An economic geography of consumer movement and expenditure patterns in county Durham

Jensen-Butler, Christopher N.

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AN ECONOMIC GEOGRAPHY OF CONSUMER MOVEMENT AND EXPENDITURE PATTERNS IN COUNTY DURHAM.

DIAGRAMS:

To accompany a Thesis submitted for the degree of Doctor of Philosophy, in the University of Durham.

CHRISTOPHER N. JENSEN - BUTLER. B.A.

December 1970.

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Percentages of household budgets used for various items, 1967.
- By household income

(a) One man, one woman households.

(b) All households

SOURCE: FES.
1898 MURTON: MORPHOLOGY.

- housing: 1967 only
- predominantly pre 1900
- pred. 1900-39 council
- pred. 1900-39 private
- pred. post 1945 council
- pred. post 1945 private
- other settlements

ward boundary
railway
pit area
ov.: ovens
w.: Wood's Terrace

1/2 mile.
INCOME GROUP AND HOUSEHOLD PURCHASE PATTERNS: MURTON.

(a)

meat

percent
of households

INDEPENDENTS

CO-OP

MULTIPLES

(b)

groceries

socio economic group:

1-6 8 9 10 17 18-21

INDEPENDENTS

CO-OP

MULTIPLES
HOUSEHOLD SOCIO-ECONOMIC GROUP AND PURCHASE PATTERNS: MURTON

MURTON 3 COMPETING CENTRES

women's clothing

men's clothing

shoes

washing machine

furniture

hardware
CROOK U.D.: WARDS

SHILDON U.D.: WARDS

MURTON PARISH (EASINGTON R.D.)

common key

- centre.
- r.d. or u.d. boundary
- ward/parish boundary
- built up areas: Crook, Shildon, Murton.
HOUSEHOLD SOCIO-ECONOMIC GROUP AND PURCHASE PATTERNS: SHILDON.

SHILDON

5 COMPETING CENTRES

all durables

shoes

hardware

women's clothing

furniture

washing machine

S.E.G.- 8 9 10 11 17 8 9 10 11 17 8 9 10 11 17
HOUSEHOLD INCOME GROUP
AND PURCHASE PATTERNS:
SHILDON.

SHILDON

5 COMPETING
CENTRES

% 50

0

shoes

% 50

0

men's clothing

% 50

0

women's clothing

% 100

0

furniture

% 50

0

jewellery

- income group -

B C D E F G-H

B C D E F G-H

B C D E F G-H

B C D E F G-H
HOUSEHOLD SOCIO-ECONOMIC GROUP AND PURCHASE PATTERNS: CROOK.

CROOK 7 COMPETING CENTRES

All durables

Shoes

Hardware

Women's clothing

Furniture

Washing machine
HOUSEHOLD INCOME GROUP AND PURCHASE PATTERNS: CROOK.

CROOK 7 COMPETING CENTRES

all durables

shoes

hardware

CROOK 7 COMPETING CENTRES

men's clothing

women's clothing

furniture

washing machine

income group: B C D E F G-H

income group: B C D E F G-H

income group: B C D E F G-H
SOCIO-ECONOMIC GROUP AND HOUSEHOLD PURCHASE PATTERNS:
all durables.
Crook, Murton and Shildon.

SOCIAL CLASS AND HOUSEHOLD PURCHASE PATTERNS:
all durables.
Crook, Murton and Shildon.

INCOME GROUP AND HOUSEHOLD PURCHASE PATTERNS:
all durables.
Crook, Murton and Shildon.

PREDICTED AND ACTUAL INCOME STRUCTURES. 1967.
RELATIONSHIP OF TURNOVER TO SALES AREA: 3 SETTLEMENTS

FOOD SHOPS.

RELATIONSHIP OF TURNOVER TO SIZE OF LABOURFORCE: 3 SETTLEMENTS.

NON FOOD SHOPS.
WARDS AND PARISHES USED IN THE ANALYSIS

North Durham

South Durham

N. Durham/S. Durham
L.A. boundary
ward/parish boundary
amalgamations

use in conjunction with table A. 30

2 m.
DISTANCE DECAY FUNCTIONS

28. ORIENTATION TO NEWCASTLE AND TEESIDE: REGIONAL CENTRE INTERACTION.

<table>
<thead>
<tr>
<th>Miles from Newcastle</th>
<th>Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>10</td>
<td>70</td>
</tr>
<tr>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>30</td>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Miles from Teesside</th>
<th>Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>10</td>
<td>70</td>
</tr>
<tr>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>30</td>
<td>10</td>
</tr>
</tbody>
</table>

29. ORIENTATION TO NORTHERN AND SOUTHERN REGIONAL CENTRES.

<table>
<thead>
<tr>
<th>Miles from northern axis</th>
<th>Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>10</td>
<td>70</td>
</tr>
<tr>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>30</td>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Miles from southern axis</th>
<th>Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>10</td>
<td>70</td>
</tr>
<tr>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>30</td>
<td>10</td>
</tr>
</tbody>
</table>

30. CENTRES: THEORETICAL DISTANCE DECAY.

<table>
<thead>
<tr>
<th>Distance</th>
<th>Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>1</td>
<td>70</td>
</tr>
<tr>
<td>2</td>
<td>40</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
</tr>
</tbody>
</table>

31. BISHOP AUCKLAND PLUS DURHAM: INTERACTION AT DIFFERENT MILES RADIUS.

<table>
<thead>
<tr>
<th>Miles from centre</th>
<th>Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>1</td>
<td>70</td>
</tr>
<tr>
<td>2</td>
<td>40</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
</tr>
</tbody>
</table>

32. COMPETITION BETWEEN DURHAM AND BISHOP AUCKLAND.

<table>
<thead>
<tr>
<th>Distance</th>
<th>Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>1</td>
<td>70</td>
</tr>
<tr>
<td>2</td>
<td>40</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
</tr>
</tbody>
</table>

33. CROOK PLUS SPENNYMOOR: INTERACTION AT DIFFERENT MILES RADIUS.

<table>
<thead>
<tr>
<th>Miles from centre</th>
<th>Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>1</td>
<td>70</td>
</tr>
<tr>
<td>2</td>
<td>40</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
</tr>
</tbody>
</table>
INTERACTION WITH NEWCASTLE PLUS SUNDERLAND FOR:

(a) WOMEN'S CLOTHING PURCHASE

(b) ALL DURABLE GOODS PURCHASE
INTERACTION WITH TEESIDE PLUS DARLINGTON FOR WOMEN'S CLOTHING PURCHASE.

INTERACTION WITH TEESIDE PLUS DARLINGTON FOR DURABLE GOODS PURCHASE.
INTERACTION WITH 6 WEAK 'A' LEVEL CENTRES FOR:

DURABLE GOODS:

WASHING MACHINE PURCHASE:

GROCERY PURCHASE:
based upon appliance purchase for 'A' and t.v. or hardware for 'B'
regional centres included only where very dominant

'B' CENTRES AND CHOSEN 'C'
CENTRES USED IN THE ANALYSIS

2m.
INTERACTION WITH 'B' CENTRES FOR GROCERY PURCHASE

INTERACTION WITH CERTAIN 'C' CENTRES FOR GROCERY PURCHASE

FOR T.V. PURCHASE

41. - 42.
CONSUMER BEHAVIOUR: THEORETICAL ASPECTS.

43.

utility

number of items offered

44.

payment, (utility measure)

number of items offered

45.

cost, (disutility)

distance

46.

number of items

distance

47.

payment and cost, (utility and disutility)

distance, Dx

48.

functions

establishments

43. – 48.
ASPECTS OF CENTRAL PLACE THEORY:
REFORMULATIONS.

(ii) A CENTRAL PLACE SYSTEM BASED ON CIRCLES

(iii) 

(iv) A CENTRAL PLACE SYSTEM BASED ON CIRCLES

heirarchical levels of centre

lowest — •
middle — •
highest — ○
19 CENTRES USED IN THE GRAVITY MODEL ANALYSIS.

NEWCASTLE
GATESHEAD
WASHINGTON
SUNDERLAND
HARTLEPOOL
Teesha
ESSON
DURHAM CITY
GROOK
SPENNYMOOR
BISHOP AUCKLAND
SHILDON
NEWTON AYCLIFFE
DARLINGTON
MIDDLESBROUGH
STOCKTON
(Teeside (arbitrary mid point))

DEVIATIONS FROM THE AVERAGE VALUE OF THE DISTANCE EXPONENT, FOR DURABLE GOODS PURCHASE

OVER 2.82
2.52 - 2.82
2.32 - 2.52
1.92 - 2.32
1.72 - 1.92
1.42 - 1.72
UNDER 1.42
GRAVITY MODEL PREDICTION: ABSOLUTE ERRORS. ONE PARAMETER MODEL. ALL DURABLES.
GRAVITY MODEL PREDICTION: $R^2$ VALUES.
ONE PARAMETER MODEL.
ALL DURABLES.
GRAVITY MODEL PREDICTION: ABSOLUTE ERRORS. TWO PARAMETER MODEL.
ALL DURABLES.
GENERAL INTERACTION PROBABILITY SURFACE.
ONE PARAMETER MODEL. ALL DURABLES.

contour interval .1
.... umland boundary
• centres

5 m.
GENERAL INTERACTION PROBABILITY SURFACE
2 PARAMETER MODEL. ALL DURABLES.

contour interval .1
..... umland boundary
● centres

5 m.
INTERACTION PROBABILITY SURFACE. WOMEN’S CLOTHING PURCHASE.

contour interval .1

- umland
- centre

3 m.

one parameter
INTERACTION PROBABILITY SURFACES: SEAHAM AND SPENNYMOOR. ALL DURABLES.

RESIDUAL COMPETITION: A SURFACE SHOWING INTENSITY OF COMPETITION: WOMEN'S CLOTHING PURCHASE.

isoline values represent competition intensity

contour interval: .1
(excepting .05)
• centres

3m - 2 parameters

one parameter.
UMLAND: THEORETICAL DEFINITION.

Centres A, B, and C are shown with interaction and distance relationships. The diagram illustrates the decrease in interaction as distance increases, with umland boundaries indicated.

(after Godlund)
DISTANCE DECAY:
FITTED FUNCTIONS
interaction at increasing miles from strong 'A' centres for the purchase of men's clothing