



The Working Life Expectancy of Americans Experiencing Depression

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RESEARCH



The working life expectancy of American adults experiencing depression

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Abstract

Objectives To estimate the working life expectancies (WLE) of men and women with depression, examining depression by symptom trajectories from the late 20s to early 50s, and to estimate WLE by race/ethnicity and educational attainment.

Methods Data from 9206 participants collected from 1979 to 2018 in the US National Longitudinal Survey of Youth 1979 cohort were used. Depression was measured using the *Center for Epidemiologic Studies Depression Scale Short Form* at four time points (age 28–35, age 30–37, age 40, and age 50). Labor force status was measured monthly starting at age 30 until age 58–62. Depressive symptom trajectories were estimated using growth mixture modeling and multistate modeling estimated WLE from age 30–60 for each gender and depressive symptom trajectory.

Results Five latent symptom trajectories were established: a persistent low symptom trajectory ($n = 6838$), an episodic trajectory with high symptoms occurring before age 40 ($n = 995$), an episodic trajectory with high symptoms occurring around age 40 ($n = 526$), a trajectory with high symptoms occurring around age 50 ($n = 570$), and a persistent high symptom trajectory ($n = 277$). The WLE for men at age 30 was 30.3 years for the persistent low symptom trajectory, 22.8 years for the episodic before 40 trajectory, 19.6 years for the episodic around age 40 trajectory, 18.6 years for the episodic around age 50 trajectory, and 13.2 years for the persistent high symptom trajectory. Results were similar for women. WLE disparities between depression trajectories grew when stratified by race/ethnicity and education level.

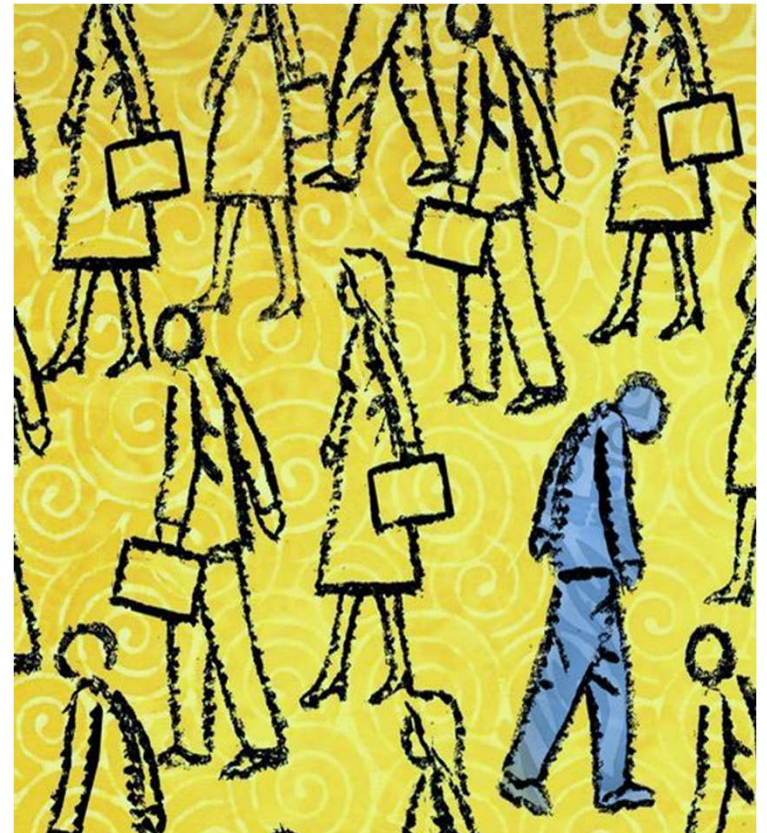
Conclusions Roughly a quarter of individuals experienced episodic depressive symptoms. However, despite periods of low depressive symptoms, individuals were expected to be employed ~5–17 years less at age 30 compared to those with low symptoms. Accessible employment and mental health disability support policies and programs across the working life course may be effective in maintaining work attachment and improving WLE among those who experience depression.

Keywords Depression · Employment · Mental illness · Working life expectancy · Unemployment · Growth mixture modeling · Multistate modeling · Markov model

- Background
- Study Objectives, Methods, Results
- Findings in Context

Major Depressive Disorder

- A mood disorder presenting as persistent low mood, or loss of interest in activities that usually cause enjoyment
- Manifests as “depressive episodes”
- Can affect anyone and occur across the life course



Depression & Labour Force Participation



- Associated with increased likelihood of unemployment, difficulties maintaining employment, and early exit from the labour force
- Highly prevalent
- Major contributor to the indirect costs of mental illness

How many years will someone who experiences depression be employed for?

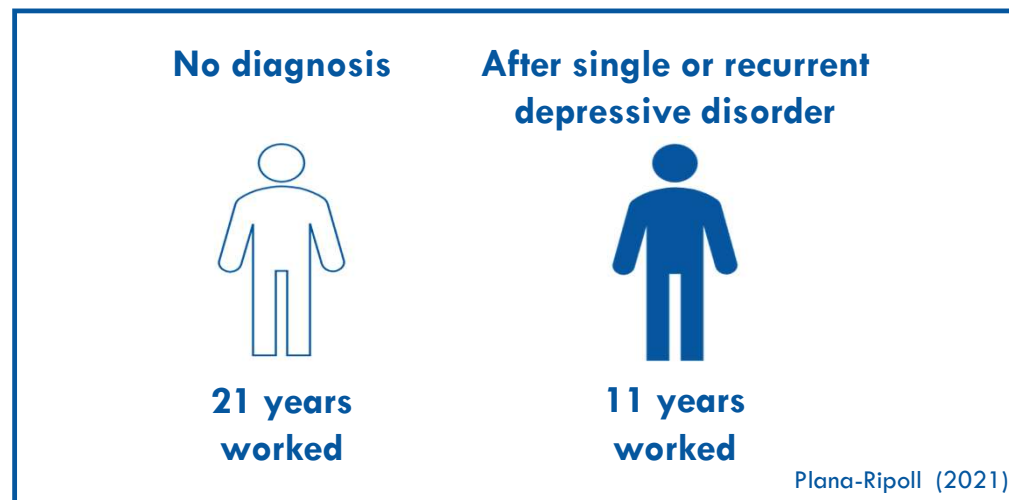
Working Life Expectancy (WLE)

- The average number of years an individual is expected to participate in employment until they permanently exit the labour force
- Can be used as a benchmark for policies and interventions
- Typically reported by gender, racial background, and education level



WLE among Populations with Depression: What We Know

- No WLE estimate among individuals with depression in North America
- Historically, Canadian data has not been available to answer this question
- Danish civil-servants with depression worked ~10 fewer years
- Unknown how WLE differs by depression course and with other socio-demographic factors



Objectives

1. Estimate the number of depressive symptom trajectories between the late 20s to early 50s among American men and women
2. Estimate the working life expectancy of American men and women among each depressive symptom trajectory
3. Estimate the working life expectancy for men and women among each depressive symptom trajectory, stratified by racial and educational background

Sample: National Longitudinal Survey of Youth 1979 (NLSY 1979)

- Cohort of 12,686 Americans who were ages 14-21 in 1979
- 3 subsamples
- Participants surveyed each year until 1994, then every two years
- Work history program has derived weekly labour force status variables
- Analytic sample: 9,206 working-age (ages 18–62 years) participants with information on labour force status and depression measures

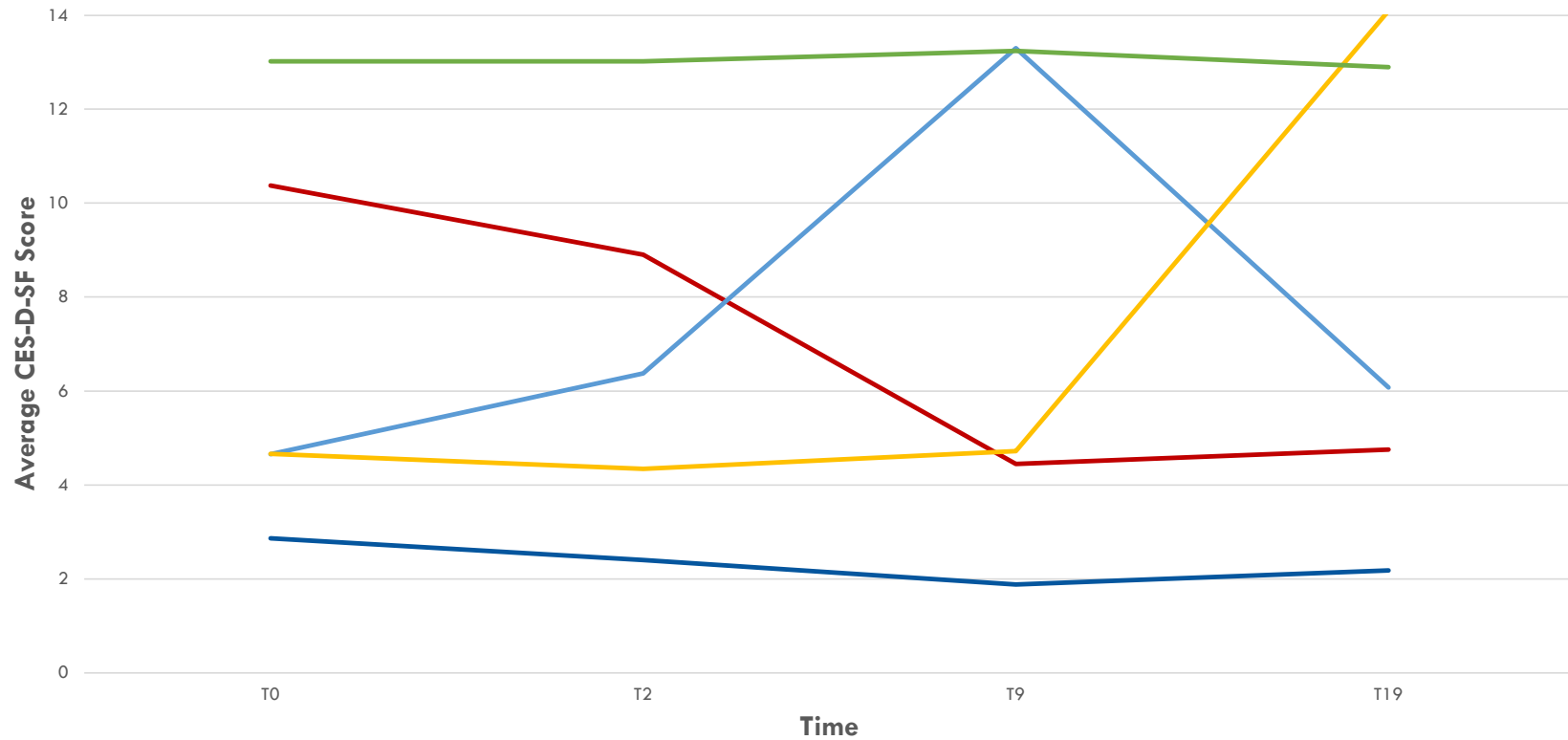
Objective 1

Estimate the number of depressive symptom trajectories between the late 20s to early 50s among a cohort of American men and women

Objective 1: Depressive Symptom Trajectories

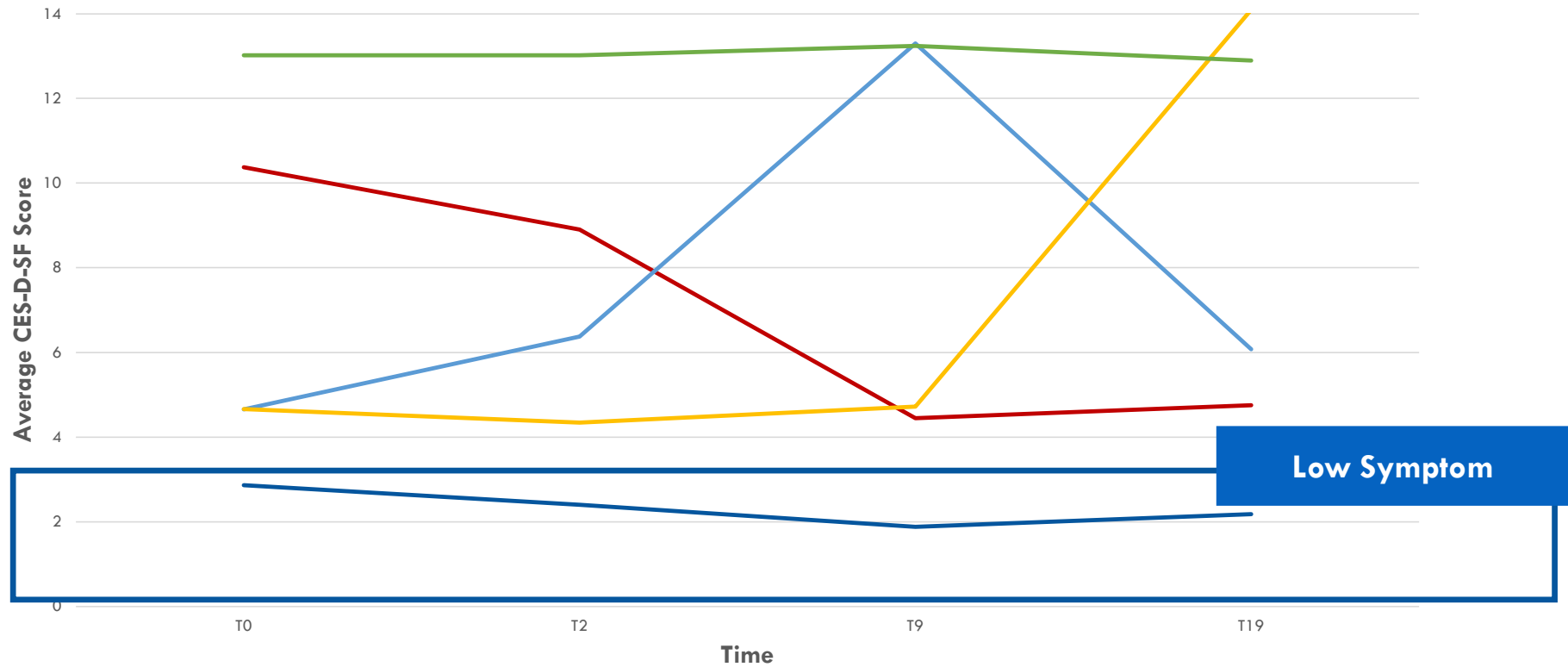
- Center for Epidemiologic Studies Depression Scale Short Form (CES-D-SF)
- Scores range between 0–21
- Four Measurements:
 - 1992 survey cycle, 28–35 years old (“T0”)
 - 1994 survey cycle, 30 – 37 years old (“T2”)
 - When participants turned 40 (1998-2006, “T9”)
 - When participants turned 50 (2008-2018, “T19”)
- Analytic technique: latent growth mixture modeling

Latent Trajectories of Depressive Symptoms from 1992 – 2018, defined by Average CES-D-SF Scores



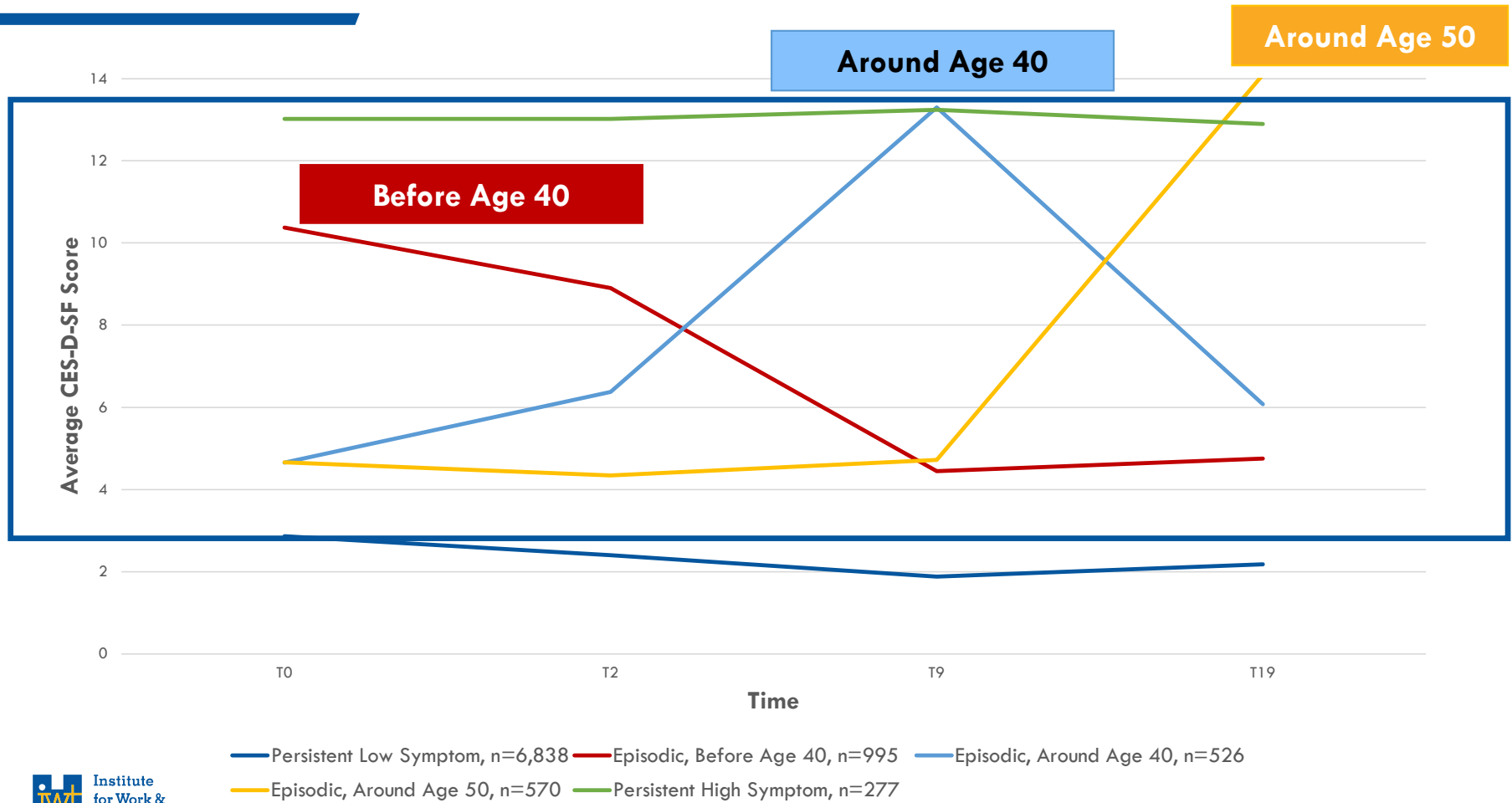
— Persistent Low Symptom, n=6,838 — Episodic, Before Age 40, n=995 — Episodic, Around Age 40, n=526
— Episodic, Around Age 50, n=570 — Persistent High Symptom, n=277

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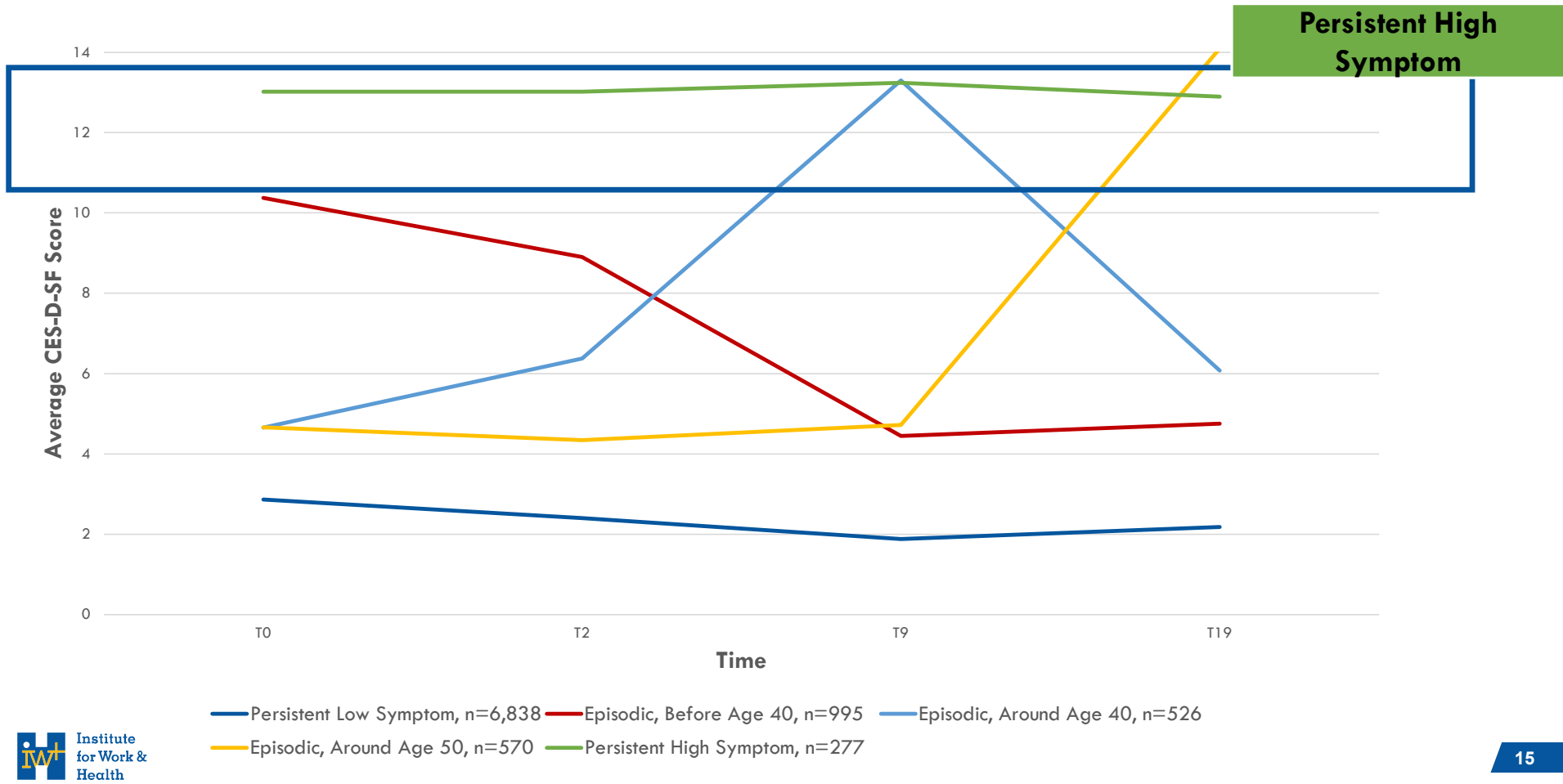


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Latent Trajectories of Depressive Symptoms from 1992 – 2018, defined by Average CES-D-SF Scores



Objective 2

Estimate the working life expectancy of American men and women among each depressive symptom trajectory

Design & Analysis

1. Measure: monthly labour force status measurements between ages 30 – 62

2. Stratified the sample by depressive symptom trajectory and gender

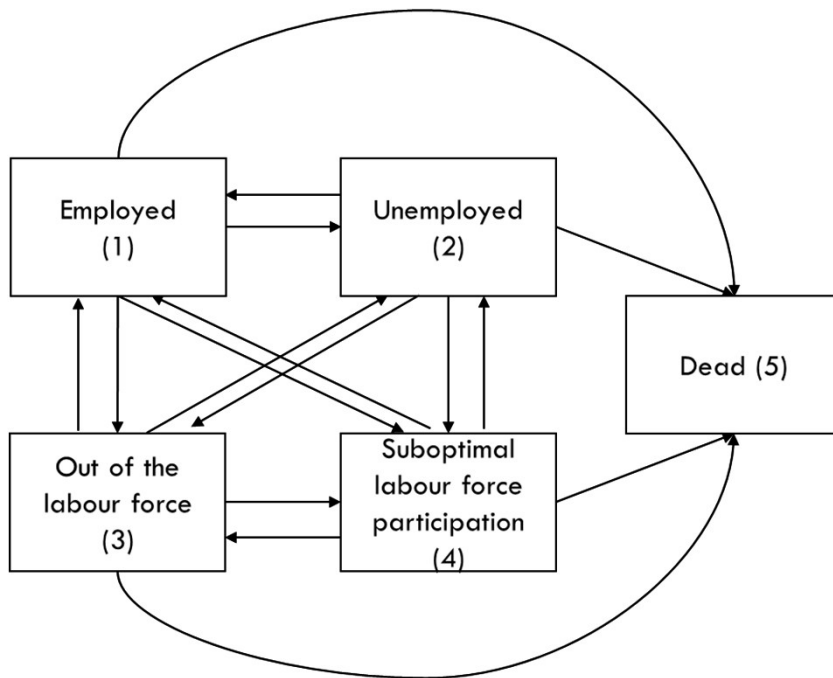
3. Computed a 5-state, continuous time non-homogenous Markov multi-state model

4. From model, then estimated WLE in 5-year increments between the ages of 30 and 60

5. Ran multi-level models including racial background as covariate, and simulated WLE for each subgroup among each depression trajectory, and gender. Then, repeated for educational background.

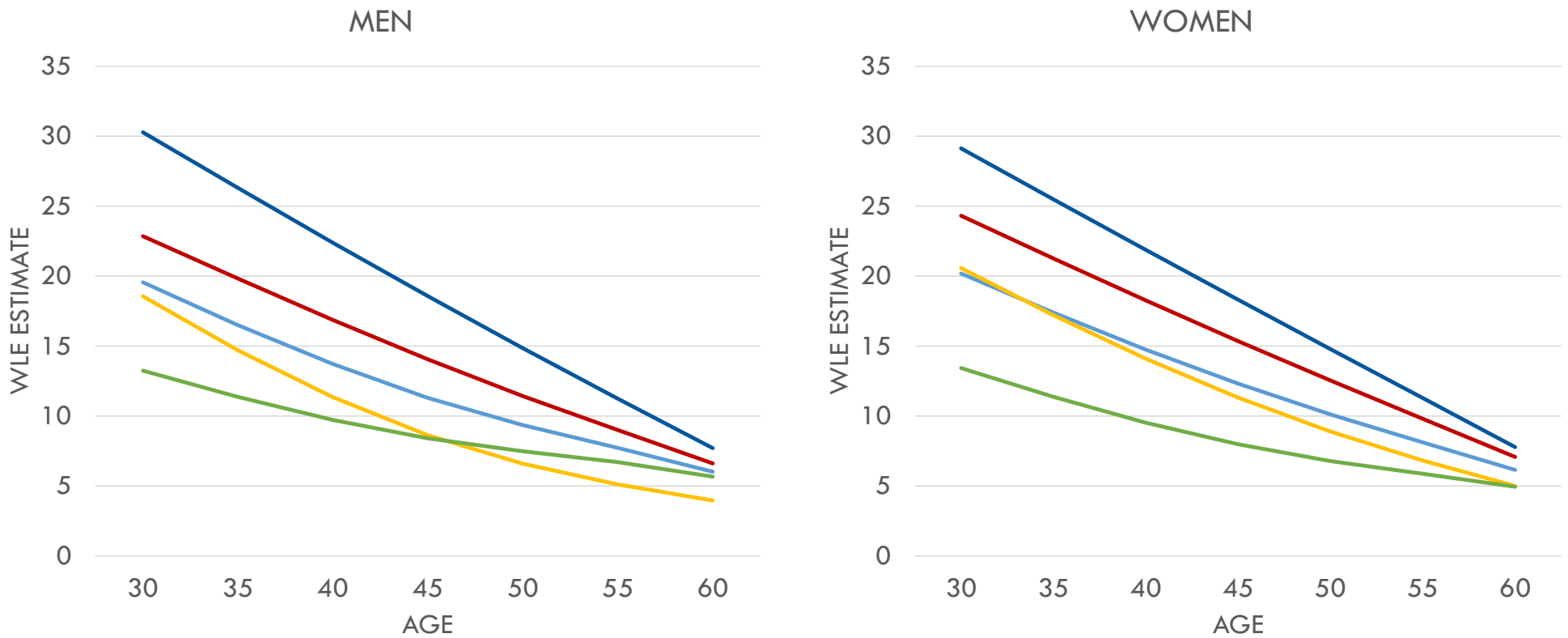
WLE Definition: the expected number of years a person would remain employed at a specific age, given that they were currently employed

Multistate Model & Labour Force States

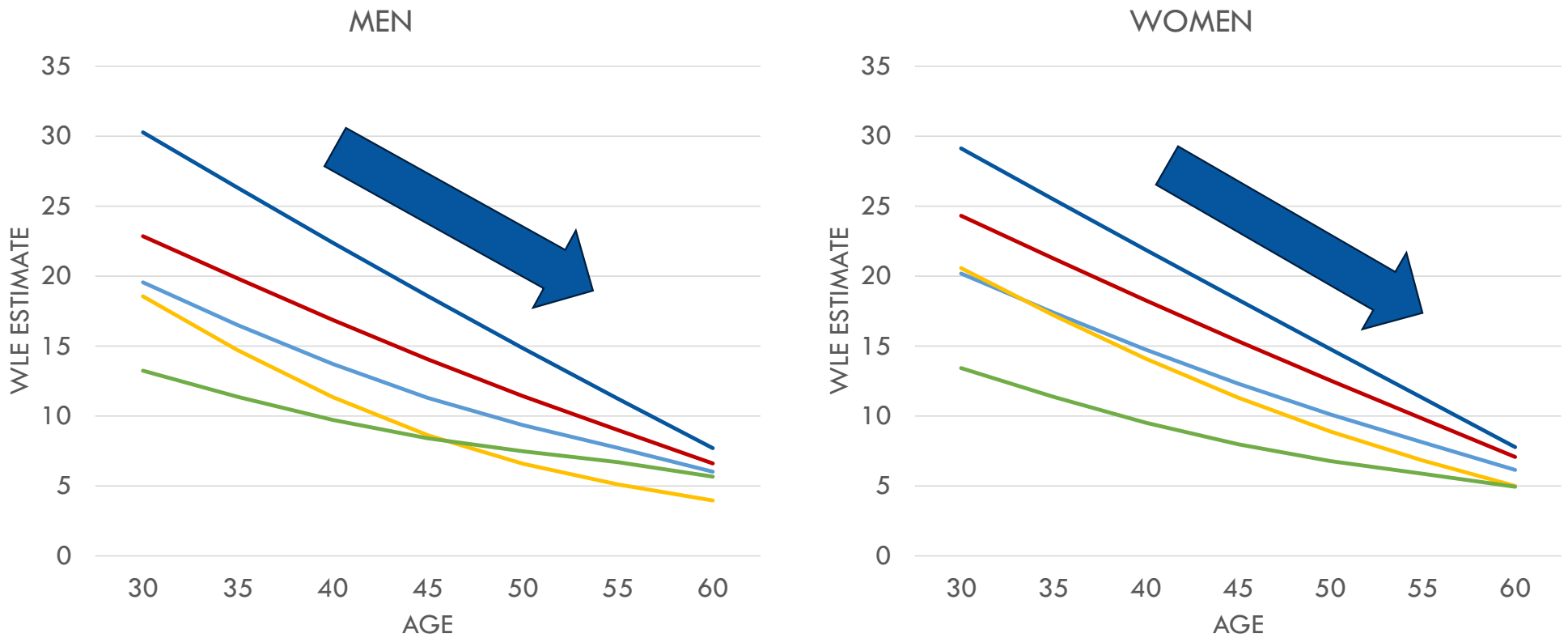


	Overall Sample <i>n=9,206</i>	Men <i>n=4,517</i>	Women <i>n=4,698</i>
Labour Force State	N, Monthly States	N, Monthly States	N, Monthly States
Employed	2,045,289	1,044,416	1,000,873
Unemployed	107,195	57,581	49,614
Suboptimal labour force participation	56,329	25,510	30,819
Out of the labour force	494,866	170,941	323,925
Dead	818	464	354
Total	2,704,497	1,298,912	1,405,585

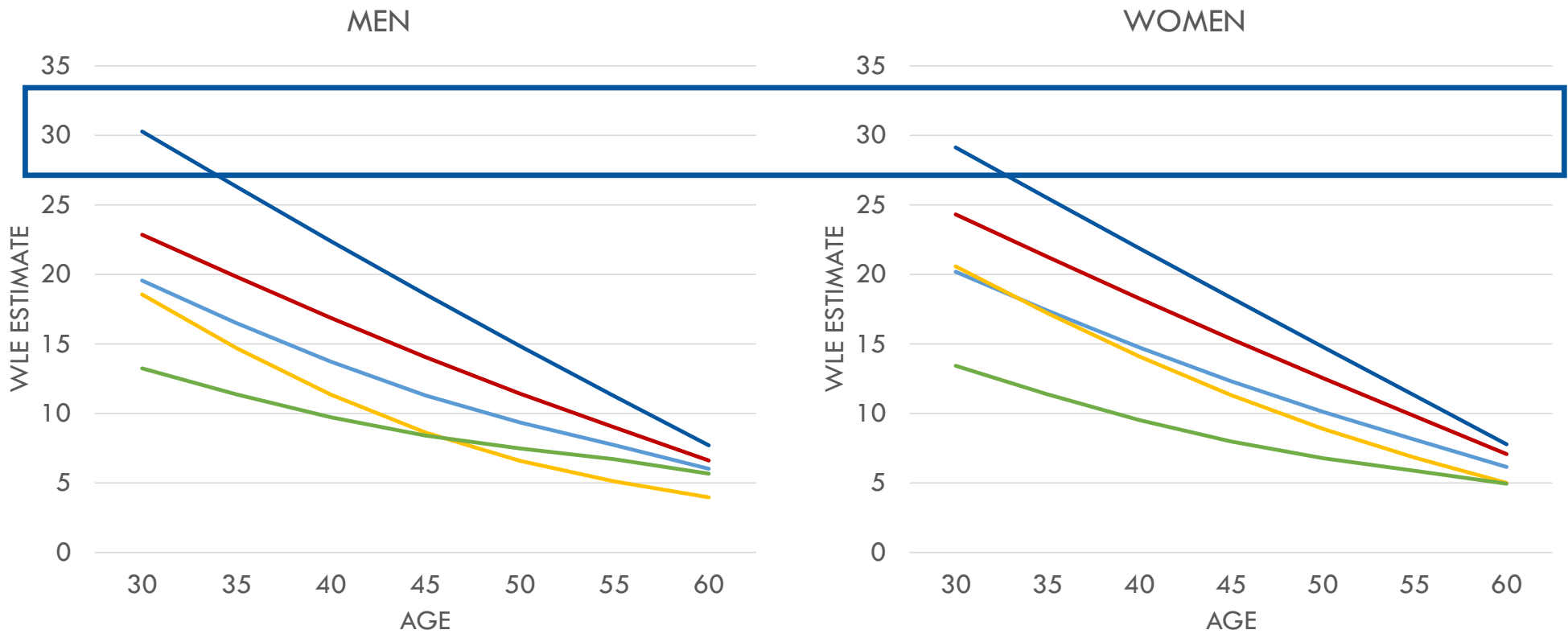
Estimates of WLE by Age, Stratified by Gender & Depressive Symptom Trajectory



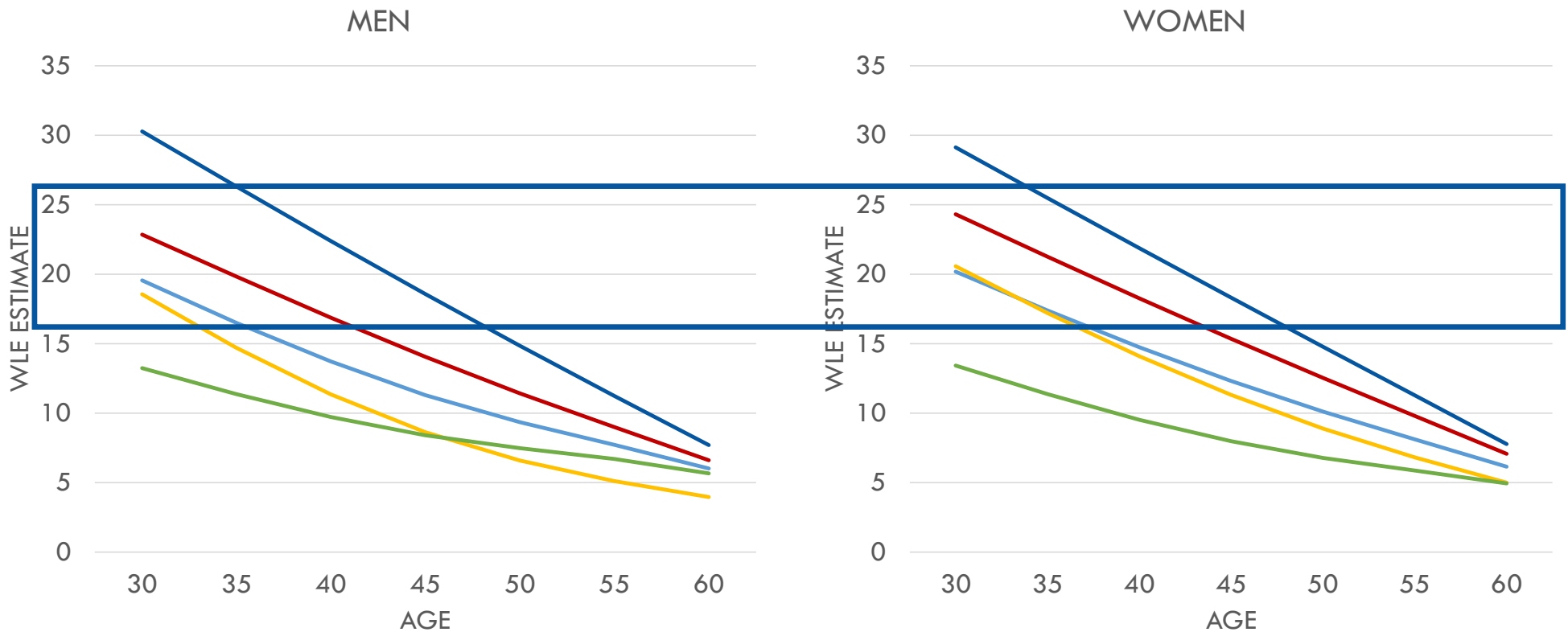
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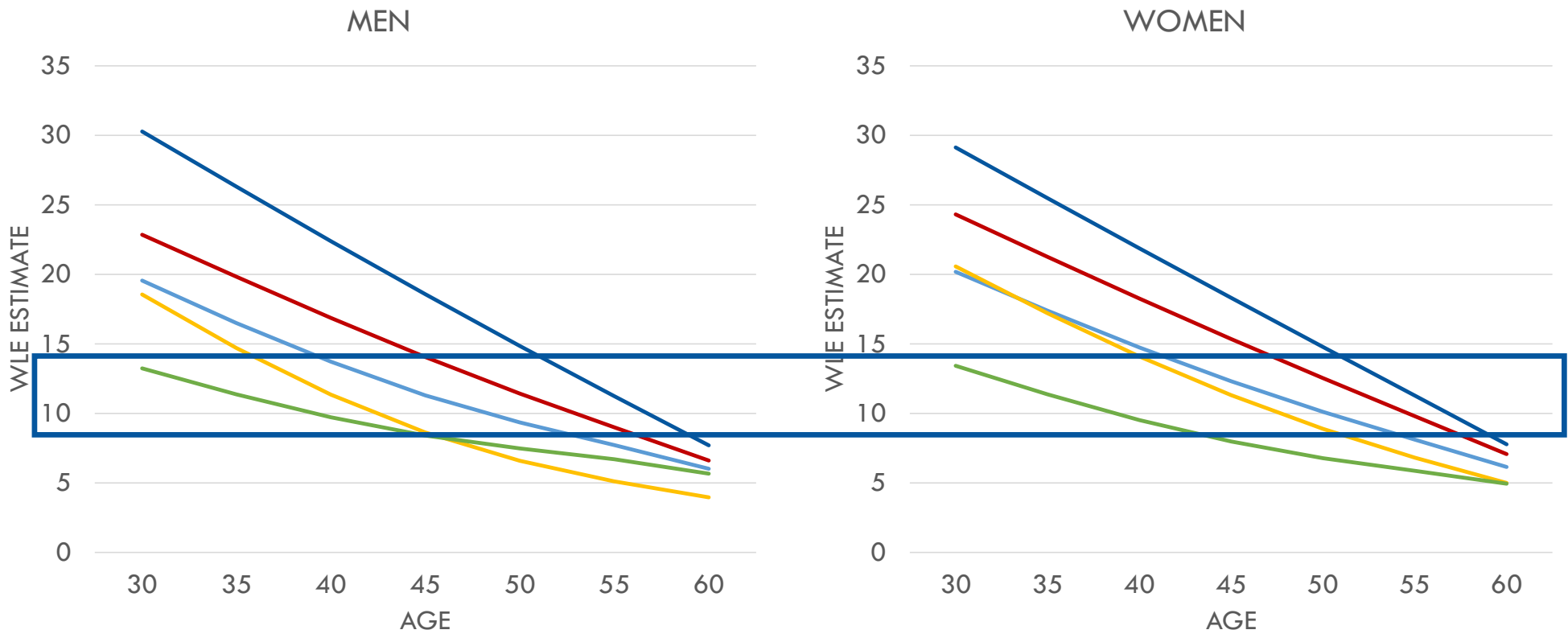


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 — Persistent High Symptom, n=277

Estimates of WLE by Age, Stratified by Gender & Depressive Symptom Trajectory



Objective 3

Estimate the working life expectancy for men and women among each depressive symptom trajectory of different racial and educational backgrounds

Design & Analysis for Objective

1. Measure: monthly labour force status measurements between ages 30 – 62

2. Stratified the sample by depressive symptom trajectory and gender

3. Computed a 5-state, continuous time non-homogenous Markov multi-state model

4. From model, then estimated WLE in 5-year increments between the ages of 30 and 60

5. Ran multi-level models including racial background as covariate, and simulated WLE for each subgroup among each depression trajectory, and gender. Then, repeated for educational background.

WLE Definition: the expected number of years a person would remain employed at a specific age, given that they were currently employed

Demographic Factors, by Depression Symptom Trajectory

	Overall	Low Depressive Symptoms	Episodic, Before Age 40	Episodic, Age 40	Episodic, Age 50	Persistent Depressive Symptoms
N	9206	6838	995	526	570	277
Age in 1979 (mean (SD))	17.50 (2.23)	17.48 (2.24)	17.49 (2.19)	17.62 (2.13)	17.60 (2.38)	17.76 (2.23)
	%	%	%	%	%	%
Gender, male (%)	49	53	38	40	38	26
Race/ethnicity						
Black	30	28	36	39	33	33
Hispanic	20	20	20	18	18	26
Non-Black, Non-Hispanic (NBNH)	50	52	44	43	49	42
Gender & race/ethnicity						
Black woman	15	13	21	23	21	25
Black man	15	15	15	16	11	8
Hispanic woman	10	9	13	10	10	19
Hispanic man	10	10	7	8	9	7
NBNH woman	26	24	28	27	31	30
NBNH man	25	28	16	16	18	11
Highest Level of Education, Age 30						
Less than High School	15	12	20	25	21	35
High School Diploma	63	62	66	63	65	57
College Degree	17	21	9	8	9	4
Missing	5	5	5	5	6	4

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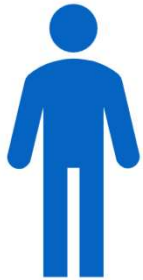
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Objective 3: WLE at Age 30 by Racial and Educational Background



Black men among all depressive symptom trajectory groups reported lower WLE compared to Non-Black, Non-Hispanic men



Hispanic and Black women in the *Episodic at Age 50* and *Persistent Symptom* trajectories had WLE ~4-6 years lower than women who were not Black or Hispanic



Educational gradient in WLE estimates at age 30 among trajectory groups

Findings in Context

Limitations

Summary

& Evidence Use



Main Findings

- 1 / 4 Americans experienced high levels of depressive symptoms at least once during the prime working years
- For both men and women, this impacted their WLE
 - **Earlier life episodes:** difficulty maintain employment, job turn over
 - **Later life episodes:** implications for early retirement and pension payments
- Disparities in WLE grew among racialized Americans

Limitations

Measurement

CES-D-SF is not a clinical instrument

Selection Bias

Subgroup analyses had small sample sizes

Analytic Bias

Numerous assumptions in multistate models

How many years will someone who experiences depression be employed for?

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Working life expectancy ~5 -15 years less
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How many years will someone who experiences depression be employed for?

Working life expectancy ~5 -15 years less than someone without depression

Reducing the number and severity of depressive episodes could increase WLE

Policy and Intervention Implications



Improve clinical and vocational support to adults experiencing depression



Enforce workplace practices to reduce the risk of depression symptoms attributable to work exposures



Increase access to health care and psychological therapy to minimize the severity of depressive episodes

Thank you

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