Estimating Program Participation Expectancies by ADL: A Policy Application of Active Life Expectancy Methods

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Background

Plentiful research that examines aspects of social programs for older people

- Cost-Benefit Analysis
- Cost Effectiveness Analysis
- Population Coverage Analysis

Almost no work using traditional demographic methods

Why not use demographic methods in program analyses?

- Issues with Sample Size
- Frequency of Low Quality Data
- Longitudinal Design Rarely Considered in Data Collection
- Few Program Personnel with Demographic Training

Research Purposes

- Demonstrate the application of ALE methods in an old-age program setting
- Describe the disability profile of program participants
- Examine race and gender differences in ‘Program Expectancy’ by ADL

About The Program

Elderly Services Program in an urban county in the Midwestern region of the United States

- Community-Dwelling Seniors (age 60+)
- Required level of disability (1+ ADL or 2+ IADL)
- Current Resident of the County
- Services provided include: personal care, adult day care, home delivered meals, transportation, monitoring, and respite

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Data

2005 Program Year

N = 5,315

- 2,409 White Females
- 783 White Males
- 1,554 Black Females
- 569 Black Males

98+% with at least 1 ADL

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Methods

Program Expectancies are calculated using Bayesian Multi-state Life Tables (Lynch & Brown 2005, *Sociological Methodology*)

- 1. Determine a model for predicting transition probabilities or hazard rates.
- 2. Estimate the model via MCMC methods to obtain simulated draws (called ‘‘iterates’’) from the posterior densities for the parameters of the model.
- 3. After discarding some early iterates prior to the algorithm’s convergence, construct life tables using each simulated set of parameters applied to whatever covariate combination is desired.
- 4. Order the resulting life table quantities and take the appropriate percentile cutpoints for the desired confidence level on any desired life table quantity.

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Descriptive Results

74.5% Female

61.8% White

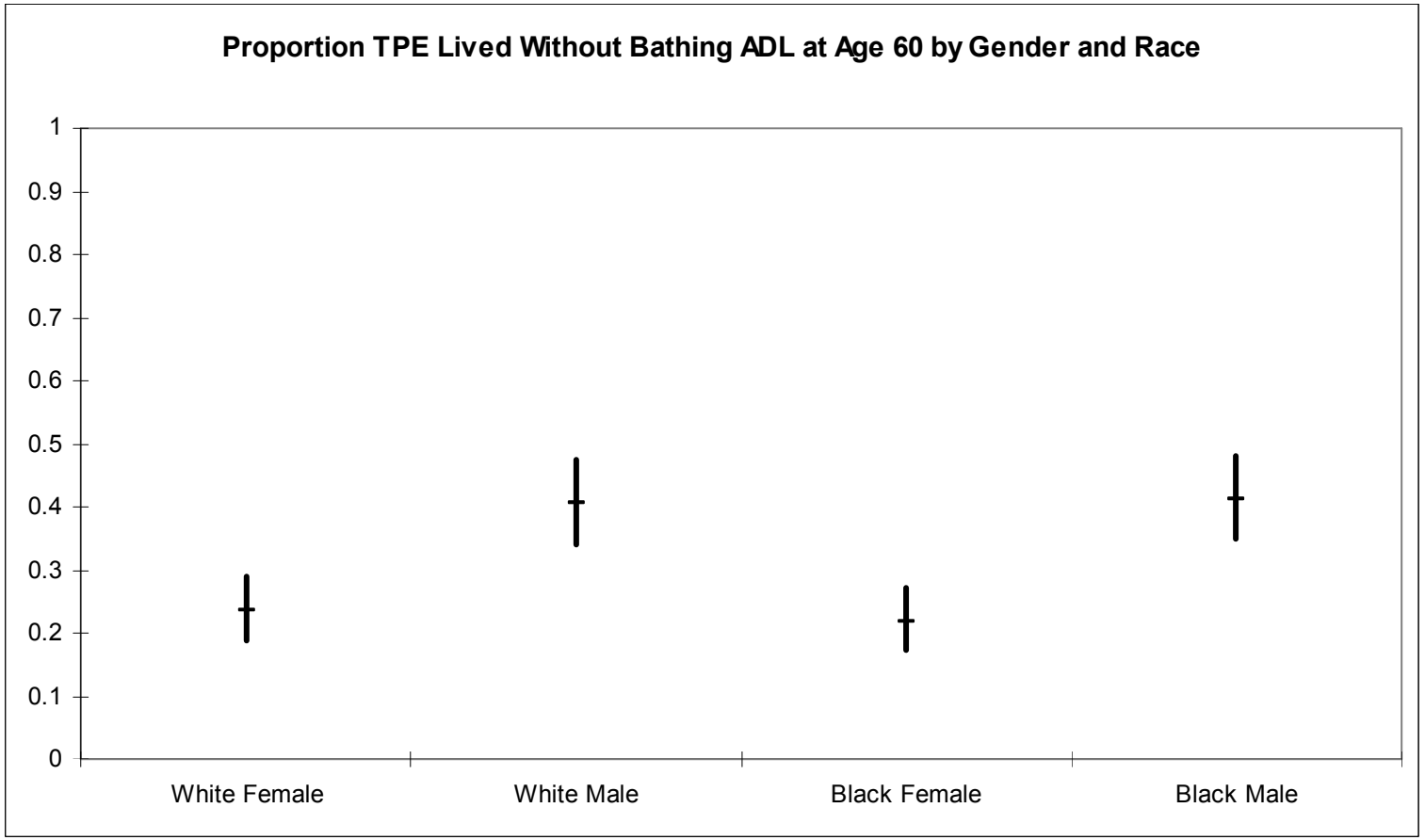
65.1% Live Alone

Mean Age of 79.6 years (Range = 60 to 104)

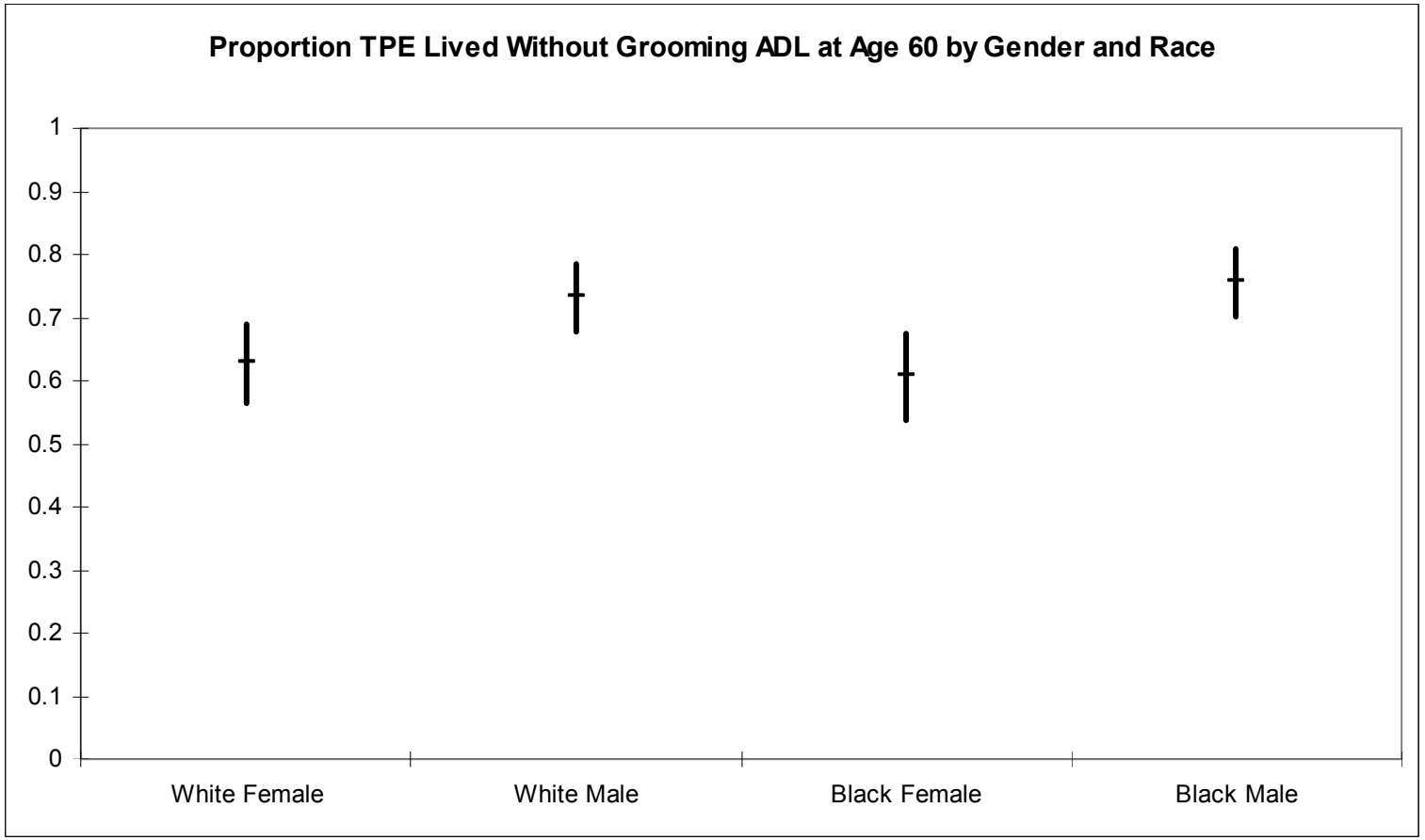
30.9% Leave the Program

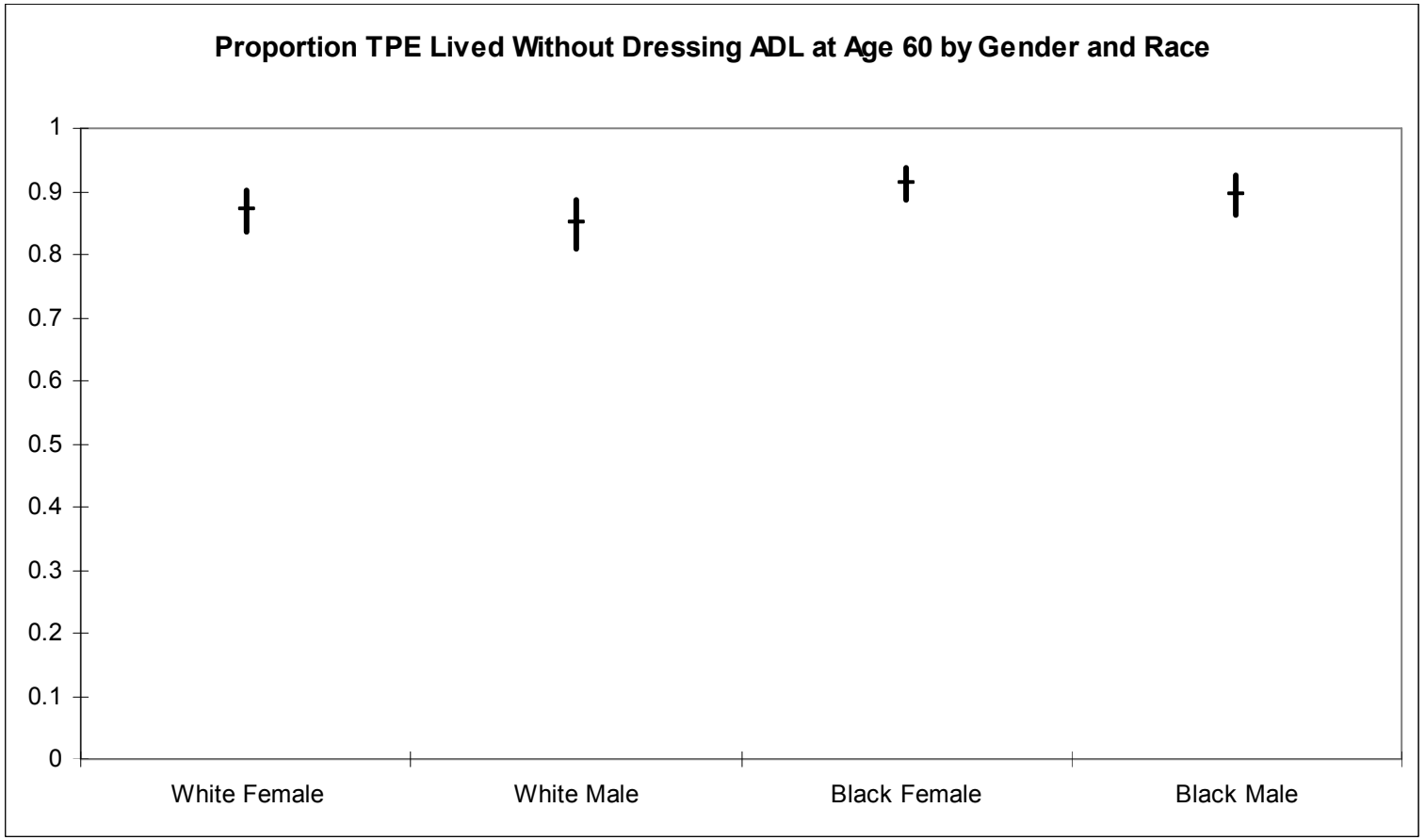
Baseline ADL Prevalence by Race & Gender (%)

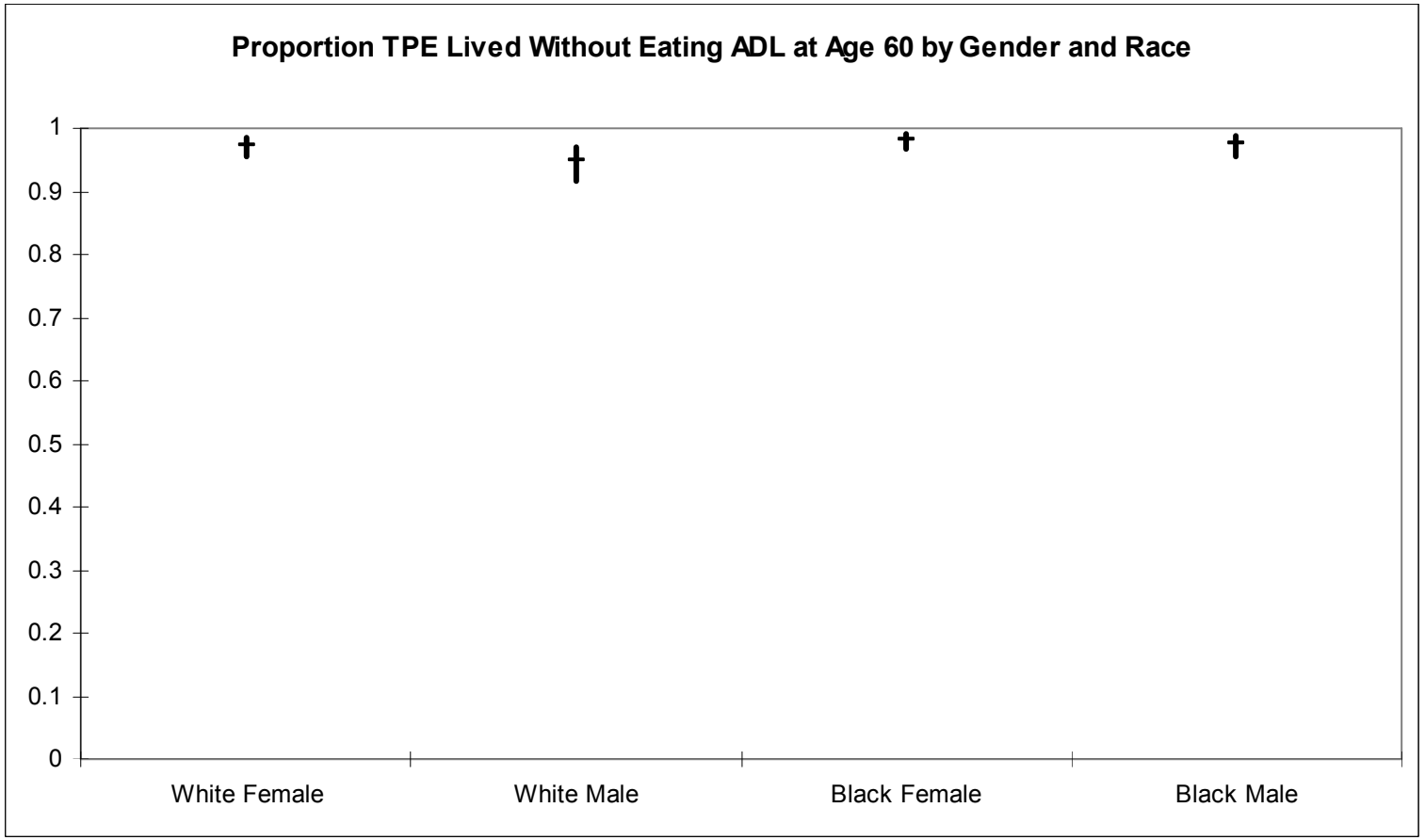
ADL	Total	WF	WM	BF	BM
Bathing	70.4	73.3	59.0	76.1	58.5
Incontinence	54.6	59.0	44.6	56.8	43.6
Eating	4.6	4.5	8.2	3.4	3.2
Transfer	53.3	54.7	52.3	52.8	50.5
Dressing	18.1	18.3	21.0	16.2	18.6
Grooming	28.0	29.3	25.9	29.8	20.0
TPE (in years)		3.0	2.5	3.6	2.9

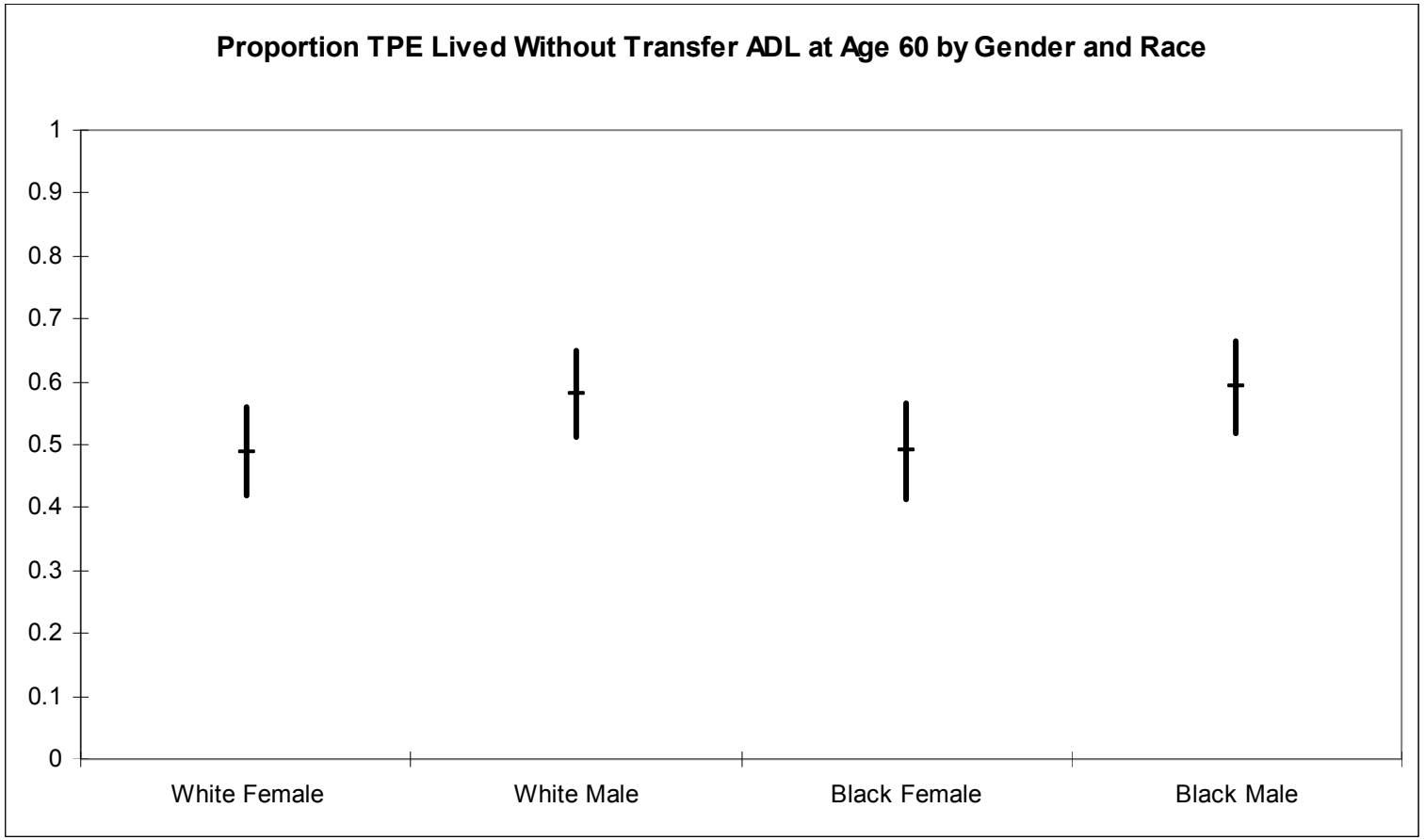

Proportion TPE Lived Without Bathing ADL at Age 60 by Gender and Race
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
White Female
White Male
Black Female
Black Male


Proportion TPE Lived Without Incontinence at Age 60 by Gender and Race
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
White Female
White Male
Black Female
Black Male


Proportion TPE Lived Without Grooming ADL at Age 60 by Gender and Race
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
White Female
White Male
Black Female
Black Male


Proportion TPE Lived Without Dressing ADL at Age 60 by Gender and Race
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
White Female
White Male
Black Female
Black Male


Proportion TPE Lived Without Eating ADL at Age 60 by Gender and Race
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
White Female
White Male
Black Female
Black Male


Proportion TPE Lived Without Transfer ADL at Age 60 by Gender and Race
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
White Female
White Male
Black Female
Black Male

Summary of Findings

- Black females have the longest TPE
- Significant differences in proportion TPE to be lived disabled with each ADL
- Gender differences dominate expectancy differences across all ADL, but gender pattern not consistent.
- Mostly no race differences

Conclusions

ALE Methods provide unique program information

- Duration Differences

Program planning should consider race-gender mix for:

- Forecasting Costs
- Forecasting Service Demand

Limitations

Only one year of program data examined

Limited set of covariates

Absorbing state consists of heterogeneous outcomes

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