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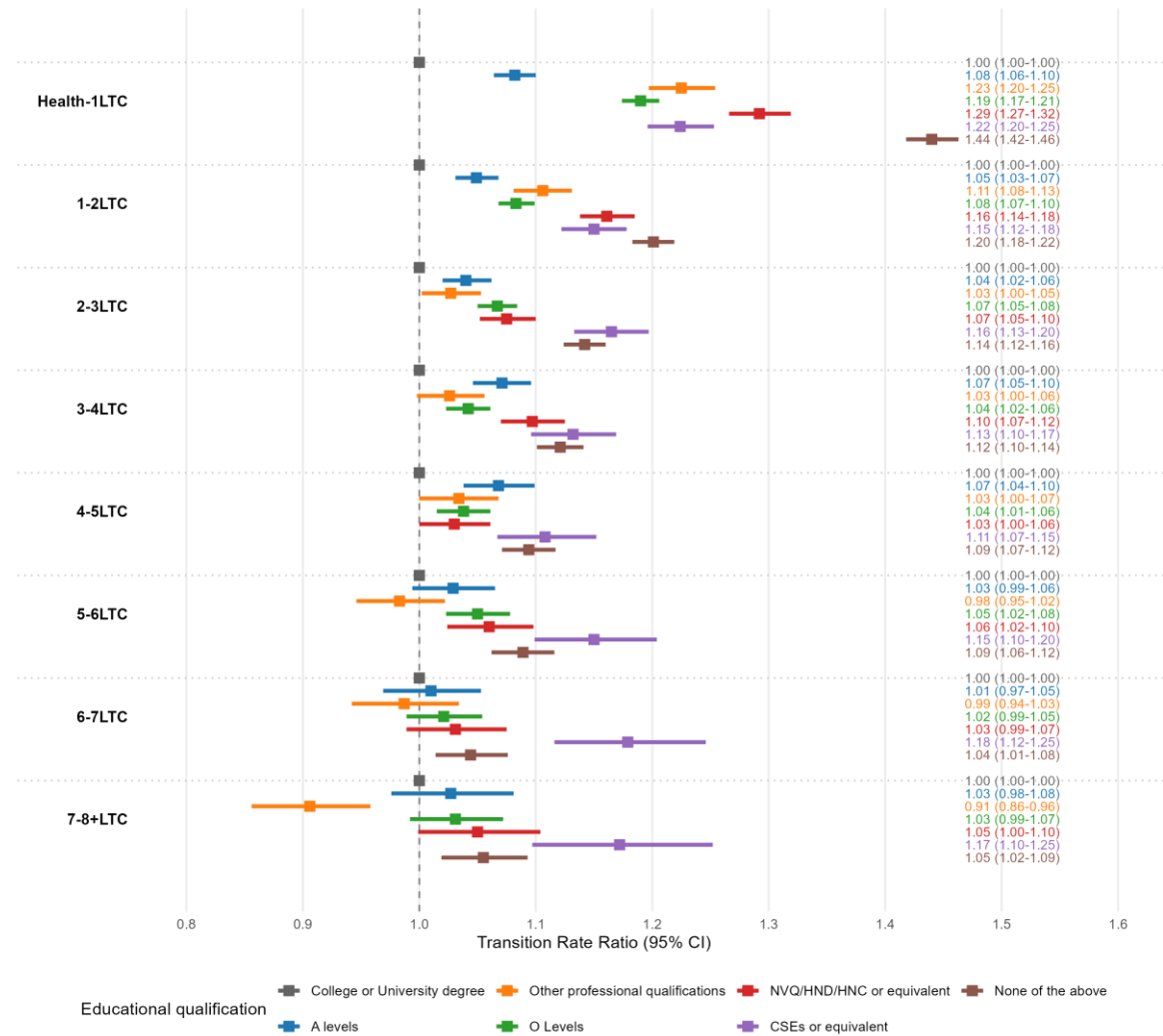
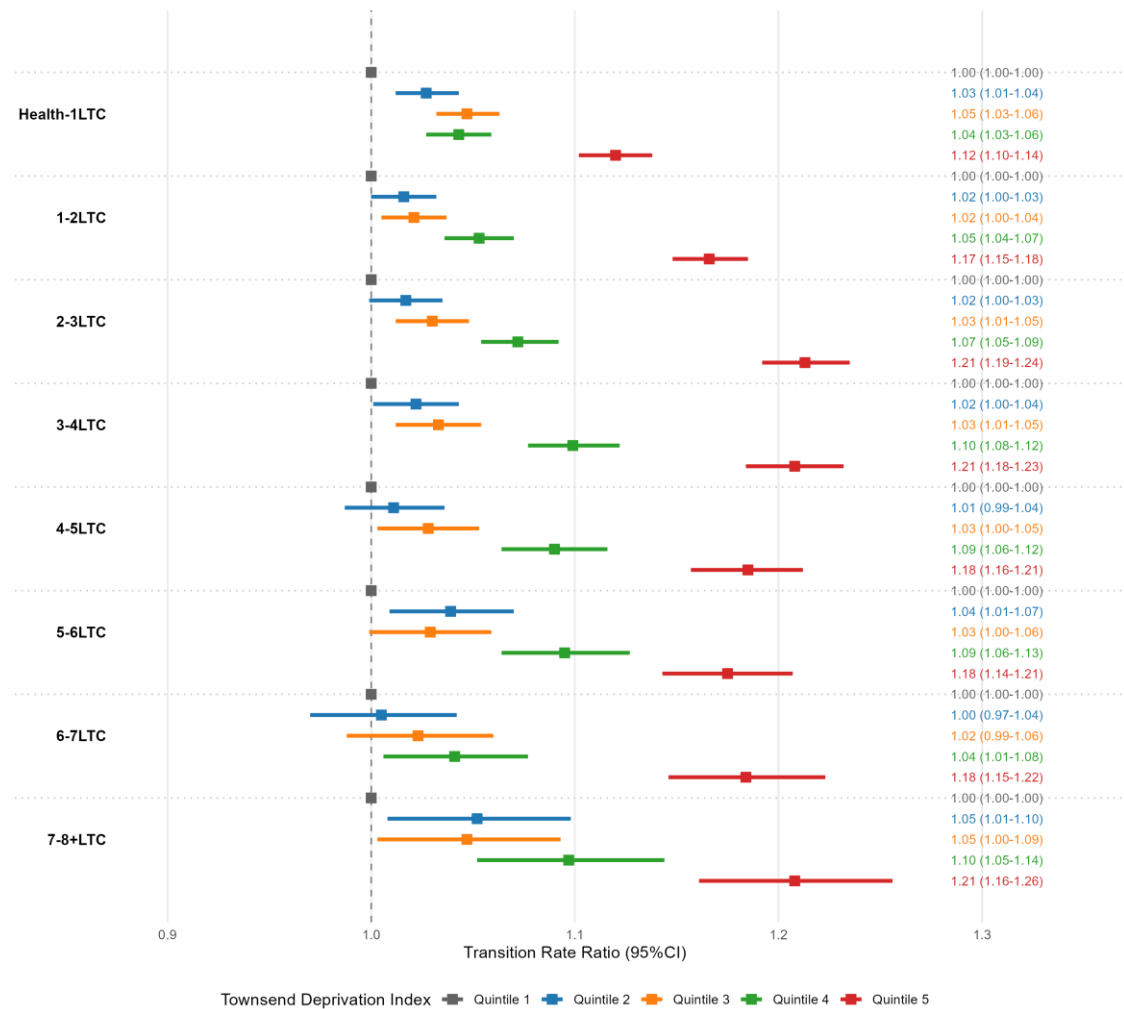


Figure S1. Transition-specific rate ratios for LTC accumulation by educational qualification

Abbreviations: LTC, Long-term conditions; CI, Confidence intervals. Reference group: college or university degree.



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Figure S2. Transition-specific rate ratios for LTC accumulation by Townsend Deprivation Index

Abbreviations: LTC, Long-term conditions; CI, Confidence intervals. Reference group: Quintile 1 (least deprived)

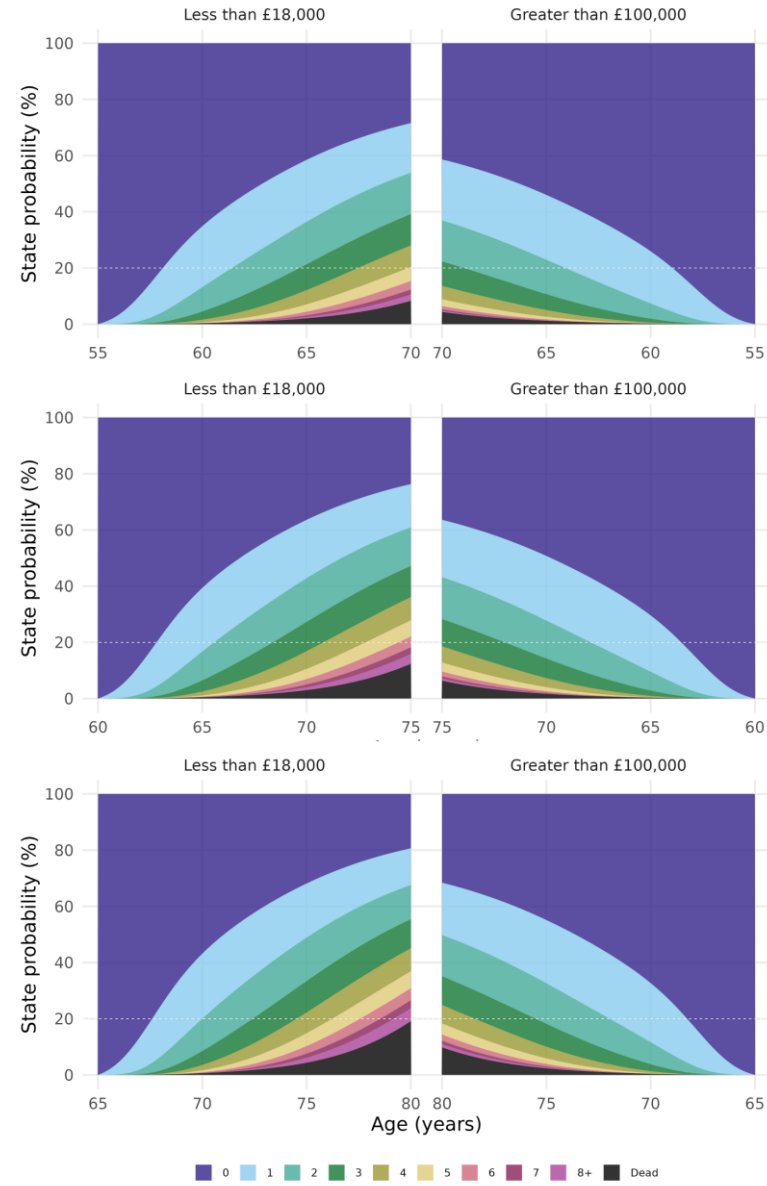


Figure S3. Predicted state probabilities of LTC accumulation and mortality by family income

Predicted probabilities of having 0, 1, 2, 3, etc. LTCs. Each colored area represents the probability of being in a given morbidity state at a given age for persons [Male, White, 2018] entering at age 55, 60, or 65. Boundaries between adjacent areas show probabilities at least a given number of LTCs (e.g. between "1" and "2" shows $P(\geq 2\text{LTCs})$). Where the horizontal dashed line at 20% intersects the boundaries marks the ages at which one-fifth of the population reaches each morbidity threshold. Differences in age at 20% probability between income groups indicate income disparities in LTC accumulation.

Abbreviations: LTCs, long-term conditions.

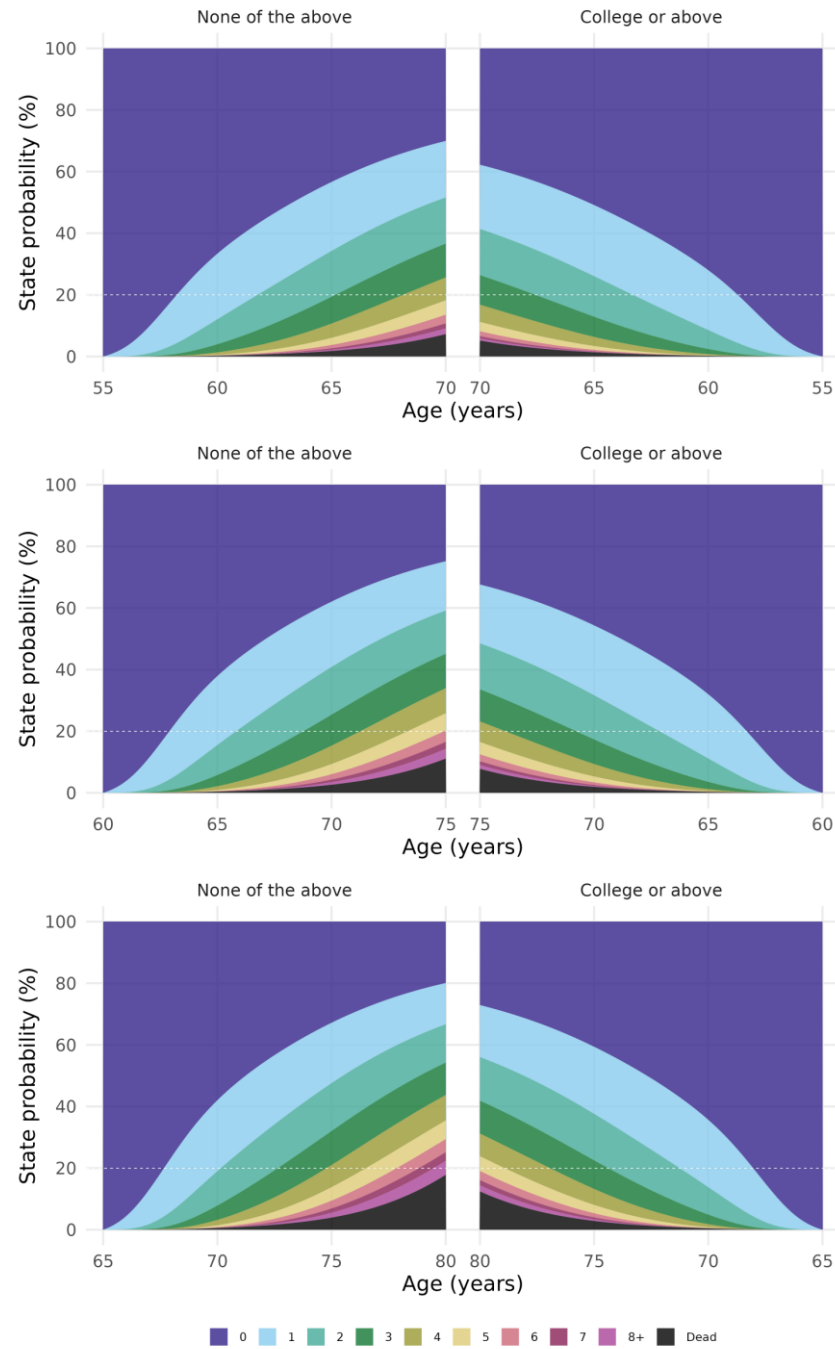
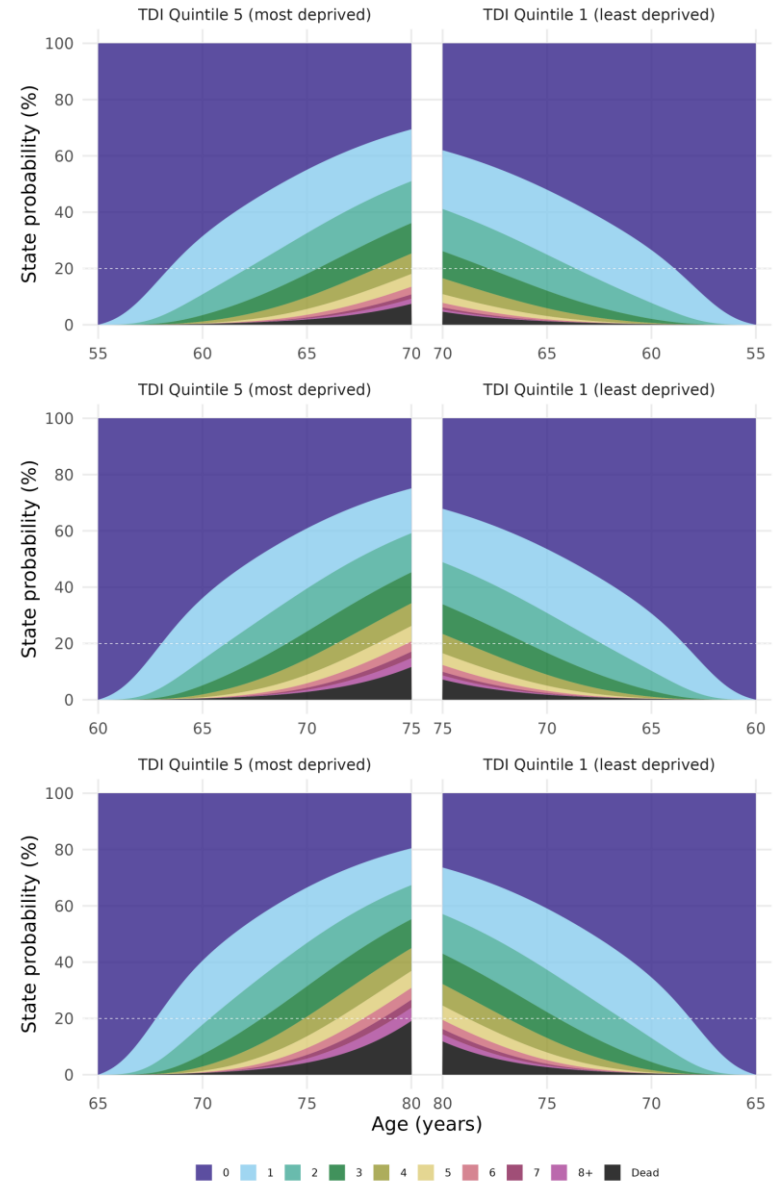


Figure S4. Predicted state probabilities of LTC accumulation and mortality by education level

Predicted probabilities of having 0, 1, 2, 3, etc. LTCs. Each colored area represents the probability of being in a given morbidity state at a given age for persons [Male, White, 2018] entering at age 55, 60, or 65. Boundaries between adjacent areas shows probabilities at least a given number of LTCs (e.g. between "1" and "2" shows $P(\geq 2\text{LTCs})$). Where the horizontal dashed line at 20% intersects the boundaries marks the ages at which one-fifth of the population reaches each morbidity threshold. Differences in age at 20% probability between education groups indicate education disparities in LTC accumulation.

Abbreviations: LTCs, long-term conditions.

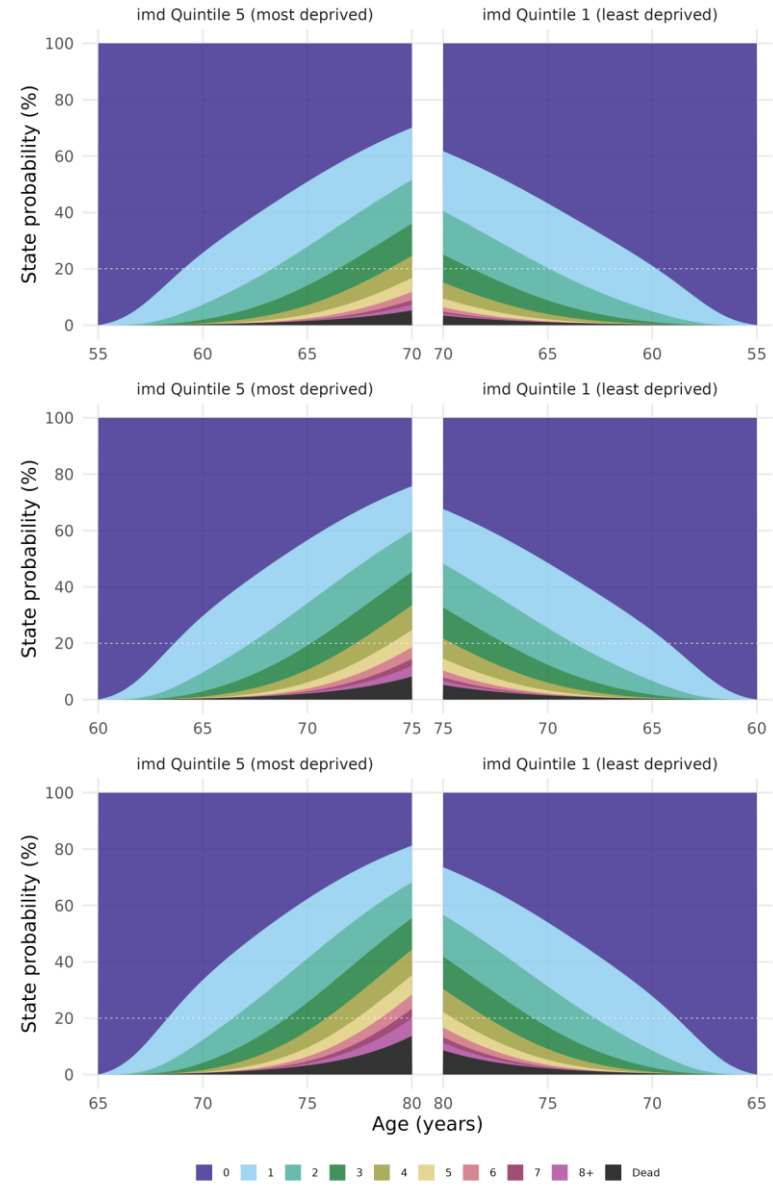


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Figure S5. Predicted state probabilities of LTC accumulation and mortality by TDI

41 Predicted probabilities of having 0, 1, 2, 3, etc. LTCs. Each colored area represents the probability of being in a given morbidity state at a given age for persons [Male, White,
42 2018] entering at age 55, 60, or 65. Boundaries between adjacent areas shows probabilities at least a given number of LTCs (e.g. between "1" and "2" shows $P(\geq 2\text{LTCs})$).
43 Where the horizontal dashed line at 20% intersects the boundaries marks the ages at which one-fifth of the population reaches each morbidity threshold. Differences in age at
44 20% probability between TDI groups indicate disparities in LTC accumulation.

45 *Abbreviations: LTCs, long-term conditions; TDI, Townsend deprivation index*



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Figure S6. Predicted state probabilities of LTC accumulation and mortality by IMD

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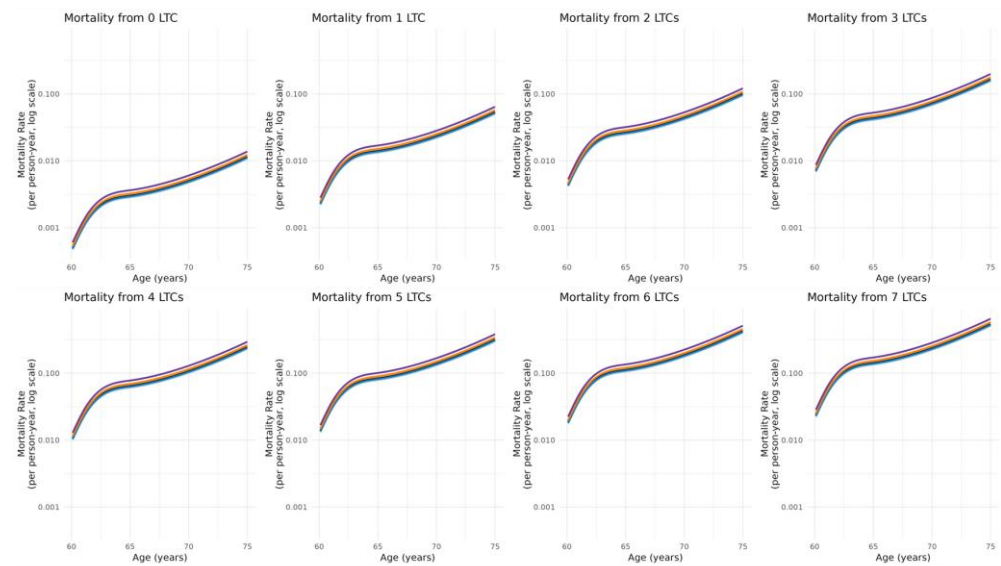
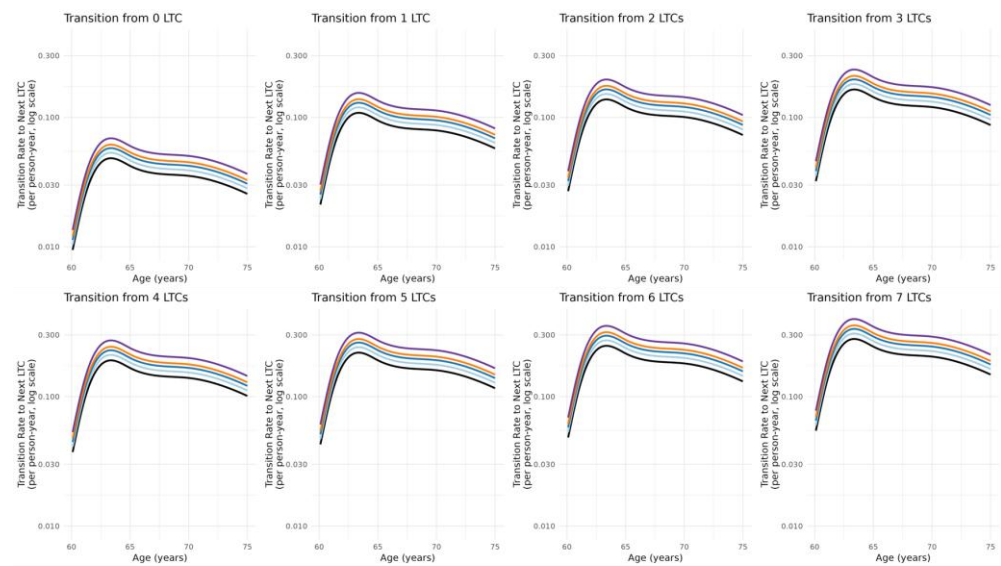
Predicted probabilities of having 0, 1, 2, 3, etc. LTCs. Each colored area represents the probability of being in a given morbidity state at a given age for persons [Male, White, 2018] entering at age 55, 60, or 65. Boundaries between adjacent areas shows probabilities at least a given number of LTCs (e.g. between "1" and "2" shows $P(\geq 2\text{LTCs})$). Where the horizontal dashed line at 20% intersects the boundaries marks the ages at which one-fifth of the population reaches each morbidity threshold. Differences in age at 20% probability between IMD groups indicate disparities in LTC accumulation.

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Abbreviations:: LTCs, long-term conditions; IMD, index of material deprivation



— Greater than 100,000 — 52,000 to 100,000 — 31,000 to 51,999 — 18,000 to 30,999 — Less than

Figure S7. Predicted transition rates of LTC accumulation and morality by family income

Predicted rates are shown on log scale for transitions between LTC states (upper panel) and mortality from each LTC state (lower panel) across ages 60-75 years. Income categories are represented by different colored lines. Predictions were generated for white males at calendar year 2004.

Abbreviations: LTCs, long-term conditions

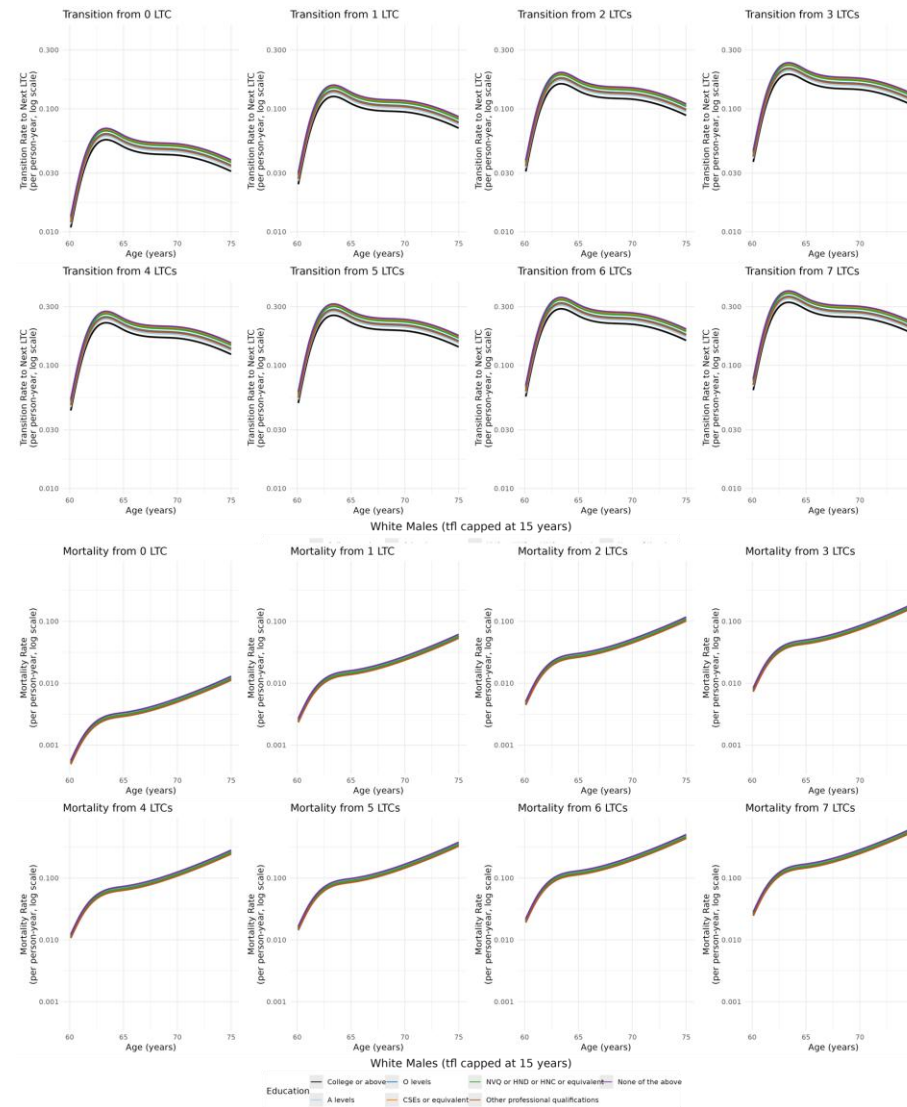


Figure S8. Predicted transition rates of LTC accumulation and mortality by education

76 Predicted rates are shown on log scale for transitions between LTC states (upper panel) and mortality from each LTC state (lower panel) across ages 60-75
77 years. Education categories are represented by different colored lines. Predictions were generated for white males at calendar year 2004.
78 *Abbreviations: LTCs, long-term conditions*
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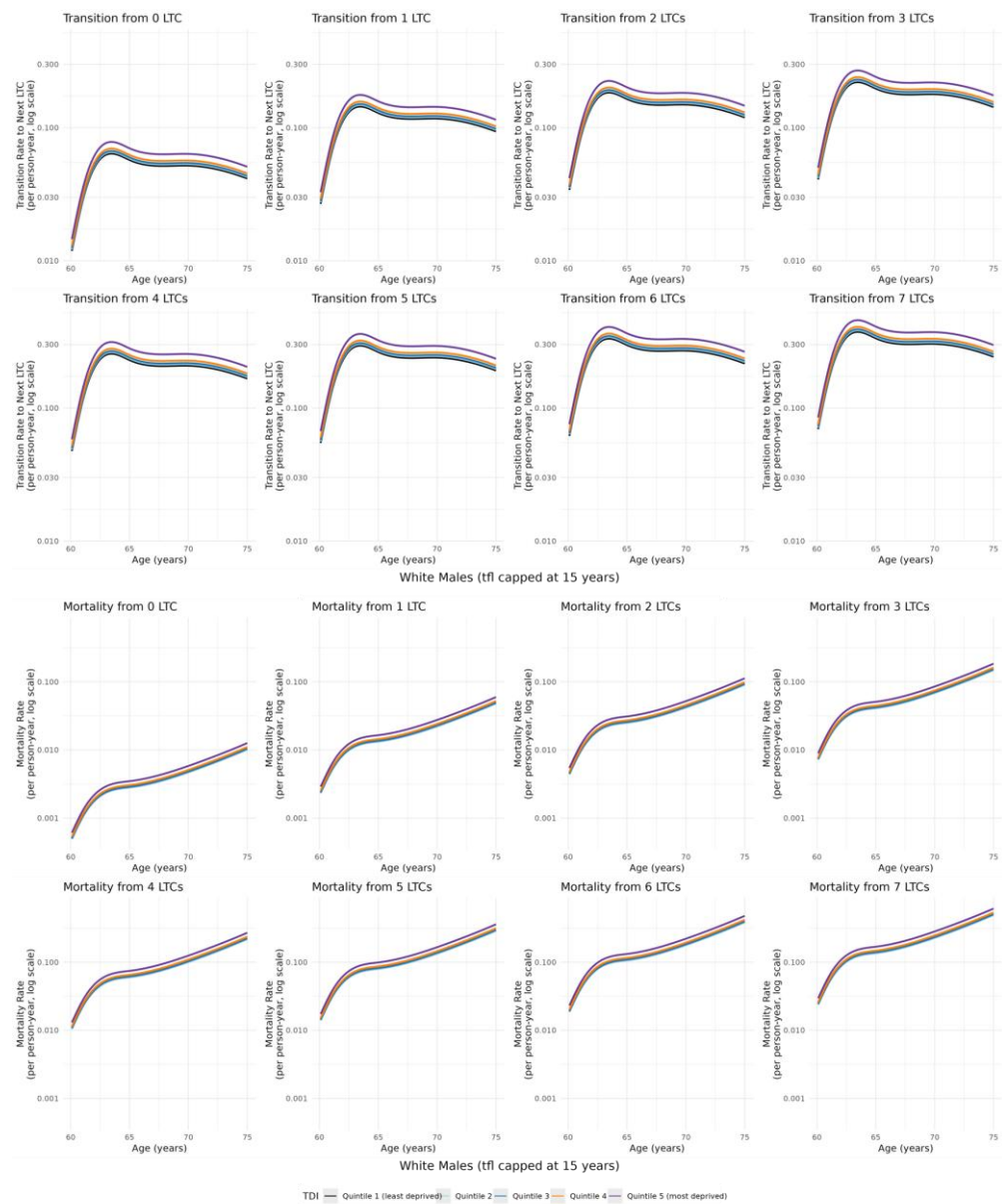
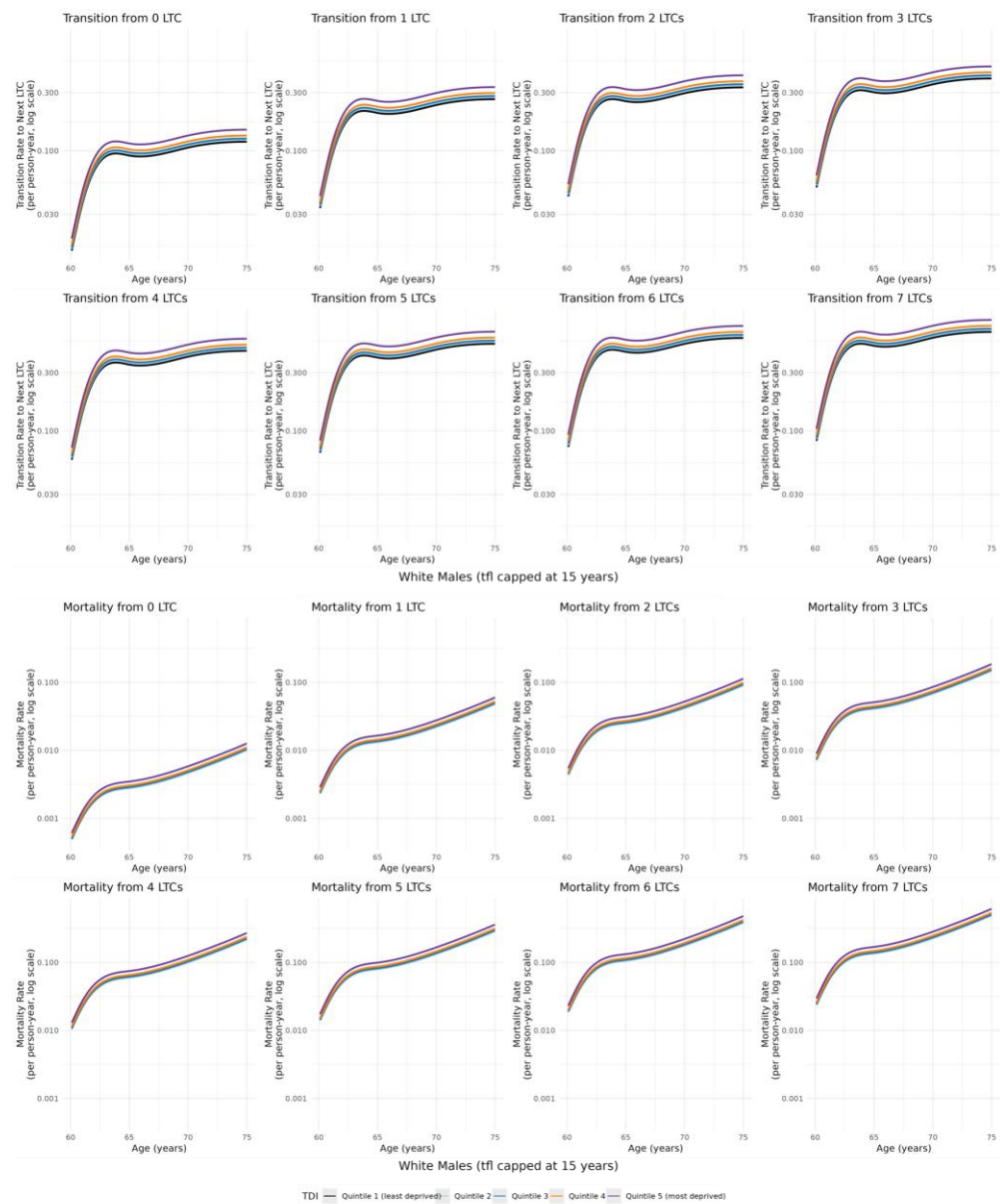


Figure S9. Predicted transition rates of LTC accumulation and morality by TDI

Predicted rates are shown on log scale for transitions between LTC states (upper panel) and mortality from each LTC state (lower panel) across ages 60-75 years. TDI levels are represented by different colored lines. Predictions were generated for white males at calendar year 2004.

Abbreviations: LTCs, long-term conditions; TDI, townsend deprivation index



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Figure S10. Predicted transition rates of LTC accumulation and morality by IMD

Predicted rates are shown on log scale for transitions between LTC states (upper panel) and mortality from each LTC state (lower panel) across ages 60-75 years. IMD levels are represented by different colored lines. Predictions were generated for white males at calendar year 2004.

Abbreviations: LTCs, long-term conditions; IMD, index of multiple deprivation