Housing Quality and Housing Development in Rural Ghana

Emmanuel E. Fiadzo
The World Bank
Deteriorating physical characteristics and limited access to social services characterize much of the housing stock in Ghana. Such characteristics may be accentuated in rural areas.
Objectives

- Identify physical and access indicators of housing quality

- Develop a valid housing quality index, and

- Evaluate relationship of index score to select socioeconomic and demographic indicators in Ghana
The CWIQ Survey

- Data on standardized core welfare indicators
- Nationally representative sample of 14,514 households
  - 9,162 rural
  - 5,352 urban
Survey Sample Demographics

- Household heads
  - 55% work full-time in agriculture/forestry/fishing
  - 60% have attended school
  - average 8 years of formal education
  - fewer than half can read and write
Predominant Housing Types in Ghana

- Single family homes
- Flats/apartments
- Single room occupancy in compound housing
- Huts (earthen materials)

Urban vs. rural frequency of types
Household Characteristics

- 44.5% live in overcrowded housing
- Most do not have access to
  - Indoor plumbing facilities/water
  - Adequate sewage systems, or
- Over 25% drink water from river, lake, pond
- 15% drink from indoor piped source
- Most have walls of wood, mud brick
- Typical roofing material is sheet iron or mud
**Constructed Housing Quality Index**

- Set of 13 items evaluated for scaling into HQI for Ghanaian case
- Physical housing characteristics standardized using UN approach (Arias & DeVos 1996)
- Extended to include access to quality of life amenities, such as schools, health centers, public transportation
**Lancasterian Product Characteristic Model**

C = multi-family housing  
B = single family housing  
A = compound housing  
L = location characteristics  
S = structural characteristics  
U = willingness to trade characteristics
Physical indicators of housing quality

Categorical variables

- Main source of drinking water
- Cooking fuel
- Lighting fuel
- Roofing material
- Wall material
- Sewage system
- Tenure
Access indicators of housing quality

Categorical variables

- Distance (time) to nearest
  - drinking water
  - food market
  - public transportation
  - primary school
  - secondary school
  - health clinic/hospital
Methodology for Testing Index

- Cronbach’s alpha to assess internal consistency and reliability
  - Low inter-item correlation for 4 items of original index (roofing material, sewage system, tenure, distance to primary school)
- Led to re-specification of index into a 9-item scale (0.80 alpha and more parsimonious)
Testing (continued)

- Factor analysis on both 13- and 9-item indices to assess single construct
- 9-item index relatively unidimensional
## Table 2 Chronbach’s alpha and Factor Analysis

<table>
<thead>
<tr>
<th>Factor</th>
<th>Item Description</th>
<th>9-Item Index</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Inter-item Correlation</td>
<td>Alpha</td>
<td>Factor 1</td>
</tr>
<tr>
<td></td>
<td>Distance, Public Transport</td>
<td>0.649</td>
<td>0.767</td>
<td>0.730</td>
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<tr>
<td></td>
<td>Distance, Hospital</td>
<td>0.623</td>
<td>0.770</td>
<td>0.718</td>
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<tr>
<td></td>
<td>Distance, Secondary School</td>
<td>0.603</td>
<td>0.773</td>
<td>0.709</td>
</tr>
<tr>
<td></td>
<td>Lighting Fuel</td>
<td>0.575</td>
<td>0.789</td>
<td>0.736</td>
</tr>
<tr>
<td></td>
<td>Cooking Fuel</td>
<td>0.533</td>
<td>0.797</td>
<td>0.690</td>
</tr>
<tr>
<td></td>
<td>Distance, Nearest Market</td>
<td>0.527</td>
<td>0.787</td>
<td>0.591</td>
</tr>
<tr>
<td></td>
<td>Wall Materials</td>
<td>0.503</td>
<td>0.804</td>
<td>0.654</td>
</tr>
<tr>
<td></td>
<td>Main Water Source</td>
<td>0.496</td>
<td>0.789</td>
<td>0.647</td>
</tr>
<tr>
<td></td>
<td>Distance, Water Source</td>
<td>0.400</td>
<td>0.800</td>
<td>0.484</td>
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<tr>
<td></td>
<td>Cronbach Alpha/Eigenvalue</td>
<td>0.80</td>
<td>4.00</td>
<td>1.08</td>
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</tbody>
</table>
Regions of Ghana
Methodology
Factors affecting housing quality in Ghana

- HQI found normally distributed
- Relationship posited to socioeconomic and demographic variables
- Estimate influences on housing quality index by household
- Only 2 of 12 posited variables not significant at 0.05 level –
  ~ Household size, full-time employment
Independent variables

Continuous variables

- Age
- Household size
- Number of rooms
- Highest grade completed by household head
Independent variables (continued)

Dummy variables

• Full-time employment
• Employment sector (Ag/Forest/Fish)
• Gender
• Marital Status
• Location (Rural/Urban)
• Tenure
<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Parameter estimate</th>
<th>Standardized estimates</th>
<th>Standard error</th>
<th>T-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Head of household</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>2.393</td>
<td>0.115</td>
<td>0.151</td>
<td>15.809***</td>
</tr>
<tr>
<td>Marital status</td>
<td>-0.829</td>
<td>-0.040</td>
<td>0.151</td>
<td>-5.484***</td>
</tr>
<tr>
<td>Employment status</td>
<td>-0.448</td>
<td>-0.010</td>
<td>0.281</td>
<td>-1.591</td>
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<tr>
<td>Work in agriculture</td>
<td>-3.583</td>
<td>-0.183</td>
<td>0.160</td>
<td>-22.403***</td>
</tr>
<tr>
<td>Occupation group</td>
<td>-0.387</td>
<td>-0.145</td>
<td>0.193</td>
<td>-2.004**</td>
</tr>
<tr>
<td>Income quintile</td>
<td>1.785</td>
<td>0.258</td>
<td>0.051</td>
<td>35.041***</td>
</tr>
<tr>
<td>Age</td>
<td>0.060</td>
<td>0.089</td>
<td>0.004</td>
<td>13.000***</td>
</tr>
<tr>
<td>Highest grade completed</td>
<td>0.059</td>
<td>0.050</td>
<td>0.009</td>
<td>6.295***</td>
</tr>
<tr>
<td><strong>Household</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tenure</td>
<td>-2.354</td>
<td>-0.118</td>
<td>0.145</td>
<td>16.200***</td>
</tr>
<tr>
<td>Location</td>
<td>9.139</td>
<td>0.445</td>
<td>0.149</td>
<td>61.144***</td>
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<tr>
<td>Size</td>
<td>0.032</td>
<td>0.009</td>
<td>0.027</td>
<td>1.177</td>
</tr>
<tr>
<td>Rooms in dwelling</td>
<td>-0.200</td>
<td>-0.033</td>
<td>0.044</td>
<td>4.561***</td>
</tr>
</tbody>
</table>

R² 0.528 *** p<0.001
F-value 1182.5*** ** p<0.01
Factors affecting HQI

- Rural/urban location difference in housing quality significant and substantial
  * 9.14 points higher in urban than rural

- Employment of household head in ag/for/fish significant and negative
  * 3.5 points lower score than formal sector
Factors affecting HQI (cont’d)

- Household heads employed in private informal sector (e.g., vendors, artisans) score marginally lower than those in formal sector
- Tenure significant and negative
  * 2.35 points lower for households in owned homes
  * Not typical of other countries
Factors affecting HQI (cont’d)

- Households headed by females significant and positive
  * 2.3 points higher than male headed HH
- Marital status significant and negative
  * 0.82 points lower for married HH
- Education impact significant but small
- Households headed by older people significant and positive association with index
Conclusions/Policy Implications

- 9-item HQI has ranking attributes that can be used to evaluate housing welfare of people in developing countries
- Suggests housing quality in Ghana necessitates significant improvement
- Rural/urban location, marital status and tenure primary determinants of which households occupy physically deficient housing in Ghana
Measures to stimulate housing improvements

- Tax credits/other incentives for developers
- Encourage savings in traditional banks
- Incentives to produce building materials locally
- Create local NGOs specialized in housing
- Intensify efforts to create industries in rural areas and minimize migration to urban areas