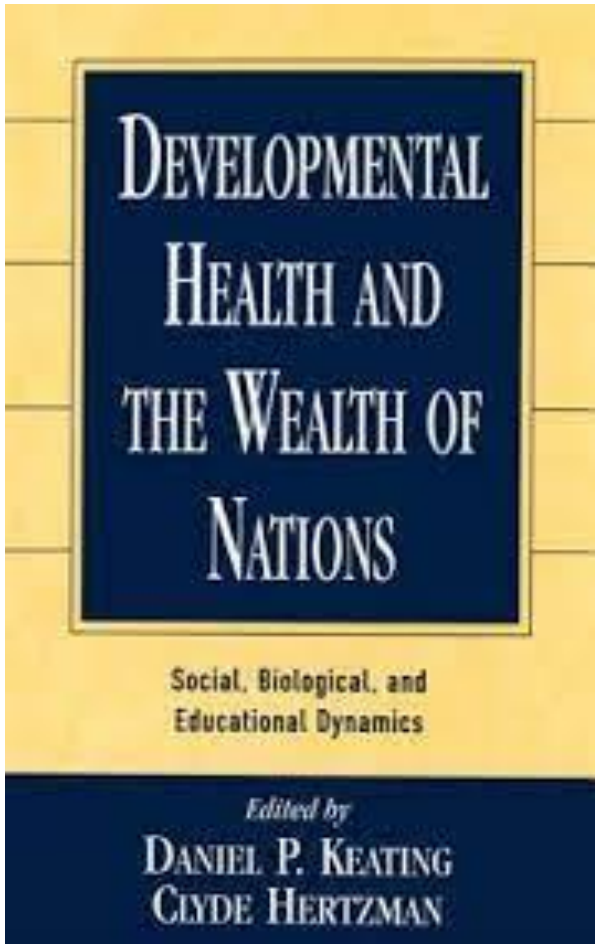
Mental Health and the Wealth of Regions

REMI CONFERENCE MEMPHIS, TN 10/13/2022

THEORETICAL BASIS FOR THE MODEL

MENTAL HEALTH AS HUMAN CAPITAL



MENTAL HEALTH TRENDS

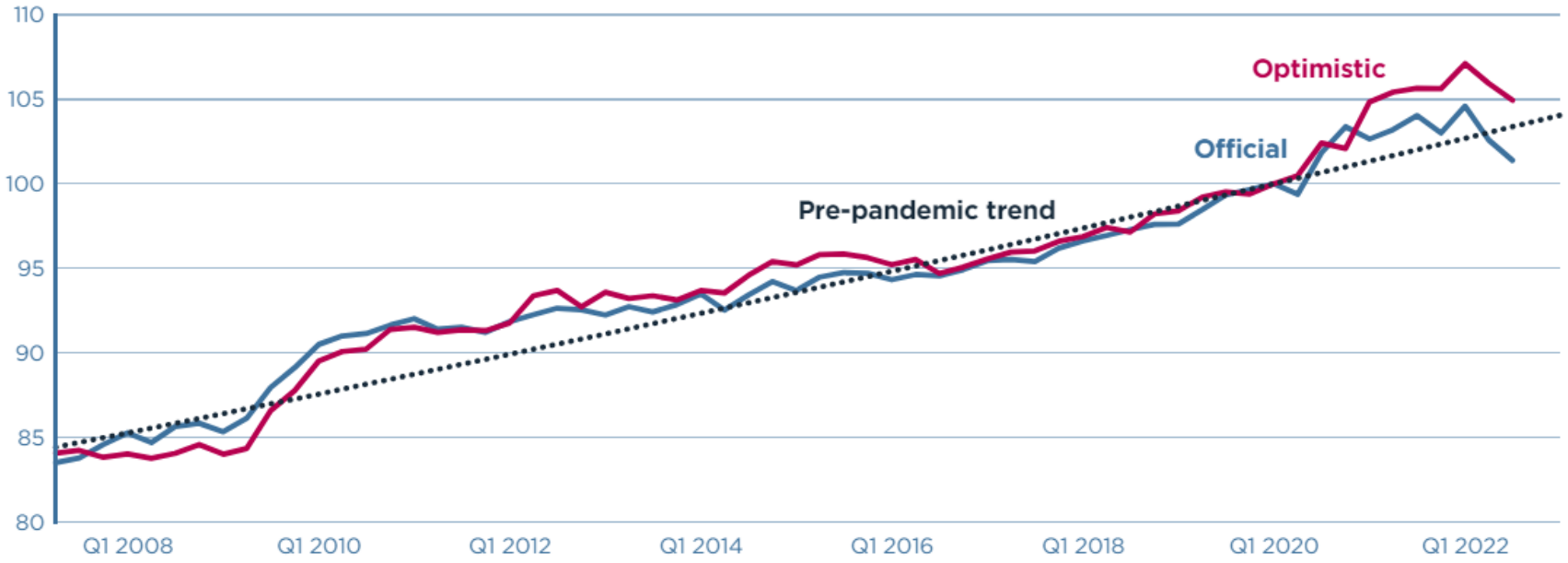
- Current Public Health research shows troubling trends, suggesting that since 2007, mental health for youth has continuously worsened. It is likely not a coincidence that 2007 marked the following milestones: Facebook became public, the iPhone was released, Twitter was established, and the Great Recession began. Many world-changing events have occurred since that time.
- Worldwide, 10-20% of children experience mental disorders. Half (50%) of all Mental Illness onsets by age 14; 75% by age 20. Only 25% of Mental Illness is adult-onset.[1]
- Post-COVID research suggests worsening trend
- Recent research demonstrates both the need and the high return-on-investment potential for investment in youth mental health.

RECORD US PRODUCTIVITY SLUMP

Figure 2

In the first two quarters of 2022, productivity fell at the fastest pace on record

Nonfarm business sector productivity (index, Q4 2019 = 100)



PIIE

Notes: Data refer to nonfarm business sector productivity. Optimistic adjusts output by the ratio of real GDI to real GDP. Pre-pandemic trend is average growth rate from Q4 2007 to Q4 2019 for official productivity.

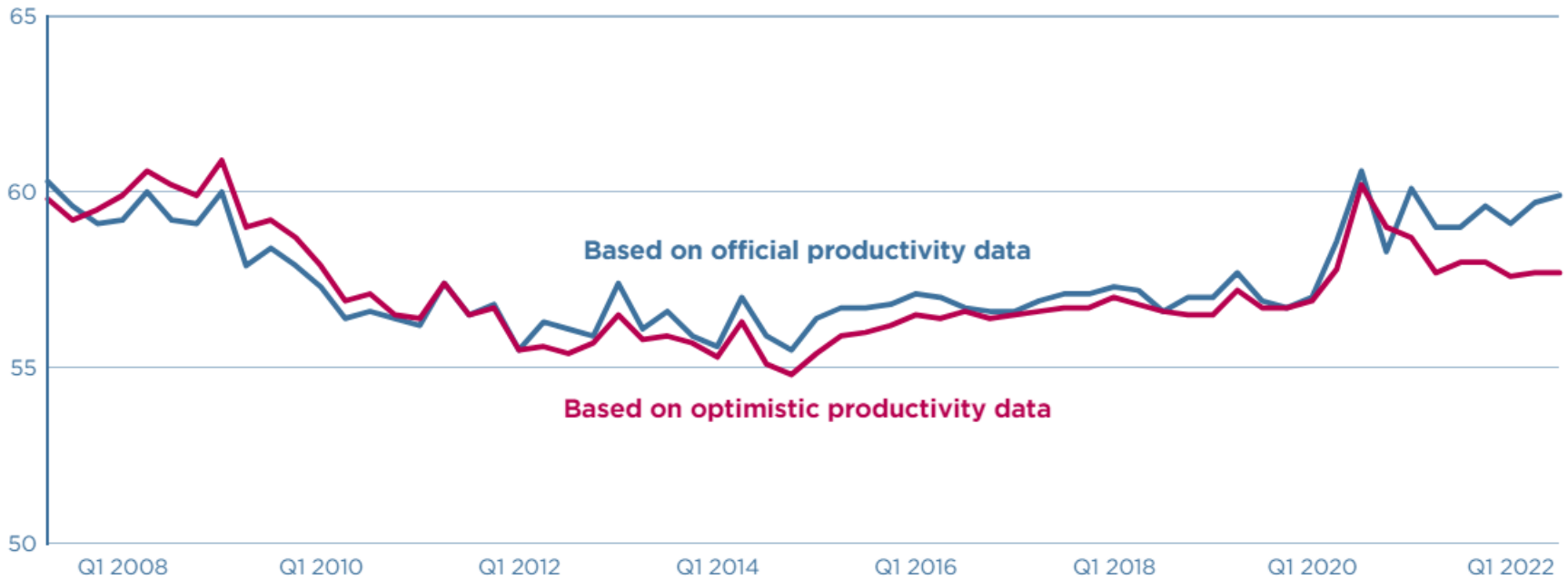
Source: Bureau of Economic Analysis and Bureau of Labor Statistics via Macrobond and authors' calculations.

Furman, J. & Powell, W. (2022, August 9). Record US productivity slump in the first half of 2022 risks higher inflation and unemployment. *Peterson Institute for International Economics.*

RECORD US PRODUCTIVITY SLUMP

Figure 5

While still low historically, the labor share of output is higher than it was immediately before the pandemic



PIIE

Notes: Optimistic adjusts output by the ratio of real GDI to real GDP.

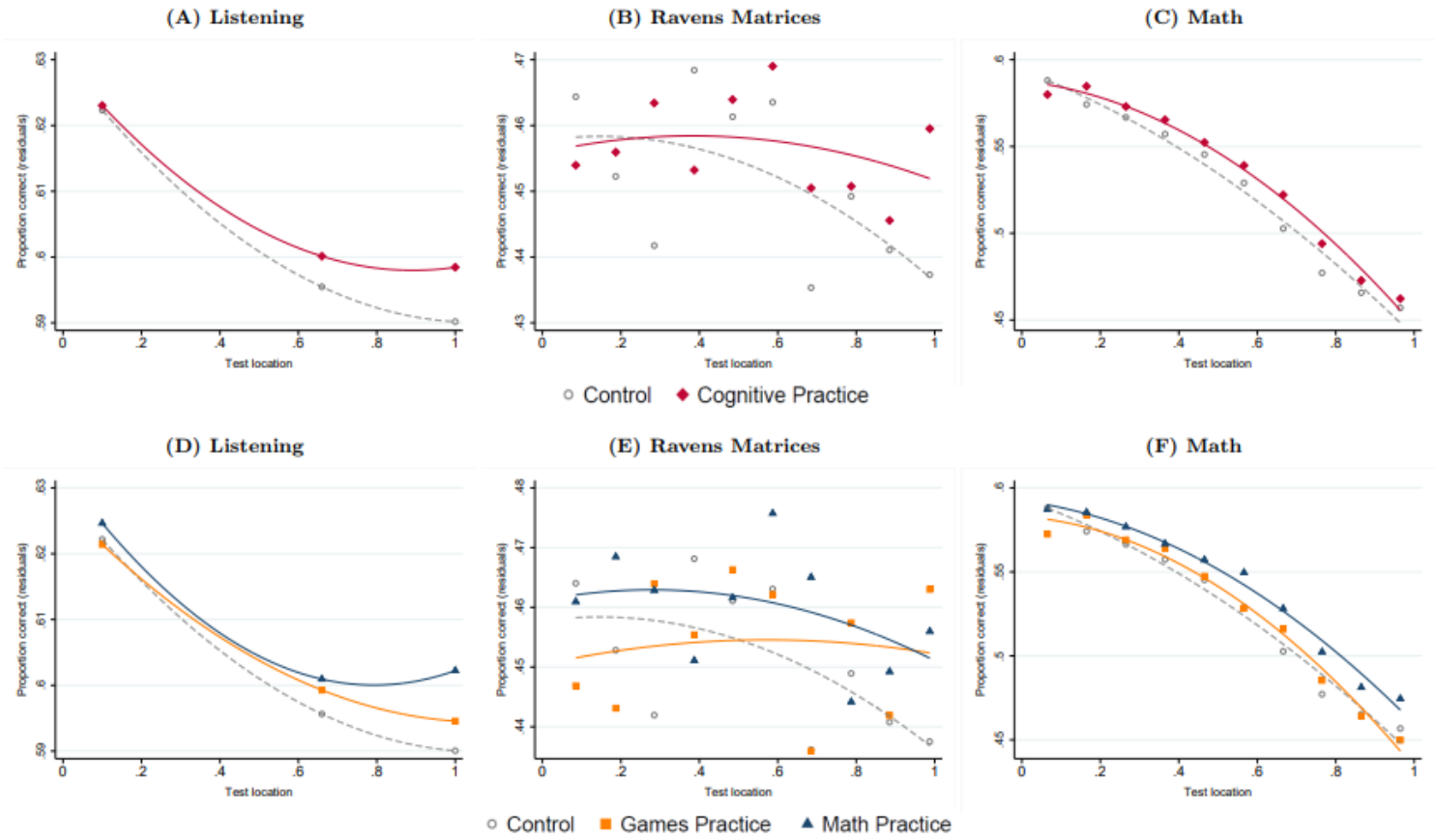
Source: Bureau of Economic Analysis and Bureau of Labor Statistics via Macrobond; authors' calculations.

RPC | REGION 1 PLANNING COUNCIL | R1

COGNITIVE ENDURANCE

Brown, C.L, Kaur, S., Kingdon, G., and Schofield, H. (2022). Cognitive Endurance as Human Capital. NBER WORKING PAPER SERIES.

FIGURE II: Performance Declines on Experimental Tests by Treatment Group



Notes: This figure plots declines in performance over the course of three tests: listening, Ravens Matrices, and math.

- Question order is randomized in each test. Observations are at the student-test-question level.
- Each panel displays a binscatter plot, where the x-axis is the percent location of the test, grouped in deciles (where 0.1 is the first decile of the test and 1 is the last decile), and the y-axis is the proportion of students who answer the question correctly. Data is residualized to remove question and test version fixed effects. All plots are overlaid with a quadractic best-fit curve by experimental arm.
- The top row plots the Control group (dashed gray, open circles) versus any Cognitive Practice (solid red, diamonds). The bottom row plots the Control (dashed gray, open circles) and each sub-treatment—Math arm (solid blue, triangles) and Games arm (solid orange, squares).
- For ease of interpretation of decline magnitudes, in each plot, the decile 1 control group mean is added to all residuals.
- Table II presents the full set of corresponding treatment effects estimates.

COGNITIVE ENDURANCE

Table VII: Effect of an Additional Year of Schooling on Performance Declines

Dimension of Quality:	Dependent Variable: 1[Question Correct]							
			School Quality		Class Pedagogy		Independent Practice Time	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Yrs of Schooling x Predicted Decline	0.309**	0.337**	-0.0132	0.0103	0.0458	0.0664	0.0320	0.0547
	(0.143)	(0.144)	(0.183)	(0.184)	(0.158)	(0.160)	(0.177)	(0.178)
Yrs of Schooling x Predicted Decline x Higher Quality			0.223**	0.222**	0.219*	0.219*	0.188**	0.185**
			(0.105)	(0.104)	(0.115)	(0.113)	(0.0920)	(0.0911)
Dep. Var. Mean	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59
Observations	276043	276043	276043	276043	276043	276043	276043	276043
Running variable func. form	Linear	Quadratic	Linear	Quadratic	Linear	Quadratic	Linear	Quadratic

Notes: This table reports the effect of an additional year of school on student performance declines on exams using data from a sample of 5,353 9-11 year olds in Pakistan (Brown and Andrabi, 2021).

- Observations are at the student-test-question level. Question order was randomized. The dependent variable is a binary indicator for whether the question is correct.
- "Yrs of Schooling" is instrumented with the kindergarten entrance cut-off, controlling for birth month (the F-statistic on the first stage is 15.9). "Predicted Decline" is defined at the item decile-grade-subject level as the difference in the percent of questions correct in the first decile minus the given decile.
- Cols. (1)-(2) present the results of an additional year of school across all schools in the sample.
- Cols. (3)-(8) show heterogeneity in the effect of an additional year by different aspects of school/class quality (denoted in the column header). Quality measures are based on the CLASS rubric, comprised of 12 components such as classroom climate, time on task, time in independent practice, and use of higher-order thinking skills (Araujo et al. (2016); Pianta et al. (2012); see Appendix B for details). *School Quality* is the school's average score on the 12 components of the CLASS rubric (Cols. 3-4). *Class Pedagogy* captures the average score on all 12 components in the student's current grade level (Cols. 5-6). *Independent Practice Time* captures the quantity and quality of time students spend working independently on cognitively challenging material (Cols. 7-8). In each column, "Higher Quality" is a linear variable denoting quartile rank in the given quality dimension, with a value of 0 for the bottom quartile up to 3 for the top quartile.
- Odd-numbered columns include birth month as a linear control, and even-numbered columns include the quadratic of birth month as well. Standard errors are clustered by student. * p<0.10, ** p<0.05, *** p<0.01.

MIDLIFE CRISIS

Table S19. Linear Regression Models of Alcohol Dependence. Adult Psychiatric Morbidity Survey (APMS) in the Year 2000. Alcohol dependence indicated by an AUDIT score of 16 or more. Note that this table has large standard-error bands.

	Model (1)				Model (2)			
Dependent variable:								
Alcohol Dependence	**b**	**SE**	**95% CI**		**b**	**SE**	**95% CI**	
Age group								
25-34	-0.035	(0.012)	-0.058	-0.012	-0.008	(0.013)	-0.034	0.017
35-44	-0.051	(0.012)	-0.074	-0.028	-0.012	(0.013)	-0.037	0.014
45-54	-0.064	(0.011)	-0.086	-0.041	-0.031	(0.013)	-0.057	-0.005
55-64	-0.071	(0.011)	-0.093	-0.048	-0.042	(0.013)	-0.068	-0.015
65-74	-0.074	(0.011)	-0.096	-0.052	-0.046	(0.014)	-0.074	-0.018
Sex								
Female					-0.036	(0.004)	-0.045	-0.028
Marital status								
Separated					0.037	(0.013)	0.011	0.063
Single					0.035	0.007)	0.021	0.049
Divorced					0.028	(0.008)	0.013	0.043
Widowed					0.011	(0.005)	0.001	0.021
Children								
Children in household					-0.020	(0.006)	-0.033	-0.008
Employment status								
Unemployed					0.042	(0.020)	0.002	0.082
Economic inactivity					0.002	(0.005)	-0.008	0.013
Educational qualification								
Teaching/HND/nursing					0.014	(0.010)	-0.006	0.034
A Level					0.012	(0.008)	-0.004	0.029
GCSE/equivalent					0.009	(0.007)	-0.004	0.022
None					0.009	(0.007)	-0.005	0.023
Tenure								
Social renter					0.008	(0.006)	1.330	0.185
Private or other renter					0.012	(0.010)	1.130	0.259
Constant	0.082	(0.011)	0.061	0.103	0.091	(0.016)	0.059	0.123
Overall R^2		0.017				0.042		
Number of individuals		8,538				8,467		

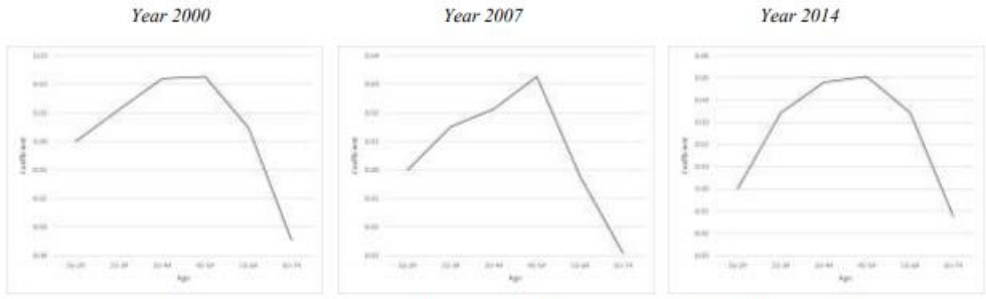


Fig. 1A. Presence of Diagnosed Depression in APMS for years 2000, 2007, and 2014

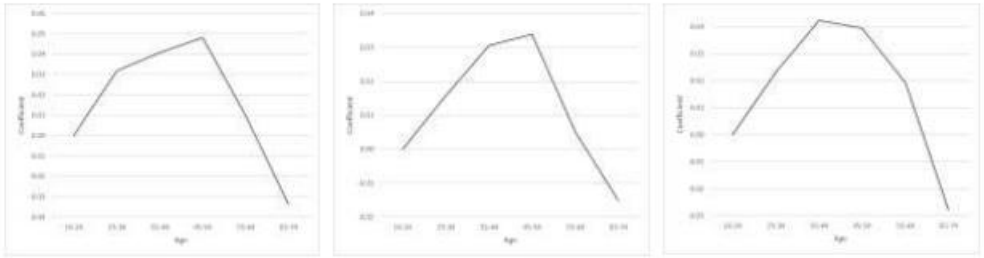


Fig. 1B. Presence of Generalized Anxiety Disorder in APMS for years 2000, 2007, and 2014

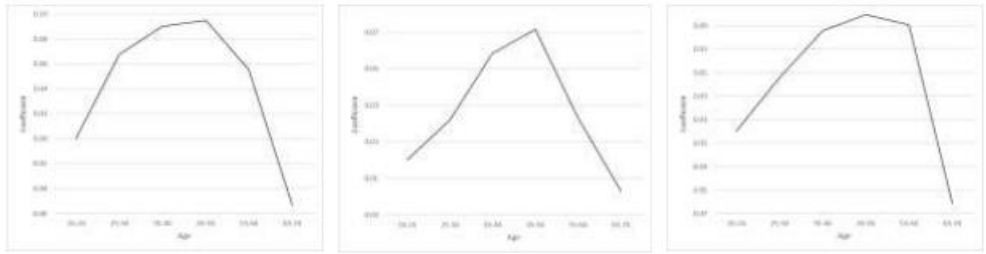
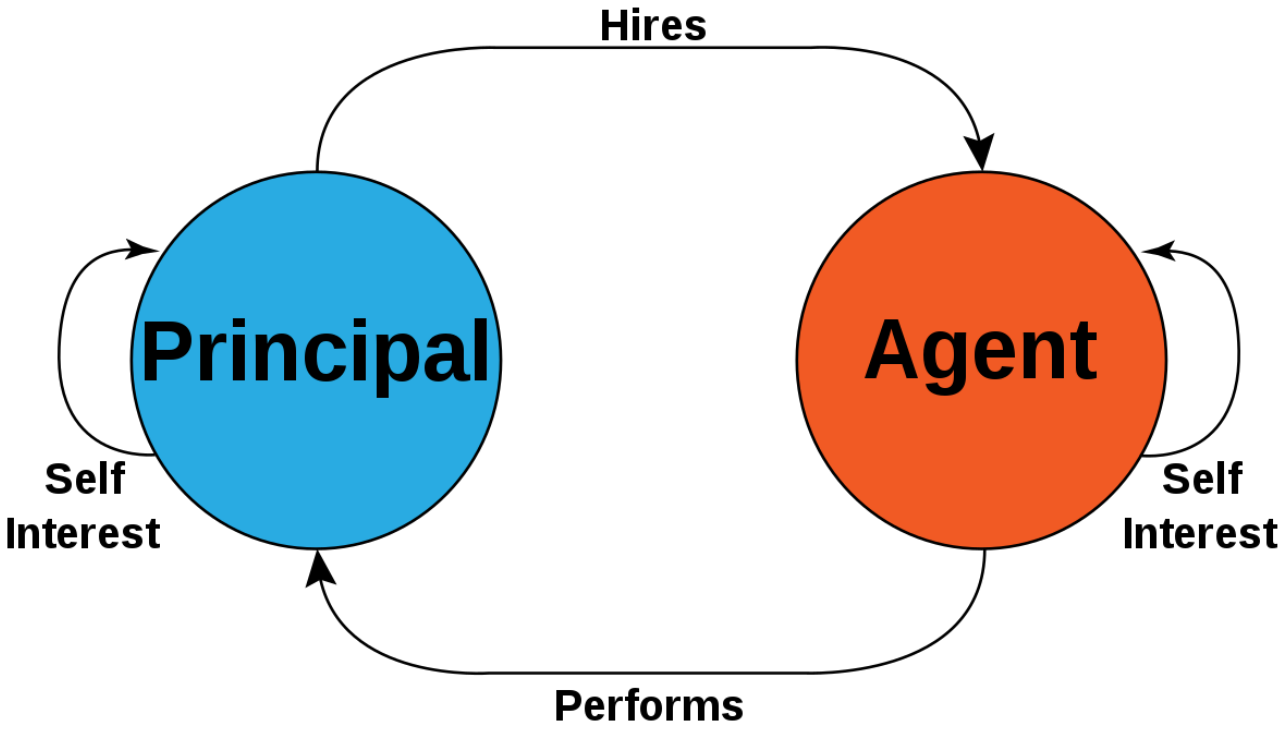


Fig. 1C. Felt That Life is Not Worth Living in APMS for years 2000, 2007, and 2014

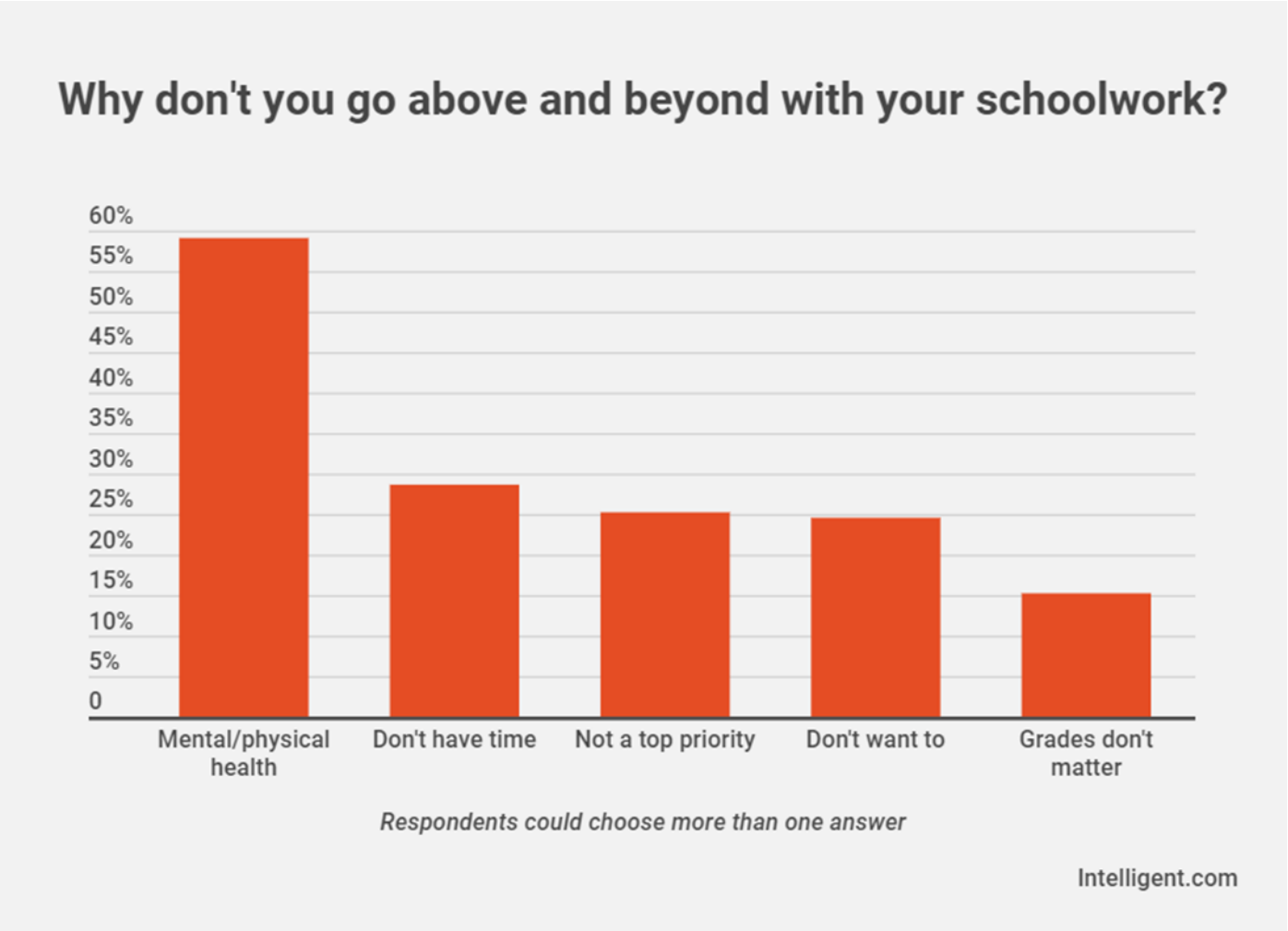
Giuntella et al., (2022). The Midlife Crisis. NBER WORKING PAPER SERIES.

THE ECONOMICS OF QUIET QUITTING

- Completing the tasks you are supposed to within the time you are paid to do them or not going above and beyond with tasks at work
- Workers have unprecedented job security so the incentive to work harder is reduced
- At least half of U.S. workforce are quiet quitters
- Principal-agent model
- Historic drops in labor market productivity over the last two quarters
- Quiet fleecing



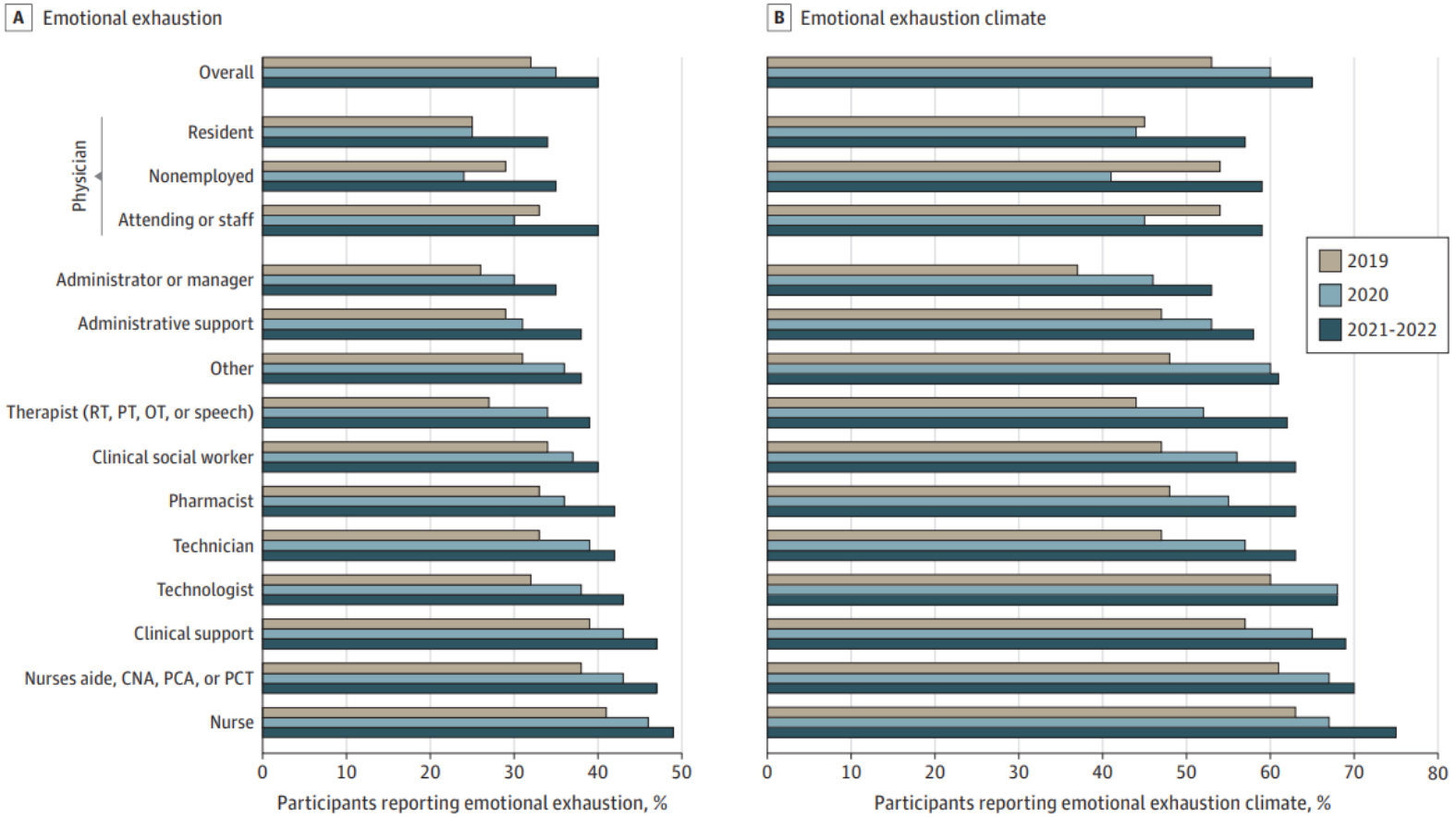
QUIET QUITTING IN COLLEGE STUDENTS



- 34% admitted that they do not go above and beyond
  - 34% of students only put “some” or “little” effort into school work
- 6 in 10 students agree with the statement “C’s get degrees”
- 64% of students somewhat or strongly agree they put less effort into online classes than in person classes

HEALTH CARE WORKERS AND EMOTIONAL EXHAUSTION

Figure 1. Reported Emotional Exhaustion and Emotional Exhaustion Climate by Health Care Worker Role

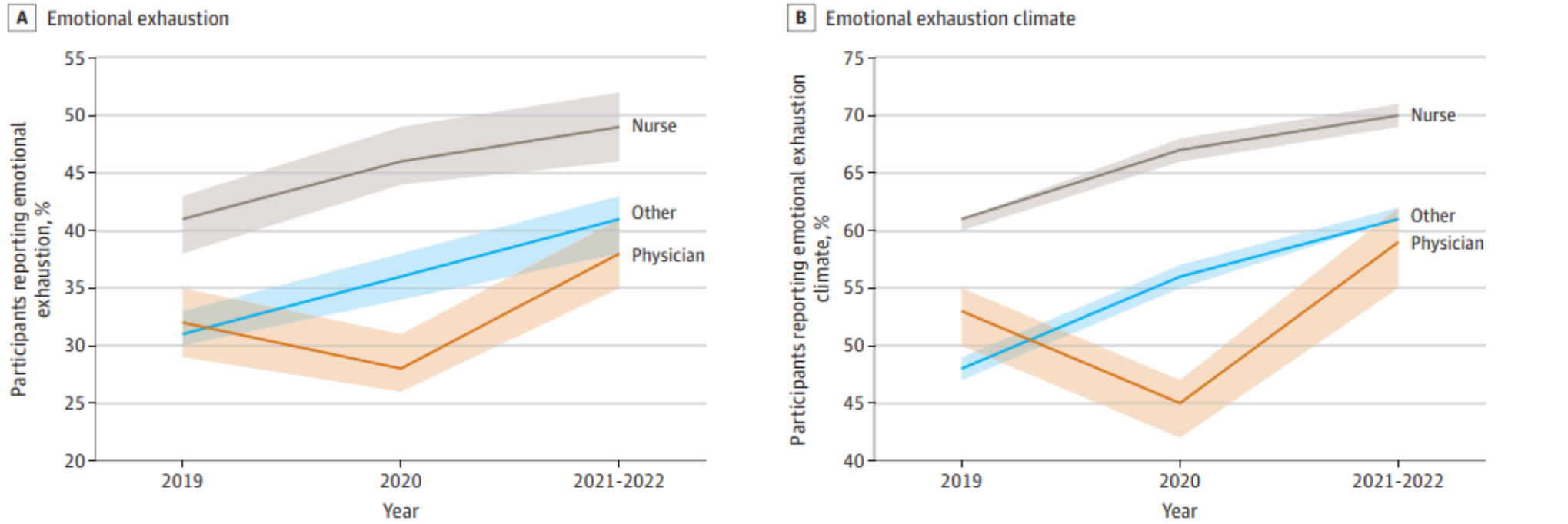


CNA indicates certified nursing assistant; OT, occupational therapist; PCA, patient care assistant; PCT, patient care technician; PT, physical therapist; and RT, recreational therapist.

Sexton, J. B., Adair, K. C., Proulx, J., Profit, J., Cui, X., Bae, J., & Frankel, A. (2022). Emotional Exhaustion Among US Health Care Workers Before and During the COVID-19 Pandemic, 2019-2021. JAMA network open, 5(9), e2232748. https://doi.org/10.1001/jamanetworkopen.2022.32748

HEALTHCARE WORKERS AND EMOTIONAL EXHAUSTION

Figure 2. Reported Emotional Exhaustion and Emotional Exhaustion Climate by Aggregated Health Care Worker Role

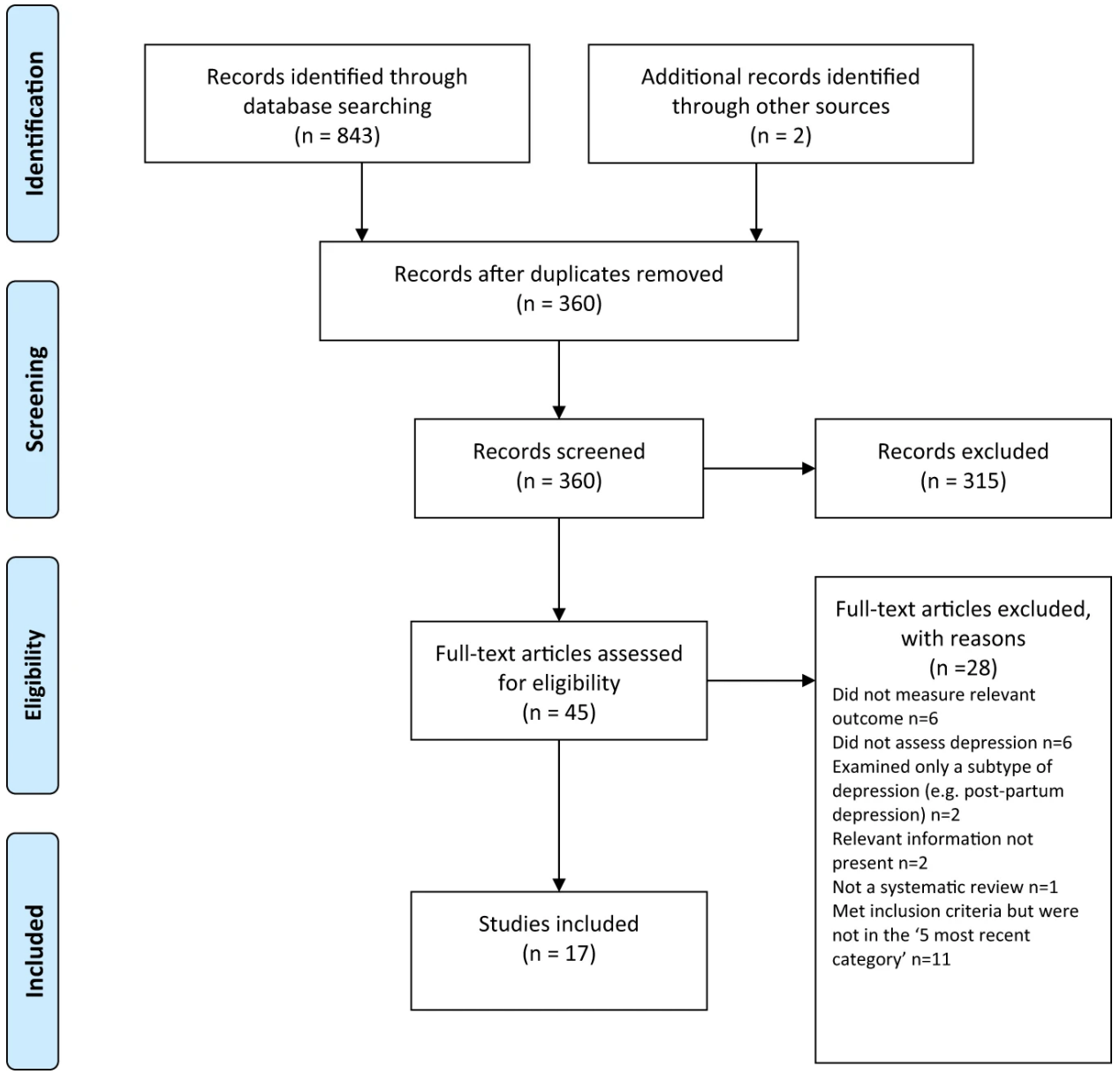


Shaded areas indicate 95% CIs.

- Differences between physician and nonphysicians assessment of workplace norms is normal

ANTIDEPRESSANTS

- Moncrieff, J., Cooper, R.E., Stockmann, T. et al. The serotonin theory of depression: a systematic umbrella review of the evidence. Mol Psychiatry (2022). https://doi.org/10.1038/s41380-022-01661-0

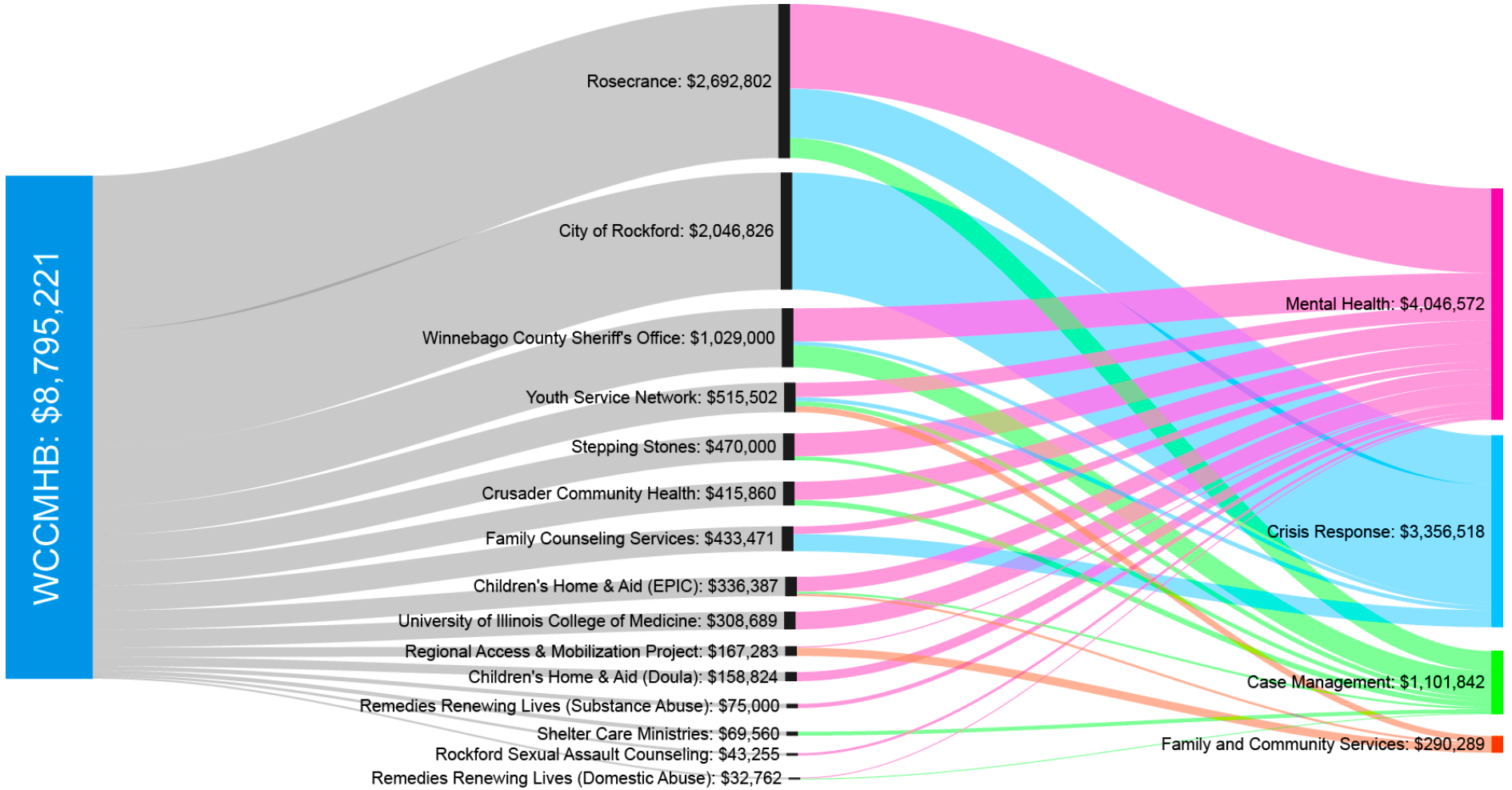


WINNEBAGO COUNTY HALF-CENT SALES TAX FOR MENTAL HEALTH

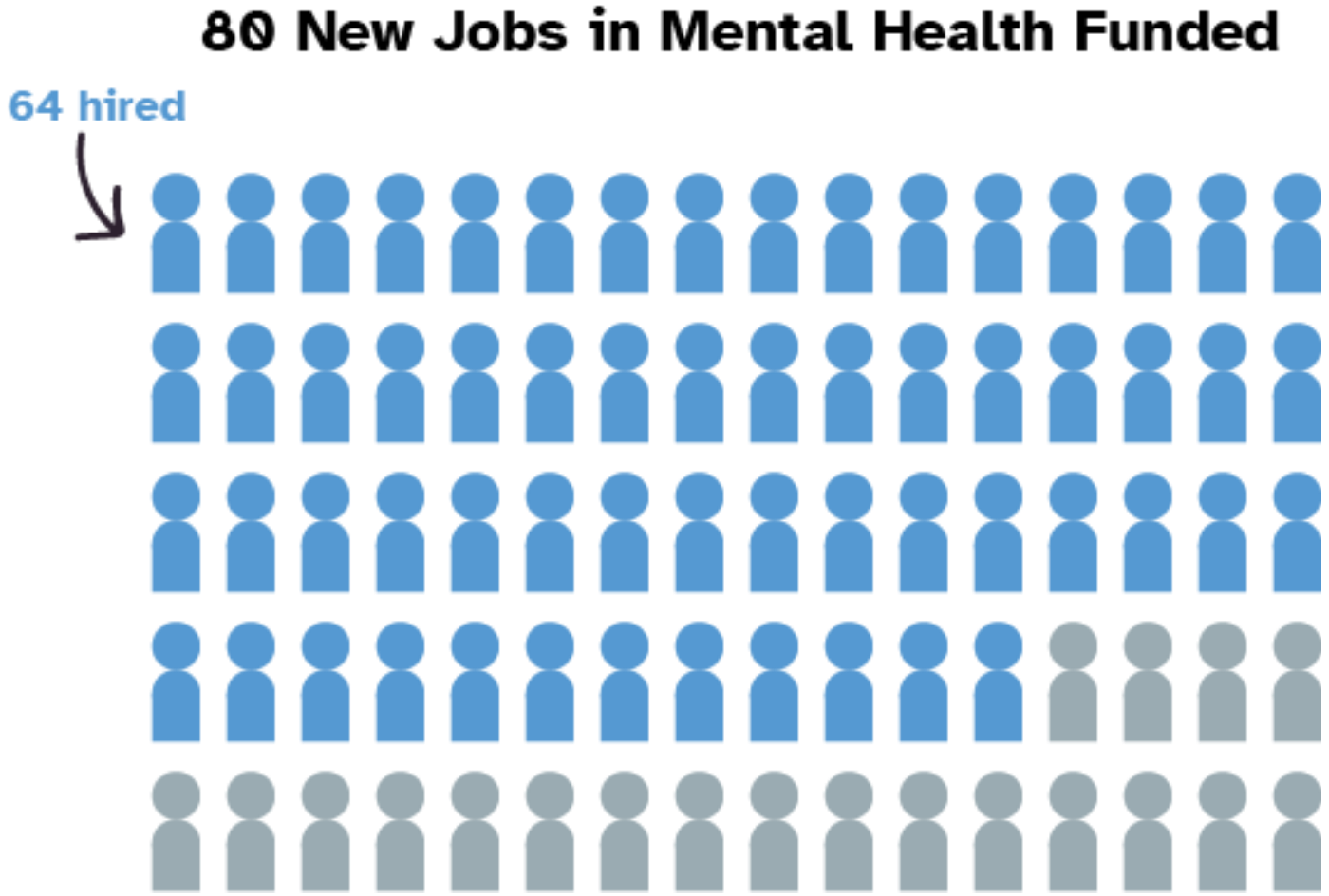
KEY INFORMANT SURVEY (2019) RESULTS

- **Funding** - Lack of funding is mentioned as a barrier across all areas needing improvement.
- **Workforce Development** - Key informants report a shortage of service providers, especially child Psychiatrists. They state that there are long waiting lists for services, and recruitment and retention of specialized staff is difficult due to low or stagnant wages in the area.
- **Equity & Access** - Current services are not affordable or accessible to all, especially for families who are Latino or African American, families who are low-income, of families in other underserved groups.
- **Collaboration** - Greater collaboration is needed to improve the system of care. Key informants think that there is a lack of coordinated and systemic approaches to service provision, and a lack of communication between organizations.
- **Engagement** - Key informants discussed the importance of engaging and educating the community about children's mental health and the mental healthcare services available in the area. Engaging parents and families is essential, however cultural barriers exist which get in the way of accomplishing this.

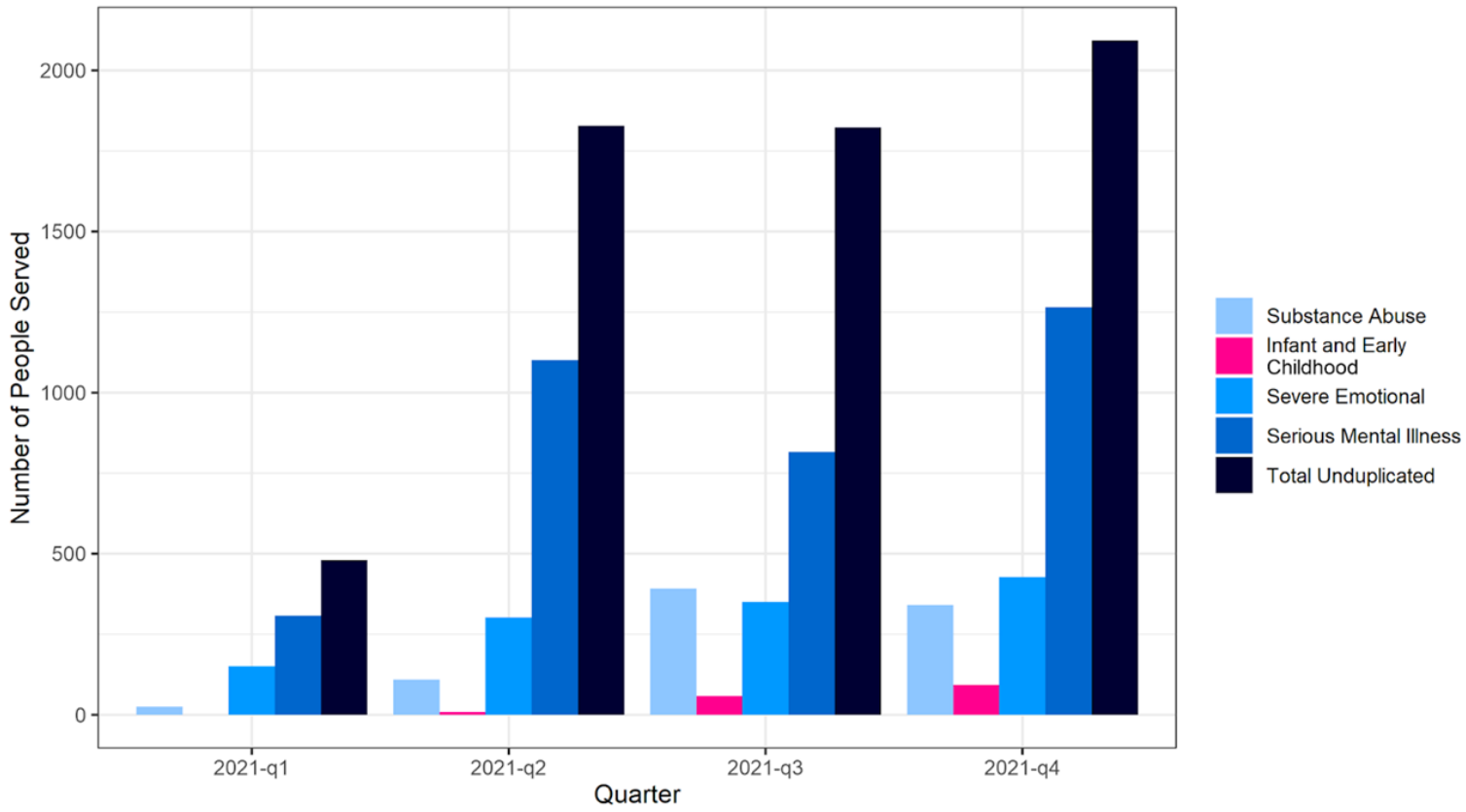
½ SALES TAX FUNDING DISTRIBUTION



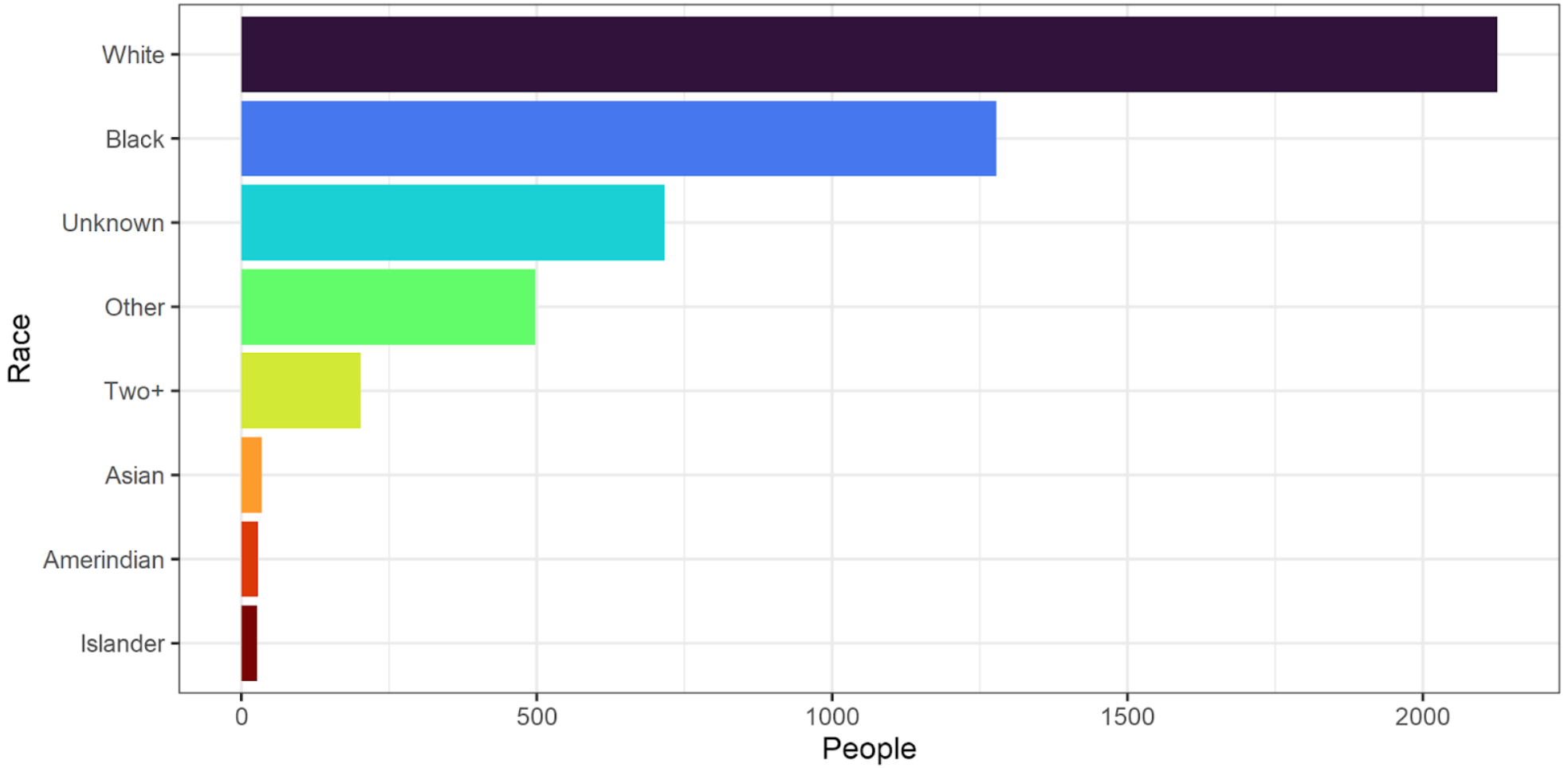
JOB CREATION



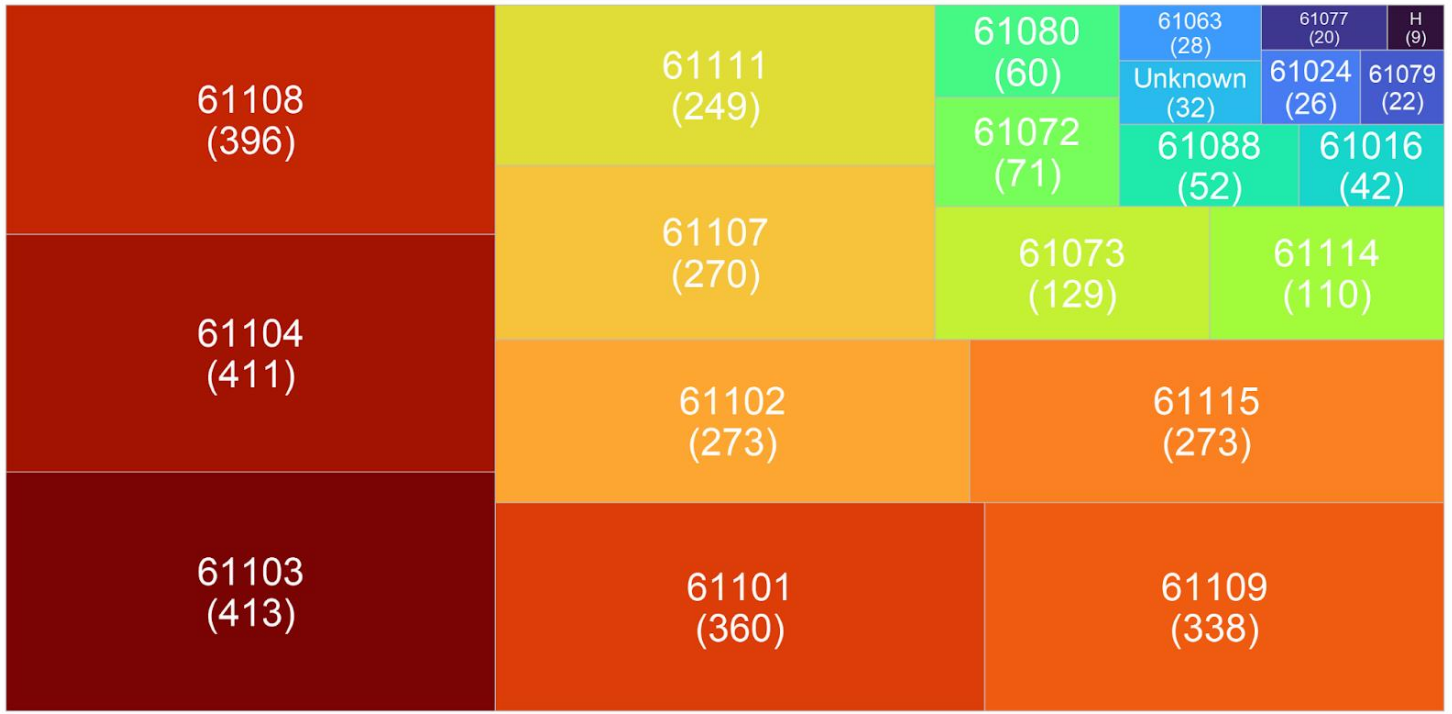
PERSONS SERVED



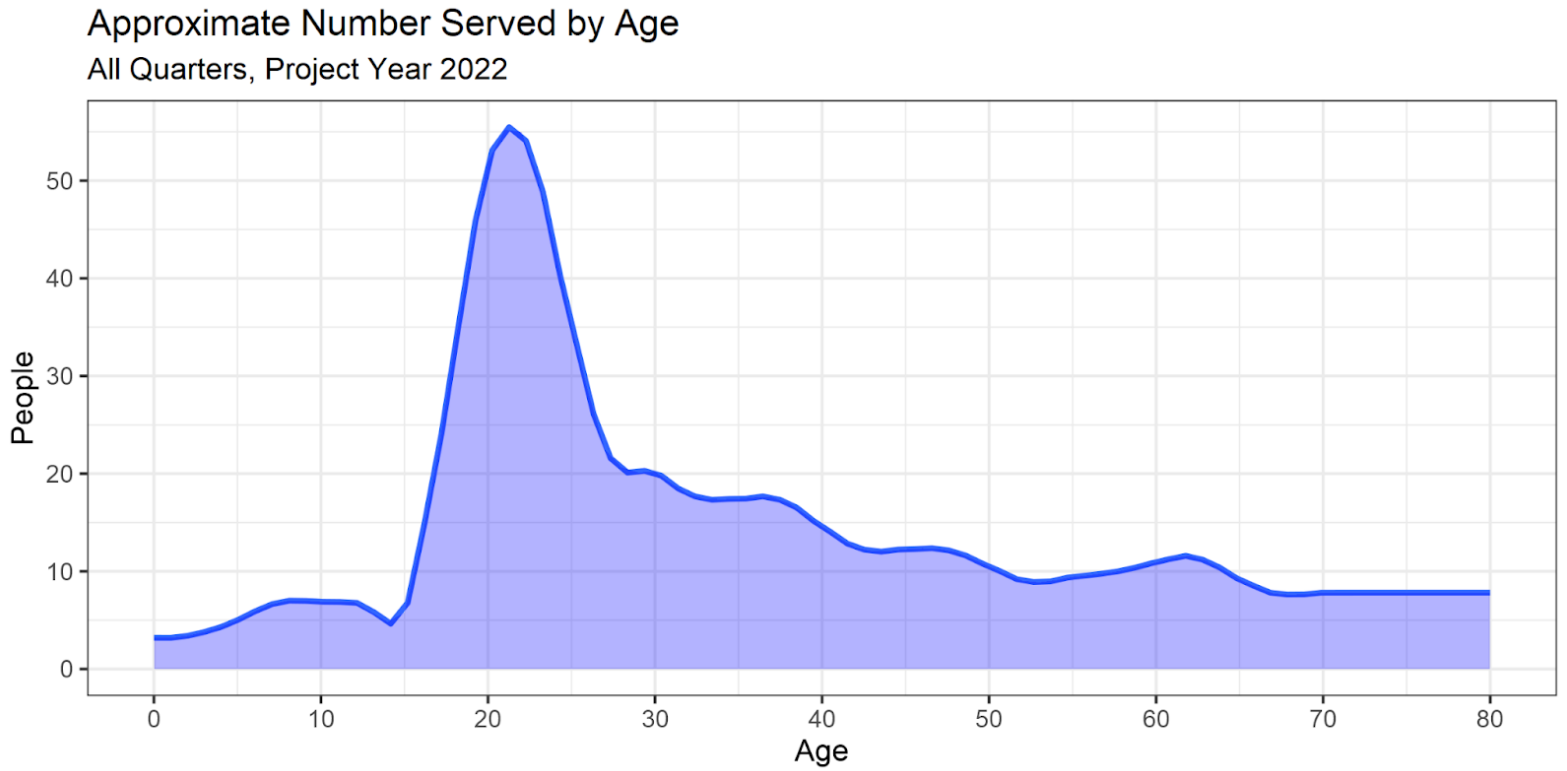
DEMOGRAPHIC BREAKDOWN - RACE



DEMOGRAPHIC BREAKDOWN - GEOGRAPHY

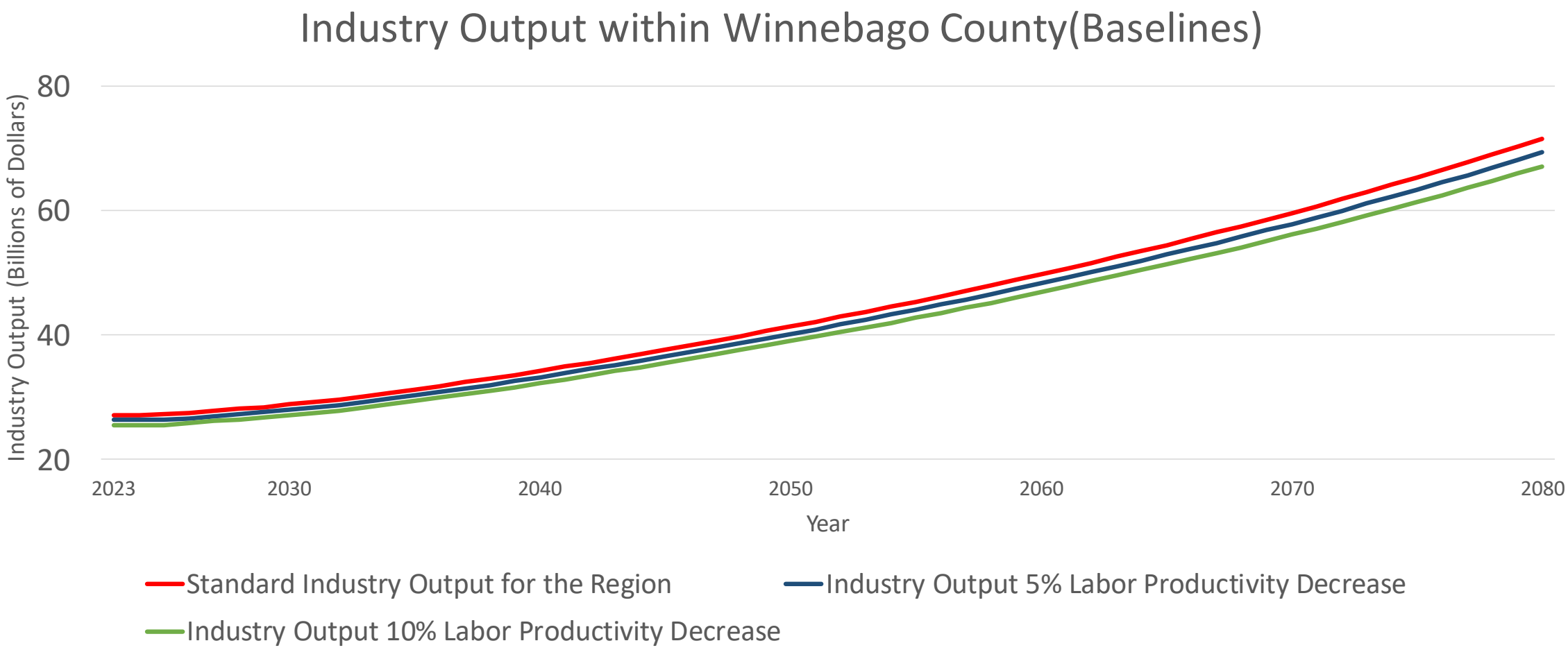


DEMOGRAPHIC BREAKDOWN - AGE



THE MODEL

BASELINES


Industry Output within Winnebago County(Baselines)
Industry Output (Billions of Dollars)
80
60
40
20
2023
2030
2040
2050
2060
2070
2080
Year
Standard Industry Output for the Region
Industry Output 5% Labor Productivity Decrease
Industry Output 10% Labor Productivity Decrease

INPUTS FOR SCENARIOS 1 AND 2

Baseline (5% Decrease)

Category	Detail	Units	2023	2024	2025	2026	2027
Labor Productivity	Details (66)	Proportion	-0.05	-0.05	-0.05	-0.05	-0.05

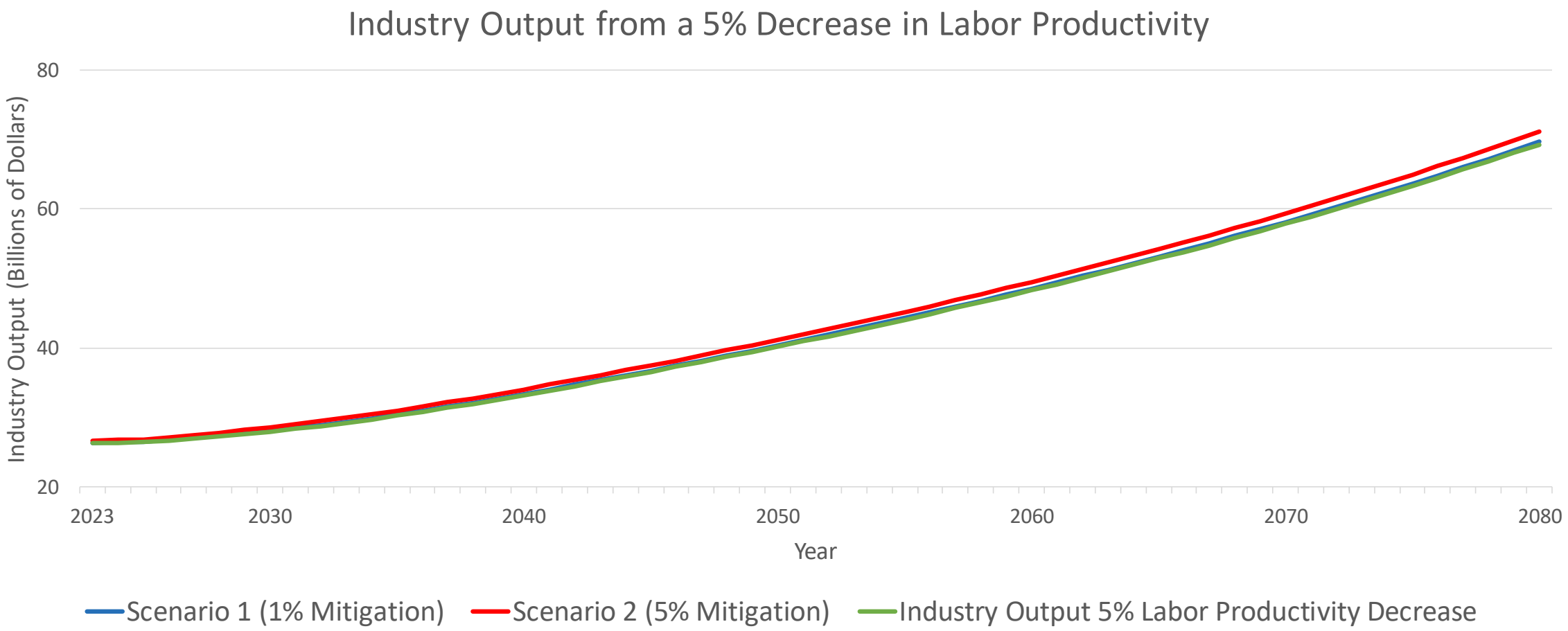
Scenario 1 (1% Mitigation)

Category	Detail	Region	Units	2023	2024	2025	2026	2027
Labor Productivity	Details (66)	Winnebago County, IL	Proportion	0.01	0.01	0.01	0.01	0.01

Scenario 2 (5% Mitigation)

Category	Detail	Region	Units	2023	2024	2025	2026	2027
Labor Productivity	Details (66)	Winnebago County, IL	Proportion	0.05	0.05	0.05	0.05	0.05

SCENARIOS 1 & 2



INPUTS FOR SCENARIOS 3 AND 4

Baseline (10% Decrease)

Category	Detail	Units	2023	2024	2025	2026	2027
Labor Productivity	Details (66)	Proportion	-0.1	-0.1	-0.1	-0.1	-0.1

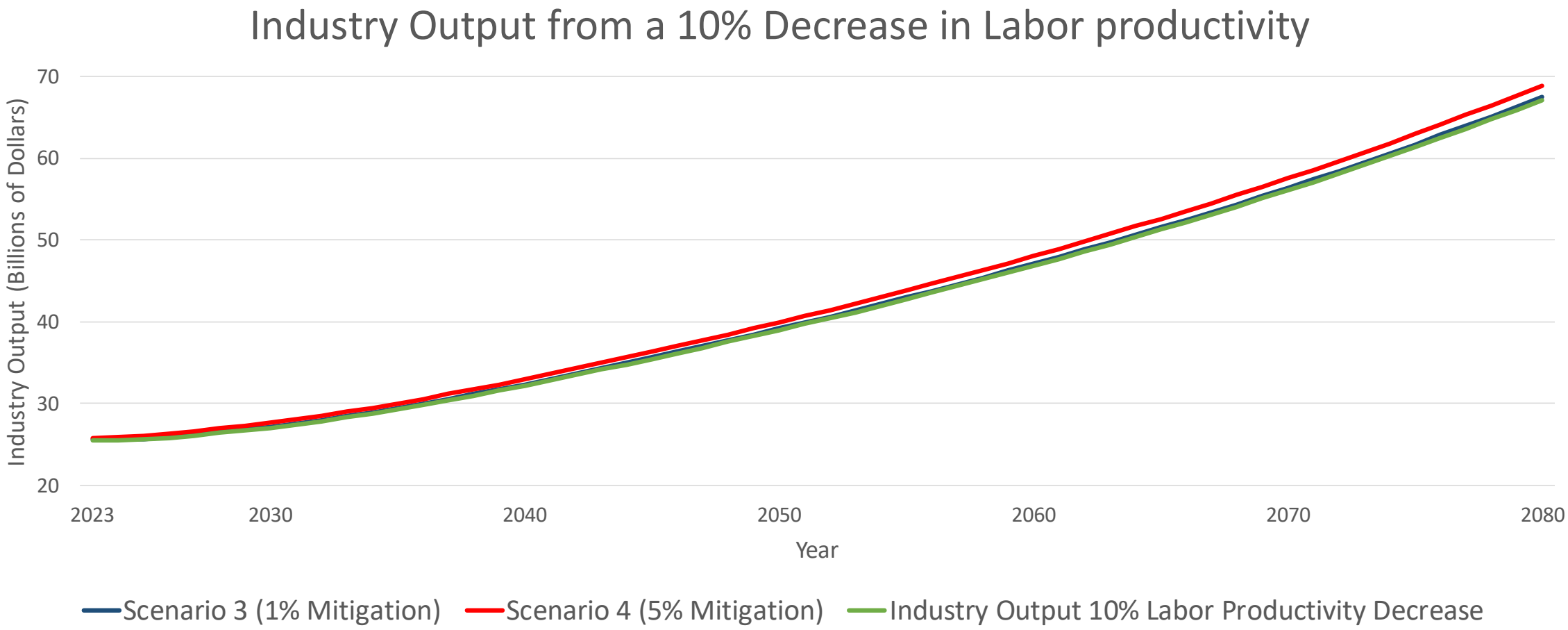
Scenario 3 (1% Mitigation)

Category	Detail	Region	Units	2023	2024	2025	2026	2027
Labor Productivity	Details (66)	Winnebago County, IL	Proportion	0.01	0.01	0.01	0.01	0.01

Scenario 4 (5% Mitigation)

Category	Detail	Region	Units	2023	2024	2025	2026	2027
Labor Productivity	Details (66)	Winnebago County, IL	Proportion	0.05	0.05	0.05	0.05	0.05

SCENARIOS 3 AND 4



INPUTS FOR SCENARIO 5

Scenario 5
(Employment with inclusion of Mental Health Tax)

Category	Detail	Region	Units
Employment	Industry Employment: Social assistance	Winnebago County, IL	Units

2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
41.46	105.7...	138.917	143.417	146.317	147.317	148.317	148.817	148.817	148.817	148.817	148.817

INPUTS FOR SCENARIOS 6 AND 7

Baseline (5% Decrease)

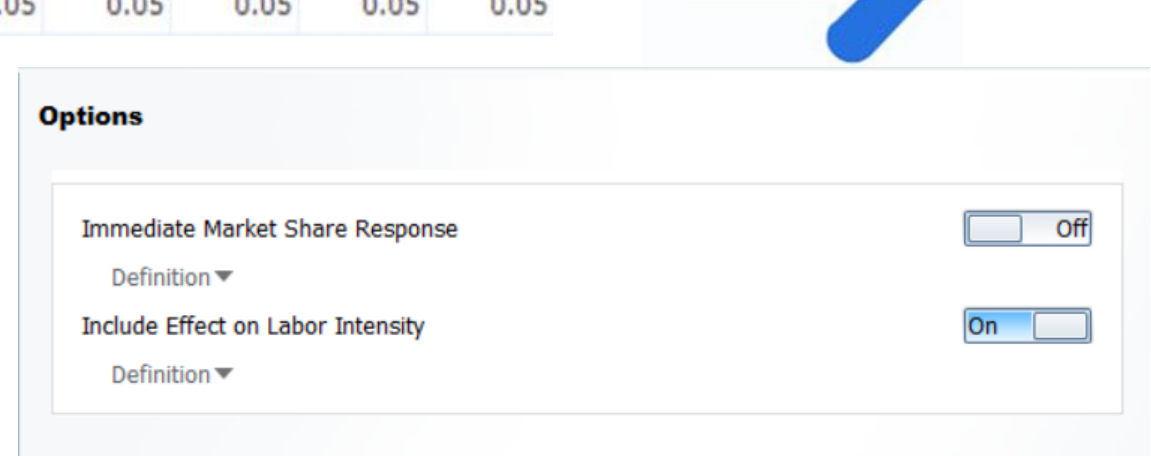
Category	Detail	Units	2023	2024	2025	2026	2027
Labor Productivity	Details (66)	Proportion	-0.05	-0.05	-0.05	-0.05	-0.05

Scenario 6 (1% Mitigation)

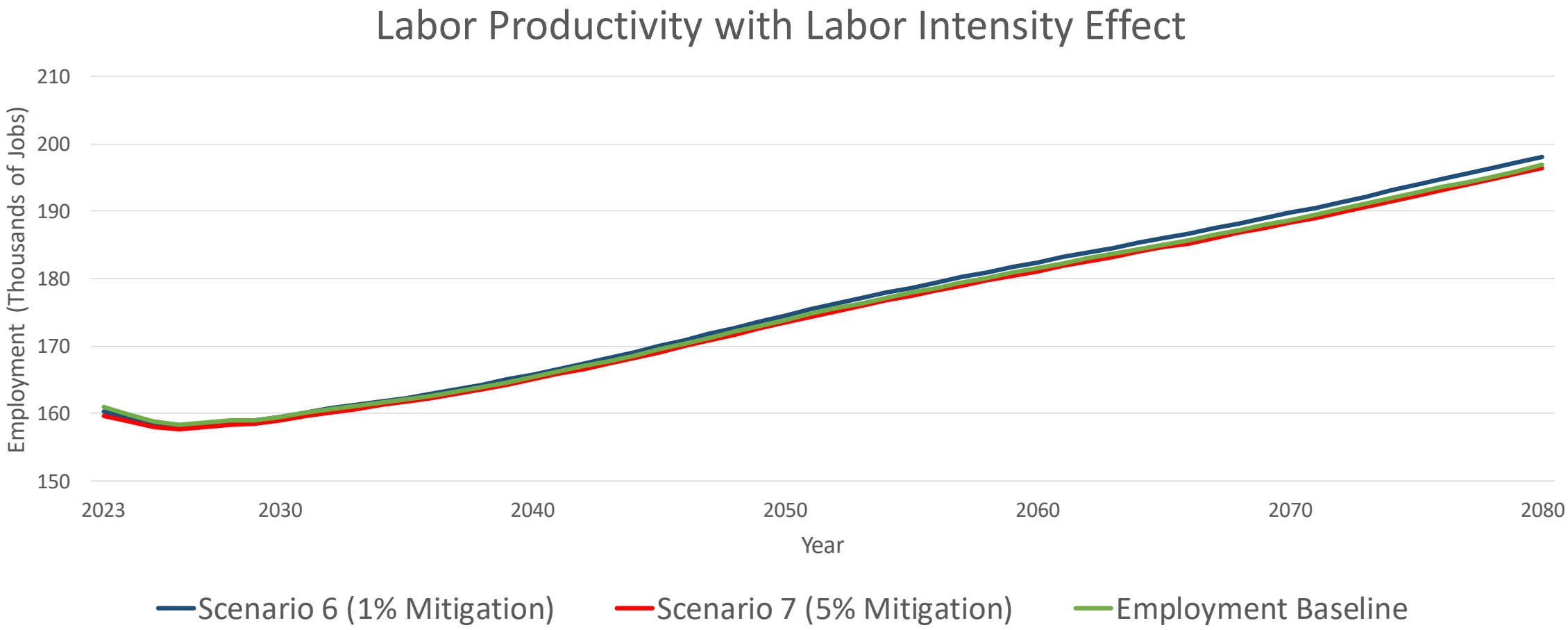
Category	Detail	Region	Units	2023	2024	2025	2026	2027
Labor Productivity	Details (66)	Winnebago County, IL	Proportion	0.01	0.01	0.01	0.01	0.01

Scenario 7 (5% Mitigation)

Category	Detail	Region	Units	2023	2024	2025	2026	2027
Labor Productivity	Details (66)	Winnebago County, IL	Proportion	0.05	0.05	0.05	0.05	0.05



SCENARIO 6 AND 7



THE FUTURE OF WORKFORCE DEVELOPMENT

NEURO-INFORMED WORKFORCE DEVELOPMENT

REFERENCES

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QUESTIONS AND COMMENTS