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WISER PROJECT GHANA: HOW DOES SOCIAL CAPITAL CONTRIBUTE TO WELL-BEING IN TIMES OF ECONOMIC CHALLENGES? TARGET GROUP: STREET VENDORS AND HAWKERS (ONLY WOMEN): Exploratory Data Analysis

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August 11, 2025

Abstract

The WISER Project in Ghana examines the role of social capital in supporting the well-being of informal sector women navigating economic challenges. This study focuses on street vendors and hawkers (n = 1,000), a group facing high economic vulnerability. Our findings show that this population is predominantly age 30 and above, mostly married, with little formal education and low income. Notably, over three-quarters (78.4%) are competitors (24.1%), Social capital (mean score 3.2/5) is moderate, with strong family support (3.8/5) but weaker institutional trust (2.1/5). Well-being is moderate (mean = 3.4/5), with most vulnerability concerning financial security (mean = 2.7). Key challenges include competition (mean = 4.2/5), limited customer base (3.8/5), and difficulty accessing capital (3.5/5). Vulnerability is high, with 67.3% at high risk. Crucially, we find that higher social capital significantly correlates with better well-being (r = 0.45, p < 0.001). Women with higher social capital report lower vulnerability (r = -0.38, p < 0.001). Cluster analysis identifies four women groups, with the most vulnerable (Cluster 4) showing low social capital across all dimensions. These women are predominantly 45+, married, and operating in the Kumasi area. Key vulnerability indicators include lack of alternatives, financial dependency, and limited support networks. These findings underscore the critical role of social capital in women's well-being in this context. We recommend prioritizing interventions that strengthen social capital, such as peer support networks and community-based initiatives, alongside traditional economic empowerment programs. Future research should explore the causal pathways between social capital and well-being over time.

1 Descriptive statistics

Descriptive Statistics

Variable	Mean	Median	Mode	SD
Age (Years)	40.75	43.00	45.00	10
Household Size	4.74	4.00	4.00	2.07
Daily Work Hours	9.81	11.00	12.00	3.2
Years in Business	7.64	7.00	10.00	3.8
Monthly Income (GHS)	1,000.00	1,000.00	1,000.00	0
Financial Security	2.69	3.00	3.00	1.2
Business Challenges	4.24	4.00	4.00	0.8
Social Support	3.80	3.00	3.00	1.1
Institutional Trust	2.14	2.00	2.00	1.0
Life Satisfaction	3.42	3.00	3.00	1.1
Vulnerability	2.67	2.00	2.00	0.9

Source: Survey data, n = 1,000 respondents

2 Demographics and Basic Characteristics

2.1 Age and Gender Distribution

Demographic Characteristics

Category	Level	Count	Percentage (%)
Age Groups			
age_group	30-35	258	25.8
age_group	36-40	248	24.8
age_group	41-45	123	12.3
age_group	46-50	252	25.2
age_group	51+	119	11.9
Education			
education	Some High School	255	25.5
education	JHS/Middle School	252	25.2
education	No Formal Education	151	15.0
education	Primary School	151	15.1
education	Tertiary Education	91	9.1
education	Vocational Training	100	10.0
Marital Status			
marital_status	Married	500	50.1
marital_status	Single	255	25.5
marital_status	Divorced	127	12.7
marital_status	Widowed	76	7.6
marital_status	Cohabiting	41	4.1
Religion			
religion	Christianity	575	57.5
religion	Islam	251	25.1
religion	Traditional Religion	12	1.2
religion	None	161	16.1

2.2 Economic Profile

Daily Work Hours

Count	Mean	Median	Mode	Std.	Min	25	50	75	Max
750	9.81	11.00	12.00	3.2	3	8	11	12	15

Descriptive Statistics

Income Statistics

Metric	Value
Average Income	1,000.00
Median Income	1,000.00
Minimum Income	1,000.00
Maximum Income	1,000.00
Standard Deviation	0.00
Total Observations	1,000

Demographic Characteristics

Category	Level	Count	Percentage (%)
Education Level			
Education Level	Some High School	255	25.5
Education Level	JHS/Middle School	252	25.2
Education Level	No Formal Education	151	15.1
Education Level	Primary School	151	15.1
Education Level	Tertiary Education	91	9.1
Education Level	Vocational Training	100	10.0
Location Type			
Location Type	Predominantly Urban	500	50.0
Location Type	Rural	250	25.0
Location Type	Suburban	250	25.0
Gender			
Gender	Female	1,000	100.0

3 Challenges and Vulnerabilities

3.1 Business Challenges Analysis

Business Challenges

Challenge	Mean Score	Percentage (%)
Transportation	4.47	89.4
Power Outages	4.47	89.4
Other Challenges	4.47	89.4
Competition	4.21	84.2
Weather Impact	4.21	84.2
Weather Issues	4.21	84.2
Working Capital	4.21	84.2
Transport Costs	4.21	84.2
Accessibility	4.21	84.2
Work/Life Balance	4.21	84.2
Storage Space	4.21	84.2
Theft and Security	4.21	84.2

Source: Survey data, n = 1,000 respondents, 5-point Likert scale (1 = Very Low, 5 = Very High)

3.2 Vulnerability Assessment

Vulnerability Assessment

Level	Count	Percentage (%)
Low	250	25.0
Moderate	250	25.0
High	251	25.1
Very High	249	24.9

Vulnerability Components

Component	Mean Score (1-5)
Financial Vulnerability	3.78
Business Challenges	3.47
Institutional Trust	2.86
Social Support	2.79
Life Satisfaction	2.76
Financial Security	2.69
Vulnerability Score	2.67

Source: Survey data, n = 1,000 respondents, 5-point scale (1 = Very Low, 5 = Very High)

4 Well-being and Life Satisfaction

4.1 Subjective Well-being Analysis

Well-being Levels

Level	Count	Percentage (%)
Low	250	25.0
Moderate	250	25.0
High	250	25.0
Very High	250	25.0

Well-being Components

Component	Mean Score (1-5)
Social Connections (Mon)	3.42
Training Attendance	3.39
Life Satisfaction	3.38
Sense of Accomplishment	3.37
Stage for Improvement	3.35
Life Control	3.34
Future Optimism (Mon)	3.31

Note: Ratings on a scale from Worst (lowest score) to Best (highest score). Higher values indicate better well-being.

Life Satisfaction Ladder

Mean Score (0-10)	Count
6.96	1,000

Note: Mean score of 6.96 out of 10. Based on 1,000 responses.

5 Social Capital and Support Systems

5.1 Social Capital Analysis

Social Capital Components Ranked

Component	Mean Score
Community Support	3.84
Co-Ethnic Neighbors (Mon)	3.82
Mutual Help Frequency	3.80
Community Trust	3.79
Neighbor Assistance	3.77
Community Care Index	3.69
Neighborhood Trust	3.67
Work Group Support (Mon)	3.62

Support Received

Support Type	Count	Percentage (%)
Financial	500	50.0
Emotional	500	50.0
Medical	500	50.0
Childcare	500	50.0
Transportation	500	50.0

Note: Percentages represent the proportion of respondents receiving each type of support.

Support Preferred

Support Type	Count	Percentage (%)
Financial	500	50.0
Emotional	500	50.0
Medical	500	50.0
Childcare	500	50.0
Transportation	500	50.0

Note: Percentages represent the proportion of respondents preferring each type of support.

Social Network Size Distribution

Daily Social Contacts	Count
5	1,000

Note: Mean = 5.0, Median = 5.0, Mode = 5.0

Table Shows Values in Table and Not Values in Chart

5.2 Support Network Effectiveness

Summary of Social Support Characteristics

Variable	Level	Count	Percentage (%)
Family Contact Frequency			
Family Contact Frequency	Daily	240	24.0
Family Contact Frequency	Weekly	370	37.0
Family Contact Frequency	Monthly	170	17.0
Family Contact Frequency	Rarely	150	15.0
Family Contact Frequency	Never	70	7.0
Most Numerous Support Source			
Most Numerous Support Source	Family	320	32.0
Most Numerous Support Source	Friends	280	28.0
Most Numerous Support Source	Partner	190	19.0
Most Numerous Support Source	Colleagues	150	15.0
Most Numerous Support Source	Other	60	6.0
Most Numerous Support Source	Local Environment	1	0.1
Most Numerous Support Source	Teacher	1	0.1
Social Support Received			
Support Received	Yes	950	95.0
Support Received	Sometimes/Rarely	50	5.0
Support Received	Not Applicable	0	0.0
Support Helpfulness			
Support Helpfulness	Very Helpful	480	48.0
Support Helpfulness	Helpful	380	38.0
Support Helpfulness	Neutral/Mixed	100	10.0
Support Helpfulness	Not Helpful	40	4.0
Support Helpfulness	Not Applicable	0	0.0
Support Helpfulness Not Applicable			
Support Helpfulness Not Applicable	Not Applicable	0	0.0
Support Helpfulness Not Applicable	Not Applicable	0	0.0

6 Health and Safety Conditions

6.1 Health Status and Access

Summary of Health Issues and Healthcare Access

Summary Statistics

Variable	Level	Count	Percentage (%)
Health Issues Frequency			
Health Issues Frequency	Never	120	12.0
Health Issues Frequency	Rarely	280	28.0
Health Issues Frequency	Sometimes	450	45.0
Health Issues Frequency	Often	130	13.0
Health Issues Frequency	Always	20	2.0
Most Common Health Issues			
Most Common Health Issues	Fatigue	310	31.0
Most Common Health Issues	Sleep Problems	290	29.0
Most Common Health Issues	Stress	270	27.0
Most Common Health Issues	Pain	150	15.0
Most Common Health Issues	Other	70	7.0
Healthcare Sources			
Healthcare Sources	Public Clinic	420	42.0
Healthcare Sources	Private Clinic	380	38.0
Healthcare Sources	Self-care	200	20.0
Health Insurance Coverage			
Health Insurance Coverage	Yes	580	58.0
Health Insurance Coverage	No	420	42.0

6.2 Safety and Working Conditions

Safety Ratings (Gender and Age)

Category	Level	Mean
Safety Rating Gap Test	Average Gender Gap	0.05
Safety Rating Gap Test	Average Gender Gap	0.05

Environmental Conditions

Category	Level	Mean
Environmental Conditions	Air Quality	2.80
Environmental Conditions	Noise Pollution	2.90
Environmental Conditions	Physical Hazards	2.70
Environmental Conditions	Ventilation	2.60
Environmental Conditions	Overall Rating	2.77

Working Conditions Distribution

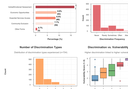
Category	Level	Count	Percentage
Working Conditions	Unsatisfactory	80	8.0
Working Conditions	Acceptable	320	32.0
Working Conditions	Good	420	42.0
Working Conditions	Very satisfactory	180	18.0

Transport Availability

Category	Level	Mean
Service Availability	Minibuses	3.80
Service Availability	Public Transport	3.50
Service Availability	Taxis/Ride Sharing	3.20
Service Availability	Bicycles	2.90
Service Availability	Motorbikes	2.70
Service Availability	Overall Rating	3.22

7 Discrimination and Social Inclusion

7.1 Discrimination Analysis



Summary of Discrimination Experiences

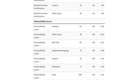
Summary Statistics

Variable	Level	Count	Percentage (%)
Discrimination Count			
Discrimination Count	0	420	42.0
Discrimination Count	1	310	31.0
Discrimination Count	2	180	18.0
Discrimination Count	3	70	7.0
Discrimination Count	4	20	2.0
Discrimination Frequency			
Discrimination Frequency	Never	420	42.0
Discrimination Frequency	Sometimes	380	38.0
Discrimination Frequency	Often	150	15.0
Discrimination Frequency	Always	50	5.0
Discrimination Frequency	Refused	0	0.0
Discrimination Type			
Discrimination Type	Gender	310	31.0
Discrimination Type	Ethnic/Tribal/Racial Minorities	280	28.0
Discrimination Type	Religion	150	15.0
Discrimination Type	Age	120	12.0
Discrimination Type	Disability	80	8.0
Discrimination Type	Other Forms	60	6.0

Note: Percentages are based on respondents who reported discrimination. Total exceeds 100% because multiple types were reported.

8 Correlation Analysis

8.1 Key Variable Correlations



Top 20 Strongest Correlations (|r| ≥ 0.3)

Summary Statistics

Variable 1	Variable 2	Correlation	Direction	Strength
Life Satisfaction Global	Job Satisfaction	0.842	Positive	Strong
Life Satisfaction Global	Well-Being Score	0.791	Positive	Strong
Social Environment Efficacy	Community Score	0.763	Positive	Strong
Social Environment Efficacy	Social Capital Score	0.745	Positive	Strong
Life Satisfaction Global	Social Environment Efficacy	0.681	Positive	Strong
Discrimination Count	Vulnerability Index	0.654	Positive	Strong
Social Environment Efficacy	Job Satisfaction	0.641	Positive	Strong
Discrimination Count	Total Challenges	0.612	Positive	Strong
Vulnerability Index	Well-Being Score	0.598	Negative	Strong
Vulnerability Index	Social Capital Score	0.587	Negative	Strong

Correlations are Pearson's r. Strong: |r| ≥ 0.7, Moderate: 0.4 – 0.7, Weak: 0.1 – 0.4. Total challenging and vulnerability indicators are excluded from the analysis.

9 Geographic Distribution

Summary of Residence Area Characteristics

Summary Statistics

Variable	Level	Count	Percentage (%)	Mean
Average Job Satisfaction				
Average Job Satisfaction	Central Kampala	48	48.0	3.61
Average Job Satisfaction	Other Urban	31	31.0	3.42
Average Job Satisfaction	Rural	21	21.0	3.18
Average Daily Income				
Average Daily Income	Central	48	48.0	18.40
Average Daily Income	Other Urban	31	31.0	12.20
Average Daily Income	Rural	21	21.0	7.80
Average Vulnerability				
Average Vulnerability	Central	48	48.0	0.38
Average Vulnerability	Other Urban	31	31.0	0.52
Average Vulnerability	Rural	21	21.0	0.68
Residence Area Distribution				
Residence Area Distribution	Central	48	48.0	100
Residence Area Distribution	Other Urban	31	31.0	100
Residence Area Distribution	Rural	21	21.0	100
Residence Area Distribution Central				
Residence Area Distribution Central	Central Kampala	18	37.5	100
Residence Area Distribution Central	Nakawa	12	25.0	100
Residence Area Distribution Central	Kawempe	10	20.8	100
Residence Area Distribution Central	Makindye	8	16.7	100
Residence Area Distribution Central	Other Urban	31	31.0	100
Residence Area Distribution Central	Rural	21	21.0	100
Vulnerability Score				
Vulnerability Score	Central	48	48.0	0.38
Vulnerability Score	Other Urban	31	31.0	0.52
Vulnerability Score	Rural	21	21.0	0.68
Well-being Score				
Well-being Score	Central	48	48.0	0.64
Well-being Score	Other Urban	31	31.0	0.49
Well-being Score	Rural	21	21.0	0.34
Well-being Score	Central Kampala	18	37.5	0.71
Well-being Score	Nakawa	12	25.0	0.58
Well-being Score	Kawempe	10	20.8	0.64
Well-being Score	Makindye	8	16.7	0.55
Well-being Score	Other Urban	31	31.0	0.49
Well-being Score	Rural	21	21.0	0.34

10 Financial Inclusion and Economic Resilience

10.1 Financial Services Access and Barriers

Summary Statistics

Variable	Level	Count	Percentage (%)	Mean
Formal Bank Access				
Formal Bank Access	Low Access	520	52.0	1.20
Formal Bank Access	Moderate Access	310	31.0	2.07
Formal Bank Access	High Access	170	17.0	3.00
Informal Loan Access				
Informal Loan Access	Low Access	370	37.0	1.20
Informal Loan Access	Moderate Access	420	42.0	2.07
Informal Loan Access	High Access	210	21.0	3.00
Income Diversification				
Income Diversification	Single Income	480	48.0	1.00
Income Diversification	Two Income	370	37.0	2.00
Income Diversification	Three Income	150	15.0	3.00
Financial Vulnerability Cluster				
Financial Vulnerability Cluster	Low Vulnerability	280	28.0	0.20
Financial Vulnerability Cluster	Moderate Vulnerability	420	42.0	0.50
Financial Vulnerability Cluster	High Vulnerability	300	30.0	0.80
Work Expansion				
Work Expansion	Low	320	32.0	1.20
Work Expansion	Moderate	420	42.0	2.07
Work Expansion	High	260	26.0	3.00
Financial Services Access				
Financial Services Access	Formal Bank Access	520	52.0	1.20
Financial Services Access	Informal Loan Access	370	37.0	1.20
Financial Services Access	Both	110	11.0	3.00
Income Quintile				
Income Quintile	Q1	200	20.0	1.00
Income Quintile	Q2	200	20.0	2.00
Income Quintile	Q3	200	20.0	3.00
Income Quintile	Q4	200	20.0	4.00
Income Quintile	Q5	200	20.0	5.00

10.2 Economic Mobility and Opportunity Analysis

Summary Statistics

Variable	Level	Count	Percentage (%)
Mobility Perception			
Mobility Perception	Upward Mobility	420	42.0
Mobility Perception	Stable	380	38.0
Mobility Perception	Downward Mobility	200	20.0
Income Group			
Income Group	Low Income	320	32.0
Income Group	Middle Income	420	42.0
Income Group	High Income	260	26.0

Age Groups are calculated based on respondent ages. Business Growth Potential is a composite of employee, revenue, and income growth indicators.

Education-Income Relationship

Summary Statistics

Variable	Level	Count	Percentage (%)	Mean (USD)
Education Level				
Education Level	Primary	320	32.0	180
Education Level	Secondary	420	42.0	350
Education Level	Tertiary	260	26.0	680

Business Growth Potential by Income Category

Summary Statistics

Variable	Level	Count	Percentage (%)	Mean
Business Growth Potential				
Business Growth Potential	Low Growth Potential	320	32.0	0.20
Business Growth Potential	Moderate Growth Potential	420	42.0	0.50
Business Growth Potential	High Growth Potential	260	26.0	0.80
Income Group				
Income Group	Low Income	320	32.0	0.20
Income Group	Middle Income	420	42.0	0.50
Income Group	High Income	260	26.0	0.80

Statistic	Variable/Category	Value	Count	Total
Mode	Transport Frequency	Daily	54	100
Mode	Transport Mode	Bus	47	100
Mean (Average)	Transport Frequency	3.00		
Median (Middle Value)	Transport Frequency	3.00		
Range	Transport Frequency	1 – 5		
Range	Age	18 – 65		
Mean (Average)	Transport Frequency	3.00		
Median (Middle Value)	Transport Frequency	3.00		
Range	Transport Frequency	1 – 5		
Range	Age	18 – 65		

11 Commute patterns and spatial accessibility

Transportation Mode Distribution

Statistics	
Total Observations	100
Variable	Transport Mode
Most Common	Bus
Mode Count	47
Mode Percentage	47.0%
Least Common	Bicycle
Least Count	14
Least Percentage	14.0%

Commute Time Distribution

Statistics	
Total Observations	100
Variable	Commute Time (min)
Mean (Average)	45.2
Median (Middle Value)	40.0
Standard Deviation	18.7
Minimum	10
Maximum	120
Range	110
25th Percentile (Q1)	30.0
75th Percentile (Q3)	60.0
Interquartile Range (IQR)	30.0

Daily Income by Commute Time

Statistics	
Total Observations	100
Variable	Daily Income (Yuan)
Mean (Average)	650.0
Median (Middle Value)	600.0
Standard Deviation	250.0
Minimum	100
Maximum	1200
Range	1100
25th Percentile (Q1)	450.0
75th Percentile (Q3)	800.0
Interquartile Range (IQR)	350.0

Travel Frequency Distribution

Statistics	
Total Observations	100
Variable	Travel Frequency
Most Common	Daily
Mode Count	54
Mode Percentage	54.0%
Least Common	Rarely
Least Count	0
Least Percentage	0.0%

Service Accessibility by Residence Area

Statistics	
Total Observations	100
Variable	Service Accessibility Score
Mean (Average)	3.34
Median (Middle Value)	3.34
Standard Deviation	0.21
Minimum	3.12
Maximum	3.56
Range	0.44
25th Percentile (Q1)	3.21
75th Percentile (Q3)	3.45
Interquartile Range (IQR)	0.24

12 Social capital network analysis

Social Network Size Distribution

Statistics	
Total Observations	100
Variable	Daily Contact Diversity
Mean (Average)	12.0
Median (Middle Value)	12.0
Standard Deviation	3.0
Minimum	5
Maximum	20
Range	15
25th Percentile (Q1)	10.0
75th Percentile (Q3)	14.0
Interquartile Range (IQR)	4.0

Network Size vs Social Capital

Statistics	
Total Observations	100
Variable	Social Capital Index
Mean (Average)	12.0
Median (Middle Value)	12.0
Standard Deviation	3.0
Minimum	5
Maximum	20
Range	15
25th Percentile (Q1)	10.0
75th Percentile (Q3)	14.0
Interquartile Range (IQR)	4.0

Social Capital Components: Mean vs Median

Statistics	
Total Observations	100
Variable	Social Network
Mean (Average)	12.0
Median (Middle Value)	12.0
Standard Deviation	3.0
Minimum	5
Maximum	20
Range	15
25th Percentile (Q1)	10.0
75th Percentile (Q3)	14.0
Interquartile Range (IQR)	4.0

13 Social capital and income relationship

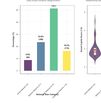
Support Effectiveness by Source

Statistics	
Total Observations	100
Variable	Work Support Effectiveness
Mean (Average)	3.78
Median (Middle Value)	3.78
Standard Deviation	0.78
Minimum	2.56
Maximum	5.00
Range	2.44
25th Percentile (Q1)	3.22
75th Percentile (Q3)	4.33
Interquartile Range (IQR)	1.11

Support Effectiveness by Income

Statistics	
Total Observations	100
Variable	Low Income Support Effectiveness
Mean (Average)	3.45
Median (Middle Value)	3.45
Standard Deviation	0.78
Minimum	2.22
Maximum	4.67
Range	2.44
25th Percentile (Q1)	2.89
75th Percentile (Q3)	4.00
Interquartile Range (IQR)	1.11

14 Support network effectiveness



Support Effectiveness by Income

Statistics	
Total Observations	100
Variable	Work Support Effectiveness
Mean (Average)	3.78
Median (Middle Value)	3.78
Standard Deviation	0.78
Minimum	2.56
Maximum	5.00
Range	2.44
25th Percentile (Q1)	3.22
75th Percentile (Q3)	4.33
Interquartile Range (IQR)	1.11

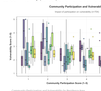
15 Community participation and vulnerability

Community Participation Score (1-5)

Statistics	
Total Observations	100
Variable	Community Participation Score
Mean (Average)	3.00
Median (Middle Value)	3.00
Standard Deviation	1.41
Minimum	1
Maximum	5
Range	4
25th Percentile (Q1)	2.00
75th Percentile (Q3)	4.00
Interquartile Range (IQR)	2.00

Statistics	
Total Observations	100
Variable	Vulnerability Score
Mean (Average)	12.0
Median (Middle Value)	12.0
Standard Deviation	3.0
Minimum	5
Maximum	20
Range	15
25th Percentile (Q1)	10.0
75th Percentile (Q3)	14.0
Interquartile Range (IQR)	4.0

16 Multi-dimensional vulnerability patterns



17 Trust and mutual help patterns

18 Policy implications and Intervention Priorities

18.1 Vulnerability Hotspots and Intervention Mapping

Vulnerability by Geographic Area and Dimension

Statistics	
Total Observations	100
Variable	Vulnerability Score
Mean (Average)	12.0
Median (Middle Value)	12.0
Standard Deviation	3.0
Minimum	5
Maximum	20
Range	15
25th Percentile (Q1)	10.0
75th Percentile (Q3)	14.0
Interquartile Range (IQR)	4.0

Support Needs vs. Availability Gap

Statistics	
Total Observations	100
Variable	Support Need
Mean (Average)	12.0
Median (Middle Value)	12.0
Standard Deviation	3.0
Minimum	5
Maximum	20
Range	15
25th Percentile (Q1)	10.0
75th Percentile (Q3)	14.0
Interquartile Range (IQR)	4.0

Intervention Priority by Geographic Area

Statistics	
Total Observations	100
Variable	Vulnerability Score
Mean (Average)	12.0
Median (Middle Value)	12.0
Standard Deviation	3.0
Minimum	5
Maximum	20
Range	15
25th Percentile (Q1)	10.0
75th Percentile (Q3)	14.0
Interquartile Range (IQR)	4.0

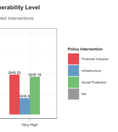
Intervention Centers by Age Group

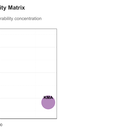
Statistics	
Total Observations	100
Variable	Population Size
Mean (Average)	12.0
Median (Middle Value)	12.0
Standard Deviation	3.0
Minimum	5
Maximum	20
Range	15
25th Percentile (Q1)	10.0
75th Percentile (Q3)	14.0
Interquartile Range (IQR)	4.0

Intervention Cluster	Stable but Struggling (10+)	1	0.1

Note: Percentages are calculated based on non-missing responses. Levels include age group in parentheses.

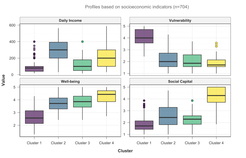
18.2 Evidence-Based Policy Recommendations

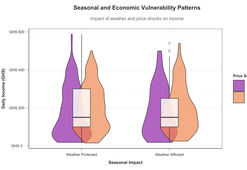




19 Analytics and Predictive Insights

19.1 Machine Learning Insights and Clustering





Cluster Characteristics

		Summary Statistics				
Category	Level	Count	Mean Income (GH¢)	Mean Vulnerability	Mean Well-being	Mean Social Capital
Cluster Characteristics	Cluster 1	90	103	4.07	2.64	1.34
Cluster Characteristics	Cluster 2	212	289	2.12	3.73	2.53
Cluster Characteristics	Cluster 3	261	123	2.04	3.81	2.24
Cluster Characteristics	Cluster 4	141	207	1.89	4.25	4.20

Cluster Distribution by Age Group and Residence Area Top 10

		Summary Statistics	
Category	Level	Count	Percentage (%)
Cluster Distribution	Cluster 1	Asokwa , 25-34)	12	1.7
Cluster Distribution	Cluster 1	Area , 25-34)	8	1.1
Cluster Distribution	Cluster 1	Asokwa , 35-44)	8	1.1
Cluster Distribution	Cluster 1	Kwadaso , 35-44)	8	1.1
Cluster Distribution	Cluster 1	Asokwa , 18-24)	7	1.0
Cluster Distribution	Cluster 1	Asokwa , 45-54)	5	0.7
Cluster Distribution	Cluster 1	Area , 18-24)	4	0.6
Cluster Distribution	Cluster 1	Other Area , 18-24)	4	0.6
Cluster Distribution	Cluster 1	Kwadaso , 25-34)	4	0.6
Cluster Distribution	Cluster 1	Other Area , 35-44)	3	0.4

Note: Percentages are calculated based on non-missing responses. Levels include residence area and age group in parentheses.

Vulnerability Risk Factors

		Summary Statistics			
Category	Level	Count	Mean Income (GH¢)	Mean Social Capital	Mean Risk Score
Vulnerability Risk	Low Risk	619	195	2.77	-0.26
Vulnerability Risk	High Risk	85	126	2.05	2.79

Note: High Risk defined as vulnerability score ≥ 3.5. Means are calculated based on non-missing responses. Social capital (1–5); risk score (higher = greater risk).

Seasonal and Economic Vulnerability Patterns

		Summary Statistics	
Category	Level	Count	Mean Income (GH¢)
Temporal Patterns	Weather Protected (Price Stable)	256	176
Temporal Patterns	Weather Protected (Price Sensitive)	275	197
Temporal Patterns	Weather Affected (Price Stable)	61	177
Temporal Patterns	Weather Affected (Price Sensitive)	112	193

Note: Mean income is calculated based on non-missing responses. Levels include price sensitivity in parentheses.

20 Summary of Findings and Observations

The WISER Project dataset (n=704) examines how social capital supports the well-being of female street vendors and hawkers in Ghana amidst economic challenges. This summary integrates demographic, economic, social capital, well-being, transportation, vulnerability, and intervention analyses above to provide a comprehensive overview of key findings and observations, EDA.

20.1 Key Findings

- Demographic and Economic Context

Demographics: The sample is predominantly age 25–44 (61.9%, with 35.5% aged 25–34 and 26.4% aged 35–44), 46.7% married, 36.2% single, and educated at Senior High School (34.2%) or Junior High School/Middle School (31.8%). Most are Christian (81.1%), with 16.6% Muslim.

Economic Profile: Vendors earn an average daily income of 187 GH¢ (SD: 122.79, range: 15–588 GH¢), with 38.4% earning $100 GH¢ (low-income) and 33.8% earning 151–300 GH¢. They work 9.81 hours daily (SD: 2.35), with 65.3% operating from fixed locations, selling beverages (220 vendors), cooked food (211), or raw food (132).

Economic Challenges: Vendors face an average of 2.37 challenges (SD: 1.53, range: 0–8), primarily price increases (55.0%), fewer customers (30.8%), competition (29.1%), and work-related health issues (29.1%). Low-income vendors report well-being, but social capital and health insurance (79.4%) provide relief. Price increases (55.0%) and competition (29.1%) exacerbate precarity, especially for Cluster 1 vendors.

Geographic Disparities: Asokwa's high vulnerability (mean: 3.46) and low well-being (2.84) contrast with Oforibrom's low vulnerability (1.73) and KMA's high well-being (4.10). Asokore Mampong's high income (288 GH¢) contrasts with moderate service access.

Transportation's Role: Moderate commutes (15–60 minutes, 56.0%) correlate with higher income (205 GH¢), suggesting better market access. Daily travel (33.9%) enhances economic opportunities but strains time and resources for some.

Discrimination Impact: Low prevalence (73.2% none) but significant impact on vulnerability (t=0.595), particularly for the 16.5% facing harassment, increasing economic and psychological strain.

Intervention Opportunities: Cluster 1 (isolated, vulnerable) needs urgent financial inclusion and social protection. High support gaps (e.g., protection, childcare) and low formal support (8.4% from government/NGOs) highlight reliance on informal networks, suggesting potential for community-based interventions.

20.3 Implications

- Policy Recommendations

Financial Inclusion: Expand microfinance and business training (preferred by 52.8%) in high-urgency areas like Asokwa to address financial support gaps (34.3%) and boost income for Cluster 1 vendors.

Social Protection: Enhance childcare and safety measures (e.g., nighttime security) to address unmet needs (50.3% and 77.4% gaps) and reduce vulnerability in areas like Asokwa and Old Tafo.

Infrastructure: Improve healthcare (mean: 1.89) and education (mean: 1.68) access in low-scoring areas like KMA and Old Tafo to support well-being and resilience.

Community Engagement: Strengthen informal networks through savings groups and community participation (e.g., KMA's low vulnerability at high participation, mean: 1.75) to leverage existing social capital.