Ensuring Sustainable Digital Inclusion for Elderly Users

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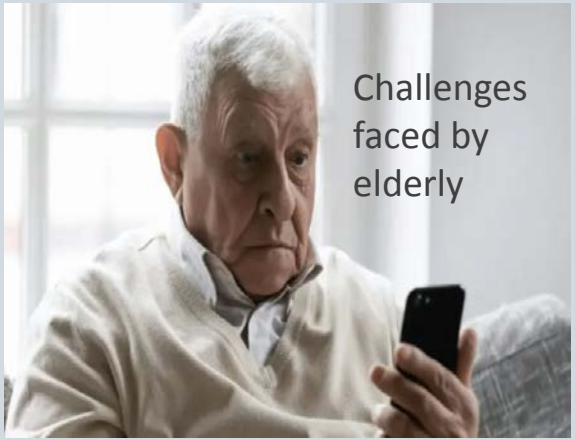
Overview


LIFE EXPECTANCY


Challenges faced by elderly


Role of Digital Inclusion

Key Takeaways

- Understand the challenges faced by the elderly in the digital era.
- Highlight actionable insights to bridge the digital divide.
- Foster global efforts for sustainable and inclusive digital adoption.

A Growing Digital Gap

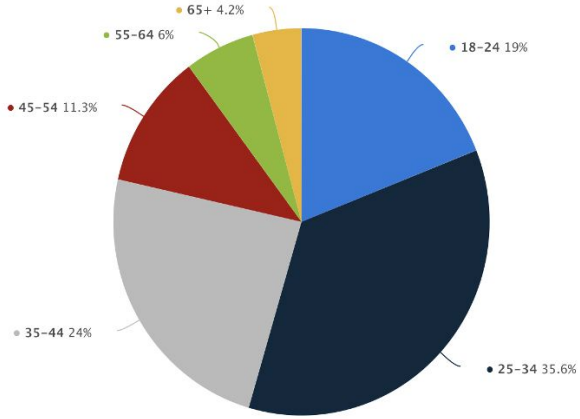


Figure 2: Distribution of internet users worldwide as of February 2024, by age group (Semrush, 2024)

Country	2024	2025	2026	2027	2050	2075
Austria	35.5	37.1	37.7	39	56	63.1
Brazil	17.7	18.3	19	19.8	39.5	62.3
Bulgaria	2.7	39.2	2.6	2.6	54.6	52.6
Estonia	35.3	39.2	36.2	36.6	54.9	59
France	39	40.9	40.4	41.2	54.5	55.8
Germany	42.4	41.4	45.1	46.7	58.1	63.1
India	11.9	12.7	12.4	12.7	22.5	37
Mexico	15.7	14.8	16.7	17.2	28.9	53.7
Romania	3.3	35.3	3.2	3.2	52.2	58
United Kingdom	34.8	35.9	36.2	36.9	47.1	53

Table 1: Expected old-age dependency ration in HICs and LMICs from 2024 to 2075 (OECD, 2024)

Data Collection & Analysis

Figure: High-Income countries used for analysis (Google Maps, 2024)

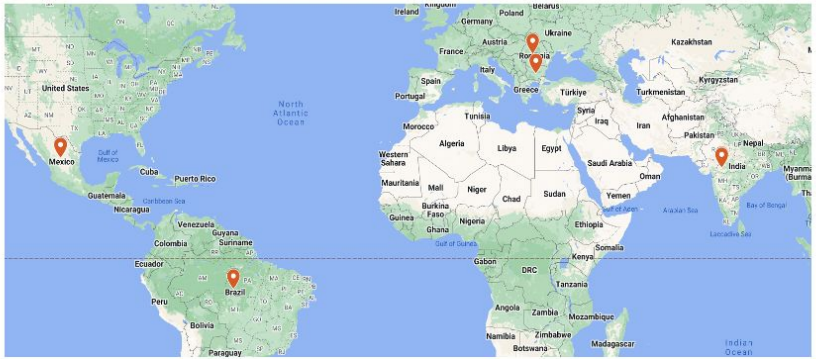


Figure: Lower and Middle-Income countries used for analysis (Google Maps, 2024)

Data Collection & Analysis

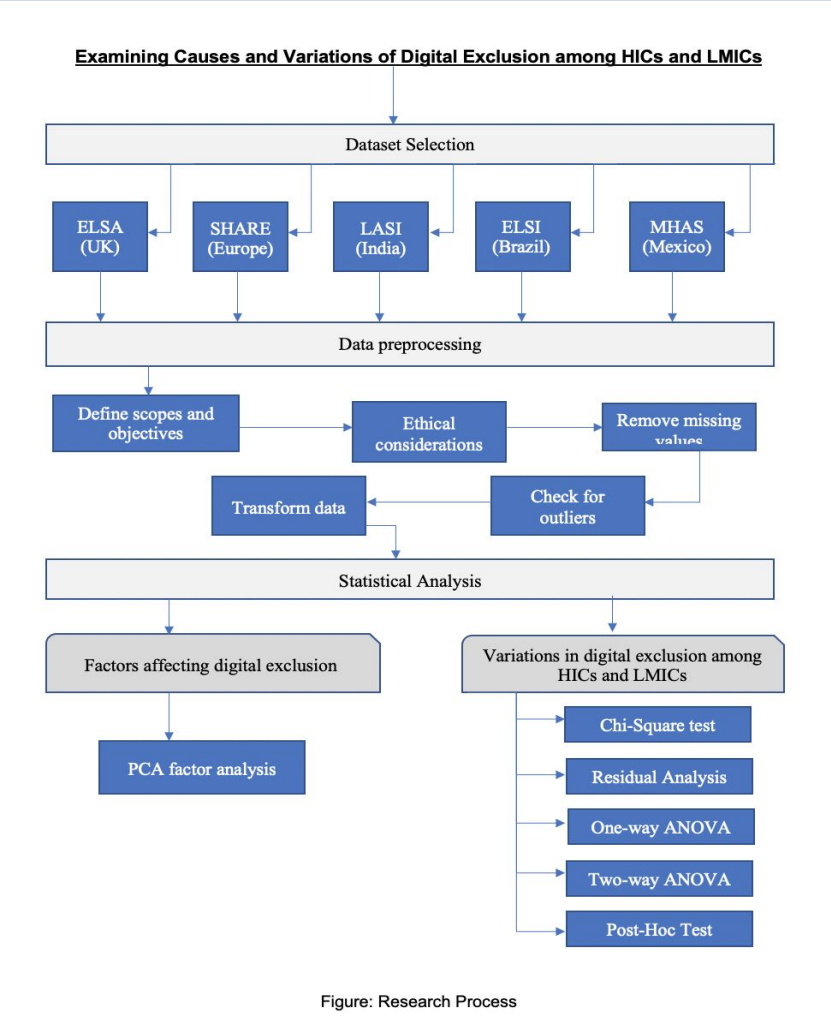


Figure: Research Process

Higher Income Countries

	Austria N = 2821	Germany N = 3138	France N = 2726	Estonia N = 4539	United Kingdom N = 6821
Age Median (Q1-Q3),	74 (55 -102)	71 (55 -99)	72 (55 – 104)	72 (55 – 101)	69 (55 – 89)
Mean,	74	71	72	72	69
Standard Deviation	8	9	10	10	9
Age group 55-64	411 (15.0)	548 (17.5)	532 (20.0)	1090 (24.0)	2276 (33.4)
Age group 65-74	992 (35.2)	813 (26.0)	1080 (40.0)	1548 (34.1)	2617 (38.4)
Age group 75+	1207 (43.0)	653 (21.0)	999 (37.0)	891 (20.0)	1928 (28.3)
Gender: Male	1115 (40.0)	931 (30.0)	1086 (40.0)	1691 (37.3)	3097 (45.4)
Gender: Female	1653 (59.0)	1083 (35.0)	1525 (56.0)	2838 (63.0)	3734 (55.0)
Digitally excluded	**619 (22.0)**	**875 (28.0)**	**848 (31.1)**	**1452 (32.0)**	**724 (11.0)**

Table: Descriptive statistics of HICs

Source: Austria, Germany, France and Estonia (SHARE, 2022); UK (ELSA, 2024)

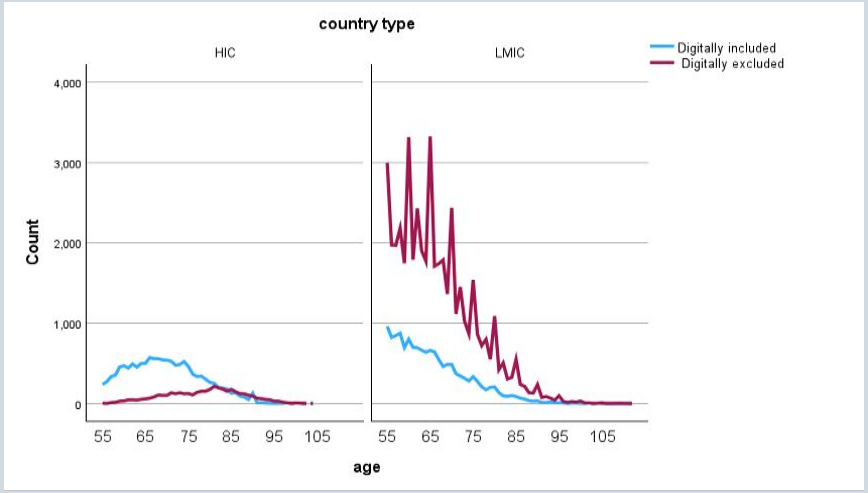
Middle Income Countries

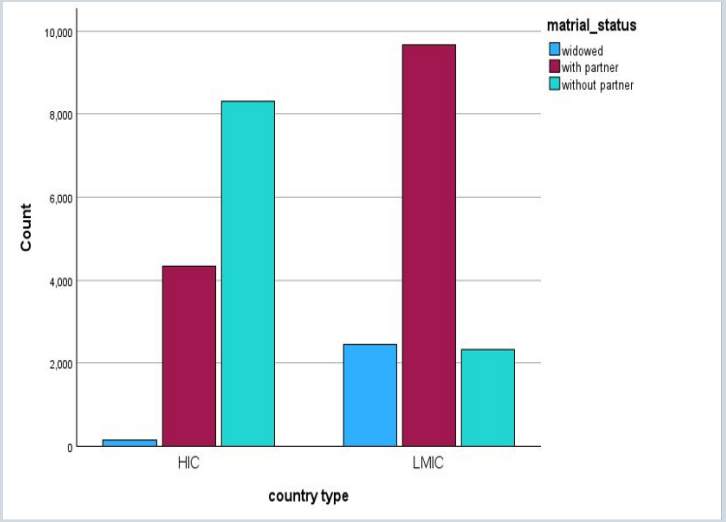
	Bulgaria N = 1012	Romania N = 1582	Brazil N = 9045	India N = 42083	Mexico N = 10016
Age Median (Q1-Q3), Mean, Standard Deviation	70 (55 – 100) 70 9	68 (55 – 98) 69 9	66 (55 - 109) 68 10	65(55 - 116) 66 8	64 (55 - 105) 66 9
Age group 55-64	201 (20.0)	514 (32.5)	3850 (43.0)	20437 (49.0)	5144 (51.4)
Age group 65-74	263 (26.0)	625 (40.0)	2928 (32.4)	14763 (35.1)	3141 (31.4)
Age group 75+	217 (21.4)	392 (25.0)	2267 (25.1)	6883 (16.4)	1731 (17.3)
Gender: Male	279 (28.0)	672 (42.5)	4952 (55.0)	19908 (47.3)	4660 (47.0)
Gender: Female	402 (40.0	859 (54.3)	4093 (45.3)	22175 (53.0)	5356 (53.5)
Digitally excluded	**689 (68.1)**	**939 (59.4)**	**4256 (47.0)**	**38321 (91.1)**	**3290 (33.0)**

Table: Descriptive statistics of LMICs

Source: Bulgaria and Romania (SHARE, 2022); Brazil (ELSI, 2023), India (LASI, 2023); Mexico (MHAS, 2021)

Digital exclusion vs age and marital status





Factors affecting digital exclusion

Pattern Matrix[a]

	Component		
	1	2	3
country_type	-0.889		
matrial_status	0.709		
education	0.656		
health_issue_bp		0.695	
health_issue_sugar		0.646	
health_rating		0.551	
health_issue_heart		0.520	
out_of_control			0.825
age_prevents			0.794

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization.
a. Rotation converged in 4 iterations.

- Socioeconomic factors (Component 1)
- Health issues (Component 2)
- Age-related limitations (Component 3)

Variations of digital exclusion between HICs and LMICs

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	16601.614[a]	1	0.000		
Continuity Correction[b]	16599.256	1	0.000		
Likelihood Ratio	16091.097	1	0.000		
Fisher's Exact Test				0.000	0.000
Linear-by-Linear Association	16601.405	1	0.000		
N of Valid Cases	79241				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5771.70.
b. Computed only for a 2x2 table

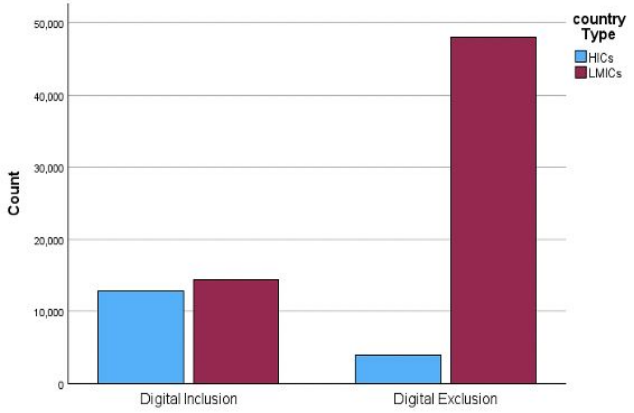


Figure: Trend in association of digital exclusion between HICs and LMICs

Variation of digital exclusion between different age groups in HICs and LMICs

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	4557.933[a]	2	0.000
Likelihood Ratio	4043.413	2	0.000
Linear-by-Linear Association	4000.725	1	0.000
N of Valid Cases	51102		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 754.43.

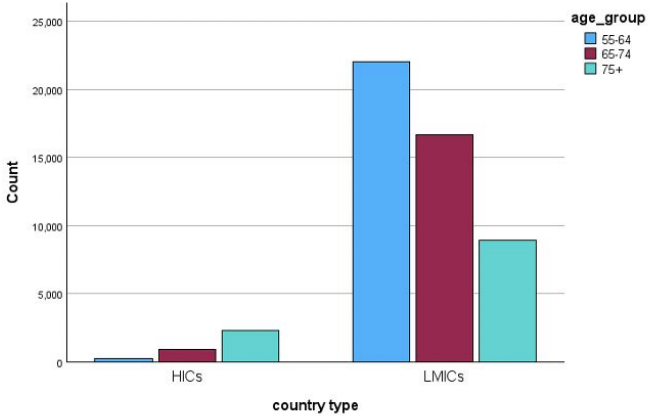


Figure: Trend in association of digitally excluded people and age groups between different country types.

Variations in life satisfaction among digitally excluded people in HICs.

ANOVA

life_satisfaction

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	557.299	4	139.325	46.668	0.000
Within Groups	7732.226	2590	2.985		
Total	8289.524	2594			

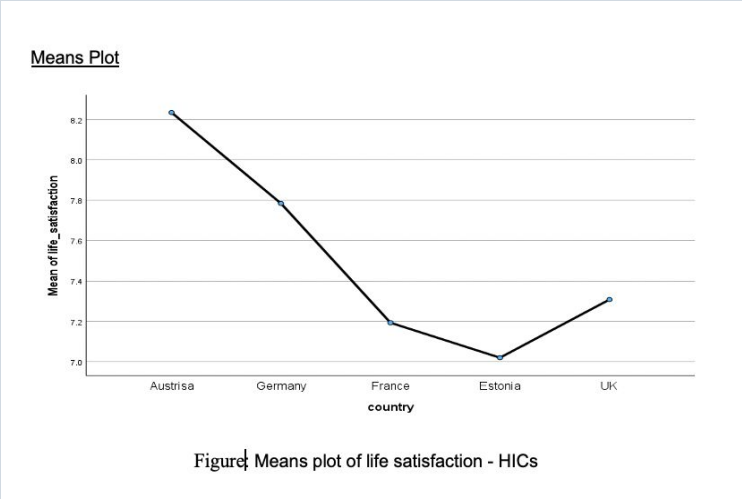


Figure: Means plot of life satisfaction - HICs

Variations in life satisfaction among digitally excluded people in LMICs.

ANOVA

life_satisfaction

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3767.305	4	941.826	265.663	0.000
Within Groups	216791.962	61151	3.545		
Total	220559.267	61155			

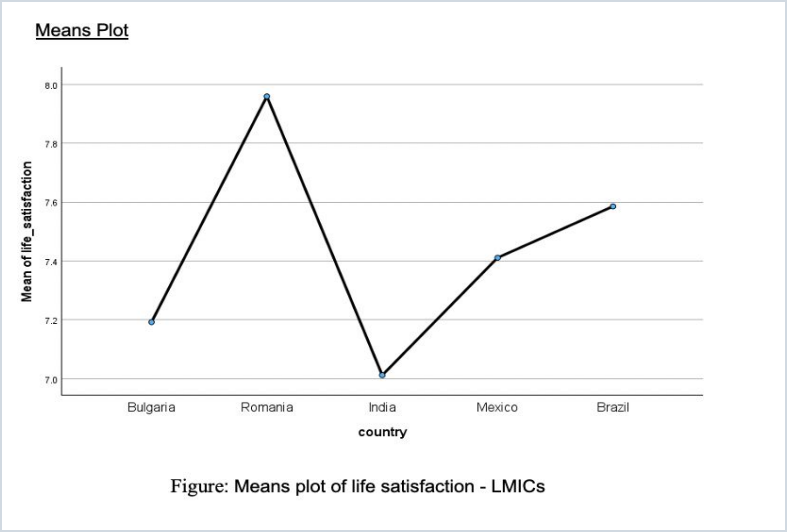


Figure: Means plot of life satisfaction - LMICs

How the health rating impacted by the interaction of digital exclusion and HICs and LMICs.

Tests of Between-Subjects Effects

Dependent Variable:

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	6616.012[a]	19	348.211	350.383	0.000
Intercept	76513.696	1	76513.696	76990.914	0.000
country	3345.504	9	371.723	374.041	0.000
digitaly_excluded	437.557	1	437.557	440.286	0.000
country * digitaly_excluded	185.155	9	20.573	20.701	0.000
Error	67900.503	68324	0.994		
Total	538597.000	68344			
Corrected Total	74516.515	68343			

a. R Squared = .089 (Adjusted R Squared = .089)

Profile Plots

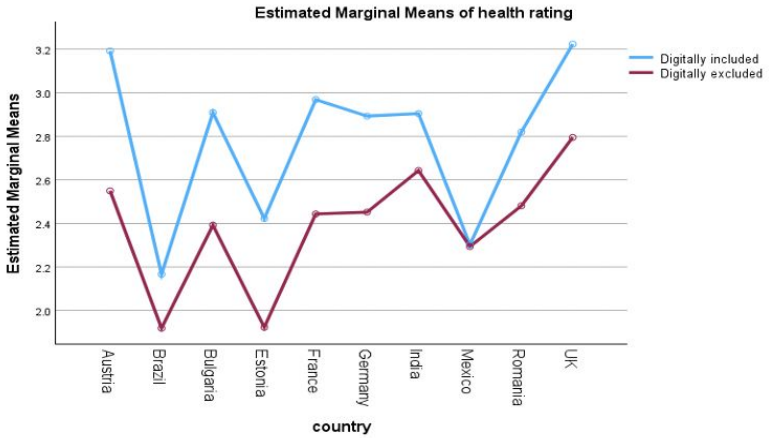


Figure: profile plot of health rating

Final Thoughts

Digital Exclusion Impacts

Key Findings

Successful Interventions

Recommendations

Future Directions

Call to Action

Thank You!

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Reference:

Mohan, R., Saleem, F., Voderhobli, K., & Sheikh-Akbari, A. (2024). Ensuring sustainable digital inclusion among the elderly: A comprehensive analysis. *Sustainability*, *16*(17), 7485. Available at: https://www.mdpi.com/2071-1050/16/17/7485