The Distribution of Government Assisted Insulation Activities in the City of Winnipeg

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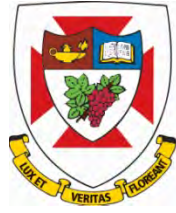
by Robert Fenton
1982

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The Institute of Urban Studies

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The Distribution of Government

Assisted Insulation Activities in the

City of Winnipeg

by

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PREFACE

The conclusions and views expressed are those of the author and do not represent the official views of the Corporation. Any errors and omissions remain the responsibility of the author.

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1.0 INTRODUCTION

The desire by governments to promote energy conservation among homeowners led to the initiation during the mid-1970's of a number of incentive programs to encourage residential energy conservation. The two of relevance to Winnipeg and Manitoba were the Canadian Home Insulation Program (CHIP) and the Manitoba Home Insulation Program (MHIP).

CHIP provided taxable grants up to $500 for reinsulation of homes built prior to 1961. MHIP provided subsidized loans to a maximum of $1,000 for purchase of energy saving devices and materials. The loan principal plus interest were amortized over time by monthly charges on the borrowers electrical bill.[1]

The Canada Mortgage and Housing Corporation provided an External Research Grant to the author to undertake an assessment of the effectiveness of the Canadian Home Insulation Program. The data reported here are one component of the results obtained from that study.

The MHIP data were added to the CHIP data base to provide comparative perspectives on the CHIP take-up or penetration rates.

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1   Both plans have had a range of terms and conditions. This summary
     reflects the terms in operation at the time the data was collected.

2.0 THE ANALYSIS

2.1 Data Acquisition

The data base for the macro-level analysis consists of the street address of residential units within the City of Winnipeg where insulation work has been undertaken under the auspices of CHIP or where energy conservation activities have been financed by a loan under MHIP. These data were acquired with the assistance of CHIP, Winnipeg Hydro and Manitoba Hydro.

The co-operating agencies were quite concerned about the release of their clients' data without prior approval of the client. For this reason, we were restricted to obtaining only the residence address in question. In order to preserve confidentiality we were also restricted from using the address data in any kind of disaggregated form.

The CHIP data tape acquired from the CHIP office in Montreal contained 27,563 Winnipeg entries. These entries had been derived from the CHIP Grant applications submitted by the applicants. They had not been verified for consistency as to reporting pattern or altered to remove errors such as labelling an 'Avenue' a 'Street' or misspelling of street names etc. The work of cleaning up the file to resolve such problems was relatively successful with recovery of more than 95 per cent of the records according to our sorting criteria. The final total of CHIP Grant entries sorted among the neighbourhoods was almost 26,300.

The acquisition of the data for the MHIP participants provided a

few additional problems. Separate records of participants in the loan program of the Manitoba Government are not maintained. Rather, a record of any positive outstanding loan balance is maintained as an element of the participant's electrical utility account. There are no identifiers in the accounts to differentiate between those electrical utility customers who have not utilized the program and those who utilized the program and completed their repayment obligation. For this reason it was possible to identify only those loans under MHIP which had positive outstanding balances as of mid-summer 1981.

At that time a total of about 9,000 customers of Winnipeg Hydro and Manitoba Hydro with Winnipeg billing addresses had positive outstanding loan balances. It is believed that this represents about 90 per cent of the total number of loans that have been made in the City of Winnipeg under MHIP since its inception in 1977.

One additional problem with the MHIP data is that the address listed for a participant is not necessarily the address where the work was undertaken. In situations involving non-owner occupied dwellings, the billing address and the address of the dwelling reinsulated may differ. This is not perceived to be a major source of difficulty.

2.2 Neighbourhood Identification

The City of Winnipeg Planning Department has identified two hundred and twenty-seven neighbourhoods within the city's boundary for planning and operational studies. These neighbourhoods have been classified into six major types according to primary criteria based on physical

characteristics.

Neighbourhood boundaries have been identified on the basis of major physical barriers or other distinguishing characteristics. The boundary criteria include:

- major transportation routes
- barriers, railways, rivers, streams
- land-use changes
- land intensity changes
- changing age of development and buildings
- changing building condition

The resulting pattern of neighbourhoods results in relatively homo-geneous characteristics within a given neighbourhood.

One hundred and sixty-four of these are residential neighbourhoods and are classified into one of six categories of Emerging, Stable, Conservation, Rehabilitation, Major Improvement and Redevelopment. The primary physical characteristics to assess the neighbourhood according to this classification scheme are:

- zoning, land use and condition of buildings
- parks, recreation and municipal services available
- existing and potential intrusions
- schools and neighbourhood elements

Secondary criteria for classification include population and family structure, ethnicity, income and tenure and mobility. The remaining neighbourhoods are essentially commercial, industrial, rural or undeveloped.

The distribution of the one hundred and sixty-four neighbourhoods among the classes reflects the City's relatively slow growth in recent

years. In particular:

Emerging	40
Stable	50
Conservation	44
Rehabilitation	19
Major Improvement	9
Redevelopment	2
	164

In order to be eligible for CHIP a dwelling unit must have been constructed prior to 1961. Unfortunately, specific ages for each dwelling unit on the tape were not available. Thus, to further distinguish among neighbourhoods for the purposes of this analysis each neighbourhood was assigned an age classification number in addition to the type category applied by the City . This age code was assigned on the basis of imprecise designations assigned by the City for each neighbourhood. The Age Code and associated criterion was:

Age Code	Criterion
0	over one-half of units built prior to 1946
1	more than one-third built prior to 1946
2	over one-half built 1946-1960
3	more than one-third built between 1946 and 1960 and more than one-third between 1961 and 1971
4	over one-half built during 1961-1971

The City of Winnipeg's neighbourhood classification scheme was utilized because it represents the basic planning tool and unit of analysis being utilized by the local authority. The system provides uniform

coverage of the City. Any particular house number and street name
in the City can easily be identified with a neighbourhood code number,
neighbourhood name, neighbourhood classification and age code. In
general the City of Winnipeg data was more up-to-date and more
complete than comparable data from the 1971 or 1976 census.

2.3 CHIP Grant Distribution and Penetration

Each data entry on the CHIP computer tape was matched to a neigh-
bourhood street address listing and a neighbourhood code attached to
the CHIP data entry. CHIP entries were then sorted according to
neighbourhood cases and cumulated for each code. (See Appendix A.)

The result was a listing of the number of CHIP grants in each of
164 neighbourhoods. Because of variation in the size of each neighbour-
hood and the number of eligible dwelling units in the neighbourhood,
the raw number of grants is relatively meaningless.

In order to obtain a comparative index of the rate of uptake of
grants, a penetration rate of the available market was calculated for
each neighbourhood. The penetration rate is a percentage of the number
of CHIP grants to the number of units in the available market. The
available market consisted of all owner occupied single and semi-detached
dwelling units in the neighbourhood constructed prior to 1961.

Existing data, however, do not permit the number of pre-1961 dwelling
units in each neighbourhood to be specified exactly. The only available

data were the criteria used to classify the neighbourhood by age code as discussed above and the classification of neighbourhoods into the six categories previously mentioned.

On the basis of judgment, certain neighbourhoods were excluded from the penetration rate analysis. First, twenty-one emerging neighbourhoods were deleted for similar reasons. As a result only about 26,200 grants are considered by the analysis.

Penetration rates were calculated for the remaining 144 neighbourhoods on the basis of the number of CHIP grants as a percentage of the number of owner occupied single and semi-detached dwellings. The latter variable was chosen for the base for two reasons. First, a review of the listing of the CHIP grant address tape revealed very few grants at addresses that were obviously apartments. Second, very few owner occupied units in the city would be other than single detached or semi-attached units. The condominium apartment block or townhouse development is simply not a major factor in Winnipeg.

A complete listing of the penetration rates calculated for each neighbourhood is presented as Appendix A.

The penetration rate descriptor has the greatest relevance for neighbourhoods in age codes '0', '1', and '2'. Age codes '3' and particularly '4' contain large numbers of dwelling units which would be inelgible for the CHIP grants.

Table 1 presents the mean and standard deviation for the penetration

rates of CHIP in each of the age code categories. As may be seen from the Table, there is a general inverse trend between the mean penetration rate and the age code index. Age code '0' neighbourhoods, the oldest, have a mean penetration rate of almost 32 per cent. The standard deviation for this group is relatively low compared to the mean at 8.8 per cent. The age code '0' subset of neighbourhoods contains 46 observations. Only seven of these lie more than one standard deviation away from the mean.

The two major parameters of the distribution of CHIP grants penetrations in age code '1' and '2' neighbourhoods are relatively similar. The mean is about 27.5 per cent in each while the standard deviation in the age code '3' subset is higher at 8.7 per cent compared to 7.3 per cent.

The penetration rates for age codes '3' and '4' are significantly different from the others. This reflects the lower rate of eligibility of owner occupied households in the areas. The penetration rate for the age code '4' groups could conceivable have been lower had not emerging neighbourhoods with a small number of eligible dwelling units been excluded from the analysis.

Table 1

Distribution of CHIP Grant Penetrations By Age Code

Age Code	Mean	Standard Deviation
0	31.7	8.8
1	27.6	7.3
2	27.5	8.7
3	11.3	7.9
4	8.8	11.1

Analysis of the significant high outliers in the age code '3' and '4' neighbourhoods was undertaken to see if these could to some extent be explained by a combination of the size of the neighbourhood and its neighbourhood type. For instance Table 2 presents a sample of neighbourhoods from the age code '4' subset.

As can be seen in the Table, three of the neighbourhoods have penetration rates in excess of the mean penetration rate estimated for age code '0' neighbourhoods. One is designated as a Stable neigh-bourhood while the other two are Emerging neighbourhoods. The key factor in each of these cases is that the size of the neighbourhood is quite small. Thus, there is likely a nucleus of dwelling units that are sufficiently old to be eligible for the CHIP grant while the balance of the neighbourhood is categorized as age code '4'. Within the older nuceleus of these neighbourhoods the penetration rate would be signicantly higher than the neighbourhood average.

In the case of the other two neighbourhoods listed in Table 2, both were considered to be stable neighbourhoods in the City of Winnipeg's 1978 neighbourhood characterization study. They both, however, were built virtually entirely in the post 1961 era without a substantial nucleus of older dwelling units that would be eligible for the CHIP grant.

The distribution of CHIP penetration rates is considered in another dimension in Table 3 and Maps 1 through 6. The distribution of penetration rates has in this case been estimated using the neighbourhood

Table 2

Comparison of a Sample of Age Code 4 Neighbourhoods

Neighbourhood Code	Name	Type	CHIP Pen.	Number of Dwellings
2017	Woodhaven	S	33.78	299
3017	The Maples	S	0.04	2678
3025	Tyndall Park	S	0.30	1680
3023	North-Main-West	E	38.81	201
4017	Peguis	E	39.29	56

Table 3

Distribution of CHIP Grant Penetrations
By Neighbourhood Type

Type	Mean	Standard Deviation
V	44.3	12.6
M	33.0	8.0
R	30.4	8.5
C	27.3	9.6
S	15.2	12.3
E	9.9	13.0

V = Redevelopment

M = Major Improvement

R = Rehabilitation

C = Conservation

S = Stable

E = Emerging
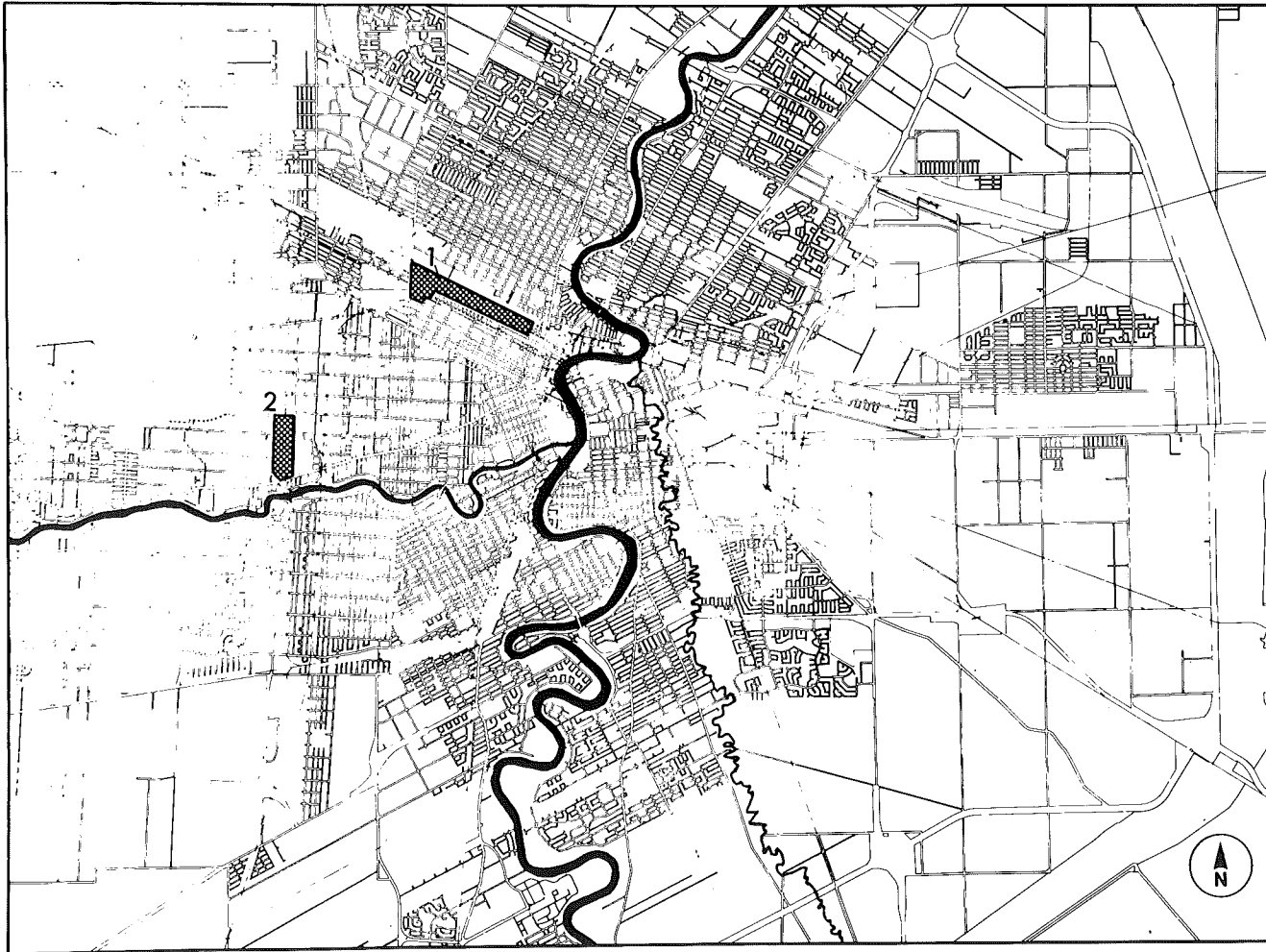
Distribution of CHIP Grant
Penetration Rates in
Redevelopment
Neighbourhoods

1 LOGAN C.P.R. (1001)
2 KENSINGTON (2001)

> 35% penetration
25.0 - 34.9 %
15.0 - 24.9 %
5.0 - 14.9 %
< 4.9 %
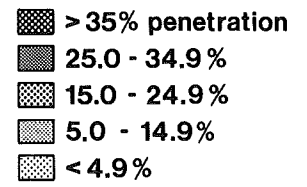
MAP 1
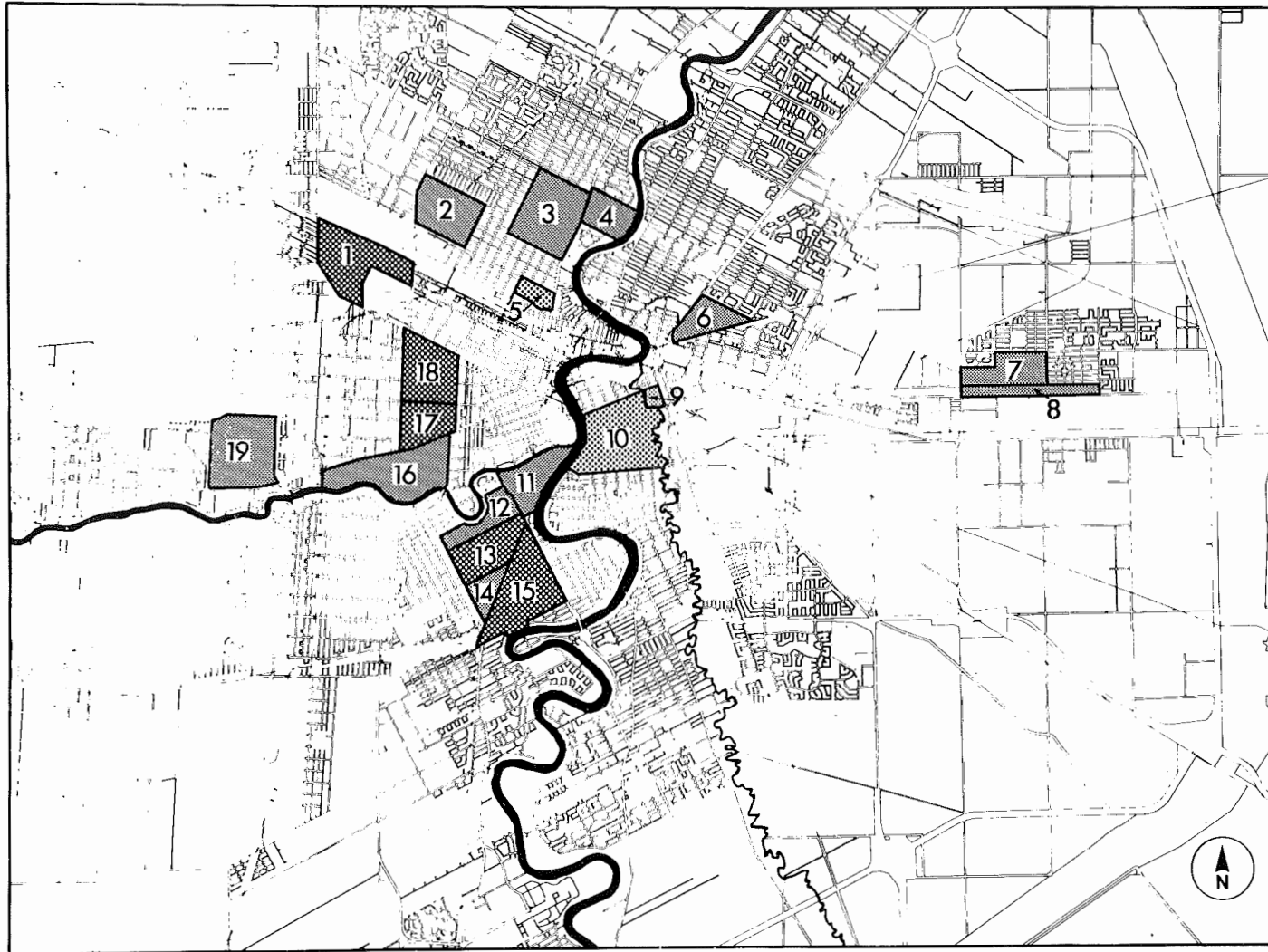
Distribution of CHIP Grant Penetration Rates in Rehabilitation Neighbourhoods

1   WESTON (1014)
2   BURROWS CENTRAL (3003)
3   ST. JOHN'S (3006)
4   LUXTON (3005)
5   LORD SELKIRK PARK (3004)
6   TALBOT GREY (4003)
7   VICTORIA WEST (4004)
8   MELROSE (4002)
9   TISSOT (5003)
10 CENTRAL ST. BONIFACE (5002)
11 RIVER OSBORNE (1011)
12 McMILLAN (1010)
13 EARL GREY (1006)
14 EBBY WENTWORTH (1007)
15 LORD ROBERTS (1009)
16 WESTMINISTER (1013)
17 ST. MATTHEWS (1012)
18 DANIEL McINTYRE (1008)
19 KING EDWARD (2003)

▨ > 35% penetration
▨ 25.0 - 34.9 %
▨ 15.0 - 24.9 %
▨ 5.0 - 14.9 %
▨ < 4.9 %

MAP 2

Distribution of CHIP Grant Penetration Rates in Major Improvement Neighbourhoods

1 BROOKLANDS (2002)
2 DUFFERIN (3001)
3 WILLIAM WHYTE (3002)
4 CHALMERS (4001)
5 NORTH ST. BONIFACE (5001)
6 CENTENNIAL (1002)
7 WEST ALEXANDER (1005)
8 SPENCE (1004)
9 MEMORIAL (1003)

> 35% penetration
25.0 - 34.9 %
15.0 - 24.9 %
5.0 - 14.9 %
< 4.9 %

MAP 3

Distribution of CHIP Grant Penetration Rates in Conservation Neighbourhoods
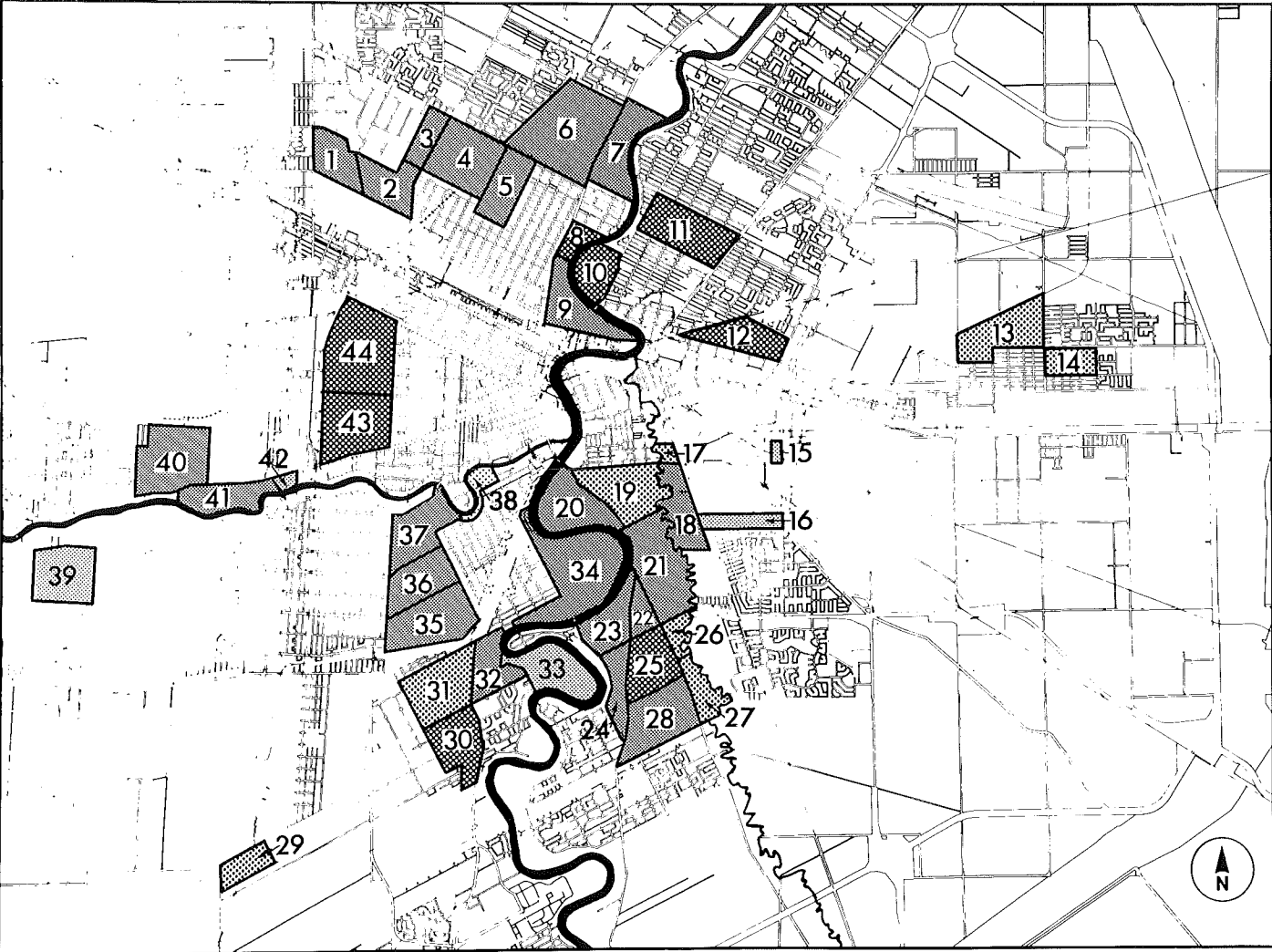
1 BURROWS KEEWATIN (3007)
2 SHAUGHNESSY PARK (3015)
3 MYNARSKI (3010)
4 ROBERTSON (3012)
5 INKSTER FARADAY (3008)
6 JEFFERSON (3009)
7 SEVEN OAKS (3014)
8 ST. JOHN'S PARK (3013)
9 NORTH POINT DOUGLAS (3011)
10 WEST ELMWOOD (4009)
11 MUNROE WEST (4007)
12 EAST ELMWOOD (4005)
13 RADDISON (4008)
14 KERN PARK (4006)
15 HOLDEN (5009)
16 MAGINOT (5011)
17 DUFRESNE (5006)
18 ARCHWOOD (5005)
19 NORWOOD EAST (5013)
20 NORWOOD WEST (5014)
21 GLENWOOD (5008)
22 VARENNES (5016)
23 ELM PARK (5007)
24 NORBERRY (5012)
25 ST. GEORGE (5015)
26 ALPINE PLACE (5004)
27 LAVALEE (5010)
28 WORTHINGTON (5017)
29 FORT WHYTE (6003)
30 MAYBANK (6005)
31 BEAUMONT (6002)
32 POINT ROAD (6006)
33 WILDWOOD (6009)
34 RIVERVIEW (1016)
35 GRANT PARK (6004)
36 ROCKWOOD (6007)
37 CRESCENTWOOD (6001)
38 ROSLYN (1017)
39 VARSITY VIEW (6008)
40 DEER LODGE (2005)
41 BRUCE PARK (2004)
42 PADDOCK (2006)
43 MINTO (1015)
44 SARGENT PARK (1018)

> 35% penetration

25.0 - 34.9%

15.0 - 24.9%

5.0 - 14.9%

< 4.9%

N

MAP 4
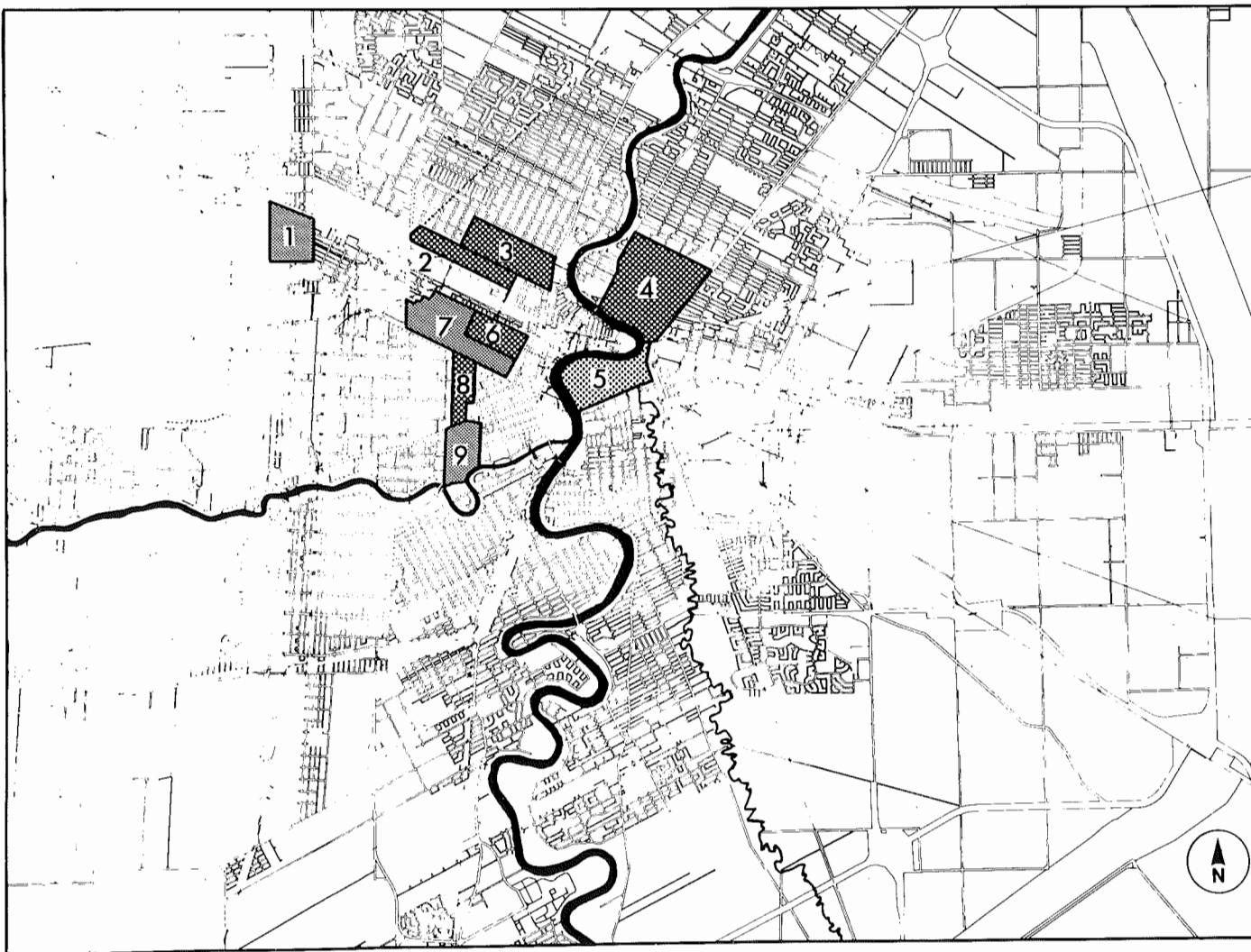
Distribution of CHIP Grant
Penetration Rates in
Stable Neighbourhoods
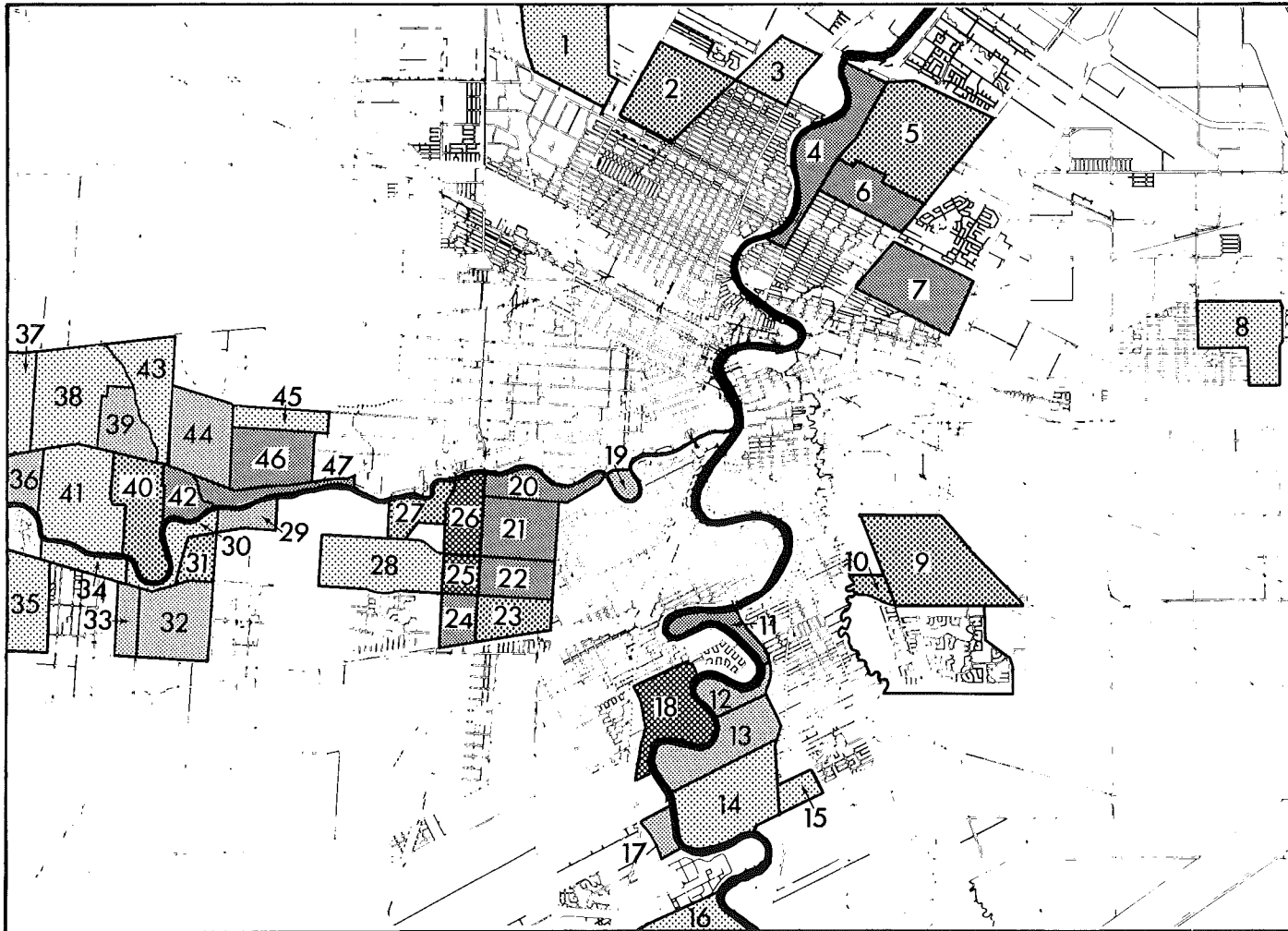
1 THE MAPLES (3017)
2 GARDEN CITY (3016)
3 MARGARET PARK (3018)
4 KILDONAN DRIVE (4011)
5 ROSSMERE 'A' (4013)
6 ROSSMERE 'B' (4043)
7 MUNROE EAST (4012)
8 KILDARE-REDONDA (4010)
9 WINDSOR PARK (5025)
10 NIAKWA PARK (5020)
11 KINGSTON CRESCENT (5018)
12 VICTORIA CRESCENT (5023)
13 PULBERRY (5021)
14 MINNETONKA (5019)
15 VISTA (5024)
16 FORT RICHMOND (6015)
17 AGASSIZ (6010)
18 CRESCENT PARK (6012)
19 ARMSTRONG POINT (1019)
20 WELLINGTON CRESCENT (6031)
21 NORTH RIVER HEIGHTS (6020)
22 CENTRAL RIVER HEIGHTS (6011)
23 SOUTH RIVER HEIGHTS (6028)
24 MATHERS (6018)
25 J B MITCHELL (6016)
26 SIR JOHN FRANKLIN (6026)
27 OLD TUXEDO (6021)
28 MOUNTBATTEN (6019)
29 VIALOUX (6030)
30 RIDGEDALE (6022)
31 MARLTON (6017)
32 ERIC COY (6014)
33 ROBLIN PARK (6024)
34 SOUTHBOINE (2010)
35 WESTDALE (6032)
36 GLENDALE (2011)
37 BUCHANON (2009)
38 CRESTVIEW (2010)
39 KIRKFIELD PARK (2014)
40 WESTWOOD 'A' (2016)
41 WESTWOOD 'B' (2024)
42 WOODHAVEN (2017)
43 HERITAGE PARK (2012)
44 BOOTH (2008)
45 JAMESWOOD (2013)
46 SILVER HEIGHTS (2015)
47 BIRCHWOOD (2007)

▨ > 35% penetration
▨ 25.0 - 34.9 %
▨ 15.0 - 24.9 %
▨ 5.0 - 14.9 %
▨ < 4.9 %

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MAP 5

Distribution of CHIP Grant Penetration Rates in Emerging Neighbourhoods

1 TYNDALL PARK (3025)
2 LEILA-McPHILLIPS TRIANGLE (3020)
3 TEMPLETON SINCLAIR (3024)
4 NORTH MAIN WEST (3023)
5 RIVER EAST (4018)
6 SPRINGFIELD NORTH (4019)
7 SPRINGFIELD SOUTH (4020)
8 VALLEY GARDENS (4022)
9 PEGUIS (4017)
10 MISSION GARDENS (4016)
11 RICHFIELD (5018)
12 MEADOWOOD (5026)
13 SOUTHGLEN (5030)
14 FAIRFIELD PARK (6037)
15 WAVERLY HEIGHTS (6046)
16 MONTCALM (6040)
17 ELMHURST (6036)

> 35% penetration
25.0 - 34.9 %
15.0 - 24.9 %
5.0 - 14.9 %
< 4.9 %

MAP 6

As may be seen in the Table, the mean penetration rate declines progressively as one moves from the Redevelopment neighbourhoods through to the Emerging neighbourhoods. This progression is to be expected for several reasons. First, the ordering of the neighbourhood types in the Table corresponds to decreasing average neighbourhood age. Thus a higher proportion of dwelling units would be expected to be eligible for CHIP in the Redevelopment and Major Improvement neighbourhoods than in the Stable or Emerging.

Second, the two Redevelopment neighbourhoods and many of the Major Improvement neighbourhoods are served by social agencies which might assist residents in obtaining CHIP grants. This would be a particularly significant factor in the case of NIP neighbourhoods.

Table 4 presents a sample of penetration rates that represent significant variation from the mean for the neighbourhood type. The sample provides a full range of the major relevant neighbourhood types as well as capturing two age groups of particular interest.

The range of penetration rates for CHIP covered in the Table includes the bound of the 'normal' penetration rates for CHIP. The reason for the major differences between neighbourhoods of similar age code and neighbourhood type can be summarized under two to three categories. For example, the discrepency between North St. Boniface and Centennial can be explained by the difference in timing of the neighbourhood redevelopment process. North St. Boniface is one of

Table 4

Comparison of a Sample of Outlying Neighbourhoods

Neighbourhood Code	Age Code	Name	Type	CHIP Pen.	Number of Dwellings
5001	0	North St. Boniface	M	15.8	379
1002	0	Centennial	M	42.5	252
5003	0	Tissot	R	5.9	34
1008	0	Daniel MacIntyre	R	42.1	1968
6009	2	Wildwood	C	6.2	354
6005	2	Maybank	C	41.5	554
1019	0	Armstrong Point	S	5.0	100
6012	2	Crescent Park	S	35.1	777

M = Major Improvement

R = Rehabilitation

C = Conservation

S = Stable

the older NIP Neighbourhoods and substantial upgrading occured
prior to the implementation of the CHIP grants. Many of the units
in the area would have had insulation upgrading done under other
auspices. Centennial neighbourhood on the other hand is currently
in the midst of redevelopment and CHIP grant funds will be used
for reinsulation activities so that other available social funds may
be channelled to other priorities. Centennial neighbourhood is
benefitting from the service of several active neighbourhood groups
and social agencies.

The remaining neighbourhoods with low CHIP penetration rates
are unlikely targets for blitz marketing techniques by the major
direct sales insulating companies. Tissot is the smallest neigh-
bourhood of the group with only 34 owner occupied single and semi-
detached dwelling units. The assessment in Tissot is about $2,750.
which is about one standard deviation below the mean assessment for
the Type.

Armstrong's Point is a relatively small neighbourhood with a high
proportion of large, turn of the century, homes that are difficult
to insulate. The income levels in the neighbourhood are quite high
with a result that the burden of heating bills over the last five years
will have been relatively low. These factors in combination would
render the neighbourhood an unattractive target for the blitz techniques
which were successful in other areas.

Wildwood neighbourhood, while significantly larger, presents an equally unattractive target for the direct sellers of insulation, partly because the neighbourhood is relatively isolated from other neighbourhoods by virtue of its position on an oxbow of the Red River. In addition, because of their income levels, the occupants will have been relatively immune to the pressure of rising energy costs and thus not susceptible to the attraction of superficial insulation, provided at low cost, by a taxable government grant.

The other neighbourhoods in the Table all provide examples of relatively high penetration rates for CHIP grants. Daniel MacIntyre, Crescent Park and Maybank neighbourhoods are all middle class neighbourhoods which would be relatively susceptible to the mass marketing techniques employed by the insulation contractors. Substantial numbers of the dwelling units in these neighbourhoods are relatively small one and one half or two storey units which could have blown cellulose attic insulation added at costs well within the range of the CHIP grant limits.

2.4 MHIP Distribution and Penetration

The procedure undertaken to identify the distribution of MHIP take-up and distribution parallelled the methodology used in the CHIP grant analysis. Neighbourhood identifiers were attached to each entry on the MHIP file and then the entries were sorted by neighbourhood. The number of loans in each neighbourhood was then obtained by cumulation.

Active loans were identified in 144 neighbourhoods in the City of Winnipeg. As with the CHIP analysis, the penetration rate was calculated on the basis of the number of loans outstanding as a percentage ratio of the number of owner occupied dwelling units in each neighbourhood. In this case, there was no age criterion to determine eligibility; thus, the problem of distinguishing between neighbourhoods with a low penetration of eligible dwellings and a low number of eligible dwellings is not a factor.

A complete listing of the penetration rates by MHIP for the 144 neighbourhoods used in the analysis is included in Appendix A. As can be seen in the Appendix the penetration rates achieved by MHIP are generally below those achieved by CHIP.

Table 5 summarized the penetration of MHIP in terms of mean penetration rates and standard deviations for the neighbourhood sub-sets sorted according to age code. The mean penetration rate is inversely correlated with the age code; falling from 10 per cent in the oldest neighbourhoods to about 5 per cent in the youngest. As discussed previously the distinction between age code '3' and age code '4' neighbourhoods may be quite blurred and the similarity between mean penetration rates is not surprising.

The distribution of MHIP penetration rates sorted by neighbour-hood type is present in Table 6. The trend for the average penetration rate to be higher in the neighbourhoods more likely to be subject

to public intervention is obvious. The two Redevelopment neighbour-
hoods have penetration rates averaging about 12 per cent while the
Stable and Emerging neighbourhoods have an approximately 5 per cent
peneration rate.

Table 5

Distribution of Penetration Rates of
MHIP Sorted by Age Code

Age Code	Mean	Standard Deviation
0	10.2	3.3
1	9.5	3.1
2	6.7	2.8
3	4.7	2.6
4	5.1	2.4

The pattern of outliers substantially more than one standard
deviation away from the means is interesting. In the Rehabilitation
neighbourhoods, both of the significant outliers lie below the mean.
Tissot was one of the lower penetration rate neighbourhoods in the
CHIP grant analysis. Lord Selkirk Park is a small neighbourhood
with 65 owner occupied dwellings.

In the Major Improvement neighbourhoods both significant outliers
lie above the mean for the category. Centennial neighbourhood had a
penetration rate for the CHIP grants that was also significantly above
the mean for the category. William Whyte is another neighbourhood
where active public interventions are underway.

The Conservation neighbourhoods have significant outliers above and below the mean for the category. Paddock, St. John's Park and West Elmwood all lie significantly more than one standard deviation above the mean. Holden, Wildwood and Alpine Place all have penetration rates lying more than one standard deviation below the mean.

All of the significant outliers for the Stable neighbourhoods lie above the mean. North River Heights, a middle class neighbourhood, has the second highest penetration rate of any neighbourhood in the class. Sir John Franklin, Woodhaven and Silver Heights are other neighbourhoods that have penetration rates substantially more than one standard deviation above the mean. Several neighbourhoods have penetrations lying slightly more than one standard deviation below the mean but the discrepancy is not nearly so pronounced as for the four neighbourhoods listed above.

The fact that several middle class neighbourhoods in the Stable category lie significantly above the mean penetration rate for the type should not be particularly surprising given the nature of the program. Loans made under MHIP can be used for many purposes other than incremental insulation. The interest subsidy available through the loan plan is not taxable and the loan makes a convenient method of financing a relatively large purchase.

For the Emerging neighbourhoods, the significant outliers again are above the mean. In this case, the neighbourhoods are North Main West and Southglen.

Table 6

Distribution of MHIP Penetration Rates
Sorted by Type of Neighbourhood

Type	Mean	Standard Deviation
V	12.1	0.9
M	10.5	2.7
R	10.6	3.7
C	8.6	3.3
S	5.1	2.3
E	5.3	2.9

3.0 CONCLUSION

The preceding data demonstrate that the CHIP program achieved
higher penetration than MHIP. This undoubtedly results, at least
in part, from the saturation marketing techniques used by insulation
contractors to market CHIP. A further factor may be that homeowners
prefer grants to loans for such activities.

The penetration rates for both CHIP and MHIP reflect a prior
impressions of the distribution of penetration rates. The older
neighbourhoods were constructed well before modern insulation became
available and are most likely to have renovations underway for other
purposes - the most propitious time for reinsulating a dwelling.

APPENDIX A

Summary Data on Neighbourhoods,
Numbers of CHIP Grants,
MHIP Loans, CHIP and
MHIP penetrations

Key

Neigh	-	Neighbourhood Code Number
Age	-	Age Code Number
Type	-	Neighbourhood Type Code
Dwell	-	Number of Owner-Occupied Single & Semi-detached Dwelling Units
CHIP	-	Number of CHIP Grants
MHIP	-	Number of MHIP Loans
CHPPEN	-	(CHIP ÷ DWELL) *100
MHPPEN	-	(MHIP ÷ DWELL) *100

NEIGH	NAME	AGE	TYPE	DWELL	CHIP	MHIP	CHPPEN	MHPPEN
1001	LOGAN/CPR	0	V	96	34	11	35.42	11.46
2001	KENSINGTON	0	V	94	50	12	53.19	12.77

NEIGH	NAME	AGE	TYPE	DWELL	CHIP	MHIP	CHPPEN	MHPPEN
1002	CENTENNIAL	0	M	252	107	38	42.46	15.08
1003	MEMORIAL	0	M	300	85	30	28.33	10.00
1004	SPENCE	0	M	480	197	47	41.04	9.79
1005	WEST ALEXANDER	0	M	738	247	54	33.47	7.32
2002	BROOKLANDS	0	M	700	202	62	28.86	8.86
3001	DUFFERIN	0	M	382	138	38	36.13	9.95
3002	WILLIAM-WHYTE	0	M	1317	468	190	35.54	14.43
4001	CHALMERS	0	M	2325	829	255	35.66	10.97
5001	NTH-STN-BONIFACE	0	M	379	60	30	15.83	7.92

NEIGH	NAME	AGE	TYPE	DWELL	CHIP	MHIP	CHPPEN	MHPPEN
1006	EARL-GREY	0	R	1064	389	128	36.56	12.03
1007	EBBY WENTWORTH	0	R	244	71	30	29.10	12.30
1008	DANIEL-MAC	0	R	1968	828	266	42.07	13.52
1009	LORD ROBERTS	0	R	1434	546	212	38.08	14.78
1010	MCMILLAN	0	R	416	115	59	27.64	14.18
1011	RIVER - OSBOURNE	1	R	113	33	12	29.20	10.62
1012	STN-MATTHEWS	0	R	1268	526	150	41.48	11.83
1013	WESTMINISTER	0	R	1862	590	235	31.69	12.62
1014	WESTON	0	R	1449	555	202	38.30	13.94
2003	KING-EDWARD	0	R	1861	601	207	32.29	11.12
3003	BURROWS-CENTRAL	0	R	1421	400	128	28.15	9.01
3004	LORD-SELKIRK-PK	0	R	65	14	1	21.54	1.54
3005	LUXTON	0	R	781	269	108	34.44	13.83
3006	STN-JOHNS	0	R	1880	655	221	34.84	11.76
4002	MELROSE	2	R	464	131	45	28.23	9.70
4003	TALBOT-GREY	1	R	778	254	84	32.65	10.80
4004	VICTORIA-WEST	1	R	950	249	78	26.21	8.21
5002	CTRL-STN-BONIFACE	1	R	941	189	59	20.09	6.27
5003	TISSOT	0	R	34	2	1	5.88	2.94

NEIGH	NAME	AGE	TYPE	DWELL	CHIP	MHIP	CHPPEN	MHPPEN
1015	MINTO	0	C	1790	664	164	37.09	9.16
1016	RIVERVIEW	0	C	1374	469	141	34.13	10.26
1017	ROSLYN	4	C	122	5	5	4.10	4.10
1018	SARGENT-PK	0	C	1957	730	130	37.30	6.64
2004	BRUCE-PARK	1	C	566	184	56	32.51	9.89
2005	DEER-LODGE	0	C	1347	451	142	33.48	10.54
2006	PADDOCK	1	C	16	2	3	12.50	18.75
3007	BURROWS-KEEWATIN	2	C	341	104	43	30.50	12.61
3008	INKSTER-FARADAY	0	C	1266	362	106	28.59	8.37
3009	JEFFERSON	2	C	2557	807	152	31.56	5.94
3010	MYNARSKI	2	C	318	92	17	28.93	5.35
3011	NTH-PT-DOUGLAS	0	C	483	135	53	27.95	10.97
3012	ROBERTSON	2	C	1636	553	123	33.80	7.52
3013	STN-JOHN'S-PK	0	C	120	49	19	40.83	15.83
3014	SEVEN-OAKS	1	C	1082	319	82	29.48	7.58
3015	SHAUGNHESSY-PK	2	C	706	203	63	28.75	8.92
4005	EAST-ELMWOOD	2	C	966	338	91	34.99	9.42
4006	KERN-PK	3	C	582	93	48	15.98	8.25
4007	MUNROE-WEST	2	C	1084	394	100	36.35	9.23
4008	RADISSON	1	C	1269	210	88	16.55	6.93
4009	WEST-ELMWOOD	0	C	753	344	108	45.68	14.34
5004	ALPINE PLACE	3	C	18	3	0	16.67	0.00
5005	ARCHWOOD	0	C	314	92	37	29.30	11.78
5006	DUFRESNE	0	C	102	24	12	23.53	11.76
5007	ELM-PK	0	C	581	172	60	29.60	10.33
5008	GLENWOOD	0	C	1499	482	132	32.15	8.81
5009	HOLDEN	2	C	56	7	2	12.50	3.57
5010	LAVALLEE	3	C	214	42	14	19.63	6.54
5011	MAGINOT	4	C	344	33	19	9.59	5.52
5012	NORBERRY	0	C	468	117	34	25.00	7.26
5013	NORWOOD-EAST	0	C	1190	286	94	24.03	7.90
5014	NORWOOD-WEST	1	C	985	300	91	30.46	9.24
5015	STN-GEORGE	1	C	1037	394	91	37.99	8.78
5016	VARENNES	1	C	357	115	36	32.21	10.08
5017	WORTHINGTON	3	C	591	151	59	25.55	9.98
6001	CRESCENTWOOD	0	C	751	253	83	33.69	11.05
6002	BEAUMONT	2	C	811	188	57	23.18	7.03
6003	FORT-WHYTE	0	C	21	5	1	23.81	4.76
6004	GRANT-PK	1	C	316	81	24	25.63	7.59
6005	MAY-BANK	2	C	554	230	48	41.52	8.66
6006	POINT-ROAD	2	C	665	225	52	33.83	7.82
6007	ROCKWOOD	1	C	1028	339	84	32.98	8.17
6008	VARSITY-VIEW	3	C	530	63	39	11.89	7.36
6009	WILDWOOD	2	C	354	22	7	6.21	1.98

NEIGH	NAME	AGE	TYPE	DWELL	CHIP	MHIP	CHPPEN	MHPPEN
1019	ARMSTRONG'S-PT	0	S	100	5	2	5.00	2.00
2007	BIRCHWOOD	2	S	277	76	8	27.44	2.89
2008	BOOTH	4	S	964	81	29	8.40	3.01
2009	BUCHANAN	4	S	705	15	40	2.13	5.67
2010	CRESTVIEW	4	S	2430	10	105	0.41	4.32
2011	GLENDALE	4	S	150	17	7	11.33	4.67
2012	HERITAGE-PK	4	S	710	1	37	0.14	5.21
2014	KIRKFIELD-PK	4	S	782	92	44	11.76	5.63
2015	SILVER-HTS	2	S	1525	499	140	32.72	9.18
2016	WESTWOOD-A	4	S	664	107	30	16.11	4.52
2017	WOODHAVEN	4	S	299	101	30	33.78	10.03
2024	WESTWOOD-B	4	S	2533	47	98	1.86	3.87
3016	GARDEN-CITY	2	S	1837	379	85	20.63	4.63
3017	THE-MAPLES	4	S	2687	1	117	0.04	4.35
3018	MARGARET-PK	4	S	603	29	22	4.81	3.65
4010	KILDARE-REDONDA	3	S	2029	73	118	3.60	5.82
4011	KILDONAN-DR	2	S	1409	399	103	28.32	7.31
4012	MUNROE-EAST	2	S	2078	519	125	24.98	6.02
4013	ROSSMERE-A	2	S	2761	550	109	19.92	3.95
4043	ROSSMERE-B	2	S	1507	504	82	33.44	5.44
5018	KINGSTON-CRESCENT	0	S	206	61	14	29.61	6.80
5019	MINNETONKA	4	S	1076	48	68	4.46	6.32
5020	NIAKWA-PK	4	S	154	33	5	21.43	3.25
5021	PULBERRY	4	S	1236	92	53	7.44	4.29
5023	VICTORIA-CRESCENT	4	S	232	28	3	12.07	1.29
5024	VISTA	3	S	354	7	17	1.98	4.80
5025	WINDSOR-PK	2	S	3200	685	247	21.41	7.72
6010	AGASSIZ	2	S	173	16	3	9.25	1.73
6011	CTRL-RIVER-HTS	0	S	1197	348	87	29.07	7.27
6012	CRESCENT-PK	2	S	777	273	56	35.14	7.21
6014	ERIC-COY	3	S	749	69	32	9.21	4.27
6015	FORT-RICHMOND	4	S	2371	28	120	1.18	5.06
6016	JNBN-MITCHELL	2	S	300	112	19	37.33	6.33
6017	MARLTON	3	S	159	27	9	16.98	5.66
6018	MATHERS	2	S	424	113	21	26.65	4.95
6019	MOUNT-BATTEN	3	S	675	33	20	4.89	2.96
6020	NTH-RIVER-HTS	0	S	2054	671	216	32.67	10.52
6021	OLD-TUXEDO	3	S	360	80	15	22.22	4.17
6022	RIDGEDALE	3	S	108	5	3	4.63	2.78
6024	ROBLIN-PK	3	S	321	32	10	9.97	3.12
6025	STN-NORBERT	4	S	307	4	10	1.30	3.26
6026	SIR-JOHN-FRANKLIN	2	S	930	325	111	34.95	11.94
6027	SOUTHBOINE	3	S	180	1	4	0.56	2.22
6028	STH-RIVER-HTS	2	S	896	179	33	19.98	3.68
6030	VIALOUX	3	S	177	9	4	5.08	2.26
6031	WELLINGTON-CRESCENT	0	S	521	138	43	26.49	8.25
6032	WESTDALE	4	S	1303	1	93	0.08	7.14

NEIGH	NAME	AGE	TYPE	DWELL	CHIP	MHIP	CHPPEN	MHPPEN
3020	LEILA-MCPHILLIPS	4	E	94	3	7	3.19	7.45
3023	NTH-MAIN-WEST	4	E	201	78	27	38.81	13.43
3024	TEMPLETON-SINCLAIR	4	E	230	7	8	3.04	3.48
3025	TYNDALL-PK	4	E	1680	5	67	0.30	3.99
4016	MISSION-GARDENS	4	E	581	7	36	1.20	6.20
4017	PEGUIS	4	E	56	22	2	39.29	3.57
4018	RIVER-EAST	4	E	1902	48	80	2.52	4.21
4019	SPRINGFIELD-NTH	4	E	389	5	12	1.29	3.08
4020	SPRINGFIELD-STH	4	E	261	3	6	1.15	2.30
4022	VALLEY-GARDENS	4	E	1561	4	75	0.26	4.80
4025	TRANSCONA-STH	4	E	143	23	8	16.08	5.59
5026	MEADOW-WOOD	4	E	1024	8	58	0.78	5.66
5028	RICHFIELD	4	E	22	2	1	9.09	4.55
5030	SOUTHGLEN	4	E	140	7	19	5.00	13.57
6033	BETSWORTH	4	E	861	28	52	3.25	6.04
6036	ELMHURST	4	E	568	13	31	2.29	5.46
6037	FAIRFIELD-PK	4	E	18	6	1	33.33	5.56
6040	MONTCALM	4	E	37	4	1	10.81	2.70
6042	PARC-LA-SALLE	4	E	503	1	16	0.20	3.18
6046	WAVERLEY-HTS	4	E	1258	1	53	0.08	4.21
6053	CHEVRIER	4	E	67	16	3	23.88	4.48
6058	WILKES-STH	4	E	27	6	1	22.22	3.70