# APPENDIX

**Chart 1:**

% DWELLING STOCK BUILT BEFORE 1930

45
40
30
20
10
5

o SCHIEDAM
o DELFT
o DORD.
o BAREN.
o MAASSL.
o NIEUW
o VLAARD.
o RIDDERK.
o H.
o ZWIJN.
o SPIJK
o KRIMPEN.
o CAP.
o POORT

NET
% IN MIGRATION FROM ROTTERDAM PER 1·1·71

1  2  3  4  5  6  7  8

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**Chart 2:**

SMALL KITCHEN (0-4m²) AND NO KITCHEN IN % OF DWELLING STOCK

42.5
40
30
20
10
0

o DELFT
o DORDRECHT
o SCHIEDAM
o VLAARDINGEN
o BARENDRECHT
o NIEUW.ad
o KRIMPEN ad. IJSSEL
o IJSSEL
o RIDDERKERK
o MAASLUIS
o SPIJKENISSE
o ZWIJNDRECHT
o POORTUGAAL
o CAPELLE ad IJSSEL
o H.I.AMBACHT

NET
% IN MIGRATION FROM ROTTERDAM PER 1·1·71

1  2  3  4  5  6  7  8

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**Chart 3:**

% DWELLING STOCK WITH NO BATH

30
20
10

o DORDRECHT
o DELFT
o SCHIEDAM
o VLAAR
o ZWIJND.
o H.I.AMB.
o NIEUW.
o KRIMP.
o RIDD.
o BAREN.
o CAP.
o MAASL.
o POORT
o SPIJK.

NET
IN-MIGRATION FROM
ROTTERDAM PER 1·1·71

1  2  3  4  5  6  7  8

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**Graph 1:**

% DWELLING STOCK WITH OUTSIDE W.C. OR NO W.C.

- 6
- 5 — ⊘SCHIEDAM
- 4 — ⊘DELFT
- 3 — ⊘VLAARDINGEN / ⊘NIEUW. a.d. IJSSEL
- 2 — ⊘DORD / ⊘ZWIJN / ⊘MAASSL
- 1 — ⊘H.I.AMBACHT / ⊘BAREN / ⊘POORT / ⊘SPIJK / ⊘KRIMPEN / RIDDERKERK ⊘⊘CAPELLE a.d. IJSSEL
- 0

NET % IN MIGRATION FROM ROTTERDAM PER 1·1·71
(axis: 1 2 3 4 5 6 7 8)

**Graph 2:**

% DWELLING STOCK WITH NO CENTRAL HEATING

- 75
- 70 — ⊘DORD
- 60 — ⊘SCHIED ⊘VLAARD / ⊘Z.WIJNDRECHT / DELFT⊘
- 50 — ⊘RIDDERKERK / BARENDRECHT / ⊘POORTUGAAL / ⊘KRIMPEN a.d. IJSSEL / ⊘H.I.AMBACHT
- 40 — ⊘MAASSLUIS / ⊘NIEUW. / ⊘SPIJK.
- 30
- 20
- 10

NET % IN MIGRATION FROM ROTTERDAM PER 1·1·71
(axis: 1 2 3 4 5 6 7 8)

⊘CAPELLE

**Graph 3:**

% DWELLING STOCK WITH EITHER NO GAS, WATER OR ELECTRICITY CONNECTION; AND NO CONNECTION AT ALL

- 3.5
- 3 — ⊘DELFT / ⊘SCHIEDAM / ⊘NIEUWEKERK a.d. IJSSEL
- ⊘SPIJKENISSE
- 2 — ⊘CAPELLE a.d. IJSSEL
- ⊘RIDDERKERK
- ⊘KRIMPEN
- 1 — ⊘MAASSLUIS / ⊘VLAARDINGEN / DORDRECHT⊘ / ⊘ZWIJNDRECHT / ⊘H.I.AMBACHT / ⊘POORTUGAAL / ⊘BARENDRECHT
- 0

NET % IN MIGRATION FROM ROTTERDAM PER 1·1·7·1
(axis: 1 2 3 4 5 6 7 8)

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Top chart:
% DWELLING STOCK WITH 1 AND 2 ROOMS PER DWELLING

y-axis values: 3.75, 3.0, 2.0, 1.0

x-axis: NET % IN-MIGRATION FROM ROTTERDAM PER 1·7·71 (1–8)

Labels: DELFT, VLAARDINGEN, DORDRECHT, NIEUWEKERK ad IJSSEL, SCHIEDAM, SRIJKENISSE, CAPELLE ad IJSSEL, MAASSLUIS, BARENDRECHT, H.I. AMBACHTS, RIDDERKERK, KRIMPEN ad IJSSEL, ZWIJNDRECHT, POORTUGAAL
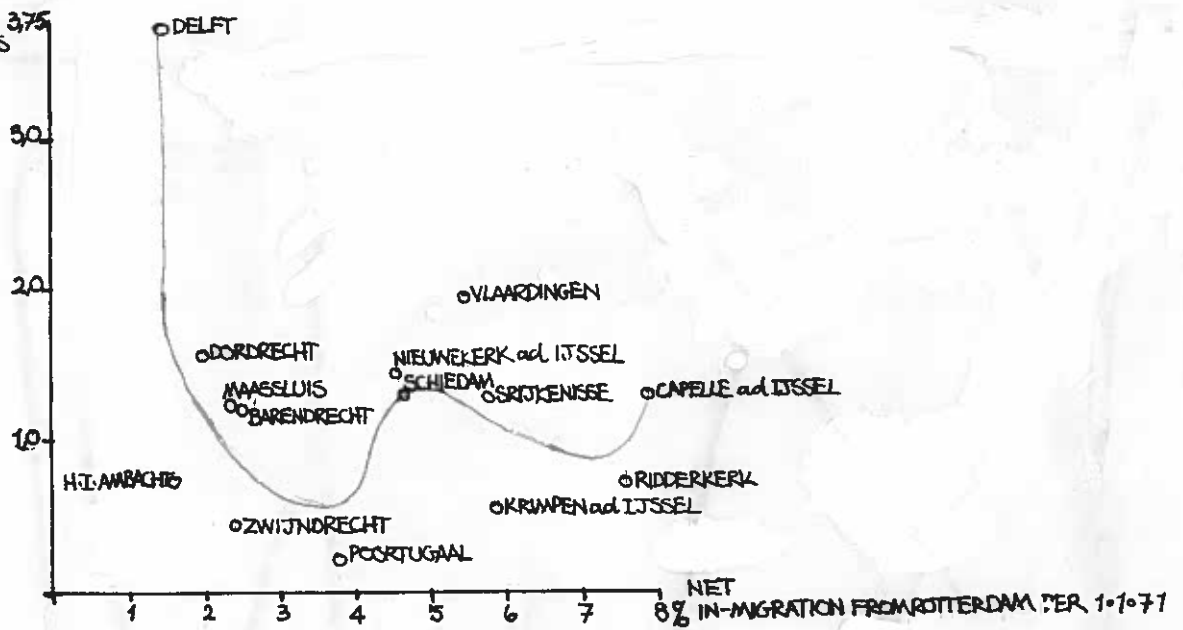
Bottom chart:
DIRECT DISTANCE FROM CENTRE OF ROTTERDAM TO CENTRE OF MUNICIPALITY IN SCALE UNITS

y-axis values: 11, 10, 9, 8, 7, 6, 5, 4, 3

x-axis: NET % IN-MIGRATION FROM ROTTERDAM PER 1·7·71 (1–8)

Labels: DORDRECHT, MAASSLUIS, ZWIJNDRECHT, H.I. AMBACHTS, DELFT, SPIJKENISSE, NIEUWEKERK ad IJSSEL, VLAARDINGEN, POORTUGAAL, RIDDERKERK, KRIMPEN ad IJSSEL, BARENDRECHT, CAPELLE ad IJSSEL, SCHIEDAM

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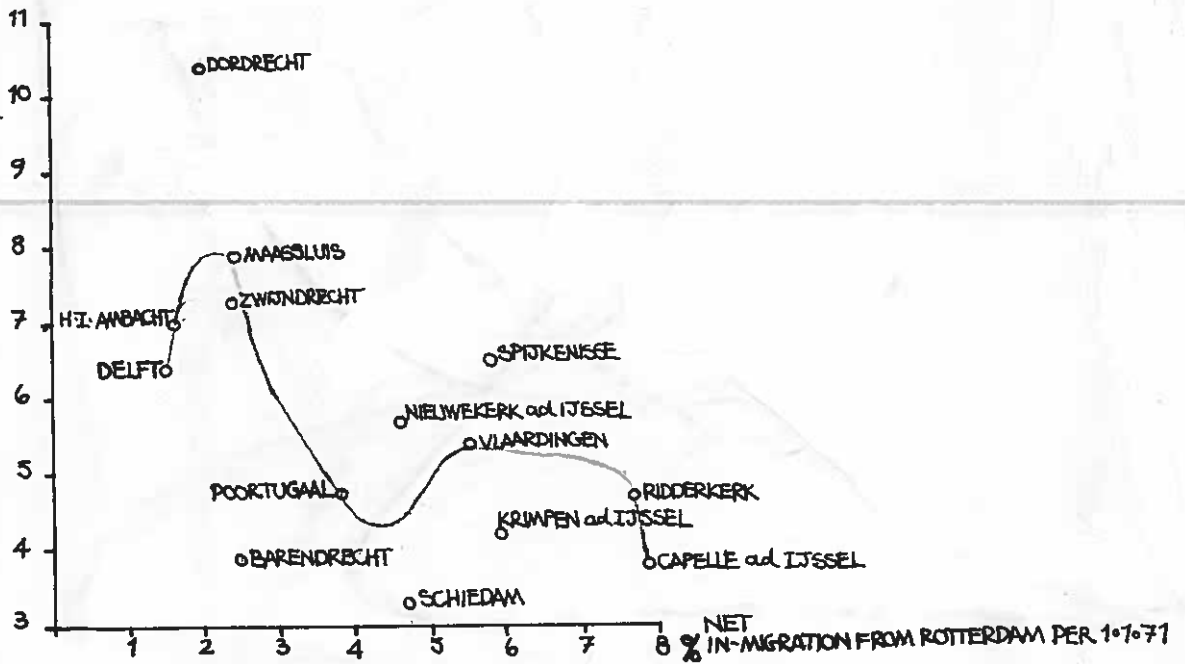
| In-coming or out-going commuters / Absolute or percentage | In-coming commuters to Rotterdam from the Rest of Rijnmond | Out-going commuters from Rotterdam to the Rest of Rijnmond |
|---|---|---|
| 1/1/1971 Absolute | 38 030 | 9 516 |
| As % of the number of inhabitants of place specified | 9,4% (of Rest of Rijnmond) | 1,4% (of Rotterdam) |
| 1/1/ 76 Absolute | 89 000 | 24 000 |
| As % of the number of inhabitants of place specified | 20,6% (of Rest of Rijnmond) | 3,9% (of Rotterdam) |

SIZE OF COMMUTING STREAM BETWEEN ROTTERDAM AND REST OF RIJNMOND
PER 1/1/1971 and 1/1/1976

Source: CBS

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NUMERICAL RANK SIZE OF DWELLING CHARACTERISTICS AND IN-MIGRATION PER MUNICIPALITY

* = Significant discrepancy
□,○ = Correlation: one less than & one more than.

| MUNICIPALITY | Prox. to R'dam | In-mig. from R'dam 1/1/76 | In-mig. from R'dam 1/1/71 | Rented dwell. | 1965 + | 5 rooms | no front door | 4-12m² kitch. | no bath | with centr. heat. | no serv. link | outside W.C. | single family | Mean Quality Rank. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SCHIEDAM | 1 | 7 | 1 | 11 | 11 | 9 | 11 | 11 | 11 | 8 | 10,5 | 8 | 11 | 11 * |
| CAPELLE a/d IJSSEL | 2 | 1 | 2 | 9 | 1 | 5 | 3,5 | 1 | 3 | 1 | 9 | 4 | 10 | 3 |
| RIDDERKERK | 4,5 | 5 | 3 | 7 | 6 | 3 | 3,5 | 4 | 5 | 6 | 4,5 | 5 | 7 | 7 * |
| SPIJKENISSE | 5 | 2 | 4 | 8 | 3 | 2 | 8 | 5 | 1 | 2 | 8 | 3 | 8 | 4 |
| POORTUGAAL | 4,5 | 4 | 5 | 10 | 2 | 4 | 3,5 | 3 | 2 | 5 | 1 | 2 | 9 | 2 * |
| KRIMPEN a/d IJSSEL | 3 | 3 | 6 | 5 | 4 | 1 | 3,5 | 9 | 4 | 4 | 2 | 1 | 5 | 1 * |
| HELLEVOETSLUIS | 7 | 6 | 7 | 3 | 7 | 6 | 10 | 2 | 7 | 7 | 6 | 7 | 2 | 5,5 |
| BRIELLE | 6 | 10 | 8 | 4 | 5 | 11 | 8 | 7 | 6 | 3 | 3 | 6 | 4 | 5,5 * |
| BERGEN OP ZOOM | 10 | 9 | 9 | 6 | 9 | 8 | 7 | 8 | 9 | 9 | 7 | 10,5 | 6 | 10 |
| OUDENBOSCH | 9 | 11 | 10,5 | 2 | 8 | 7 | 3,5 | 10 | 8 | 11 | 4,5 | 9 | 3 | 8 * |
| ZEVENBERGEN | 8 | 8 | 10,5 | 1 | 10 | 10 | 3,5 | 6 | 10 | 10 | 10,5 | 10,5 | 1 | 9 |

THE SECOND MESO COMPARATIVE STUDY

CONCLUSIONS OF THE MESO COMPARATIVE STUDY     (Second Study)

The quality rank of dwellings in  5  of the chosen municipalities
was found to correlate strongly with the in-migration rank to the
municipalities, either per 1/1/1971 or 1/1/1976.


The municipality which ranks as first in dwelling quality was
Krimpen a/d IJssel.  Although found to be significantly discrepant
with the other municipalities  as it was ranked sixth in in-migration
per 1/1/1971, it would seem that this 'back-log' was rapidly diminished
per 1/1/1976 when it ranked third.  This same trend towards a greater
correlation appears in Poortugaal (from fifth to fourth) and strongly
in Schiedam (from first to seventh).
It should be noted that Schiedam is the most proximate of all the
municipalities studied to Rotterdam, with Cappele a/d IJssel second
closest; and it may be tentatively concluded that this proximity is
appreciated more strongly than the dwelling quality when choosing
to migrate ( and commute a short distance by car or public transport)
to these two municipalities.  Cappelle a/d IJssel ranks first in
in-migration per 1/1/1976  (assuming that dwelling quality remains
equal) whilst ranking third  in mean dwelling quality, thereby tending
to correlate more strongly with in-migration than Schiedam did in
1971.

Various priorities in the decision making process of a potential migrant may be the cause of discrepancies between the dwelling quality and the amount of in-migration (hypothese). These include the following:

a) comparative availability of houses e.g. single family type.
b) availability of amenities, green space and sport facilities.
c) distance and nature of road to place of work.
d) availability of schools catering for specific age groups.
e) subjective environmental preferences.
f) economic considerations - income, savings and cost of dwelling (Rossi states that cost is often a deciding factor.)

Priorities and the particular sacrifice a family is prepared to make to achieve these priorities, vary from family to family. This results in families, who were pushed from Rotterdam for the same reasons - their house was too small, it had no bathroom and internal W.C. , kitchen was too small, the house was structurally inflexible either because of age or because it was rented, views from the dwelling and sun-penetration was bad, their small children had no spafe place to play; being pulled to different municipalities as a result of their varying priorities when seeking a new home.

A factor which influences the findings and contributes largely to discrepancies was found to be distance. This in a situation where it has been shown that commuting plays a large role ( work attraction is not a deciding factor in destination selection in this case). The more proximate the place of work (Rotterdam) to the to be chosen municipality the better. It may be added that this proximity is becoming less important as a result of the increased mobility over time. Car ownership per capita is steadily ( rapidly) increasing. Modern roads, cars and improved public transport, increases commuting radii, making it possible to migrate further from the place of work than previously. Consequently the range in possible destinations increases making dwelling quality a more important priority when selecting a new home from a larger amount of possibilities that present themselves. Dwelling quality becomes relatively more important than the other priorities listed above.

CONCLUSIONS/COMMENTS OF THE SECOND MESO COMPARATIVE STUDY.

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$$r_s = 1 - \frac{6 \sum\limits_{i=1}^{n} D_i^2}{n(n^2-1)}$$ , hierbij ligt de waarde van $\rho$ tussen $-1$ en $+1$.

De waarnemingen worden per waarnemingsreeks geordend, bijvoorbeeld in volgorde van groote, en aan de uitkomsten wordt een rangnummer toegekend, $1,2,3,\ldots,n$. $D_i$ geeft het verschil aan tussen de rangnummers van een waarnemingspaar $(x_i,y_i)$ en $i=1,2,\ldots,n$ ofwel het aantal waarnemingsparen. We kunnen ons bijvoorbeeld de vraag stellen of het aantal malen per dag dat een trein in een plaatst stopt al dan niet samenhangt met de bevolkingsomvang van die plaats. Om antwoord te krijgen op deze oriënterende vraag kiezen we 12 plaatsen uit het spoorboekje en rangschikken deze naar bevolkingsgrootte (X), terwijl we tevens uit het boekje bepalen hoe vaak er per dag een trein stopt (Y). De resultaten vinden we in tabel 2.

*Tabel 2. Berekeningstabel voor de korrelatie koëfficiënt van Spearman*

| Plaats | $X$ x 1000 | $Y$ frekw. | $X_{rang}$ | $Y_{rang}$ | $D$ rangverschil | $D^2$ |
|---|---|---|---|---|---|---|
| 1 | 750 | 40 | 1 | 3,5 | −2,5 | 6,25 |
| 2 | 650 | 40 | 2 | 3,5 | −1,5 | 2,25 |
| 3 | 150 | 45 | 3 | 1,5 | 2,5 | 6,25 |
| 4 | 120 | 30 | 4 | 7,5 | −3,5 | 12,25 |
| 5 | 105 · | 45 | 5 | 1,5 | 3,5 | 12,25 |
| 6 | 95 | 30 | 6,5 | 7,5 | −1,5 | 2,25 |
| 7 | 95 | 36 | 6,5 | 5 | 1,5 | 2,25 |
| 8 | 60 | 25 | 8,5 | 10 | −1,5 | 2,25 |
| 9 | 60 | 19 | 8,5 | 12 | −2,5 | 6,25 |
| 10 | 51 | 30 | 10 | 7,5 | 2,5 | 6,25 |
| 11 | 47 | 30 | 11 | 7,5 | 3,5 | 12,25 |
| 12 | 35 | 20 | 12 | 11 | 1,0 | 1,00 |

Waar de trein even vaak stopt, krijgen deze plaatsen hetzelfde rangnummer, d.w.z. het gemiddelde rangnummer. De frekwentie in Y is in de plaatsen 4,6,10 en 11 even hoog en deze plaatsen zouden bij een verschillende frekwentie de rangnummers 6,7,8 en 9 gekregen hebben.
De gemiddelde rang is nu:

$$(6+7+8+9)/4 = 30/4 = 7,5.$$
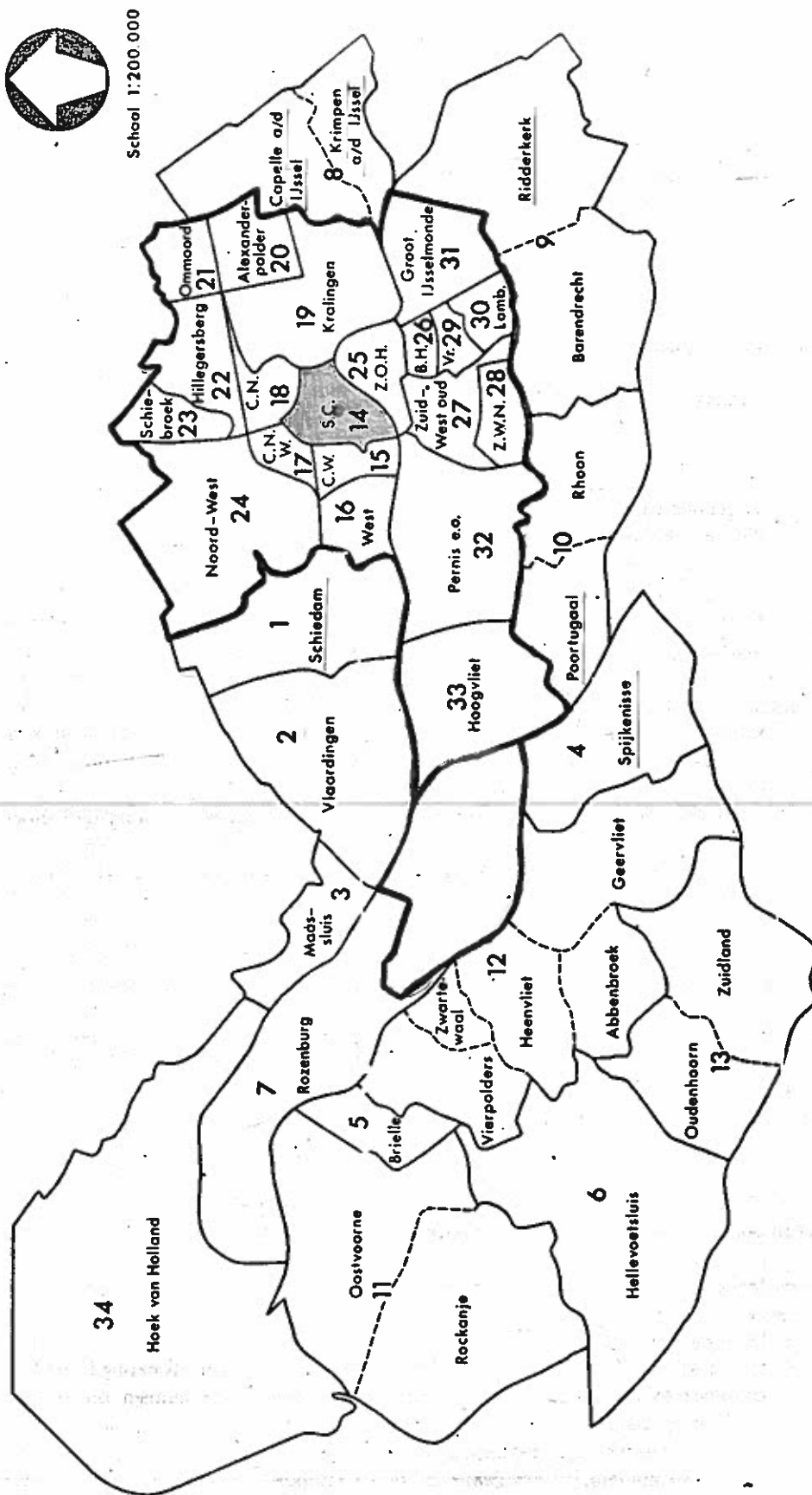
$$\sum_{i=1}^{12} D^2 = 72,50,$$

$$r = 1 - \frac{6 \sum\limits_{i=1}^{12} D^2}{n(n^2-1)},$$

$$r = 1 - \frac{6.72,50}{12(12^2-1)},$$

$$r = 0,75.$$

Toetsen we deze uitkomst met behulp van $t=r\sqrt{\frac{n-2}{1-r^2}}$,[3] dan blijkt dat de berekende t-waarde, t=3,31, signifikant is tot op het 1% niveau. Deze Student t-toets wordt gebruikt, wanneer voor het aantal waarnemingen (n) geldt: $n > 10$ want dan volgt de verdeling van $r_s$ de Student verdeling. Is het aantal waarnemingen kleiner dan tien, dan kan de kans exakt worden berekend.[4] Tabellen hiervoor staan in elk boek over niet-parametrische statistiek. Op basis van de hierboven berekende uitkomsten, is het gerechtvaardigd te konkluderen dat er een statistisch sterk signifikant verband bestaat tussen de beide cijferreeksen. De verklaring en interpretatie ervan zal echter vanuit de gestelde hypothesen of de theorie gegeven moeten worden. De rangkorrelatie koëfficiënt is zeer geschikt voor een beperkt aantal waarnemingen en een bijkomend voordeel is, dat er geen a priori veronderstelling gemaakt wordt over de verdeling van het waarnemingsmateriaal, zoals de normaliteitsveronderstelling.

THE COEFFICIENT OF SPEARMAN ($r_s$)  SOURCE-VAN DER KNAAP 1973
FOR NUMERICAL RANK CORRELATION SIGNIFICANCY TESTING

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RIJNMOND

illustration 3

Schaal 1:200.000

34 Hoek van Holland

7 Rozenburg

11 Oostvoorne

Rockanje

5 Brielle

Vierpolders

Zwarte waal

12 Heenvliet

6 Hellevoetsluis

Oudenhoorn

Abbenbroek

13 Zuidland

Geervliet

3 Maassluis

2 Vlaardingen

1 Schiedam

33 Hoogvliet

4 Spijkenisse

Poortugaal

10

Rhoon

32 Pernis e.o.

24 Noord-West

16 West

15 C.W.

17 C.N.W.

18 C.N.

23 Schie-broek

22 Hillegersberg

19 Kralingen

21 Ommoord

20 Alexander-polder

Capelle a/d IJssel

8 Krimpen a/d IJssel

14 S.C.

25 Z.O.H.

26 B.H.

29 Vr.

30 Lomb.

27 Zuid-, West oud

28 Z.W.N.

31 Groot IJsselmonde

Barendrecht

9

Ridderkerk

VERKLARING

B.H.    Bloemhof / Hillesluis
C.N.    Centrum Noord
C.N.W.  Centrum Noord–West
C.W.    Centrum West
Lomb.   Lombardijen
S.C.    Stadscentrum Rotterdam
Vr.     Vreewijk
Z.O.H.  Zuid Oude Havengebied
Z.W.N   Zuid–West Nieuw

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# CHARACTERISTICS OF THE DWELLING

| Deelgebied | MHB/HB % | balkon % | zolder % | kelder % | was-ruimte % | bad/douche % | tuin % | c.v. % | garage % | tel. % | gem. ouderd. in jaren t.o.v. 1971 | gem. huur/maand |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Stadscentrum | 71* | 51* | 48* | 29* | 48 | 76 | 11* | 36 | 1* | 71 | 46 | 153 |
| Centrum Noord | 71* | 73* | 59* | 13* | 56 | 53* | 23* | 6* | 1* | 55 | 63 | 104* |
| Centrum Noordwest | 94* | 88* | 10* | 32* | 44 | 90 | 16* | 18 | —* | 80* | 32 | 155 |
| Centrum West | 69* | 64 | 52* | 15* | 56 | 66* | 24* | 8* | 1* | 62 | 62 | 144 |
| Rotterdam West | 89* | 68 | 44 | 33* | 45 | 64* | 27* | 5* | —* | 53* | 42 | 113* |
| Kralingen | 71* | 67 | 33 | 47 | 50 | 76 | 33 | 25 | 4 | 71 | 50 | 168 |
| Zuid Oude Havengebied | 90* | 53 | 71* | 14* | 53 | 45* | 14* | 6* | —* | 27* | 68 | 102* |
| Bloemhof/Hillesluis | 60 | 57 | 40 | 7* | 41 | 51* | 21* | 2* | —* | 44* | 44 | 121* |
| Schiebroek | 62 | 77 | 23 | 77* | 34 | 94* | 40 | 62* | 19 | 92* | 17 | 216 |
| Hillegersberg | 23* | 79* | 36 | 47 | 47 | 91 | 35 | 46* | 20* | 80* | 31 | 228* |
| Noordwest | 47 | 80* | 24 | 71* | 47 | 93 | 40 | 16* | 18 | 71 | 26 | 163 |
| Zuidwest Oud | 65 | 71 | 22* | 51 | 33* | 77 | 36 | 16* | 2* | 55 | 34 | 130* |
| Zuidwest Nieuw | 79* | 81* | 4* | 80* | 25* | 99* | 26* | 21* | 8 | 67 | 15 | 149 |
| Vreewijk | 11* | 18* | 62* | 42 | 60 | 80 | 78* | 2* | 4 | 62 | 43 | 93* |
| Ridderkerk/Barendrecht | 32* | 49* | 44 | 42 | 58* | 98* | 66* | 45* | 25* | 67 | 17 | 198* |
| Groot IJsselmonde | 52 | 64 | 19* | 56* | 40 | 97* | 45 | 45* | 4 | 64 | 18 | 178 |
| Lombardijen | 69 | 52 | 14* | 57 | 38 | 100* | 31 | 45 | 24 | 67 | 16 | 191 |
| Alexanderpolder | 69* | 73 | 20* | 56 | 31* | 95* | 29 | 97* | 7 | 83* | 9 | 262* |
| Ommoord | 76* | 72 | 20* | 56 | 56 | 96* | 28 | 98* | 7 | 87* | 3 | 273 |
| Krimpen/Capelle | 46 | 55 | 33 | 60* | 57 | 95* | 52* | 75* | 19 | 60 | 1? | 236* |
| Schiedam | 60 | 78* | 23* | 60* | 42 | 82 | 31* | 30 | 7 | 56* | 31 | 156 |
| Vlaardingen | 47 | 66 | 25* | 60* | 46 | 86 | 43 | 34 | 17* | 64 | 24 | 179 |
| Maassluis | 60* | 66 | 22 | 68* | 42 | 92 | 36 | 56* | 12 | 72 | 22 | 211* |
| Hoek van Holland | 19* | 35* | 33 | 44 | 63* | 91 | 77* | 56* | 14 | 65 | 18 | 187 |
| Poortugaal/Rhoon | 33* | 55 | 51* | 51 | 69* | 92 | 67* | 46 | 18 | 77 | 16 | 188 |
| Pernis e.o. | —* | 24* | 33 | 22* | 52 | 98* | 78* | 30 | 7 | 63 | 25 | 157 |
| Hoogvliet | 69 | 60 | 5* | 74* | 17* | 98* | 41 | 26 | 5 | 60 | 15 | 148 |
| Spijkenisse | 42 | 61 | 51* | 67* | 58 | 98* | 56* | 65* | 30* | 72 | 19 | 231* |
| Rozenburg | 40 | 61 | 51* | 63* | 53 | 95* | 58* | 67* | 19 | 67 | 11 | 210 |
| Oostvoorne/Rockanje | —* | 21* | 74* | 42 | 74* | 88 | 98* | 51* | 61* | 72 | 32 | 283* |
| Brielle | 8* | 35* | 71* | 27* | 67* | 94* | 94* | 55* | 41* | 74 | 30 | 255* |
| Zwartewaal e.a. | —* | 5* | 84* | 31* | 85* | 94* | 98* | 64* | 36* | 74 | 21 | 303* |
| Hellevoetsluis | 10* | 20* | 76* | 45 | 66* | 95* | 85* | 45* | 17 | 53 | 22 | 201 |
| Zuidland/Oudenhoorn | —* | 2* | 86* | 33 | 83* | 93 | 93* | 21 | 33* | 64 | 20 | 262* |
| Rijnmond | 58 | 63 | 35 | 47 | 47 | 82 | 40 | 32 | 11 | 64 | 31 | 168 |

R'DAM
R'DAM

* = significant afwijkend van het Rijnmondgemiddelde

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Probabilities of interprovincial migration in the Netherlands: $t$-values and $\beta$-coefficients

| Independent variables | $t$-values | | | $\beta$-coefficients[a] | | |
|---|---|---|---|---|---|---|
| | 1961–1965 | 1966–1970 | 1969–1973 | 1961–1965 | 1966–1970 | 1969–1973 |
| Relative economic attraction $(E_{j,i})$ | 13.9 | 14.1 | 14.5 | 0.839 | 0.819 | 0.781 |
| Social distance $(S_{i \supset j})$ | 6.5 | 5.7 | 6.6 | 0.303 | 0.262 | 0.290 |
| Relative housing attraction $(H_{j,i})$ | −2.9 | −3.5 | −4.5 | −0.156 | −0.181 | −0.216 |
| Physical distance $(D_{ij})$ | −11.6 | −13.4 | −14.6 | −0.495 | −0.556 | −0.568 |
| Alternative economic attraction $(E_{k/i})$ | −4.4 | −4.6 | −4.1 | −0.181 | −0.185 | −0.154 |

[a] $\beta = \alpha \sqrt{\dfrac{\sum x^2}{\sum y^2}}$

The importance of relative housing attraction, on the other hand, is slowly increasing during the second half of the sixties. Physical distance-sensitivity of aggregate migration probabilities is growing over time. This factor has to be thoroughly analysed before any conclusions can be drawn     SOURCE: P. DREWE 1977
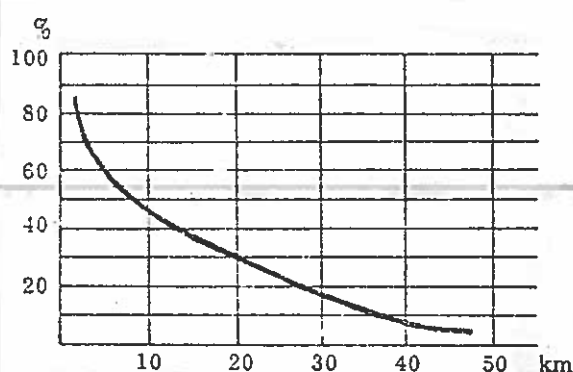


RELATIONSHIP BETWEEN THE DISTANCE OF A MOVE AND THE IMPORTANCE OF DWELLING FACTORS
SOURCE: H·PRIEMUS 1972

| MUNICIPALITY | 1960 | 1965 | 1970 | 1975 |
|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) |
| Amsterdam | 3,39 | 3,22 | 2,92 | 2,56 |
| Rotterdam | 3,62 | 3,31 | 2,95 | 2,59 |
| 's-Gravenhage | 3,61 | 3,44 | 3,07 | 2,67 |
| Utrecht | 3,97 | 3,78 | 3,47 | 3,13 |
| Groningen | 3,65 | 3,53 | 3,23 | 2,79 |
| Arnhem | 3,94 | 3,76 | 3,37 | 2,90 |
| Eindhoven | 4,48 | 4,10 | 3,65 | 3,05 |
| Nederland | 4,05 | 3,86 | 3,51 | 3,15 |

bron: Informatiesysteem ruimtelijke ordening Nederland (INSYRON).

AVERAGE DWELLING OCCUPATION IN SEVEN MUNICIPALITIES WITH MORE THAN 100 000 INHABITANTS IN THE NETHERLANDS SINCE 1960
SOURCE: 'VERSTEDELIJKINGS-NOTA' OF 1976

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In brief outline, the major substantive findings of Section IV can be summarized as follows:

About one out of every four residential shifts must be classified as either involuntary or as the logical consequences of other decisions made by the household. Involuntary moves include evictions and destructions of dwellings. Moves which must be looked upon as forced by other decisions include moves made as a consequence of marriage, divorce, or separation, job changes involving long distance shifts, or severe losses in income.

Among voluntary moves -- where the household had a clear choice between staying and moving -- the most important factor impelling households to move was dissatisfaction with the amount of space in their old dwellings. Other factors, in order of their importance, were complaints about their former neighborhoods, and about the costs of rent and maintenance in their old homes. No other category of complaints received any significant amount of mention as important factors in moving decisions.

The important things the respondents had in mind in choosing their present homes from all those available them were, in rank order: space in the dwelling, particular dwelling design features, dwelling location, and, finally, cost. However, costs appeared as the major consideration in the actual choice, followed by space, location, and neighborhood in that order. Apparently, the most important attribute of a dwelling is its dimensions, but then if two or more dwellings of roughly equal size are considered, the cheaper one is finally chosen. Costs are the "clinching" factor in the choice point of housing selection.

SOURCE: "WHY FAMILIES MOVE"
BY P. ROSSI 1955

## The Functional Role of Mobile Areas:

Mobility, as we have seen, is the mechanism which adjusts housing to housing needs. Different kinds of housing vary in their ability to accommodate the needs of families in the several stages of the life cycle. Some types of housing are suitable to a wide range of family types; other dwellings fit in only with the needs of a very limited variety of family types.

What is especially characteristic of mobile areas is the concentration of "limited purpose" dwellings to be found in such areas. The suburb, with its large owned units, provides the setting for minimal mobility and attracts families in the most stable of their life cycle stages. In contrast, because mobile areas offer small rental units with limited facilities for family living, they contain the housing least adjustable to the changes occurring to families in their life histories.

The small rental units characteristic of mobile areas -- furnished rooms or apartments, "one-room-and-kitchenette" unfurnished apartments-- are housing types congenial only to the family-less individual or the childless couple. Young unmarried adults, young couples without children, older couples whose children have married and left the family, old widows and widowers -- all find these small units suited to their housing needs.

Those households with children which are found in mobile areas tend to be either broken families whose precarious economic condition make cheap housing a premium, or young couples using the area as only a way-station. Couples with children are therefore the most mobile of all households in mobile areas. Their residence in such areas is only a temporary expedient with their next destinations in other areas where dwellings are larger, and the social environment more congenial to child-raising.

Mobile areas perform an important function within the urban housing market. They provide rental dwellings for the "marginal" family-less urban dwellers. The young migrants from the hinterland, the aged, the broken families living on the edge of poverty, all can find in the mobile areas the housing which fits their needs. Services catering to the family-less can also be found there: all-night delicatessens, restaurants, "bachelor's" laundries, take care of the needs of the family-less which are ordinarily provided for in family living.

In an urban society where the aged no longer fit into the family homestead and where thousands of migrants arrive in the city from the hinterland every year, mobile areas provide the housing once taken care of by a family-system in which grandparents, parents, and unmarried children occupied the same dwelling.

Mobile areas are mobile because they provide housing for households in those life cycle stages which are particularly unstable. The young, single, migrants soon marry and take their places in the areas which provide for family living. Oldsters suffer the heaviest tolls of the death rate. The breadwinners of broken families work in marginal occupations and constantly adjust their housing to the fluctuations of an income frequently interrupted by unemployment. The families with children who do locate themselves in such areas do so primarily out of economic necessity and regard residence there as a temporary expedient to be abandoned as soon as opportunity presents itself.

The mobility of an area affects its social integration. Mobile areas contain population types of considerable heterogeneity. The gulf of interests and needs between the young unmarried and the old retired is especially great. The temporary character of residence makes it hard for persons to identify with each other and feel that they share common interests. The opportunities for friendship and association on an informal level seem slight in a situation of diverse population types and impermanency.

SOURCE: WHY FAMILIES MOVE, BY P. ROSSI
1955

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The probability of a decision maker's passing, during period $\Delta t$, from one home/work combination to another can now be described in terms of the characteristics of alternatives and deciding individuals. To keep the argument within reasonable bounds we shall focus on one homogeneous group of decision makers whose systematic differences in mobility can only be ascribed to differences in location at time $t$; in that way, all other individual divergences can be left out of account. To the analogy of other mobility studies we shall distinguish the following groups of character- istics of alternatives:

1. Characteristics of the residential locations available during period $\Delta t$. To these can be counted features of the house itself (age, number of rooms, costs of dwelling, high-rise building or one-family houses, rent/ownership, etc.) and features of the residential surroundings (social status, presence of amenities, general access to the labour market).

2. Characteristics of the aversion against moving from the present to alternative residential locations (removal costs, breaking off old and establishing new social contacts, good or poor information about houses and estates elsewhere).

3. Characteristics of the employment positions available during $\Delta t$ (income, secondary labour conditions, flexible worktimes, nature of the function, etc.) and features of the establishments (chances of promotion, situation in respect of attractive residential quarters).

4. Characteristics of the resistance against a change from the present occupation to available positions elsewhere (breaking off old and establishing new contacts, degree of familiarity with the labour market, need for reschooling).

5. Characteristics of the attraction of, or resistance against, the home-to-work trip at time $t_0$ as compared to alternative home-to-work trips (time and money costs, comfort of the various modes of transportation, etc.).

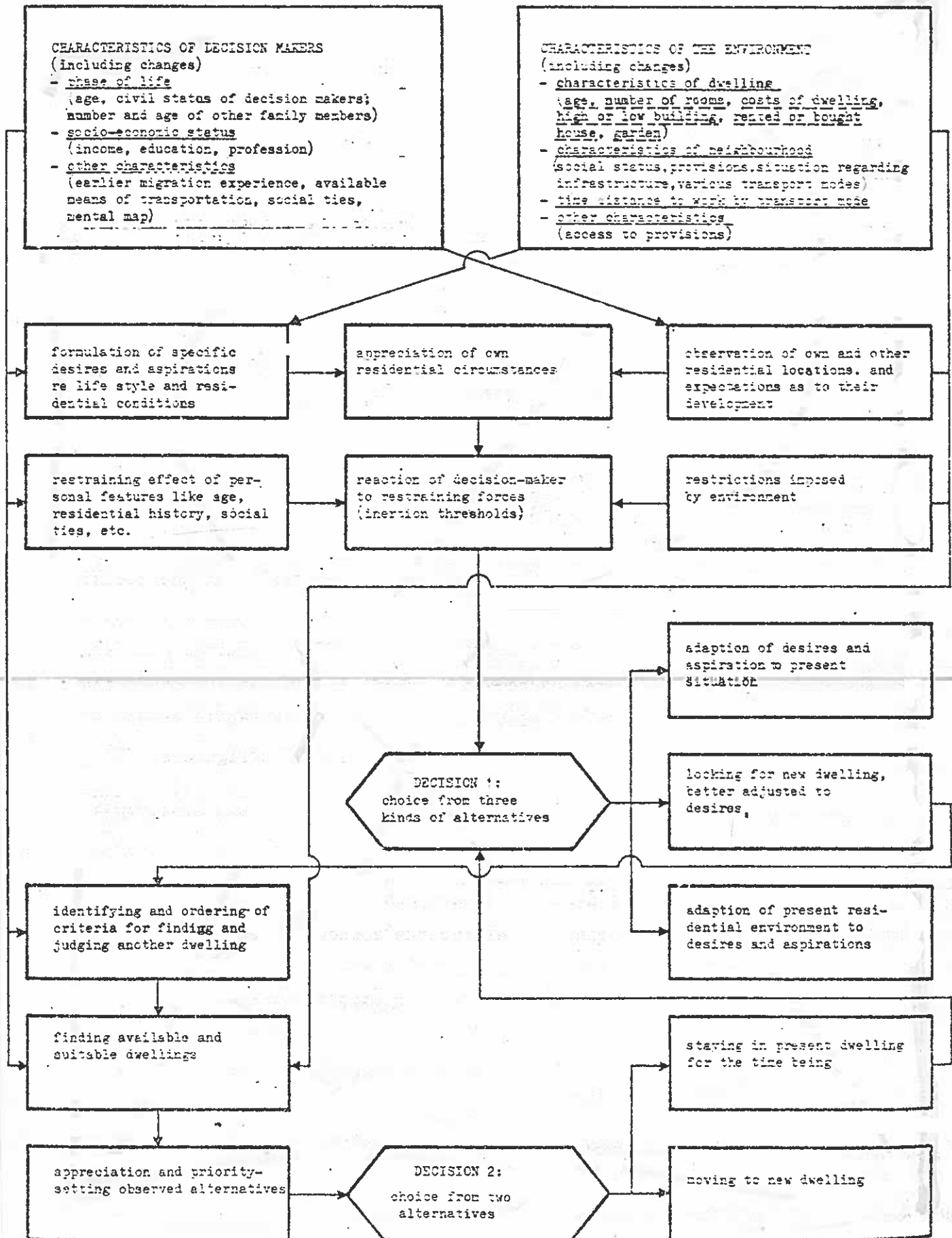SOURCE: VERSTER AND DE LANGEN NEI 1978

## residential location, work location, and home-to-work traffic

To get an idea how decisions in matters of residential and work locations hang together, a limited literature study was undertaken. We found that most mobility studies focus either on residential mobility or on work mobility separately, choosing a utility-theoretical set of concepts as the point of departure from which to elaborate theories of residential and employment location. Only in so-called economic trade-off theories does the home-to-work distance play a significant role as an explanatory factor for the choice of home locations. Moreover, most location theories were not developed to the point of specifying formal behavioural hypotheses - least of all on the spatial scale we are interested in - that could lead to quantitative tests or predictions with the help of decision models.

Decision theories on residential as well as work location, incorporate the usual concepts of consumer behaviour theory, assuming that decision makers wish to behave according to a certain plan. A decision maker, according to this theory, indentifies - during or after a searching process - a number of alternatives; he ranks them according to the relative satisfaction (the 'utility') he expects to derive from them, and then tries to realize the alternative with the highest utility score. Most theories do point out that a decision maker is not fully acquainted with all potential alternatives, and that he may have only very few possibilities open to him. Moreover, a person's decision is subject to objective constraints (such as income, distance to work or home, respectively, composition and size of his family) and to his own subjective decision thresholds, which may keep him from without delay realizing the alternative which he clearly prefers. Attempts have been made to explain the threshold, the inertion, the sluggishness,from such factors as age, family situation, profession, length of time people have lived in the same house or held the same job. When, finally, the relative advantage of the alternative exceeds a certain critical value, the inertion will be overcome and the alternative realized.

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# Hypothetical structure of the decision-making process of residential movers.

**CHARACTERISTICS OF DECISION MAKERS**
(including changes)
- phase of life
  (age, civil status of decision makers; number and age of other family members)
- socio-economic status
  (income, education, profession)
- other characteristics
  (earlier migration experience, available means of transportation, social ties, mental map)

**CHARACTERISTICS OF THE ENVIRONMENT**
(including changes)
- characteristics of dwelling
  (age, number of rooms, costs of dwelling, high or low building, rented or bought house, garden)
- characteristics of neighbourhood
  (social status, provisions, situation regarding infrastructure, various transport modes)
- time distance to work by transport mode
- other characteristics
  (access to provisions)

formulation of specific desires and aspirations re life style and residential conditions

appreciation of own residential circumstances

observation of own and other residential locations. and expectations as to their development

restraining effect of personal features like age, residential history, social ties, etc.

reaction of decision-maker to restraining forces (inertion thresholds)

restrictions imposed by environment

adaption of desires and aspiration to present situation

**DECISION 1:**
choice from three kinds of alternatives

looking for new dwelling, better adjusted to desires.

identifying and ordering of criteria for finding and judging another dwelling

adaption of present residential environment to desires and aspirations

finding available and suitable dwellings

staying in present dwelling for the time being

appreciation and priority-setting observed alternatives

**DECISION 2:**
choice from two alternatives

moving to new dwelling

SOURCE: VERSTER AND DE LANGEN NEI 1978

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