NAIVE VS. BEHAVIORAL SIR

Naive vs Behavioral SIR

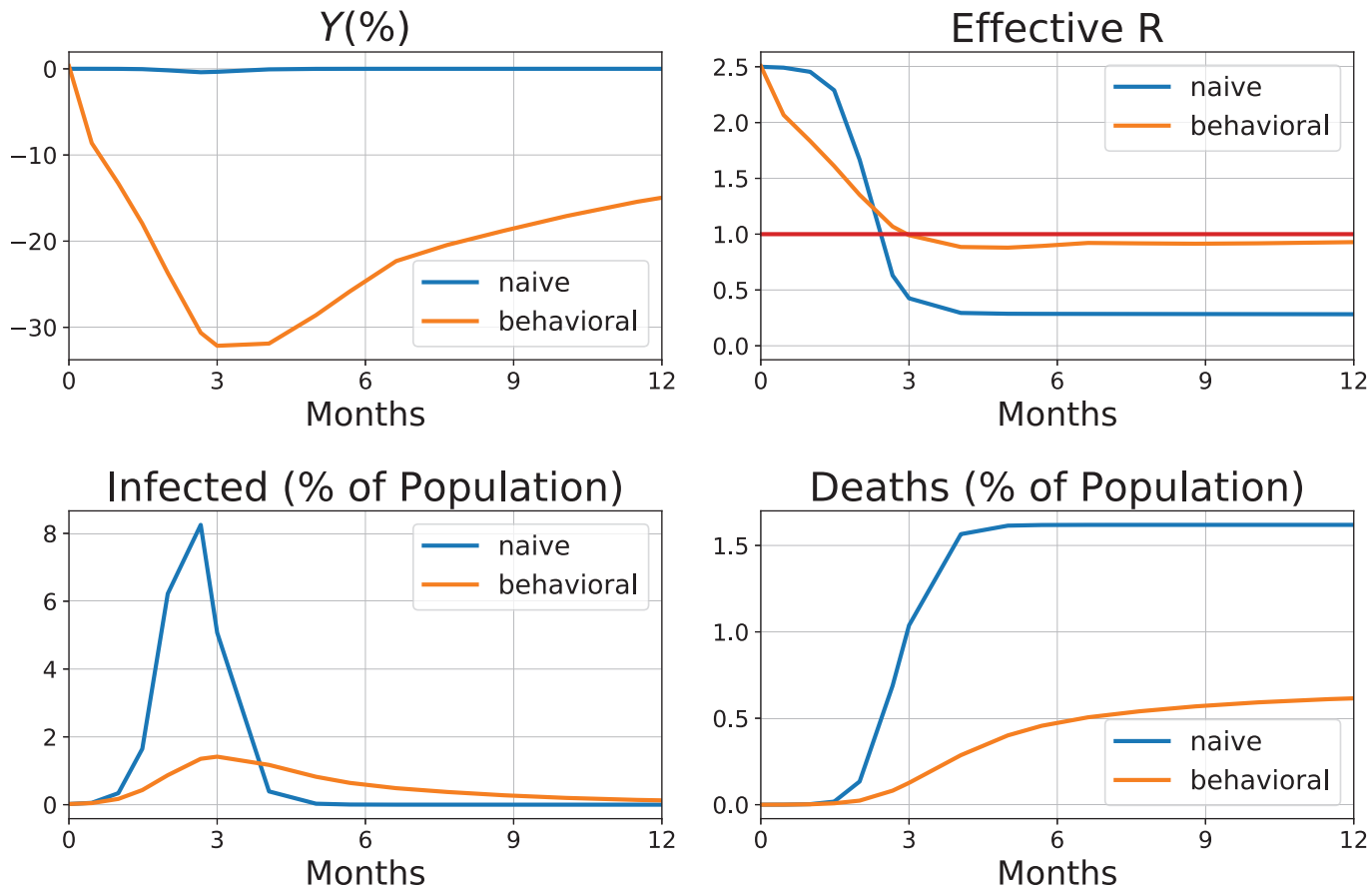
Naive	**Behavioral**
$\dot{I}_t = \beta_t \left(S_t I_t\right) - \lambda I_t$	
$\beta_t = \beta_0 + \left(\beta^* - \beta_0\right)\left(1 - e^{-\gamma t}\right)$	

Naive vs Behavioral SIR

Naive	**Behavioral**
$\dot{I}_t = \beta_t (S_t I_t) - \gamma I_t$	$\dot{I}_t = \beta_t (S_t I_t) - \gamma I_t$
$\beta_t = \beta_0 + (\beta^* - \beta_0)\left(1 - e^{-\lambda t}\right)$	$\beta_t = \beta_0 g(Y_t), \quad g' > 0$
	$Y_t = f(I_t), \quad f' < 0$

- Transmission block (g): Virus transmission is not a biological constant (nor an exogenous function of time), but depends on economic activity Y
- Economic block (f): Economic activity Y depends on risk of infection (and death)
- Economists microfound both

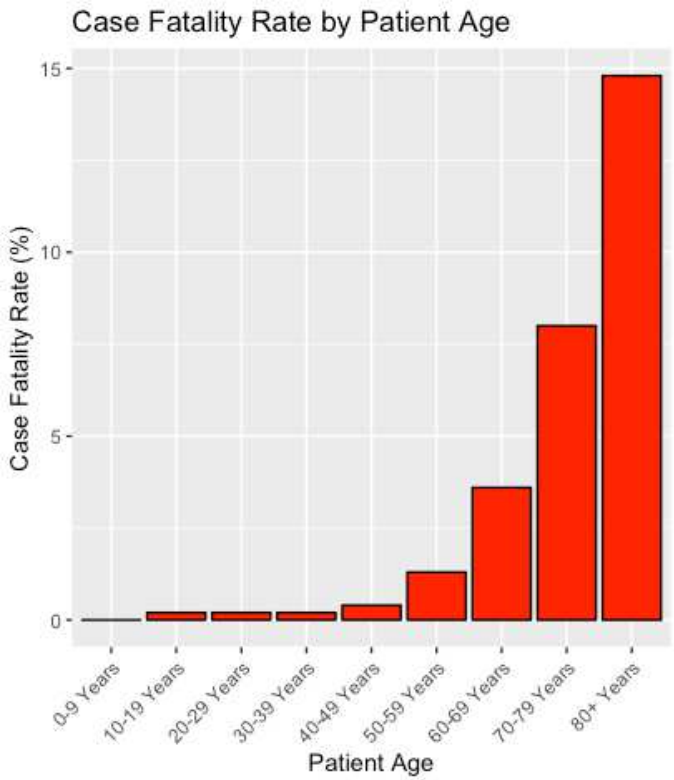
Naive vs Behavioral SIR: Dynamics



- Effective $R = 1$ is a natural attraction point in Behavioral-SIR

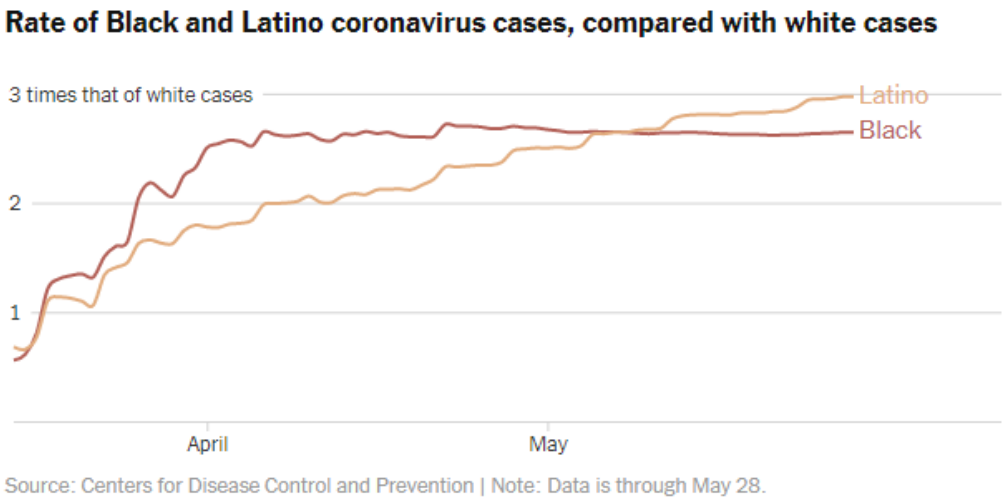
DISTRIBUTIONAL CONSEQUENCES OF COVID-19

Inequality in health outcomes: Age



- Fatalities are heavily concentrated among the elderly
  - 80% of deceased are older than 65, and median age is 80
  - 40% of all deaths are linked to nursing homes

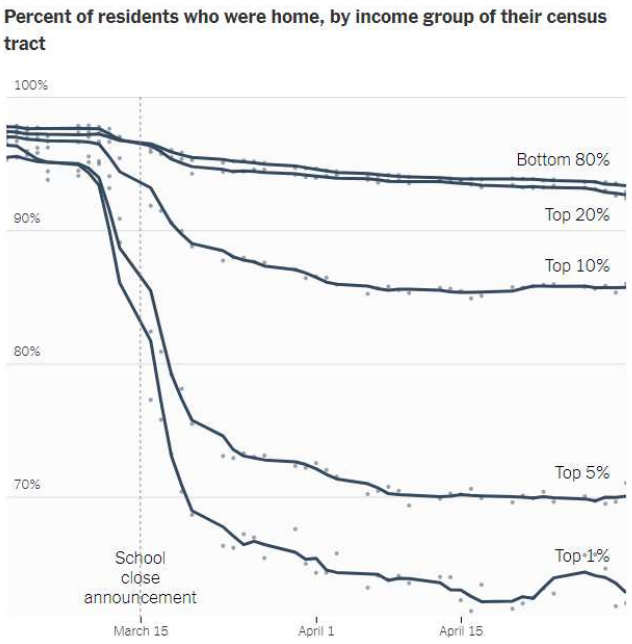
Inequality in health outcomes: Race



- Death rates for Blacks and Latinos twice as large as for Whites
  - More exposed ex-ante: Higher rate of comorbidity
  - More exposed ex-post: Front-line workers who cannot work remotely, rely on public transportation, and live in cramped apartments

Inequality in health outcomes: Income

- Zip codes in bottom quintile have 4 times cases than those in top
  - Example: Rich New Yorkers fleeing the city in March



  - Silver lining: some low-income communities may be much closer to herd immunity (e.g. Queens, NYC)

Inequality in economic outcomes: Occupations

- Useful to think in terms of a (2×2) matrix of sector $\times$ occupation
  - Regular C: utilities, manufacturing, finance
  - Social C: health care, food services, travel & entertainment

	Flexible	**Rigid**
Regular	Software engineer, Accountant	Car mechanic, Miner
Empl. share	23%	16%
Social	Event planner, Teacher	Waiter, Travel guide
Empl. share	10%	21%

- The residual 30% of employment are essential occupations

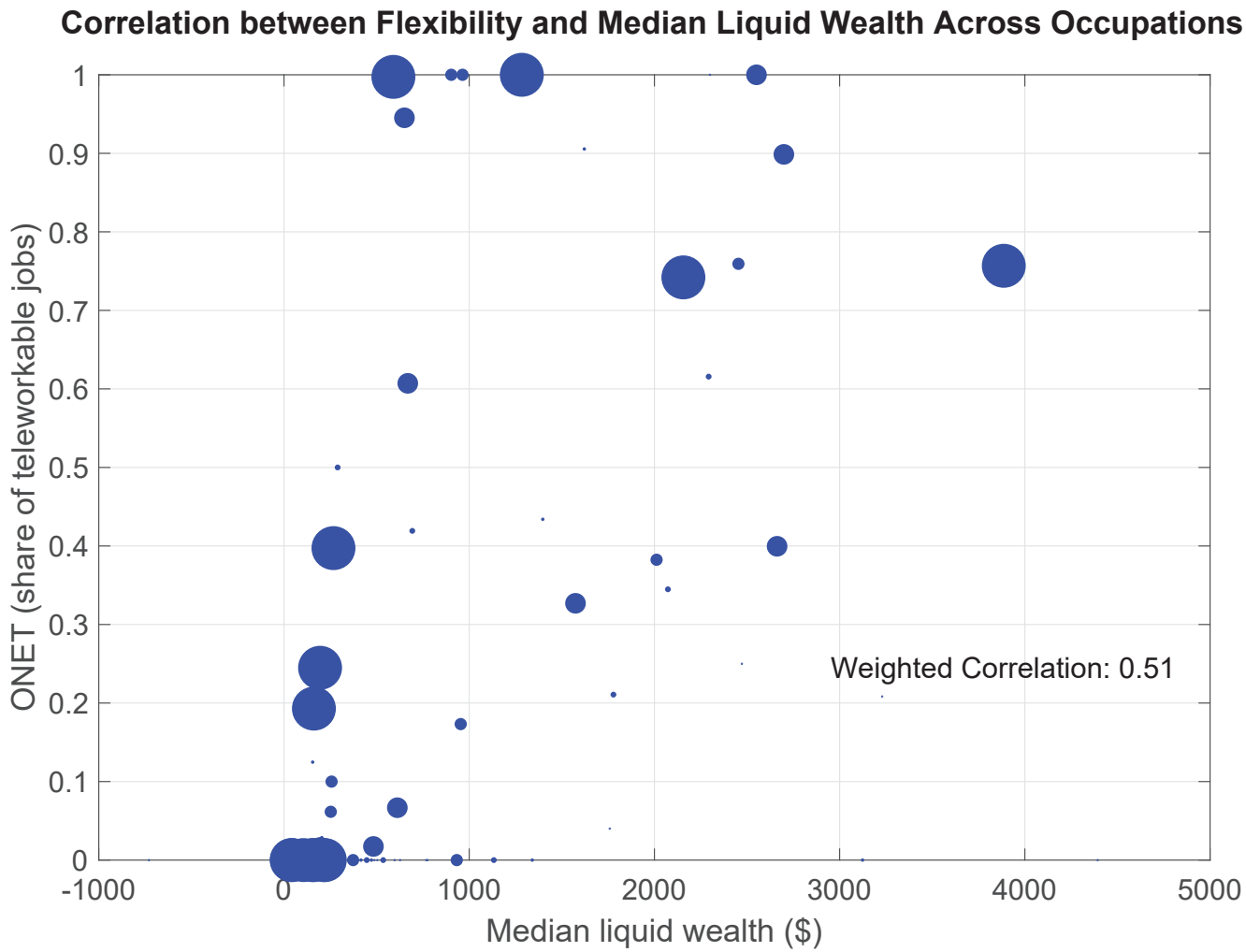
Inequality in economic outcomes: Occupations

- Pandemic shock has both demand and supply elements:
  - Behavioral: collapse in demand for S-good
  - Govt. regulation: lockdown restricted supply of rigid labor

	Flexible	**Rigid**
Regular		
Δ Y (March-May)	-8%	-17%
Median liq. wealth	$5,000	$1,000
Social		
Δ Y (March-May)	-9%	-29%
Median liq. wealth	$2,000	$600

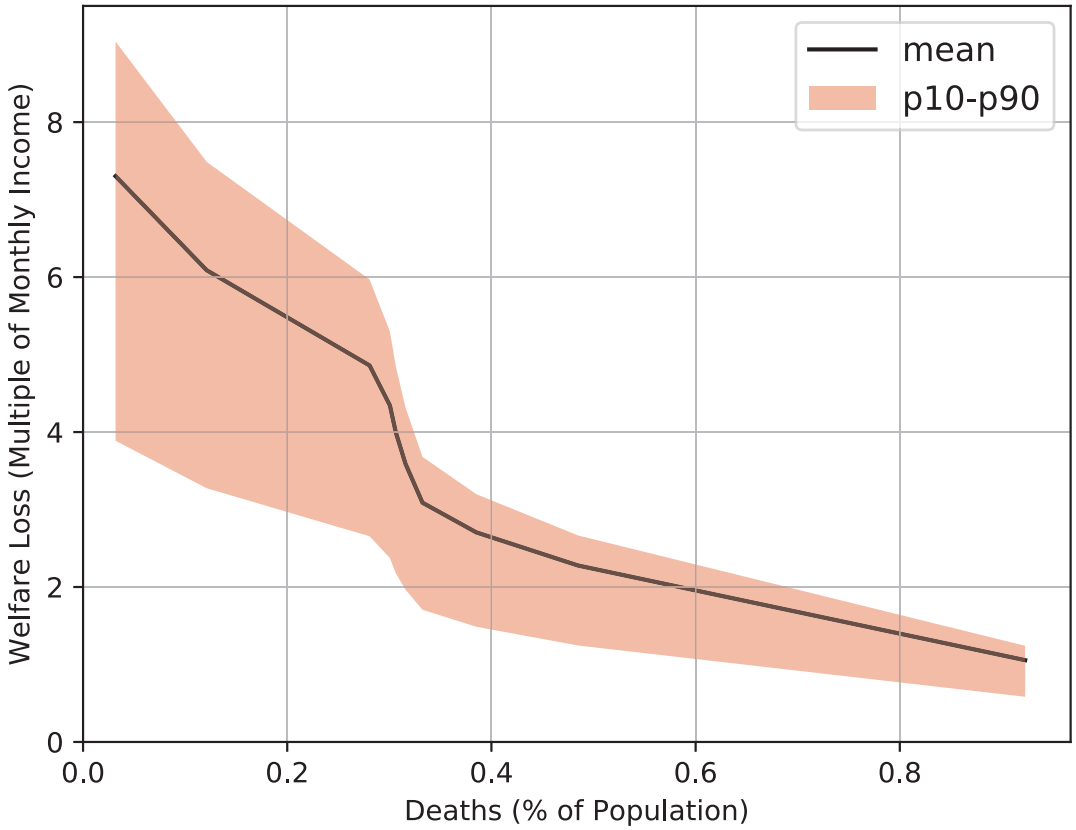
- S-intensive rigid occupations have been hit the hardest & are most vulnerable to shocks ex-ante

Inequality in economic outcomes: Occupations



Health-Wealth Frontier

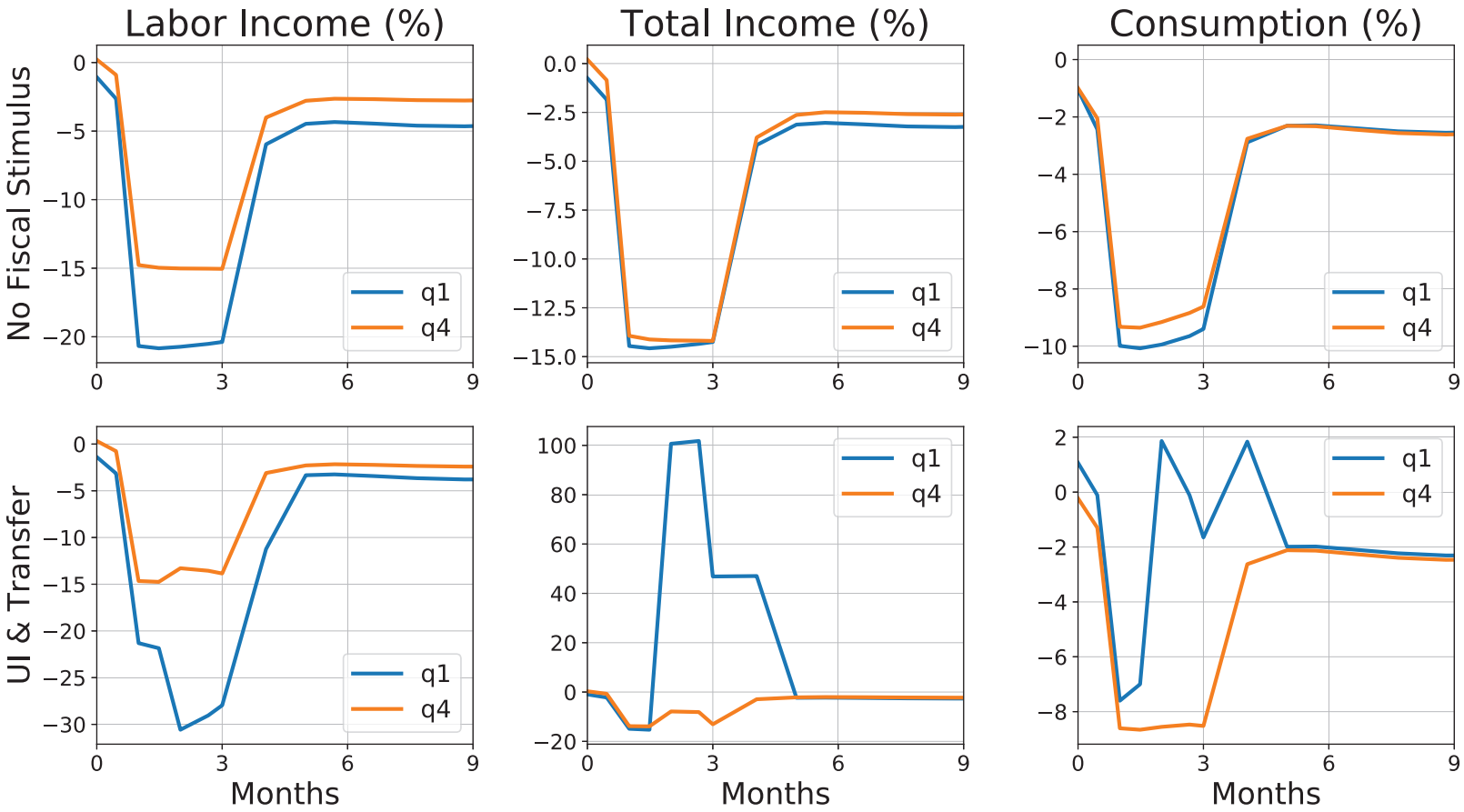
- Kaplan-Moll-Violante (2020): lockdowns of various length



← Longer lockdowns

Income vs Consumption: Role of CARES Act

- Kaplan-Moll-Violante (2020): add Pandemic UI + Transfer



LONG-RUN CONSEQUENCES FOR HUMAN CAPITAL

Human capital

- Long-term non-employment $\Rightarrow$ persistent erosion of skills
- Danger: drop in participation rate of prime-age low-skilled men

- Double-whammy: deep recession against backdrop of SBTC

Two aspects of epidemic shock

- Temporary liquidity shortages for small businesses
  - Inefficient separations $\Rightarrow$ destruction of viable matches
- Permanent reallocation of demand away from social sector
  - Efficient separations to avoid prolonged misallocation of inputs
- Labor-market policy faces trade-off:
  - Short run: favor social insurance and match preservation
  - Medium run: favor reallocation via active LM policies

Human capital: additional dimensions

- Prolonged school closures
  - Losses in learning at a crucial age
  - Achievement gap will open up because poor parents have less time/online access/ability to help kids at home
  - Higher drop-out rate of marginal college students
- Permanent shift to more remote work
  - Weaker agglomeration effects because lower ‘interaction’?