On the Distribution and Dynamics of Medical Expenditure among the Elderly

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August 2, 2021

Disclaimer. The research reported herein was performed pursuant to a grant from the U.S. Social Security Administration (SSA) funded as part of the Retirement and Disability Consortium. The opinions and conclusions expressed are solely those of the author(s) and do not represent the opinions or policy of SSA or any agency of the Federal Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of the contents of this report. Reference herein to any specific commercial product, process or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply endorsement, recommendation or favoring by the United States Government or any agency thereof. The opinions and conclusions are solely those of the authors, and do not necessarily reflect the views of the Federal Reserve Bank of Richmond, or the Federal Reserve System.

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- How do *Medicare* and *Medicaid* reduce this risk?
- Our contributions
  - Estimate cutting edge model of dynamics of medical spending
  - Estimate non-linear budget set
    $\Rightarrow$ out of pocket as fraction of total medical spending

Data

- HRS (out-of-pocket spending) linked to Medicaid and Medicare fee for service claims

  (imputing other payors is in progress)

- Households with heads aged 65 or older, years 1998-2012

Medical Spending Facts

Fact 1: Medical Spending is Concentrated

Total Spending Percentiles	Total Spending		Percent paid by		
	Average Exp.	Pct. of Total	Out-of-Pocket	Medicare	Medicaid
All	14,500	100.0	20.8	69.2	10.0
95-100%	105,700	36.4	15.9	69.7	14.5
90-95%	52,100	18.0	14.8	72.4	12.8
70-90%	21,900	30.2	21.1	72.2	6.7
50-70%	7,200	10.0	35.7	61.3	3.0
0-50%	1,600	5.5	44.4	53.7	1.9

Notes: Total spending is the sum of annual household Medicare, Medicaid, and out-of-pocket spending, age 65+. Expenditures are expressed in 2014 dollars.

Table: Medical spending by total expenditures and payor

Fact 2: Medicare and Medicaid Pay a High Share of Care of Highest Medical Spenders

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Budget Sets

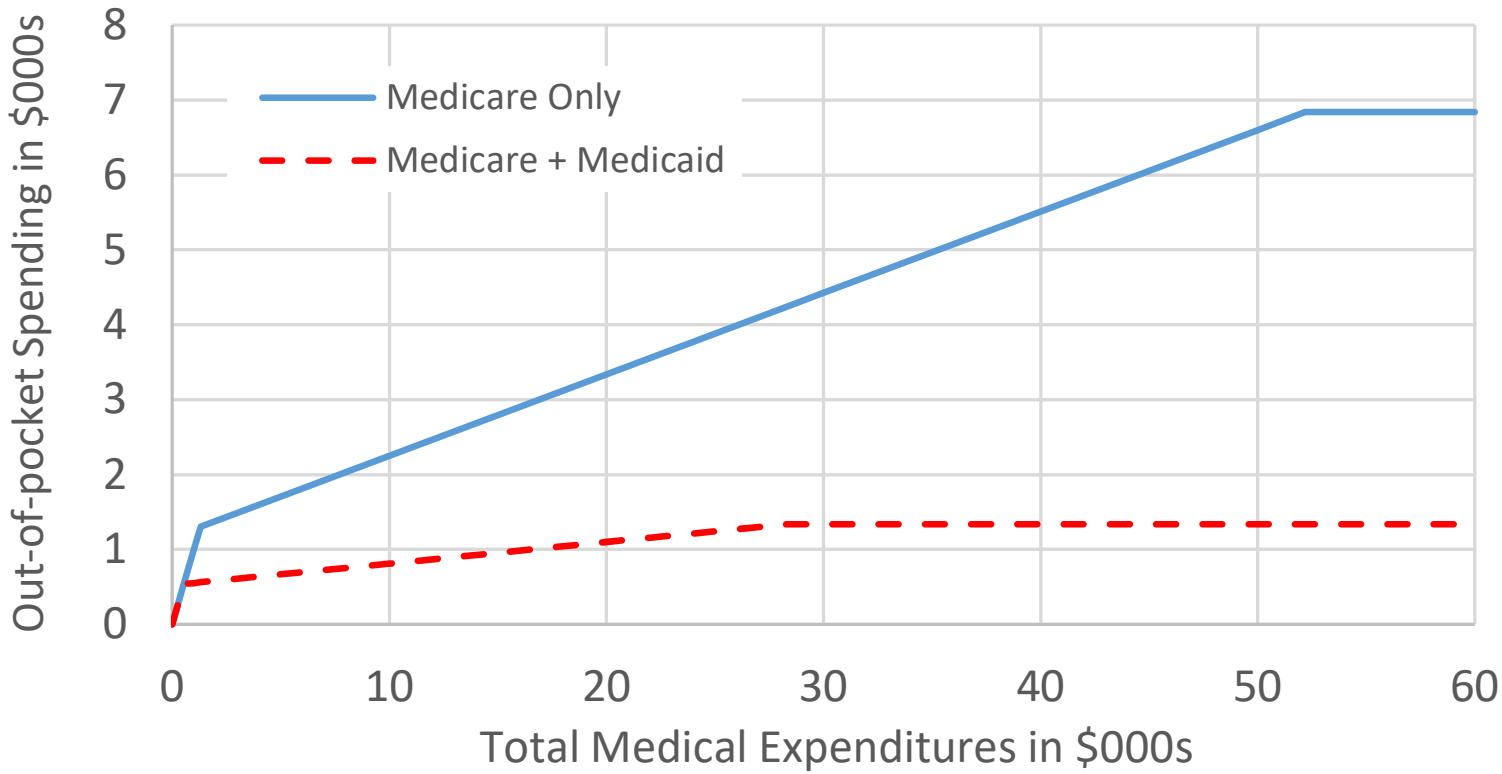

Figure: Out of pocket medical spending as a function of total medical spending

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- We build on the Arellano, Blundell, Bonhomme (Ecta 2017) approach
  - Flexible distribution of the shocks
  - Flexible Markov model for persistence of the shocks–allows for non-linear persistence

Dynamics of health, survival

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- Health (and survival) $\in \{$dead, nursing home, bad, good$\}$: age, gender, marital status, and PI-specific Markov chain
- Use estimated models to simulate lifetime histories of:
  - health, mortality shocks
  - medical spending shocks
  - $\Rightarrow$ compute medical spending histories

Life Expectancy as of Age 70

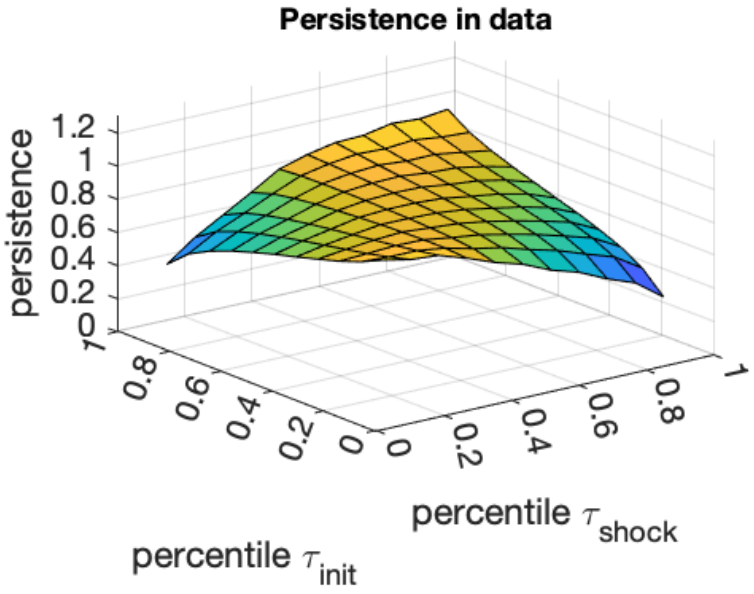
Income Percentile	Men: Nursing Home	Men: Bad Health	Men: Good Health	Women: Nursing Home	Women: Bad Health	Women: Good Health	All
Singles							
10^{th}	**3.0**	6.9	8.7	4.1	11.3	13.2	10.2
90^{th}	2.9	8.1	10.9	3.8	12.5	15.4	12.0
Couples							
10^{th}	2.7	7.8	9.8	4.0	12.1	14.1	11.3
90^{th}	2.7	10.4	13.5	3.9	14.6	**17.3**	14.5
Oldest Survivor							**17.9**
Probability that Oldest Survivor is Woman							63.7%

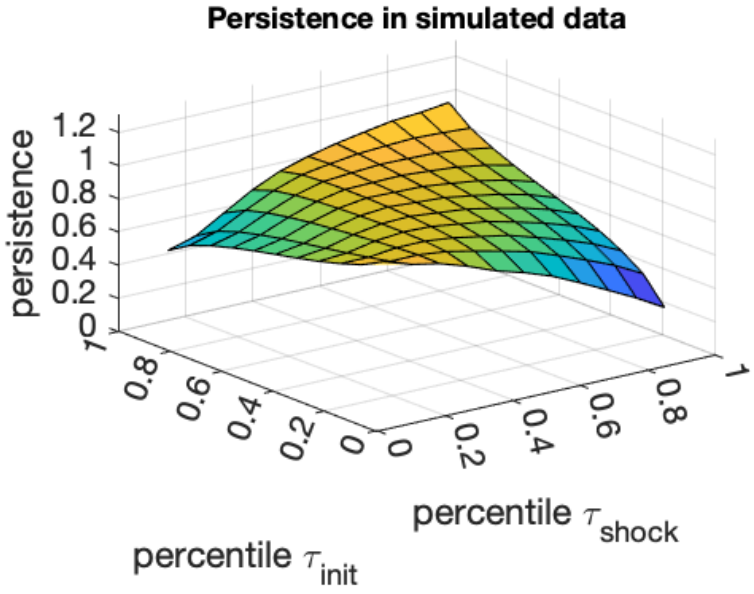
Probability of Ever Entering a Nursing Home

	Men		Women		
Income Percentile	Bad Health	Good Health	Bad Health	Good Health	All
Singles					
10^{th}	23.6	25.3	35.8	**37.9**	32.8
90^{th}	20.3	22.8	32.2	35.8	30.1
Couples					
10^{th}	17.3	19.2	34.4	37.0	28.7
90^{th}	**14.6**	16.8	31.4	34.5	26.3

- Conditional on being alive at age 70

Persistence of Medical Spending





How much total medical spending risk do households face?

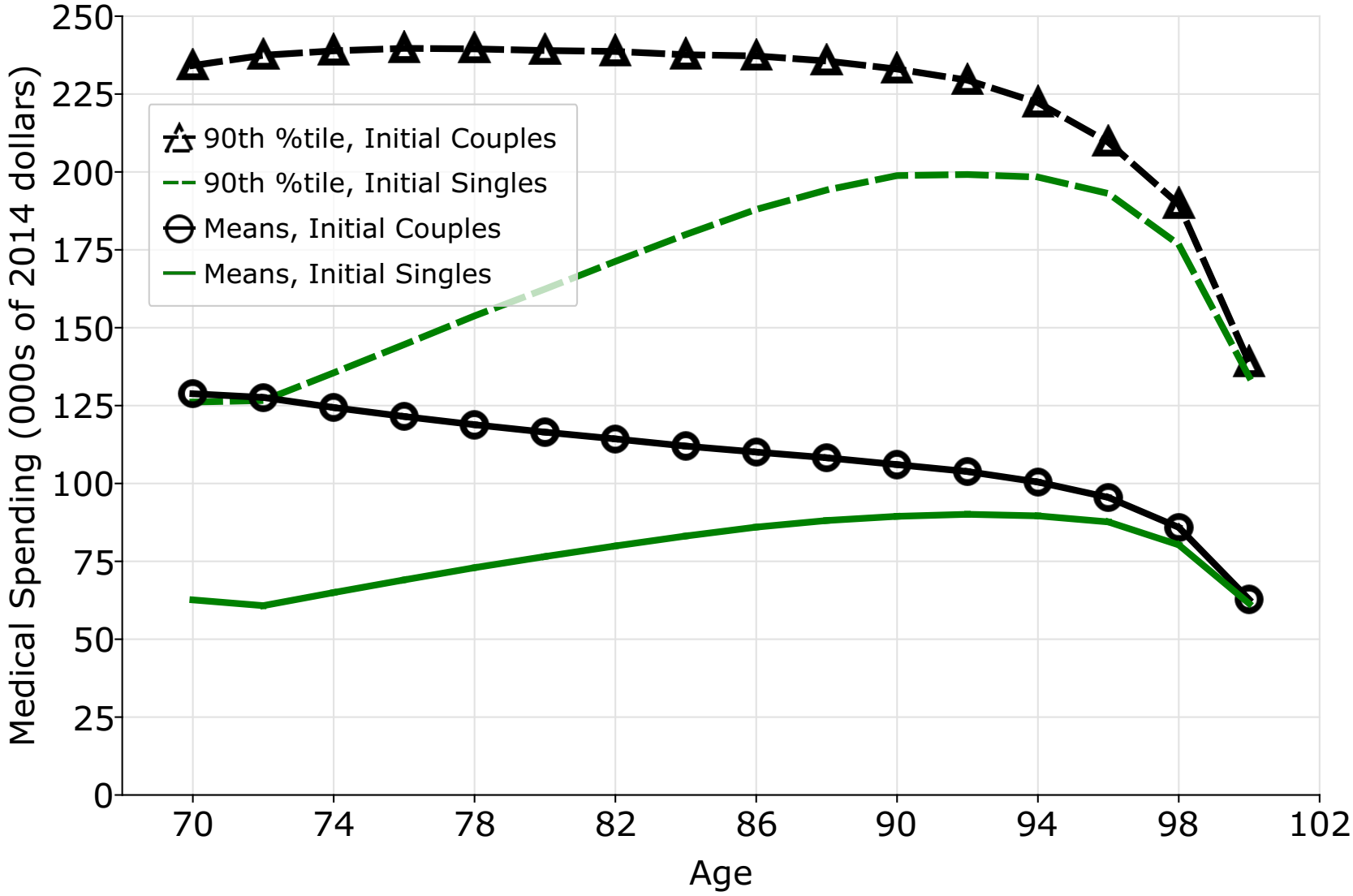


Figure: Mean and 90th percentile of remaining lifetime medical spending for surviving households, initial singles and initial couples

Conclusion

- We establish the following facts about medical spending
  - It is very dispersed (not new)
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- We develop a framework to
  - Predict lifetime medical expenses
  - Predict how lifetime medical spending is reduced by Medicare, Medicaid