice, promise to appear or recognizance.
- s.455 anyone, who believes a person has committed an indictable offence within the territorial jurisdiction of a justice, may swear an information before the justice.
- s.455.3 judge may issue a summons or warrant for the arrest of that person, based on the information sworn.
- s.456(1) contents of such warrant, including order that accused be brought before a justice having territorial jurisdiction.
- s.456(2) warrant remains in force until executed.
- s.456.2 warrant directed to peace officers within territorial jurisdiction of issuing judge.
- s.453.4 justice may issue warrant for accused who fails to appear for the purposes of the Identification of Criminals Act when required to do so by appearance notice, promise to appear or recognizance.
- s.455.6 as in section above, but when required to do so by summons.
- s.526(1) where an indictment has been found against an accused who then fails to appear in court, the court may issue a warrant in Form 7 (bench warrant).
- s.526(2) such warrant may be executed anywhere in Canada.
- s.431.1(1) accused who absconds during trial deemed to have waived his right to be present and court may issue a bench warrant for his arrest and continue the trial to judgment and sentence.
- s.431.1(2) court may draw adverse inference from abscondment.
- s.471.1 as s.43.1, but for preliminary hearings.
- s.631(1) warrant issued by a superior court may be executed anywhere in Canada.
- s.631(2) warrant issued by magistrate may be executed anywhere within the province in which it is issued (applicable to s.483 offences, minor in nature).
- s.456.3(1) warrant may be executed whenever accused is found within territorial jurisdiction of issuing justice or anywhere in Canada in the case of fresh pursuit.
- s.456.3(2) peace officer to whom warrant is directed may execute it outside his territorial jurisdiction.
- s.461(1) where a warrant cannot be executed in accordance with s.456.3, a justice within whose jurisdiction the accused is believed to be shall endorse the warrant.

- s.461(2) such endorsement is authorization for peace officers within that territorial jurisdiction to execute the warrant.
- s.661 execution of warrants of committal.
- s.133(2) offence of being at large without excuse, i.e., failure to appear in court after release by undertaking or recognizance (dual offence, maximum punishment being imprisonment for two years).
- s.133(3) offence of failure to comply with release conditions.
- s.133(4) offence of failure to appear for the purposes of the Identification of Criminals Act after being served with a summons.
- s.133(5) as above, but in instances of release via appearance notice, promise to appear or recognizance.

APPENDIX 2

Regional Fugitive Return Policies

Calgary

The Crown Prosecutor determines the radius of return after reviewing each case individually and considering the offence, record of accused and location of arrest. On a radius extending outside the province, written permission to return an offender is received from the office of the Crown Prosecutor after arrest of the accused.

Edmonton

Policy is set by the office of the Attorney General's Department and is standard throughout Alberta. In most instances, the radius is Alberta-wide. However, in certain cases it may be extended to be either Western Canada or Canada-wide. The determining criterion is usually the seriousness of the offence.

The establishment of radii on warrants issued by the courts is the responsibility of the Senior Agent of the Crown Prosecutor's Office, Attorney General's Department.

Prisoners arrested outside the province are escorted by the Royal Canadian Mounted Police (RCMP). Costs are reimbursed

through the Office of the Attorney General.

Regina

Each case is individually reviewed and the radius determined by the seriousness of the offence and the availability of witnesses. Summary conviction offences are returnable within the Province of Saskatchewan only. An agent of the Attorney General's Department determines the radius of return.

Expenses are the responsibility of the Provincial Attorney General's Department.

Winnipeg

Return radius is determined by the inspector in charge of the warrant division who may consult the Crown prosecutor. This policy was established by the Winnipeg Police Department and the Attorney General's Department.

RCMP members are used to escort returning prisoners and the Attorney General is responsible for the cost.

Toronto

Radius of return is determined by the Assistant Crown Attorney for criminal cases and by the Federal Prosecutor for federal cases. The Superintendent of Investigative Services or the Duty Inspector, Headquarters Duty Desk determines whether to

return an offender.

The cost is paid by the Provincial Crown Attorney using a justice account or, in the case of a federal warrant, charged to a federal account.

Montréal

All Montréal warrants are entered on the Canadian Police Information Centre (CPIC) with a Québec radius. Upon receiving a written request from the investigating officer and authorization from his/her supervisor, a Canada-wide radius will be implemented. There is a departmental directive which states that for bench warrants (for failing to appear) a Canada-wide warrant must be authorized by the Director, Operational Support, Montréal Urban Communities Police Department.

Policy is established by the Commanding Officer. The Montréal Urban Police Department pays all expenses.

Halifax

The radius of return is determined by the Chief Crown Prosecutor.

The Municipality of the County of Halifax has a fund supported by the City of Halifax, the City of Dartmouth and the County of Halifax. Prisoner transportation costs are taken from this account.

Vancouver

On September 3, 1983 the Vancouver Police Department had to alter its policy regarding the return of prisoners arrested outside its jurisdiction. At this time the Assistant Deputy Attorney General, Criminal Justice Division, applied to Crown Counsel to use "serious case standards" before authorizing any returns, as he wished to keep escort expenses (incurred by Court Services) to an absolute minimum. Therefore, the actual guidelines which the Crown started to follow (rules which were not formally laid down or articulated until much later), were not congruent with policy in effect at the time of the issuance of the then current outstanding warrants. This resulted in some embarrassing incidents causing much concern in the Vancouver Police Department. Crown Counsel had to be consulted upon the arrest on a Vancouver warrant by an outside jurisdiction. The arrested party could then, upon such decision by Crown Counsel, not be returned despite the fact that he was picked up within the radius of the warrant. A new, smaller radius would then be defined for that warrant. This resulted in persons being arrested, remanded, not returned and then released. Some jurisdictions advised Vancouver that they would not remand prisoners without confirmation of the warrant, confirmation which the Vancouver Police Department could only obtain from Crown Counsel. This practice resulted in unacceptable delays to the arresting jurisdiction which would then release the prisoner. Eventually, a new policy was constructed and warrants

modified. It should be noted that instances like this still happen for a variety of reasons throughout Canada. The Superintendent in charge of the Investigation Division, Vancouver Police Department stated in a letter directed to the Ministry of Attorney General, Crown Counsel Office, dated October 21, 1982, that the force desired to keep warrants enforceable for all but very petty criminal acts and, referring to warrants with radius restrictions, "...it has been common belief that such warrants tended to keep that 'criminal person' from returning to that particular jurisdiction and this becomes a provincial crime prevention tool". (VPD P&R File 81-46A (1982).)

Prior to this date, Vancouver would return to all places in Canada every case involving indictable offences except those listed under s.483 C.C. Summary conviction, dual and s.483 C.C. offences were returnable province-wide. This policy of return was the maximum allowed by the Criminal Code.

Within the general atmosphere of government spending restraints and specifically, as part of the expenditure reduction program approved by the Ministry of Attorney General, Executive Committee, the present policy, set on February 23, 1984, applies the "serious case" standard. Nation-wide returns were restricted to serious offences (homicide, rape, prison break, counterfeiting coins/stamps, kidnapping, and selected individual cases), and otherwise limited to British Columbia or to the Lower Mainland (from Vancouver north to Squamish, and

east to Hope). The charge is to be waived to the holding jurisdiction if the accused pleads guilty.

Policy is determined by the Regional Crown Counsel and can be varied depending upon cost factors, availability of the victim and witnesses, and the individual case fact pattern. Escort costs are the responsibility of the Ministry of Attorney General and prisoner returns are the responsibility of the provincial Sheriff Services.

APPENDIX 3

Estimation Procedure for Total Population Size

The population estimation problem was discussed with Dr. Richard Routledge and May Chen of the Mathematics and Statistics Department, Simon Fraser University. Using capture-recapture analysis techniques and with the assistance of a Pascal program, an estimate of the total population size was obtained. This equal chance selection method (also called mark-recapture analysis) has been used in the past to estimate wildlife abundance from fish and animal sampling techniques.

It was assumed that:

1. the sampling was random; individual selection could obviously not be formally randomized but a reasonable first approximation of the procedure was the random sampling model; and
2. the population is closed over the run of the survey (that is, there is no in or out-migration); this is very likely not true though over the short time period involved migration should be minimal.

It was recognized that not every person in the population was equally visible or likely to be checked; a rough estimate of 10% high profile, 10% low profile was used.

Routledge and Chen employed a population estimation equation used by Craig that maximizes the likelihood of the observed

results:

$$(1-r/N) = (1-1/N)^s$$

where: r is the number of contact elements (757)

N is the population size

s is the number of contact attempts (1,167).

(G.A.F. Seber, The Estimation of Animal Abundance and Related Parameters, 2nd ed. (London: Charles Griffin & Co., 1982), pp.136-137.)

This is usually solved by converting the equation into logarithms:

$$H(N)=(s-1)\ln N+\ln(N-r)-s\ln(N-1)=0$$

and substituting different N values in an attempt to minimize the error in the equation.

The confidence intervals were calculated from a general method for constructing confidence intervals based on likelihood ratio test procedures. (See D.R. Cox and D.V. Hinkley, Theoretical Statistics, (London: Chapman and Hall, 1974).)

The maximum-likelihood estimate of the fugitive population size in Vancouver (during the study period) was calculated to be 1,243. The 95% confidence interval was estimated to lie between 1,380 (upper limit) and 1,131 (lower limit). Since the survey collected 757 cases, it appears that well over half (60.9%) of the population was sampled.

Routledge and Chen state that this procedure has never been used in this context before and further checking is required. This might be accomplished by comparisons with other population estimation techniques or by Monte Carlo testing. The calculation of the population size must be evaluated in light of these caveats and the results should only be considered as an approximation.

APPENDIX 4

Coded Variable Data

1. Category - indication of where the case was collected (Radio Communications Centre, CPIC Room or MRDS) and when (August or September).
2. Page Number - identity classification and locational reference to raw data.
3. Line Number - same as "Page Number".
4. Person Number - consecutive numeric listing of separate persons.
5. Record Number - consecutive numeric listing of records per person.
6. Arrested - notation if party arrested on another matter.
7. First Appearance - indication of whether the case is unique or a duplicate.
8. Maximum Possible Score - as described above, for the responded case recorded.
9. Score - as described above for the recorded case.
10. Distance - the radius attached to the warrant for that case. For a non-distance (areal) radius, unique abbreviations were used; in the case of the specification of an exact distance, the actual number was coded.
11. Measure - an indication of whether the radius distance was in miles or kilometers. All distances were subsequently converted into mileages for computational purposes

(1 kilometre=.6214 mile). Areal radii were classed as being either provincial (e.g., "Manitoba only" or "Québec only", and included the relatively large zones of Northwest Ontario and Southern Ontario), or local (e.g., Winnipeg, Niagara Region, Cape Breton, Essex County and the vague "Local Radius Only"). Dual radius warrants were coded using the higher measure (e.g., "50 miles or Nova Scotia" was listed as provincial).

12. City - originating jurisdiction of the warrant.
13. Province - the province of the originating city.
14. Day - the date of the warrant's entry on CPIC.
15. Month - as for "Day".
16. Year - as for "Day".
17. Offence 1 to Offence 16 - a listing of the charges on the warrant up to and including 16 offences. As CPIC entries use abbreviations and may not always include every charge laid in a specific case, some interpretation and grouping was required. As it is the more minor charges usually affected by this procedure, reliability was not felt to be significantly impacted. These decisions were based on my experience and knowledge of police procedure and criminal law. Warrants of committal and attempted crimes were classified under the substantive offence, "fail to appears" were listed as an additional charge, and it was necessary to construct an "unknown" category for unspecified offences.

APPENDIX 5

City Radii: Calculations and Distances

Calgary, Alberta-wide radius:	West-along Trans-Canada Highway to British Columbia/ Alberta border (100 miles). East-along Trans-Canada Highway to Alberta/ Saskatchewan border (214 miles).
Edmonton, Alberta-wide radius:	West-along Yellowhead Highway to British Columbia/ Alberta border (239 miles). East-along Yellowhead Highway to Alberta/ Saskatchewan border (155 miles).
Saskatoon, Saskatchewan-wide radius:	West-along Yellowhead Highway to Alberta/ Saskatchewan border (165 miles). East-along Yellowhead Highway to Saskatchewan/ Manitoba border (262 miles).
Regina, Saskatchewan-wide radius:	West-along Trans-Canada Highway to Alberta/ Saskatchewan border (265 miles). East-along Trans-Canada Highway to Saskatchewan/ Manitoba border (147 miles).

Winnipeg, Manitoba-wide radius: West-along Trans-Canada Highway to Saskatchewan/Manitoba border (210 miles). East-along Trans-Canada Highway to Manitoba/Ontario border (94 miles).

Manitoba or Northwest Ontario radius: West-as for Manitoba-wide radius. East-along Trans-Canada Highway to Sault St. Marie (1,002 miles).

Winnipeg radius: West and East-10 miles

Halton, Ontario-wide radius: West-along major routes and Trans-Canada Highway to Manitoba/Ontario border (1,205 miles). East-along major routes to Ontario/Québec border (274 miles).

Hamilton-Wentworth, Hamilton Region radius: West and East-10 miles.

Hamilton-Wentworth Region Radius: West and East-10 miles.

Waterloo, Southern Ontario radius: West and East-along major routes to Sudbury (304 miles).

Waterloo Region radius: West and East-10 miles.

Local Radius: West and East-10 miles.

London, Ontario-wide radius:	West-along major routes and Trans-Canada Highway to Manitoba/Ontario border (1,294 miles). East-along major routes to Ontario/Québec border (358 miles).
Montréal, Québec-wide radius:	West-along Trans-Canada Highway to Ontario/Québec border (50 miles). East-along Trans-Canada Highway to Québec/ New Brunswick border (323 miles).
Windsor, Ontario-wide radius:	West-along major routes and Trans-Canada Highway to Manitoba/Ontario border (1,406 miles). East-along major routes to Ontario/Québec border (470 miles).
Essex County radius:	West and East-30 miles.
Windsor radius:	West and East-10 miles.
Local radius:	West and East-10 miles.

APPENDIX 6

Provincial Radii: Calculations and Distances

Alberta, Alberta-wide radius: West and East-average of the distances from the Trans-Canada and Yellowhead Highway's mid-points to the British Columbia/Alberta and Alberta/Saskatchewan borders (177 miles).

Saskatchewan, Saskatchewan-wide radius: West and East-average of the distances from the Trans-Canada and Yellowhead Highway's mid-points to the Alberta/Saskatchewan and Saskatchewan/Manitoba borders (210 miles).

Manitoba, Manitoba-wide radius: West and East-average of the distances from the Trans-Canada Highway mid-point to the Saskatchewan/Manitoba and Manitoba/Ontario border (152 miles).

Ontario, Durham Region radius: West and East-10 miles.

Niagara Region Radius: West and East-10 miles.

Lambton County Radius: West and East-20 miles.

Sudbury District radius: West and East-60 miles.

All other local radius (including Peterborough, Elliot Lake, Niagara and Sarnia): West and East-10 miles.

Ontario-wide radius: West and East-calculated individually for each origin along major routes and the Trans-Canada Highway to the Manitoba/Ontario border and

the Ontario/Québec border
respectively (mean-1,184
miles West, 295 miles East).

Québec, Québec-wide radius:

West-measured along the
Trans-Canada Highway from a
point mid-way between
Montréal and Québec City to
the Ontario/Québec border
(105 miles).

East-measured along the
Trans-Canada Highway from a
point mid-way between
Montréal and Québec City to
the Québec/New Brunswick
border (268 miles).

New Brunswick, New Brunswick-wide radius:

West-calculated individually
for each origin along major
routes and the Trans-Canada
Highway to the Québec/New
Brunswick border (mean-255
miles).

East-calculated individually
for each origin along major
routes and the Trans-Canada
Highway to the New
Brunswick/ Nova Scotia
border (mean-106 miles).

Prince Edward Island, Prince Edward Island-Wide radius:

West and East-calculated
individually for each origin
along major routes including
ferry distance across
Northumberland Strait to
Cape Tormentine, New
Brunswick (mean-18 miles).

Nova Scotia, Cape Breton Island radius:

West and East-measured from origin along the Trans-Canada Highway to Auld's Cove, Nova Scotia (single case, Sydney, Nova Scotia-87 miles).

50 miles or Nova Scotia radius:

West and East-measured from origin along the Trans-Canada Highway to the New Brunswick/Nova Scotia border (single case, Truro, Nova Scotia-74 miles).

Nova Scotia-wide radius:

West and East-calculated individually for each origin along major routes and the Trans-Canada Highway to the New Brunswick/Nova Scotia border (mean-144 miles).

Newfoundland, Newfoundland-wide radius:

West and East-measured from origin along the Trans-Canada Highway including ferry distance across Cabot Strait to North Sydney, Nova Scotia (single case, Gander, Newfoundland-415 miles).

Yukon, Yukon-wide radius:

West and East-measured South along the Alaska Highway to its first crossing of the British Columbia/Yukon border (60 miles).

Northwest Territories, Northwest Territories-wide radius:

West and East-calculated individually for each origin South along the Mackenzie Highway to the Alberta/ Northwest Territories border (mean-199 miles).

APPENDIX 7

Threat Analysis

Methodology

Varying crime mixes must be weighted by offence to determine the relative "seriousness" of the different crimes. The Sellin-Wolfgang and the Akman-Normandeau scales are only designed to be applied to individual cases, not general crime classes. (D.D. Akman and A. Normandeau, "Constructing a Crime and Delinquency Index in Canada", Criminal Law Quarterly 7 (1967):66-77; D.D. Akman and A. Normandeau, "Towards the Measurement of Criminality in Canada: A Replication Study", Acta Criminologica 1 (January 1968):135-261; Thorsten Sellin and Marvin E. Wolfgang, Constructing an Index of Delinquency - A Manual (Philadelphia: Center of Criminological Research, 1963); Thorsten Sellin and Marvin E. Wolfgang, The Measurement of Delinquency (New York: John Wiley and Sons, 1964).) Sutton has constructed a sentence weight index, but any such scale must be linked to the initial offences. (Sutton, pp.22-23.)

McDonell, Mathews and Currie present a crosstabulation in their addendum of sentence categories with offence categories. By combining British Columbia and Québec data (appropriately weighted by size), and assigning numeric values for sentence ranges, it is possible to calculate a mean sentence value. The values are presented in table A.1 and represent the range

Table A.1: Numerical Scale for Sentencing Ranges

Inst'n, Life	- 25	(first possibility of parole on conviction of first degree murder)
Inst'n, 14 yr or >	- 19.5	(mid-point of 14 and 25)
Inst'n, 10 yr and <14	- 12	
Inst'n, 5 yr and <10	- 7.5	
Inst'n, 2 yr and < 5	- 3.5	
Inst'n, >6 mo and <24 mo	- 1.25	
Inst'n, to 6 mo	- .25	(mid-point of 0 and .5)
Probation, Fine, Not Stated	- .125	(mid-point of 0 and .25)

Source: Bill McDonell, Margaret Mathews, and Stan Currie, Adult Criminal Court Statistics 1980 (British Columbia and Québec) (Ottawa: Statistics Canada, n.d.), crosstabulations addendum.

mid-point in years of incarceration.

By weighting, for each offence classification, every sentence category value by the number of cases in that cell, summing for all cells, and dividing by the total number of cases for that offence, a mean sentence scale can be calculated. Such a scale was applied to individual cases in an attempt to discern differences between fugitives from the various origins. Table 4.1 (chapter IV) shows how the study's original offence classifications were collapsed into the McDonell, Mathews and Currie offence categories. Four variables were constructed from this information:

- Sentence total (calculated by applying the sentence scale to all outstanding charges listed in the offence variables for a given case and summing);
- Sentence maximum (calculated by taking only the single highest sentence scale value from all the outstanding charges - this recognizes the practices of overcharging,

- informal plea bargaining and concurrent sentencing);
- Risk total (same as sentence total but the sentence scale was reduced by multiplying by the probability of being convicted for that particular offence); and
 - Risk maximum (same as sentence maximum but with the changes noted for risk total).

Sentence categories, conviction rate, weighted mean sentences and risk measures are presented in table A.2.

One-way analysis of variance using the Scheffé multiple comparison procedure (with the default alpha of .05) was employed to detect differences among provincial origins, and among city origins for each of these four variables. The groups are assumed to constitute a fixed effects model, and the samples appear to be independent, and from normally distributed populations. Homogeneity of variance is tested for, with Cochran's *C*, Bartlett-Box *F*, and Hartley's *F* max.

Results

The only statistically significance differences that can be detected occur between Calgary and Edmonton, for both sentence total and risk total. No provincial differences were discerned for any of the four threat variables and no city differences were found for the sentence maximum and risk maximum variables.

The employment of all four threat measures allows a range of possibilities to be examined. Yet this strategy has a price – a statistically significant relationship is more likely to appear

Table A.2

Offence Categories by Disposition

Offence Category	Percentage Convicted	Weighted Mean (Years)	Risk Measure* (Years)
Offensive Weapon	54.7	.410	.224
Obstruct, Mislead	61.1	.163	.0993
Fail to Appear	62.4	.206	.129
Sexual Offences	62.2	.990	.616
Morals, Conduct	67.4	.144	.0971
Criminal Negligence	52.8	.941	.497
Murder	46.7	23.9	11.1
Manslaughter	82.2	7.01	5.76
Attempted Murder	22.4	6.68	1.50
Impaired Driving	30.1	.145)	.0436)
Over 80 mgs. Alcohol	75.1	.138).142	.104).0737
Other Driving	75.1	.147	.110
Assaults and Harm	55.0	.190	.104
Theft and Like	74.4	.212	.158
Robbery	73.8	1.96	1.45
Break and Enter	77.7	.678	.527
Possess Stolen Goods	33.8	.300	.101
Forgery, Fraud	69.7	.422	.294
Mischief	64.4	.199	.128
Attempts, Conspiracy	56.5	.918	.519
Breach Probation	67.5	.193	.130
Possession Narcotics	72.1	.138	.0996
Other Drug Offences	55.6	.683	.380
Other Criminal Code	63.2	.408	.258
Other Federal	86.2	.128	.110
TOTAL MEAN	61.6	.271	.167

* (weighted mean sentence x % convicted)

Source: Bill McDonell, Margaret Mathews, and Stan Currie, Adult Criminal Court Statistics 1980 (British Columbia and Québec) (Ottawa: Statistics Canada, n.d.), crosstabulations addendum.

out of the sheer increase in comparisons, and the noted differences are very likely spurious. It is possible, however, that a portion of the residual migration unexplained by distance, population, and radius could be due to the untested phenomenon of regional sentencing variation.

Analysis of variance testing requires the assumptions of independence of samples, normal populations, and homoscedasticity. The Cochran's C (maximum variance/sum of variances), the Bartlett-Box F , and Hartley's F max (maximum variance/minimum variance) are the three homogeneity of variance testing procedures available with SPSS^x. Their usefulness is limited, however, as other data features can affect their performance. (Norušis, p.113.)

Of the eight analyses, only sentence total by province and risk total by province meet the criteria of these tests; the other six comparisons appear to have non-equal variance problems. Unequal variances imply that some areas have fewer serious and fewer minor crimes (as measured by potential punishment) than other areas. All jurisdictions included in this study operate under the same Criminal Code and such "crime clustering" behaviour is not likely. The results of the homogeneity of variance tests are probably caused by their inherent limitations, or the presence of a few relatively small populations.

*Threat Analysis: One-way Analysis of Variance Tests**

Sentence total by province -

F -ratio = .6243, $p < .711$

Cochran's C = .1747, $p < .311$

Bartlett-Box F = 1.074, $p < .375$

Maximum/minimum variance = 2.253

No two groups significantly different at the $p < .05$ level.

Sentence total by city -

F -ratio = 3.3421, $p < .00005$

Cochran's C = .4559, $p < .0005$

Bartlett-Box F = 14.217, $p < .0005$

Maximum/minimum variance = 247.54

Calgary and Edmonton are significantly different at the $p < .05$ level.

Sentence maximum by province -

F -ratio = 1.1933, $p < .3076$

Cochran's C = .2749, $p < .0005$

Bartlett-Box F = 8.869, $p < .0005$

Maximum/minimum variance = 4.113

No two groups significantly different at the $p < .05$ level.

Sentence maximum by city -

F -ratio = 2.0282, $p < .0145$

Cochran's C = .1741, $p < .0005$

Bartlett-Box F = 12.094, $p < .0005$

Maximum/minimum variance = 44.996

No two groups significantly different at the $p < .05$ level.

Risk total by province -
F-ratio = .4786, $p < .8245$
Cochran's $C = .1865$, $p < .080$
Bartlett-Box $F = 1.811$, $p < .093$
Maximum/minimum variance = 2.740
No two groups significantly different at the $p < .05$ level.

Risk total by city -
F-ratio = 2.8079, $p < .0005$
Cochran's $C = .4543$, $p < .0005$
Bartlett-Box $F = 14.111$, $p < .0005$
Maximum/minimum variance = 231.64
Calgary and Edmonton are significantly different at the $p < .05$ level.

Risk maximum by province -
F-ratio = 1.1626, $p < .3244$
Cochran's $C = .2682$, $p < .0005$
Bartlett-Box $F = 9.923$, $p < .0005$
Maximum/minimum variance = 4.120
No two groups significantly different at the $p < .05$ level.

Risk maximum by city -
F-ratio = 1.9498, $p < .0199$
Cochran's $C = .1763$, $p < .0005$
Bartlett-Box $F = 14.128$, $p < .0005$
Maximum/minimum variance = 44.621
No two groups significantly different at the $p < .05$ level.

*Degrees of freedom -
 between-groups=6(province), 14(city),
 within-groups=1,753(province), 499(city),
 total=1,759(province), 513(city).
Variable means presented in tables 5.9 and 5.10 (chapter V).

APPENDIX 8

Longitudinal Analysis

The origin results from the present analysis were compared to the Vancouver Police, Planning and Research Section's two previous surveys of non-returnable warrants in 1981 (July 9 to July 31) and in 1982 (September 1 to October 31). The 1981 study did not include MRDS data, did not code "fail to appear" offences and did not separate out duplicates. The 1982 survey failed to include MRDS hits, but eliminated repeat checks and used only unique cases. The data are comparable for origin analyses but the different methodologies employed complicate a longitudinal study.

The number of operational MRDS units varied throughout these years as did the size of the patrol division, and it is fair to assume institutional variations would affect the recording procedures; the more policemen checking persons, the more potential hits may be discovered. This relationship is problematic as call load, crime rate, street level activity, number of radio channels in use and other variables influence the data.

Patrol size varied from 401 (1981) to 442 (1982) to 438 (1984). (Figures from the appropriate Vancouver Police Department Monthly Detail of Duty, Actual Strength by Rank, Patrols North and South.) Twenty-two MRDS units were operational

in 1981, increasing to 55 terminals in service during 1982 and 1984. Palys, Boyanowsky and Dutton suggest that total query volume might rise as the number of terminals increases; they found 1,944 person queries transacted per week during their study (representing 12.9% of total MRDS use). (A Behavioural Evaluation of the Vancouver Police Department's Mobile Radio Data System, p.57.) CPIC, Ottawa processes 10,000 transactions per hour. (Rossmo, n.2.)

While such data are not kept by the VPD or the RCMP, Ports Canada Police in Vancouver found for 1983, that of the 2,794 parties they checked on CPIC, 1,225 (44%) had records and 329 (12%) were wanted on warrants. Half of these (165 or 6% of the total) were wanted non-returnable. For the period of January to August 1984, Ports Canada Police found 130 (60%) of their 218 confined hits were non-returnable, an 18% increase over the previous year. (Rossmo, n.2.)

An estimate was made of the number of different persons checked daily wanted on non-returnable warrants, incorporating the calculated impact of MRDS use and patrol size differentials. The current Vancouver survey collected 1,167 fugitive warrants of which 757 were unique cases. These represented 586 individual persons and 1,241 separate charges. (As discussed in chapter IV, these figures are probably artificially low.) Compensating for police system changes and differential survey time periods, and then comparing with the 1,252 unique warrants (representing 763 individual persons) found in 1982, and the 549 warrants

including duplicates (representing an unknown number of individual persons) found in 1981, suggests a 25% increase in fugitive migrants from 1981 to 1982, and a 29% increase from 1981 to 1984. (Rossmo, pp.7-8, 11-12.) These results must be treated with caution.

APPENDIX 9

Provincial Analysis: Multiple Regression Results

1. Dependent variable - ratio
 Independent variables - radius west, percent provincial radii
 Stepwise selection method - no variables entered/removed
 Forced entry method - both variables entered

Multiple R=.90552 F=9.1088 (p<.0324)
 R Square=.81996
 Adjusted R Square=.72995
 Standard Error=.21061

Variable	<u>B</u>	<u>S.E. B</u>	<u>Beta</u>	<u>T</u>	<u>(p<)</u>
radius west	-.006092	.002304	-.58830	-2.645	(.0573)
% provincial radii	-.47583	.19827	-.53386	-2.400	(.0744)
(constant)	2.0878	.27919		7.478	(.0017)

Ratio of B coefficients = 78.11

2. Dependent variable - Z-score
 Independent variables - radius west, percent provincial radii
 Stepwise selection method - percent provincial radii entered on step no.1, radius west entered on step no.2

Multiple R=.98003 F=48.586 (p<.0016)
 R Square=.96046
 Adjusted R Square=.94069 (Adjusted R Square on step no.1 = .62875)
 Standard Error = 1.0512

Variable	<u>B</u>	<u>S.E. B</u>	<u>Beta</u>	<u>T</u>	<u>(p<)</u>
% provincial radii	-6.3347	.98962	-.66727	-6.401	(.0031)
radius west	-.060078	.011498	-.54467	-5.225	(.0064)
(constant)	10.779	1.3935		7.735	(.0015)

Ratio of B coefficients = 105.44

Forced entry method - all variables previously entered

3. Dependent variable - ratio
 Independent variables - radius average, percent provincial radii
 Stepwise selection method - no variables entered/removed
 Forced entry method - both variables entered.

Multiple R=.73963 F=2.4156 (p<.2052)
 R Square=.54706
 Adjusted R Square=.32059
 Standard Error=.33405

Variable	<u>B</u>	<u>S.E. B</u>	<u>Beta</u>	<u>T</u>	<u>(p<)</u>
radius average	.004486	.007375	.43418	.608	(.5758)
%provincial radii	-.97476	.63615	-1.0936	-1.532	(.2002)
(constant)	.98932	.73487		1.346	(.2495)

Ratio of B coefficients=217.29

4. Dependent variable - Z-score
 Independent variables - radius average, percent provincial radii
 Stepwise selection method - percent provincial radii only entered
 Forced entry method - radius average entered

Multiple R=.83113 F=4.4679 (p<.0956)
 R Square=.69078
 Adjusted R Square=.53617 (Adjusted R Square on step no.1=.62875)
 Standard Error=2.9398

Variable	<u>B</u>	<u>S.E. B</u>	<u>Beta</u>	<u>T</u>	<u>(p<)</u>
% provincial radii	-7.6654	5.5985	-.80744	-1.369	(.2428)
radius average	-.002944	.064901	-.026753	-.045	(.9660)
(constant)	4.4887	6.4673		.694	(.5258)

Ratio of B coefficients=2,603.73

5. Dependent variable - ratio
 Independent variables - radius minimum, percent provincial radii
 Stepwise selection method - radius minimum only entered
 Forced entry method - percent provincial radii entered

Multiple $R=.88491$ $F=7.2193$ ($p<.0471$)
 R Square=.78306
 Adjusted R Square=.67459 (Adjusted R Square on step no.1=.58144)
 Standard Error=.23118

Variable	<u>B</u>	<u>S.E. B</u>	<u>Beta</u>	<u>T</u>	<u>(p<)</u>
radius minimum	-.008168	.003608	-.60396	-2.264	(.0863)
% provincial radii	-.37081	.23780	-.41603	-1.559	(.1939)
(constant)	2.1068	.33031		6.378	(.0031)

Ratio of B coefficients=45.40

6. Dependent variable - Z-score
 Independent variables - radius minimum, percent provincial radii
 Stepwise selection method - radius minimum entered on step no.1, percent provincial radii entered on step no.2

Multiple $R=.97440$ $F=37.574$ ($p<.0026$)
 R Square=.94946
 Adjusted R Square=.92419 (Adjusted R Square on step no.1=.66619)
 Standard Error=1.1885

Variable	<u>B</u>	<u>S.E. B</u>	<u>Beta</u>	<u>T</u>	<u>(p<)</u>
radius minimum	-.083964	.018551	-.58287	-4.526	(.0106)
% provincial radii	-5.1892	1.2225	-.54661	-4.245	(.0132)
(constant)	11.253	1.6981		6.627	(.0027)

Ratio of B coefficients=61.80

Forced entry method - all variables previously entered

APPENDIX 10

City Analysis: Multiple Regression Results

1. Dependent variable - ln(count)
 Independent variables - ln(accused population),
 ln(distance), ln(MRA)

Stepwise selection method - ln(accused population)
 entered on step no.1,
 ln(distance) entered on step
 no.2, ln(mra) entered on
 step no.3.

Multiple R=.94963 F=33.668 (p<.00005)
 R Square=.90179
 Adjusted R Square=.87501, R Square Change = .08174,
 Standard Error=.34029 F Change=9.1553 (p<.0115)

Adjusted R Square on step no.1=.6254, R Square Change=.6522,
F Change=24.378 (p<.0005)
 Adjusted R Square on step no.2=.7901, R Square Change=.1678,
F Change=11.193 (p<.006)

Variable	<u>ln(accused population)</u>	<u>ln(distance)</u>	<u>ln(mra)</u>	<u>(constant)</u>
B	.81840	-1.0351	-.30525	3.7718
S.E B	.10734	.19581	.10088	2.3256
95% Confid. Interval B	.58215 to 1.0547	-1.4661 to -.60416	-.52729 to -.083207	-1.3468 to 8.8903
Beta	.79755	-.62071	-.38109	
Partial Correlation Coefficient	.91700	-.84709	-.67400	
T	7.624	-5.286	-3.026	1.622
(p<)	(.00005)	(.0003)	(.0115)	(.1331)

2. Dependent variable - ln(count)
 Independent variables - ln(accused population),
 ln(distance), ln(mrm)

Stepwise selection method - ln(accused population)
 entered on step no.1,
 ln(distance) entered on step
 no.2, ln(mrm) entered on
 step no.3.

Multiple R=.94927 F=33.410 ($p < .00005$)
 R Square=.90111
 Adjusted R Square=.87413, R Square Change = .08106,
 Standard Error=.34147 F Change=9.0158 ($p < .0120$)

Adjusted R Square on step no.1=.6254, R Square Change=.6522
 F Change=24.378 ($p < .0005$)
 Adjusted R Square on step no.2=.7901, R Square Change=.1678
 F Change=11.193 ($p < .006$)

Variable	<u>ln(accused population)</u>	<u>ln(distance)</u>	<u>ln(mrm)</u>	<u>(constant)</u>
B	.80005	-1.0667	-.40116	4.6126
S.E B	.11014	.20281	.13360	2.5626
95% Confid. Interval B	.55763 to 1.0425	-1.5131 to -.62031	-.69521 to -.10710	-1.0277 10.253
Beta	.77967	-.63963	-.39975	
Partial Correlation Coefficient	.90966	-.84587	-.67114	
T	7.264	-5.260	-3.003	1.800
(p<)	(.00005)	(.0003)	(.0120)	(.0993)

3. Dependent variable - ln(count)
 Independent variables - ln(accused population),
 ln(distance), ln(mrw)

Stepwise selection method - ln(accused population)
 entered on step no.1,
 ln(distance) entered on step
 no.2, ln(mrw) entered on
 step no.3.

Multiple R=.94791 F=32.469 (p<.00005)
 R Square=.89853
 Adjusted R Square=.87086, R Square Change = .07848,
 Standard Error=.34589 F Change=8.5076 (p<.0140)

Adjusted R Square on step no.1=.6254, R Square Change=.6522
 F Change=24.378 (p<.0005)
 Adjusted R Square on step no.2=.7901, R Square Change=.1678
 F Change=11.193 (p<.006)

Variable	<u>ln(accused population)</u>	<u>ln(distance)</u>	<u>ln(mrw)</u>	<u>(constant)</u>
B	.82880	-1.0578	-.23322	3.5422
S.E.B.	.10814	.20481	.79959	2.3322
95% Confid. Interval B	.59078 to 1.0668	-1.5086 to -.60704	-.40921 to -.057234	-1.5909 8.6753
Beta	.80768	-.63431	-.38083	
Partial Correlation Coefficient	.91775	-.84145	-.66039	
T (p<)	7.664 (.00005)	-5.165 (.0003)	-2.917 (.0140)	1.519 (.1570)

APPENDIX 11

Gravity Model Scattergrams

1. Radius configuration - modified average
Correlation (R)=.98644 ($p<.000005$)
 R Squared=.97307
Slope=1.1148
Intercept=-1.7012

2. Radius configuration - modified minimum
Correlation (R)=.99083 ($p<.000005$)
 R Squared=.98175
Slope=1.1153
Intercept=-2.5071

3. Radius configuration - modified west
Correlation (R)=.98701 ($p<.000005$)
 R Squared=.97418
Slope=1.1114
Intercept=-4.3248

4. Radius configuration - percent provincial radii
Correlation (R)= .99295 ($p<.000005$)
 R Squared=.98594
Slope=1.0270
Intercept=1.9157

5. Radius configuration - percent provincial radii (simplified)
Correlation (R)= .96052 ($p<.000005$)
 R Squared=.92260
Slope=1.0430
Intercept=8.0726

APPENDIX 12

City Analysis (Percent Provincial Radii): Multiple Regression Results

1. Multiple $R=.96223$ $F=45.804$ ($p<.000005$)
 R Squared=.92588
Adjusted R Square=.90567, R Square Change=.10583
 F Change=15.707 ($p>.0022$)
Standard Error=.29562

Variable	<u>ln(accused population)</u>	<u>ln(distance)</u>	<u>percent provincial radii</u>	<u>(constant)</u>
B	.92878	-1.2269	-.92822	2.7580
S.E B	.086948	.19311	.23421	1.6996
95% Confid. Interval B	.73741 to 1.1202	1.6519 to -.80186	-1.4437 to -.41272	-.98285 to 6.4989
Beta	.90512	-.73570	-.45261	
Partial Correlation Coefficient	.95503	-.88648	-.76689	
T	10.682	-6.353	-3.963	1.623
($p<$)	(.00005)	(.0001)	(.0022)	(.1329)

BIBLIOGRAPHY

- Akman, D.D., and Normandeau, A. "Constructing a Crime and Delinquency Index in Canada". Criminal Law Quarterly 7 (1967):66-77.
- _____. "Towards the Measurement of Criminality in Canada: A Replication Study". Acta Criminologica 1 (January 1968):135-261.
- Babbie, Earl R. The Practice of Social Research. Belmont, California: Wadsworth Publishing Co., 1975.
- Bailey, Kenneth D. Methods of Social Research. 2nd ed. New York: Free Press, Macmillan Publishing Co., 1982.
- Biderman, Albert D., and Reiss, Jr., Albert J. "On Exploring the 'Dark Figure' of Crime". The Annals of the American Academy of Political and Social Science 374 (November 1967):1-15.
- Blalock, Jr., Hubert M. Social Statistics. 2nd ed. New York: McGraw-Hill Book Co., 1972.
- Brantingham, Paul J. and Brantingham, Patricia L. Patterns of Crime. New York: Macmillan Publishing Co., 1984.
- _____. eds. Environmental Criminology. Beverly Hills: Sage Publications, 1981.
- Cassels, Jamie. "Prostitution and Public Nuisance: Desperate Measures and the Limits of Civil Adjudication". The Canadian Bar Review 63 (1985):764-804.
- "City a haven for warrant evaders". Vancouver Sun, 13 December, 1984, sec.A, p.3.
- Clark, G.L., and Ballard, K.P. "Modeling out-migration from depressed regions: the significance of origin and destination characteristics". Environment and Planning 12 (July 1980):799-812.
- Clarke, Kenneth L.; Barnhorst, Richard; and Barnhorst, Sherrie. Criminal Law and the Canadian Criminal Code. Toronto: McGraw-Hill Ryerson, 1977.
- "Court Activity Summary Report". Victoria: British Columbia Ministry of the Attorney General, Court Services, 1983.
- Cox, D.R., and Hinkley, D.V. Theoretical Statistics. London: Chapman and Hall, 1974.

The Criminal Law in Canadian Society. Ottawa: Department of Justice, 1982.

• Dabestani, Alagar. A Model of Interprovincial Migration Between British Columbia and Other Canadian Provinces. Vancouver: B.C. Telephone Co., 1975.

Deming, W. Edwards. Sample Design in Business Research. New York: John Wiley and Sons, 1960.

Ditton, Jason. Contrology: Beyond the New Criminology. London: Macmillan Publishing Co., 1979.

Dodd, S.C. "The Interactance Hypothesis: A Model Fitting Physical Masses and Human Groups". American Sociological Review 15 (1950):245-257.

Encyclopædia Britannica, 15th ed. S.v. "Crime and Delinquency", by Franco Ferracuti and Graeme R. Newman, "Exile and Banishment", "Prisons and Penology", by Gresham M'Cready Sykes.

Ericson, Richard V. Criminal Reactions. Westmead: Saxon House, 1975.

_____ Reproducing Order: A Study of Police Patrol Work. Toronto: University of Toronto Press, 1982.

• Ferracuti, Franco. "European Migration and Crime". Collected Studies in Criminological Research 3 (1968):9-76.

"Florida Officials Fear Northward Crime Migration". Law Enforcement News, February 22, 1982, pp.3,6.

Gabor, Thomas. "Crime Displacement: The Literature and Strategies for its Investigation". Crime and Justice 6 (1978):100-106.

Gabor, Thomas, and Gottheil, Ellen. "Offender Characteristics and Spatial Mobility: An Empirical Study and Some Policy Implications". Canadian Journal of Criminology 26 (July 1984):267-281.

• George, M.V. Internal Migration in Canada. Ottawa: Dominion Bureau of Statistics, 1970.

• Gould, Peter. "Acquiring Spatial Information". Economic Geography 51 (April 1975):87-99.

_____ On Mental Maps. Michigan Inter-University Community of Mathematical Geographers Discussion Paper Series, no. 9. Ann Arbor, Michigan: University of Michigan, 1966.

- Gould, Peter, and White, Rodney. Mental Maps. New York: Penguin Books, 1974.
- Greenberg, David, F. Mathematical Criminology. New Brunswick, New Jersey: Rutgers University Press, 1979.
- Greenspan, Edward L., annotator. Martin's Annual Criminal Code 1985. Aurora, Ont.: Canada Law Book, 1985, and 1986-87.
- Gustaru, S.O., and Brown, L.A. "Place attributes in a migration decision context". Environment and Planning A 9 (1977):529-548.
- Hakim, Simon and Rengert, George F., eds. Crime Spillover. Beverly Hills: Sage Publications, 1981.
- Haynes, Kingsley E., and Fotheringham, A. Stewart. Gravity and Spatial Interaction Models. Scientific Geography Series, vol. 2. Beverly Hills: Sage Publications, 1984.
- Hodges, Joseph Lawson; Krech, David; and Crutchfield, Richard S. Statlab: An Empirical Introduction to Statistics. New York: McGraw-Hill Book Co., 1975.
- Huff, D.L. "Geographical Aspects of Consumer Behaviour". University of Washington Business Review 18 (1959):27-37.
- Jeacock, Robert J. A Provincial Population Forecasting Model Emphasizing Interprovincial Migration. Ottawa: Conference Board of Canada, 1982.
- Johnston, R.J. "Map Pattern and Friction of Distance Parameters: a Comment". Regional Studies 9 (November 1975):281-283.
- _____. "On Frictions of Distance and Regression Coefficients". Area 5 (1973):187-191.
- Kish, Leslie. Survey Sampling. New York: John Wiley & Sons, 1965.
- "Leave town, thief told". Vancouver Province, 27 June, 1986, p.10.
- Lowe, John C., and Moryadas, S. The Geography of Movement. Boston: Houghton Mifflin Co., 1975.
- Lowman, John. "Conceptual Issues in the Geography of Crime: Toward a Geography of Social Control". Annals of the Association of American Geographers 76(1)(1986):81-94.

- _____
"Crime, Criminal Justice Policy and the Urban Environment". In Geography and the Urban Environment. Progress in Research and Applications 5, pp.307-341. Edited by D.T. Herbert and R.J. Johnston. Chichester: John Wiley and Sons, 1982.
- _____
"Geography, Crime and Social Control". Ph.D. dissertation, University of British Columbia, 1983.
- Luce, R. Duncan. Individual Choice Behavior. New York: John Wiley & Sons, 1959.
- McDonnell, Bill; Mathews, Margaret; and Currie, Stan. Adult Criminal Court Statistics 1980 (British Columbia and Québec). Ottawa: Statistics Canada, n.d.
- Madge, John. The Origins of Scientific Sociology. New York: Free Press, Macmillan Publishing Co., 1962.
- Magid, Simmie. "Bail Reform Act Survey: Analysis". Ottawa: Statistics Canada, 1974.
- Manual Respecting the Authority and Duties of Peace Officers in Relation to Arrest and Pre-trial Release and Detention of Accused Persons. Ottawa: Information Canada, 1971.
- Menzies, Robert. "Doing Violence: Psychiatric Discretion and the Prediction of Dangerousness". Ph.D. dissertation, University of Toronto, 1985.
- Nachmias, David, and Nachmias, Chava. Research Methods in the Social Sciences. New York: St. Martin's Press, 1976.
- Nguyen, Trien Tien. "Differential Migration towards Canadian Census Metropolitan Areas". M.A. Essays, Simon Fraser University, 1975.
- Nichols, Jr., Woodrow W. "Mental Maps, Social Characteristics, and Criminal Mobility". In Crime: A Spatial Perspective, pp.156-166. Edited by Daniel E. Georges-Abeyie and Keith D. Harries. New York: Columbia University Press, 1980.
- Niedercorn, J.H., and Bechdolt, Jr., V.B. "Economic Derivation of the 'Gravity Law' of Spatial Interaction". Journal of Reginal Science 9 (1969):273-282.
- Norušis, Marija J. SPSS^X Introductory Statistics Guide. New York: McGraw-Hill Book Co., 1983.
- _____
SPSS^X Advanced Statistics Guide. New York: McGraw-Hill Book Co., 1985.

- SPSS^X User's Guide. 2nd ed. New York: McGraw-Hill Book Co., 1986.
- Ostrom, Jr., Charles W. Time Series Analysis: Regression Techniques. Beverly Hills: Sage Publications, 1978.
- Palys, T.S.; Boyanowsky, E.O.; and Dutton, D.G. A Behavioural Evaluation of the Vancouver Police Department's Mobile Radio Data System. Burnaby, B.C.: Criminology Research Centre, Simon Fraser University, 1983.
- "Mobile Data Access Terminals and Their Implications for Policing". Journal of Social Issues 40 (1984):113-127.
- Palys, T.S., and Divorski, Stan. "Explaining Sentence Disparity". Canadian Journal of Criminology 28 (1986):347-362.
- Perspective Canada. Ottawa: Information Canada, 1974.
- Rand McNally Road Atlas. Chicago: Rand McNally & Co., 1984.
- Repetto, Thomas A. "Crime Prevention and the Displacement Phenomenon". Crime and Delinquency 22 (April 1976):166-177.
- Ricour-Singh, Francoise. Poles and Zones of Attraction. Ottawa: Statistics Canada, 1979.
- Rossmo, Kim. "Non-Returnable Warrants Survey". Vancouver, 1984.
- Rumbelow, D. I Spy Blue: The Police and Crime in the City of London from Elizabeth 1st to Victoria. London: Macmillan Publishing Co., 1971.
- Scollin, John A. The Bail Reform Act: An Analysis of Amendments to the Criminal Code Related to Bail and Arrest, 1972.
- Seber, G.A.F. The Estimation of Animal Abundance and Related Parameters. 2nd ed. London: Charles Griffin & Co., 1982.
- Sellin, Thorsten, and Wolfgang, Marvin E. Constructing an Index of Delinquency - A Manual. Philadelphia: Center of Criminological Research, 1963.
- The Measurement of Delinquency. New York: John Wiley & Sons, 1964.
- Smith, Stephen. Recreation Geography. Burnt Mill, Essex: Longman House, n.d.

- Smith, Terence R., and Slater, Paul B. "A Family of Spatial Interaction Models Incorporating Information Flows and Choice Set Constraints Applied to U.S. Interstate Labor Flows". International Regional Science Review 6-1 (1981): 15-31.
- Smith, Tony E. A Choice Theory of Spatial Interaction. RSRI Discussion Paper Series, no. 74. Philadelphia: Regional Science Research Institute, 1974.
- Som, Ranjon Kumar. A Manual of Sampling Techniques. London: Heinemann Educational Books, 1973.
- Statistics Canada. Annual Elements of Population Growth, Canada, 1955-6 to 1982-83. Publication No.91-201.
- _____. Census Subdivisions in Decreasing Population Order, 1982. Publication No. 9E904.
- _____. International and Interprovincial Migration in Canada by Age and Sex, June 1, 1976-77 to December 31st, 1982. Publication No. 91-208.
- _____. Migration Streams, 1956-1961.
- _____. Postcensal Annual Estimates of Population by Marital Status, Age, Sex and Components of Growth for Canada and the Provinces, June 1, 1982 and 1983. Vol. 1. Publication No.91-210.
- _____. Print-outs from requested statistical computer program runs on Crime by Offence (Canadian Centre for Justice Statistics, various cities and dates), Crime Data (Criminal Justice Monthly Report, various cities and dates), and Police Strength of 40 Largest Municipal Forces (Police Administration, 1984).
- _____. Canadian Centre for Justice Statistics. Selected Urban Crime Indictators, 1982.
- Stoufer, A. "Intervening Opportunities and Competing Migrants". Journal of Regional Science 1 (1960):1-20.
- Sutton, L. Paul. Variations in Federal Criminal Sentences: A Statistical Assessment at the National Level. Utilization of Criminal Justice Statistics Project, Analytic Report 17. Albany, N.Y.: Criminal Justice Research Centre, 1978.
- Taylor, Ian; Walton, Paul; and Young, Jock. The New Criminology: For a Social Theory of Deviance. London: Routledge & Kegan Paul, 1973.

- Theodorson, George A., and Theodorson, Achilles G. Modern Dictionary of Sociology. New York: Thomas Y. Crowell Co., 1969.
- Thomson, Lillian. More about Transient Youth. Ottawa: Canadian Welfare Council, 1970.
- _____ Transient Youth. Ottawa: Canadian Welfare Council, 1970.
- Tversky, Amos, and Kahneman, Daniel. "The Framing of Decisions and the Psychology of Choice". Science 211 (1981):453-458.
- Vancouver Police Department, Planning, Research and Audit Section, Files 81-46 (1981), 81-46A (1982), 84-27 (1984), 84-27A₁ (1984), 84-27A₂ (1984).
- Van Doren, Carlton, S.; Priddle, George B.; and Lewis, John E., eds. Land and Leisure - Concepts and Methods in Outdoor Recreation. 2nd ed. Chicago: Maaroufa Press, 1979.
- Webster's New Twentieth Century Dictionary of the English Language Unabridged, 2nd ed. S.v. "fugitive".
- Weisberg, Herbert F., and Bowen, Bruce D. An Introduction to Survey Research and Data Analysis. San Francisco: W.H. Freeman and Co., 1977.
- Wilson, A.G. "A Statistical Theory of Spatial Distribution Models". Transportation Research 1 (1967):253-269.
- Wolfe, Roy I. Transportation and Politics. Princeton: D. Van Norstrand Co., 1963.