Long-Term Supports and Services Financing Feasibility Analysis

THE SENATE ,HOUSE OF REPRESENTATIVES OF THE TWENTY-SEVENTH LEGISLATURE INTERIM OF 2014

COMMITTEE ON HUMAN SERVICES AND COMMITTEE ON HEALTH. INFORMATIONAL BRIEFING, OCTOBER 03, 2014 , 1:30PM-3:30PM. CONFERENCE ROOM 309,STATE CAPITOL

LAWRENCE H. NITZ, PH.D., UNIVERSITY OF HAWAII AT MANOA.

Where do we start? We used to know!

- We knew how to take care of our own!
  - Everyone moved in with Mom and Dad—the farm could always use extra hands
  - Space is never a problem—there was always room on the homestead
  - When we moved to the city—there was room for Gram—we had a 5 room apt.
  - Everyone was always home for the holidays
- We could provide for everybody
  - Jimmy's going off to tech school—we can help him out
  - Janey's starting a new shop—perhaps a little bit for the equipment an furnishings

Then something changed!

- The farm (plantation, garage, carpentry shop, etc.) is gone
  - Jackson moved to a job 200 miles away—he doesn't get home but for weekends
  - Jennifer got her professional license in Minnesota—and stayed for the snow
  - Johnson graduated locally—then took a job with a national firm—he is everywhere
  - Josie married a doctor and is living in Paris
  - John went bankrupt—he doesn't have much any more
- Mom is getting frail, and Dad cannot help her so much any more

How did this disaster happen?

- Is this family mobility a disaster? Perhaps for John.
  - Did all the kids desert their parents?
  - Did the kids move to new opportunities when the old ones were no longer there?
  - Do we really regret the loss of the plantation, the hard-scrabble farm, the marginal auto service station, the 18 hour days in the small shop?
  - Wouldn't we really rather see the kids working there, close to home?
  - Can we adjust to seeing to care for the folks when the kids are not there, there is no extra space, the distances to travel are too long?

Is it time to drop the other shoe yet?

- The mobile population is not just a Hawaii or an American phenomenon
  - Migration from the land to the city is continuing across Europe, Japan, China—all the places we know well.
  - Towns which had a collection of services and a dozen stores—now have empty buildings.
  - In both Eastern and Western Germany
    - Farmhouses with 13 or 14 rooms used to house 11 or 12 children and workers
    - now house a couple of remaining older residents—who wish not to leave home

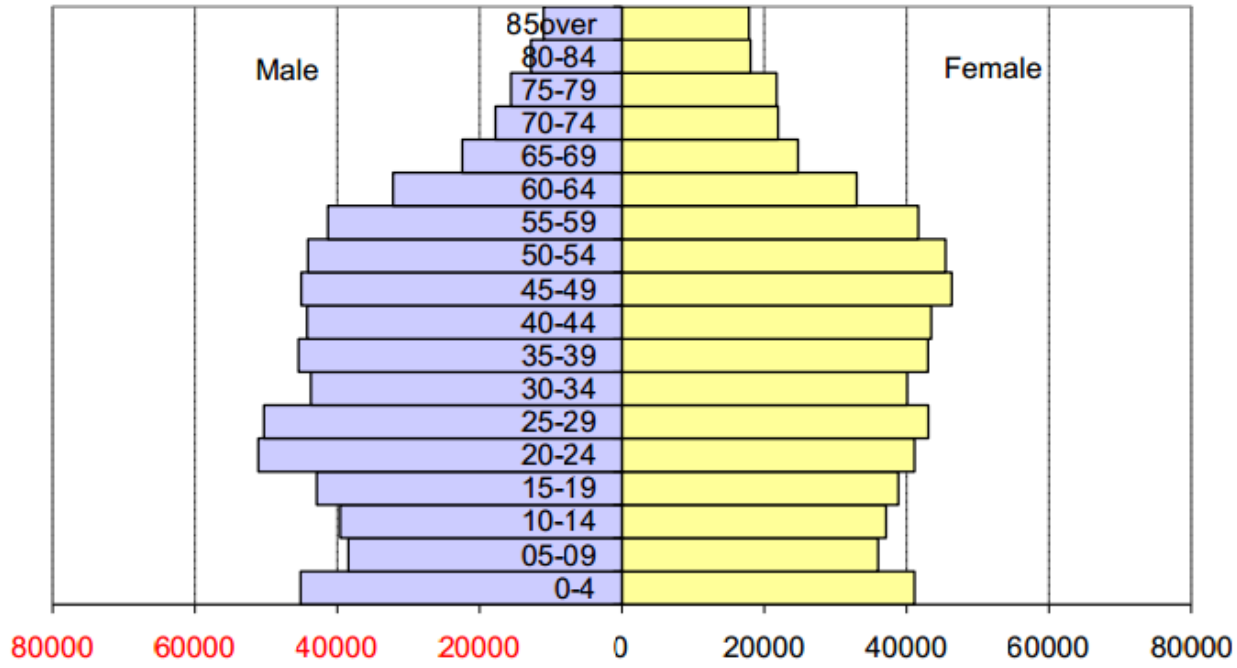
Now the shoe!

- Beyond the migration out of the extended family
  - People in industrialized societies are living longer
    - The life expectancy in Hawaii is essentially 15 years beyond the 65 year life expectancy when the Social Security Act was passed.
    - Advances in medicine prolong life—but may not prolong strength and vitality
    - Advances in health care financing make care available longer
  - Hawaii and other sunbelt states attract new residents
    - The migrants to Hawaii are largely middle-aged adults
      - Some coming for a second career
      - Some coming to "retire"
  - Secular changes in the Hawaii job picture prompt some younger workers to move out

Migration and resulting re-composition of the population have consequences

- The traditional Christmas-tree shape of the population distribution

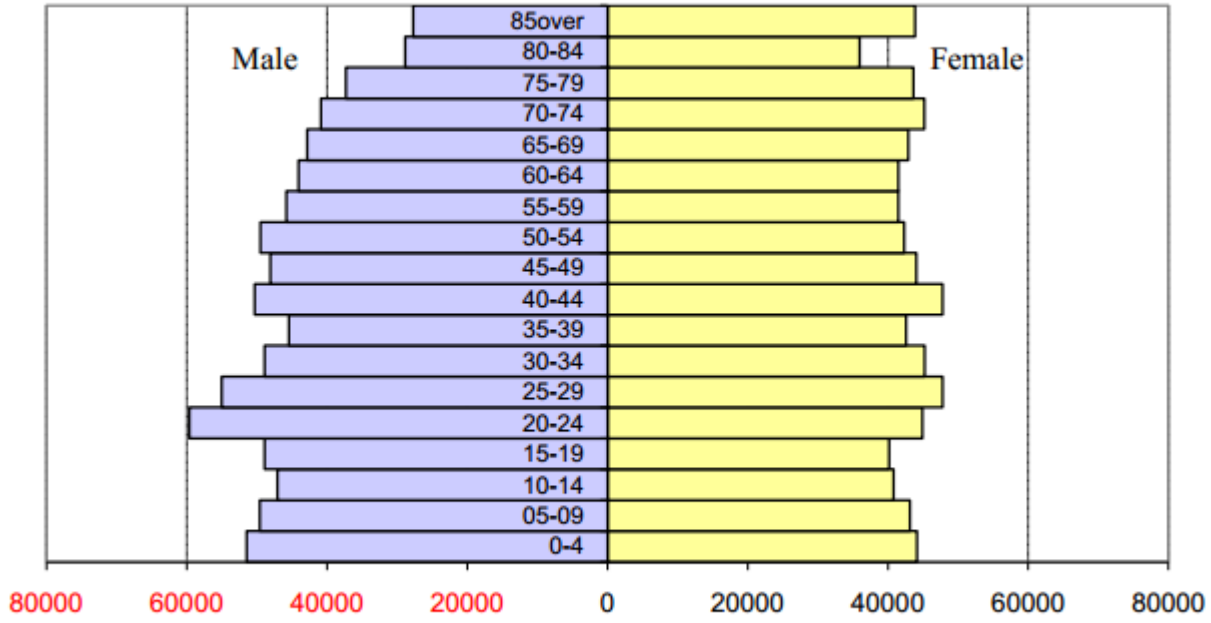
Figure 2. Age Distribution for the Resident Population of Hawaii: 2007



Source: Population Division, U.S. Census Bureau.

- Is changing to this:

Figure 3. Age Distribution for the Resident Population of Hawaii: 2035



Source: Department of Business, Economic Development and Tourism Projections.

This change in our population figure has unusual and unexpected effects

- If we think of a population starting with babies and aging
  - We miss the growth in the middle through migration
  - We miss the re-composition of households through men's shorter life expectancy
  - We anticipate that it will be easier to build programs that start with younger people and "build on" them
- Missing the first two issues can be easily corrected
- Missing the third is a real problem
  - The population that starts with all young people
  - And seeks to fill needs that grow with age
  - Has an unstable growth path: the fund that pays for this must grow rapidly from a very low base

The logic of an actuarial analysis

- The analysis counts people and counts events
  - How many folks do we have in Hawaii at each age?
  - How likely is a person of any given age to experience the event (frailty, ADL deficit)?
  - How will the age profile change over time through birth and migration?
  - How many events are we likely to experience each year over all ages?
- How do we want to respond to (insure) these events?
  - What will it cost to provide some specified level of care or compensation for these events?
  - What do we have to do to assure continuity into the future?

The actuary cannot tell us

- What level of care to provide
  - The actuary can say something about providing early care to ward off later more serious events
  - The actuary can report on administration mechanisms that work better than others
  - The actuary can suggest rules for cost control, or ensuring fairness, or covering risk into the future
- The actuary cannot tell us what we want to pay for this care
  - The actuary can tell us about the risk of really long stretches of care
  - The actuary can tell us about kinds of care that are unusual or unpredictable

For example, some care services are used much more frequently than others

Tomita studied elders sent to a screening center by the equivalents of local area agencies in Georgia and Florida. The respondents all had one or more ADL deficits. Here are the assistance devices and services they used.

Type of Motor-Impairment Device	*Frequency*	*%*	*Number of Device Use per Person*
ADL-bathing	1,300	19.7	1.87
Environmental control devices	799	12.1	1.15
Balance aid	759	11.5	1.09
Fine-motor devices	703	10.7	1.01
Meal preparation	694	10.5	1.00
ADL-hygiene	548	8.3	0.79
Special phone features and accessories	466	7.1	0.67
Reachers	340	5.2	0.49
Wheelchair	220	3.3	0.32
Special seating system	218	3.3	0.31
ADL-dressing	216	3.3	0.31
Special switches and controls	100	1.5	0.14
Leisure	85	1.3	0.12
ADL-eating	82	1.2	0.12
ADL-grooming	57	0.9	0.08
Total	6,587	100	9.49

NOTE: ADL = activities of daily living.

What should we provide?

- The fundamental commitment of the United States Administration on Aging is to support older adults' choice of the assistance they need
  - Care is thus a menu choice under this policy
  - Specifying tightly defined bundles of care or facilities opens the door to lots of cooks salting the soup—everyone wants to add something to the package
- How much should we provide?
  - This is a policy, not an actuarial question
  - It is tied to how much we and our fellow citizens want to pay
- Will everybody get some?
  - We are insuring to compensate for bad events
  - Nobody wants these events—there is an element of "collision insurance" in LTSS

A little more detail: The actuary

- Develops population age distributions from Census Bureau information and from tabulations provided by Hawaii's DEBDT
- Collects data on the risk of the target event (for example, needing stand-by or hands-on assistance with 2 or more ADLs.
  - For each age in single years
  - Adjusts these rates for reductions in mortality over time
- Takes a benefit value (payment) given by the client (policy makers)
  - Counts up the benefit money spent on the target group—the beneficiaries
  - Determines how much money must be collected at which time to make these payments over a long period.

We take the procedure from there

- Four prototype LTSS social insurance programs
  - A flat premium program for people in the labor force and their spouses
  - A flat premium program for everyone in the society not currently in collection status for LTSS
  - A program for people in the labor force based on a small percentage addition to the resident income tax
  - A program based on a small addition to the General Excise Tax, for which membership or eligibility is determined by a history of filing Hawaii resident income tax returns

Setting common features

The trick to NOT adjusting all four legs of a chair: Fix one or two of them!

- Every program has the same features and similar administrative procedures
  - Each is funded by a trust fund, administered by fiduciarily responsible trustees
  - Each offers an initial benefit of $70 per day for 365 days of service (could be a couple of years if used every other day). Benefit may grow up to 2.75% p.a.
  - Each relies on the standard of requiring "stand by" help for two or more ADL deficits or for cognitive deficit
  - Each is intended to be posterior to Medicare and prior to Medicaid
  - Each has a 30 day waiting period before benefits may be paid
- Each has a 10 year vesting (and de-vesting) period
  - 1/10th of the daily benefit is earned for every year of meeting the membership standard
  - The benefit is lost at only 1/10 per year when the standard is not met.

The programs

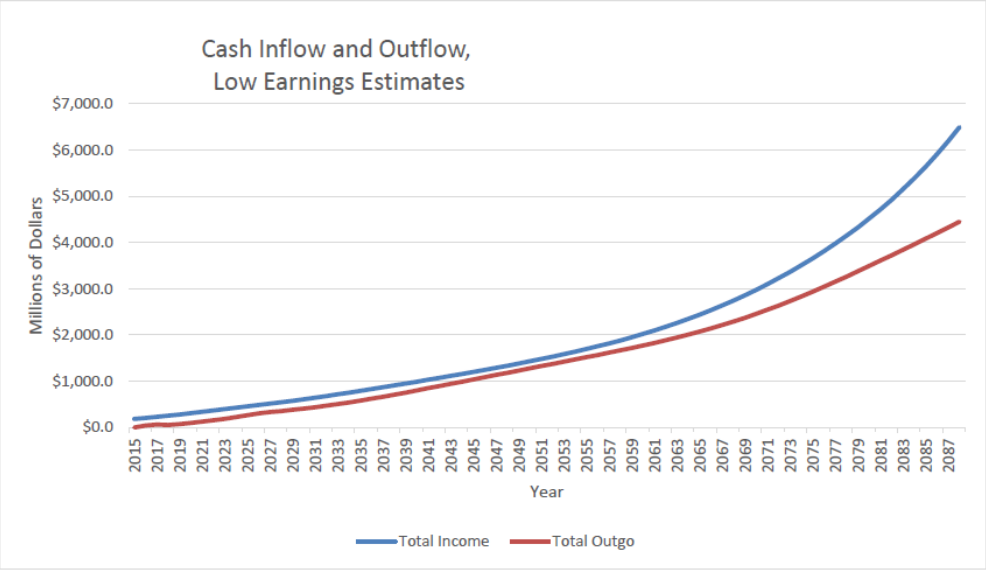
- Fixed premium, whole population: Starts at $16 monthly premium growing 3.9% per year
- Fixed premium, working population: Starts at $9 monthly premium, growing 3.9% per year
- Payroll tax, working population: No fixed start but 0.40% addition to the resident income tax rate
- General Excise Tax, whole population: 0.25 % addition to the GET and Use Tax; Benefit eligibility determined by history of filing resident income tax returns.

The evaluation principles

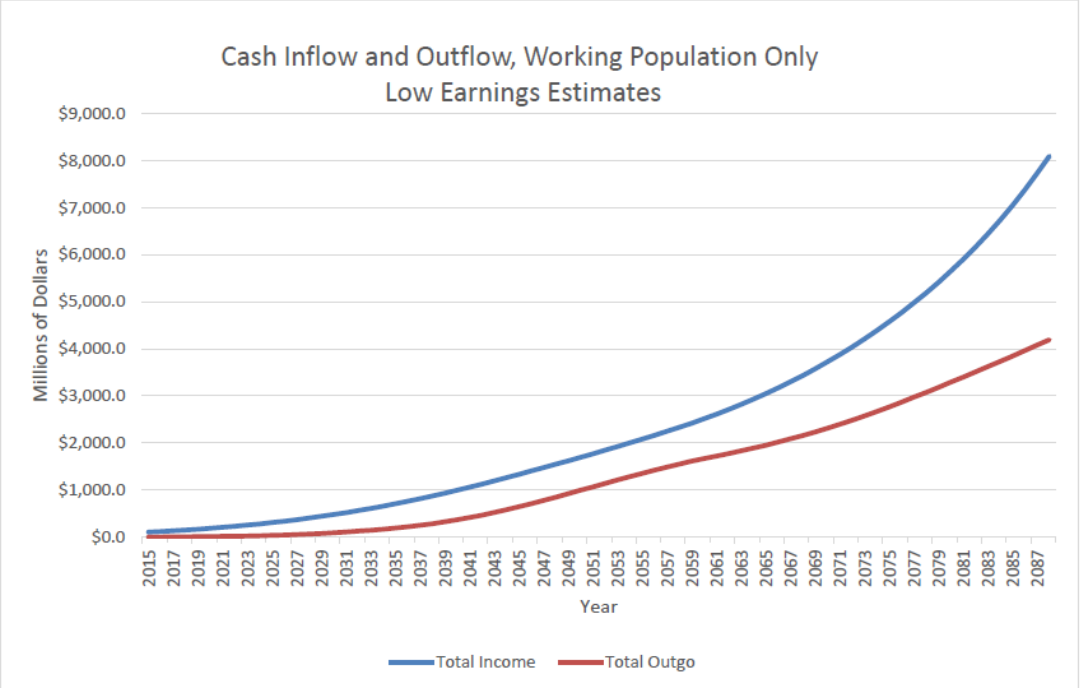
- Any proposal considered for implementation must
  - Have income rates that cover the needed outgo every year
  - Are long-term fiscally sound—Available funds must cover expenses over a 75 year period
  - Are not in visible danger of insolvency—The ratio of fund balances to fund needs shall not be declining in the end years of the calculations
  - Choose conservative rates of return for investments, and tightly monitored rates at which benefits may be allowed to increase
- Any proposal enacted shall have detailed public presentations of the fund and program health by a review actuary every year.

Whole population, flat premium

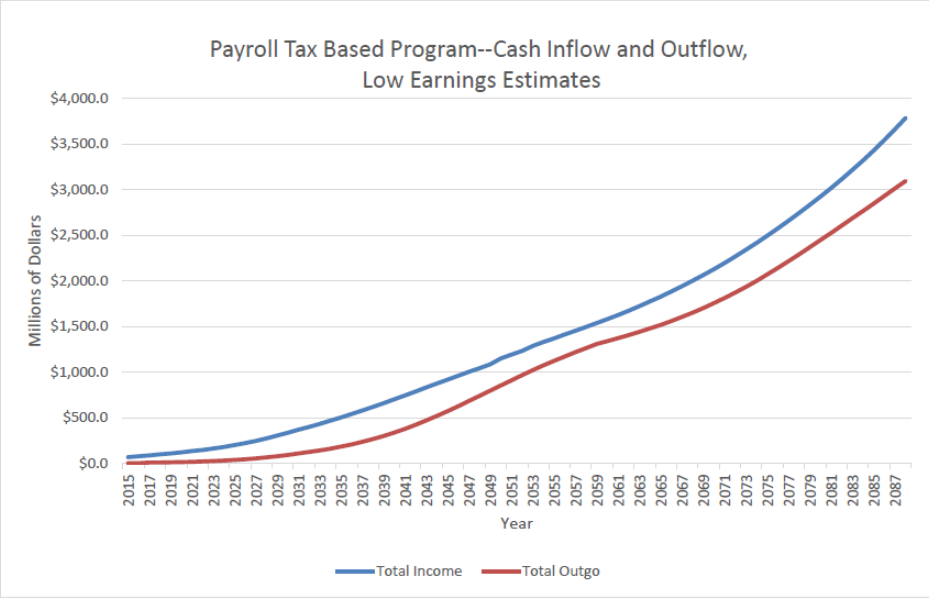
Flat Premium Program for the Whole Population--Tracking of Income and Outgo



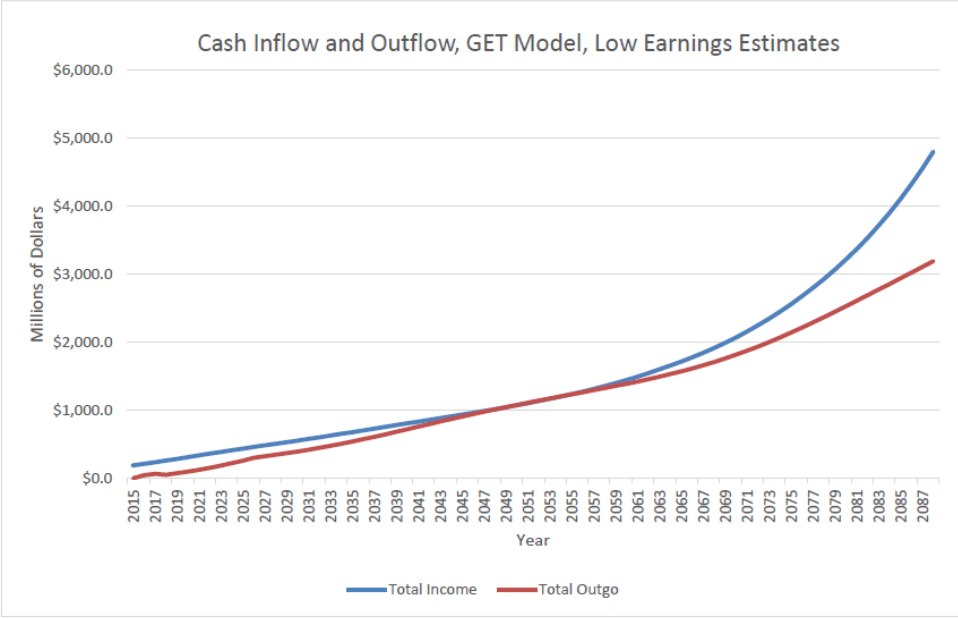
Working Population, Flat Premium



Working Population, Income Tax



General Excise Tax, Whole Population



With this, we can move to the detailed tables in the handouts

- This is the place where we acknowledge and thank those who made this work possible.
- John Wilkin, Senior Actuary, Actuarial Research Corporation
- Melissa Faverault,Ph.D. Senior Scholar, The Urban Institute
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Graduate Assistants

Omar Bird, Kelsey Fabre, Noreen Kohl, Ivan Sanidad

Past Collaborators

Melvin Sakurai, Ph.D., Lisa Alexcih, Marilyn Seely, Jeneatte Takamura, Ph.D

Executive Office on Aging Director, Wesley Lum, Ph.D.

General Excise Tax Based, Whole Population LTSS Social Insurance Option

The illustrations in this section present the parameter settings of the whole population model, give the inflation adjustments for benefits and for premiums, and illustrate the tracking of income and outgo. There is a preliminary table of estimated home care benefits that would be delivered, based on the frailty and disability levels of each age group in the Hawaii population. Finally, an illustration of the long-run solvency of the program trust fund is given by the Loss Ratio plot, which graphs the balance in the trust fund every year divided by the year's benefit and administrative cost requirements. The rule of thumb here is that the fund ratio line should be pointing up at the end of the analysis period, and should be three or four times the funds required during the coming year.

In this model, benefits are allowed to increase at most 2.75% per year, consistent with wage improvement for lower skill workers. Because the addition to the GET is fixed, premiums increase per year only as driven by the growth in the General Excise Tax base (The amount on which the 4% GET and 4% use tax are levied) to cover benefit increases and the continuing aging of the population. Trustees have the fiduciary obligation to keep planned benefit payouts within the range allowed for 75 year solvency.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	**Policy Options for the Hawaii Long-Term Care program**												
2													
3	**I. SCENARIO**												
4	NH-UN5-365-xPov-xMH-Whole-0.4%												
5													
6	**II. COVERAGE**												
7	**A. Coverage parameters**												
8	2015	First year of taxes											
9	2016	First year of benefits											
10	10	Years required for full vesting											
11	25	Lowest age at which premiums (taxes) are required											
12	98	Highest age at which premiums (taxes) are required											
13	99	Maximum intial covered age											
14	0	= 0 for whole population and 1 for working population (applies to premium payers only)											
15	3	Covered services (1 = HC Only, 2 = HC + ARCH Only, 3 = HC + ARCH + NH)											
16	100%	Spouses coverage percent											
17	0	Coverage below the poverty line (0 = no premium and no benefits, 1 = no premium but receive benefits, 2 = premium + benefits)											
18	1	= 0 for no devesting, 1 for devesting (details specified below)											
19	24	Lower bound age for continue paying parameter											
20	5%	Percent at age above that continue paying if move out of Hawaii (linear interpolation between ages)											
21	65	Upper bound age for continue paying parameter											
22	95%	Percent at age above that continue paying if move out of Hawaii											
23	10	Years for complete devesting											
24	1	Grace period before devesting begins											
25													
26	**III. BENEFIT OPTIONS**												
27	**A. Benefit Eligibility Requirement**												
28	2	= Number of ADLs											
29	1	=Cogitive Impairment (including Alzheimer's and Senility) (0=No Cognitive, 1= With Cognitive)											
30	0	=Definition of Failure (0=Hands On, 1=Supervision, can be any number between 0 and 1)											
31	1	= Mental Exclusion (0=No Exclusion, 1=Exclusion) (working population model assumes =1)											
32	0	= Medical Necessity (0=No Medical Necessity, 1= Medical Necessity)											
33	**B. Deductible**												
34	30	= Days (calendar days)											
35	**C. Lifetime Maximum**												
36	365	= Days (service days)											
37													
38	**D. Percent of Days in which benefits are received (Note: Days below trigger are not used)**												
39		**ADL=0 Cog.=Y**	**ADL=1 Cog.=N**	**ADL=1 Cog.=Y**	**ADL=2 Cog.=N**	**ADL=2 Cog.=Y**	**ADL=3 Cog.=N**	**ADL=3 Cog.=Y**					
40		28.6%	42.9%	57.1%	71.4%	78.6%	85.7%	100.0%	This line is read by model				
41													
42	**IV. Expense Factors**												
43	4.0%	Expenses as a percent of benefits											
44	4.0%	Expenses as a percent of taxes											
45													
46	**V. Yearly Parameter**		5.00%	2.75%	2.75%								
47	**0**	**0**	**1**	Indicate whether Payroll Tax (applies to workers only), Premium (can apply to either workers or whole population),									
48	Year	HI LTC Payroll Tax Rate	Monthly Premium ($)	Maximum Daily Nursing Home Benefit	Maximum Daily Home Care Benefit	Required Fund Ratio (eoy)	GET Tax Rate						
49	2014	0.00%	0.00	0.00	0.00	100.00%	0.00%						
50	2015	0.40%	5.00	0.00	0.00	100.00%	0.25%						
51	2016	0.40%	5.25	70.00	70.00	100.00%	0.25%						
52	2017	0.40%	5.51	71.93	71.93	100.00%	0.25%						
53	2018	0.40%	5.79	73.90	73.90	100.00%	0.25%						
54	2019	0.40%	6.08	75.94	75.94	100.00%	0.25%						
55	2020	0.40%	6.38	78.02	78.02	100.00%	0.25%						
56	2021	0.40%	6.70	80.17	80.17	100.00%	0.25%						
57	2022	0.40%	7.04	82.37	82.37	100.00%	0.25%						
58	2023	0.40%	7.39	84.64	84.64	100.00%	0.25%						
59	2024	0.40%	7.76	86.97	86.97	100.00%	0.25%						
60	2025	0.40%	8.14	89.36	89.36	100.00%	0.25%						
61	2026	0.40%	8.55	91.82	91.82	100.00%	0.25%						
62	2027	0.40%	8.98	94.34	94.34	100.00%	0.25%						
63	2028	0.40%	9.43	96.93	96.93	100.00%	0.25%						
64	2029	0.40%	9.90	99.60	99.60	100.00%	0.25%						
65	2030	0.40%	10.39	102.34	102.34	100.00%	0.25%						
66	2031	0.40%	10.91	105.15	105.15	100.00%	0.25%						
67	2032	0.40%	11.46	108.05	108.05	100.00%	0.25%						
68	2033	0.40%	12.03	111.02	111.02	100.00%	0.25%						
69	2034	0.40%	12.63	114.07	114.07	100.00%	0.25%						
70	2035	0.40%	13.27	117.21	117.21	100.00%	0.25%						
71	2036	0.40%	13.93	120.43	120.43	100.00%	0.25%						
72	2037	0.40%	14.63	123.74	123.74	100.00%	0.25%						
73	2038	0.40%	15.36	127.14	127.14	100.00%	0.25%						
74	2039	0.40%	16.13	130.64	130.64	100.00%	0.25%						
75	2040	0.40%	16.93	134.23	134.23	100.00%	0.25%						
76	2041	0.40%	17.78	137.93	137.93	100.00%	0.25%						
77	2042	0.40%	18.67	141.72	141.72	100.00%	0.25%						
78	2043	0.40%	19.60	145.62	145.62	100.00%	0.25%						

Table 1: Trust Fund Operations (in millions)

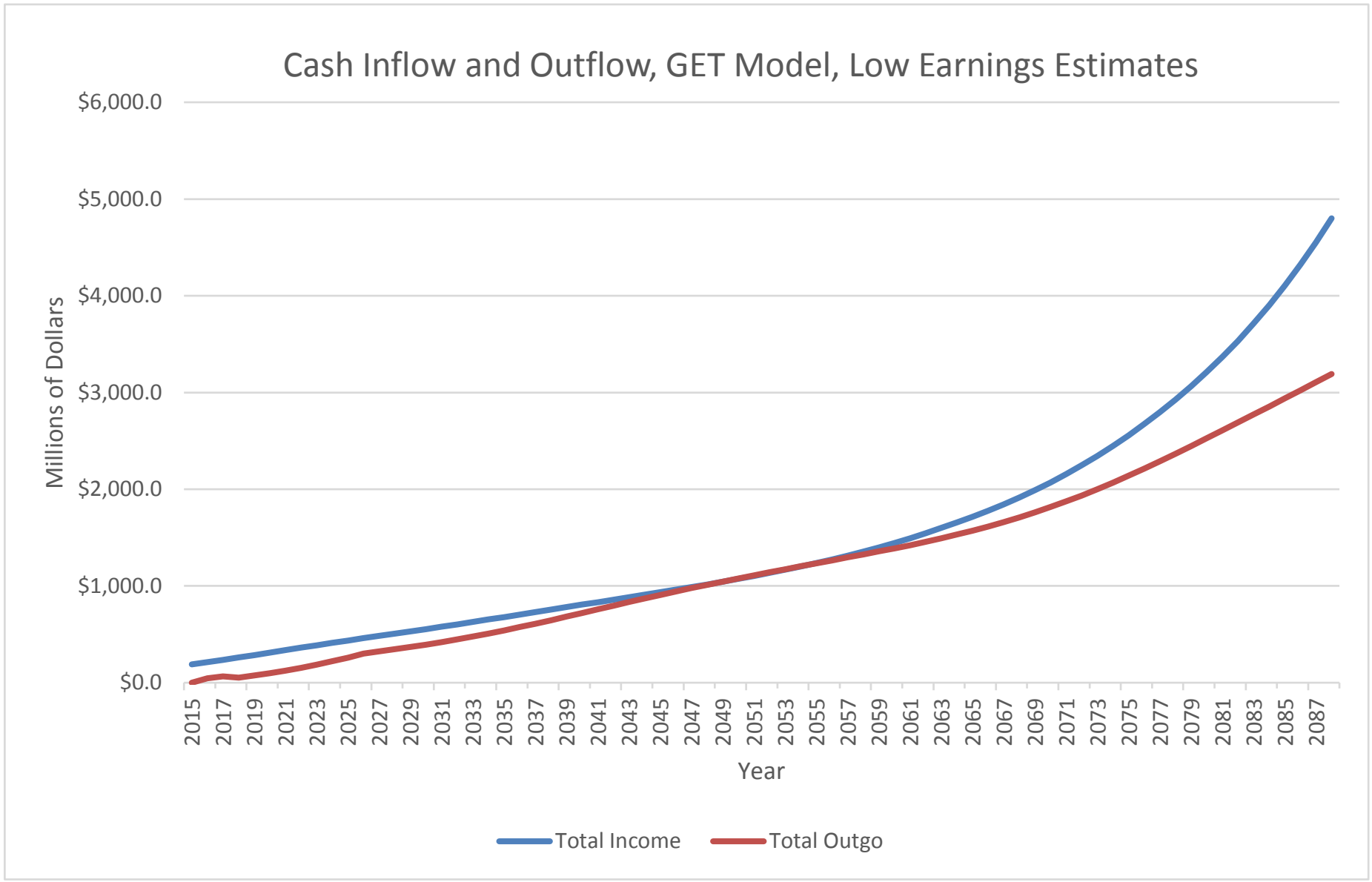
General Excise Tax Based Program _.25%_Whole Population

Year	Premiums	Payroll Taxes	GET Taxes	Interest	TOTAL INCOME	Benefits	Admin Expenses	TOTAL OUTGO	INCREASE IN FUND	FUND BALANCE (EOY)	FUND RATIO (BOY)
									0		
2015	$0.0	$0.0	$182.3	$7.4	$189.7	$0.0	$0.0	$0.0	$189.7	$189.7	0%
2016	0.0	0.0	192.0	21.4	213.4	43.8	1.8	45.6	167.8	357.5	416%
2017	0.0	0.0	201.7	34.7	236.4	62.3	2.5	64.8	171.6	529.2	552%
2018	0.0	0.0	211.2	49.5	260.7	51.0	2.0	53.1	207.7	736.8	997%
2019	0.0	0.0	220.2	65.9	286.1	71.9	2.9	74.8	211.3	948.2	985%
2020	0.0	0.0	229.1	82.5	311.6	94.9	3.8	98.7	212.9	1,161.0	960%
2021	0.0	0.0	238.0	99.2	337.1	120.2	4.8	125.0	212.1	1,373.2	929%
2022	0.0	0.0	246.8	115.6	362.4	148.0	5.9	153.9	208.5	1,581.7	892%
2023	0.0	0.0	256.0	131.7	387.7	178.6	7.1	185.8	201.9	1,783.5	851%
2024	0.0	0.0	265.4	147.1	412.5	212.6	8.5	221.1	191.4	1,975.0	807%
2025	0.0	0.0	275.3	161.5	436.8	250.1	10.0	260.1	176.6	2,151.6	759%
2026	0.0	0.0	285.6	174.6	460.3	289.2	11.6	300.8	159.5	2,311.1	715%
2027	0.0	0.0	296.1	187.1	483.2	312.4	12.5	324.9	158.3	2,469.4	711%
2028	0.0	0.0	306.8	199.5	506.3	333.2	13.3	346.6	159.8	2,629.1	713%
2029	0.0	0.0	318.0	212.1	530.0	354.9	14.2	369.1	160.9	2,790.1	712%
2030	0.0	0.0	329.5	224.7	554.1	378.2	15.1	393.3	160.8	2,950.8	709%
2031	0.0	0.0	341.4	237.2	578.6	403.3	16.1	419.4	159.2	3,110.1	704%
2032	0.0	0.0	353.9	249.5	603.4	430.1	17.2	447.3	156.1	3,266.2	695%
2033	0.0	0.0	366.9	261.6	628.5	458.5	18.3	476.9	151.7	3,417.8	685%
2034	0.0	0.0	380.5	273.2	653.7	488.6	19.5	508.1	145.7	3,563.5	673%
2035	0.0	0.0	394.8	284.3	679.1	520.1	20.8	540.9	138.2	3,701.7	659%
2036	0.0	0.0	410.0	294.8	704.8	552.8	22.1	574.9	129.8	3,831.6	644%
2037	0.0	0.0	425.8	304.6	730.4	586.7	23.5	610.2	120.3	3,951.8	628%
2038	0.0	0.0	442.5	313.6	756.1	621.5	24.9	646.3	109.8	4,061.6	611%
2039	0.0	0.0	459.8	321.7	781.6	657.0	26.3	683.2	98.3	4,159.9	594%
2040	0.0	0.0	478.1	329.0	807.1	692.8	27.7	720.6	86.5	4,246.5	577%
2041	0.0	0.0	497.6	335.3	832.9	728.9	29.2	758.1	74.8	4,321.3	560%
2042	0.0	0.0	518.1	340.7	858.8	765.0	30.6	795.6	63.2	4,384.4	543%
2043	0.0	0.0	539.5	345.2	884.7	801.0	32.0	833.1	51.6	4,436.0	526%
2044	0.0	0.0	561.3	348.8	910.0	836.8	33.5	870.2	39.8	4,475.8	510%
2045	0.0	0.0	583.8	351.4	935.3	871.7	34.9	906.6	28.7	4,504.5	494%
2046	0.0	0.0	608.0	353.3	961.3	906.2	36.2	942.4	18.8	4,523.3	478%
2047	0.0	0.0	633.8	354.4	988.2	940.2	37.6	977.8	10.5	4,533.8	463%
2048	0.0	0.0	661.1	355.0	1,016.1	973.2	38.9	1,012.1	4.0	4,537.7	448%
2049	0.0	0.0	689.4	355.1	1,044.5	1,005.5	40.2	1,045.7	-1.2	4,536.5	434%
2050	0.0	0.0	719.1	354.9	1,074.0	1,037.0	41.5	1,078.5	-4.5	4,532.0	421%
2051	0.0	0.0	750.1	354.5	1,104.5	1,067.8	42.7	1,110.5	-5.9	4,526.0	408%
2052	0.0	0.0	782.0	354.0	1,136.0	1,098.2	43.9	1,142.1	-6.1	4,519.9	396%
2053	0.0	0.0	815.3	353.6	1,168.9	1,128.0	45.1	1,173.1	-4.2	4,515.7	385%
2054	0.0	0.0	849.5	353.4	1,202.9	1,157.4	46.3	1,203.7	-0.8	4,514.9	375%
2055	0.0	0.0	884.5	353.5	1,238.0	1,186.7	47.5	1,234.2	3.8	4,518.7	366%
2056	0.0	0.0	920.8	354.1	1,274.9	1,215.8	48.6	1,264.4	10.5	4,529.2	357%
2057	0.0	0.0	958.5	355.2	1,313.7	1,245.1	49.8	1,294.9	18.8	4,548.0	350%
2058	0.0	0.0	997.8	357.1	1,354.9	1,274.5	51.0	1,325.5	29.5	4,577.5	343%
2059	0.0	0.0	1,038.9	359.9	1,398.8	1,304.7	52.2	1,356.9	41.8	4,619.3	337%
2060	0.0	0.0	1,081.4	363.7	1,445.1	1,335.7	53.4	1,389.1	56.0	4,675.3	333%
2061	0.0	0.0	1,125.1	368.7	1,493.9	1,367.4	54.7	1,422.1	71.7	4,747.1	329%
2062	0.0	0.0	1,170.2	375.0	1,545.2	1,400.7	56.0	1,456.7	88.5	4,835.5	326%
2063	0.0	0.0	1,216.8	382.6	1,599.4	1,435.5	57.4	1,492.9	106.5	4,942.0	324%
2064	0.0	0.0	1,264.3	391.7	1,656.0	1,472.4	58.9	1,531.3	124.7	5,066.7	323%
2065	0.0	0.0	1,312.6	402.2	1,714.7	1,511.2	60.4	1,571.6	143.1	5,209.8	322%
2066	0.0	0.0	1,363.3	414.1	1,777.5	1,552.3	62.1	1,614.4	163.1	5,372.9	323%
2067	0.0	0.0	1,416.7	427.7	1,844.5	1,596.2	63.8	1,660.1	184.4	5,557.3	324%
2068	0.0	0.0	1,472.0	443.0	1,915.1	1,643.0	65.7	1,708.7	206.4	5,763.7	325%
2069	0.0	0.0	1,530.1	460.1	1,990.1	1,693.4	67.7	1,761.1	229.1	5,992.7	327%
2070	0.0	0.0	1,591.3	479.0	2,070.3	1,746.7	69.9	1,816.6	253.8	6,246.5	330%
2071	0.0	0.0	1,656.0	499.9	2,155.9	1,802.6	72.1	1,874.7	281.2	6,527.7	333%
2072	0.0	0.0	1,724.4	523.1	2,247.5	1,861.4	74.5	1,935.9	311.6	6,839.3	337%
2073	0.0	0.0	1,796.1	548.8	2,344.9	1,923.5	76.9	2,000.4	344.5	7,183.8	342%
2074	0.0	0.0	1,870.7	577.1	2,447.8	1,989.1	79.6	2,068.6	379.2	7,562.9	347%
2075	0.0	0.0	1,948.5	608.3	2,556.8	2,057.1	82.3	2,139.4	417.3	7,980.3	354%
2076	0.0	0.0	2,030.2	642.6	2,672.8	2,127.8	85.1	2,213.0	459.8	8,440.1	361%
2077	0.0	0.0	2,115.3	680.4	2,795.7	2,201.1	88.0	2,289.2	506.6	8,946.7	369%
2078	0.0	0.0	2,203.2	722.1	2,925.3	2,275.6	91.0	2,366.7	558.7	9,505.3	378%
2079	0.0	0.0	2,295.0	768.1	3,063.1	2,352.3	94.1	2,446.4	616.7	10,122.0	389%
2080	0.0	0.0	2,391.2	819.0	3,210.1	2,429.9	97.2	2,527.1	683.0	10,805.0	401%
2081	0.0	0.0	2,491.4	875.4	3,366.8	2,508.2	100.3	2,608.6	758.2	11,563.2	414%
2082	0.0	0.0	2,595.5	938.0	3,533.5	2,587.1	103.5	2,690.6	842.9	12,406.1	430%
2083	0.0	0.0	2,703.7	1,007.7	3,711.4	2,666.2	106.6	2,772.9	938.6	13,344.7	447%
2084	0.0	0.0	2,816.2	1,085.4	3,901.6	2,745.5	109.8	2,855.3	1,046.3	14,390.9	467%
2085	0.0	0.0	2,932.1	1,172.0	4,104.1	2,825.2	113.0	2,938.3	1,165.8	15,556.7	490%
2086	0.0	0.0	3,051.3	1,268.4	4,319.7	2,905.5	116.2	3,021.8	1,298.0	16,854.7	515%
2087	0.0	0.0	3,175.1	1,375.7	4,550.9	2,986.7	119.5	3,106.1	1,444.7	18,299.4	543%
2088	0.0	0.0	3,305.3	1,495.3	4,800.5	3,068.2	122.7	3,191.0	1,609.6	19,909.0	573%

Table 4B. Summary of Home Care Benefits

General Excise Tax Based Program _.25%_Whole Population

	TOTAL					MALE			FEMALE			
Year	Total Number of HC Beneficiaries	Average Benefit Days Per Year	Average Daily Benefit	Average Yearly Benefit	Benefit Payments (millions)	Total Number of HC Beneficiaries	Average Yearly Benefit	Benefit Payments (millions)	Total Number of HC Beneficiaries	Average Yearly Benefit	Benefit Payments (millions)	Maximum Daily Benefit
2015	$0	$0	$0	$0	$0.0	$0	$0	$0.0	$0	$0	$0.0	$0
2016	19,694	161	6	1,023	20.1	7,603	975	$7.4	12,091	1,053	$12.7	70.00
2017	20,230	117	13	1,518	30.7	7,806	1,439	$11.2	12,424	1,568	$19.5	71.93
2018	20,933	73	20	1,437	30.1	8,045	1,343	$10.8	12,888	1,495	$19.3	73.90
2019	21,400	73	27	1,979	42.4	8,250	1,846	$15.2	13,150	2,063	$27.1	75.94
2020	21,883	73	35	2,552	55.8	8,467	2,377	$20.1	13,416	2,661	$35.7	78.02
2021	22,383	73	44	3,155	70.6	8,697	2,939	$25.6	13,685	3,292	$45.1	80.17
2022	22,905	73	52	3,792	86.9	8,941	3,534	$31.6	13,964	3,957	$55.3	82.37
2023	23,453	73	61	4,464	104.7	9,199	4,164	$38.3	14,255	4,657	$66.4	84.64
2024	24,035	74	71	5,173	124.3	9,472	4,832	$45.8	14,563	5,395	$78.6	86.97
2025	24,650	74	81	5,924	146.0	9,758	5,542	$54.1	14,891	6,174	$91.9	89.36
2026	25,300	74	90	6,644	168.1	10,058	6,249	$62.8	15,243	6,904	$105.2	91.82
2027	25,986	74	93	6,970	181.1	10,370	6,619	$68.6	15,616	7,203	$112.5	94.34
2028	26,708	75	96	7,218	192.8	10,693	6,861	$73.4	16,015	7,457	$119.4	96.93
2029	27,462	75	99	7,459	204.8	11,024	7,106	$78.3	16,438	7,696	$126.5	99.60
2030	28,242	76	102	7,712	217.8	11,360	7,363	$83.6	16,883	7,947	$134.2	102.34
2031	29,044	76	104	7,979	231.7	11,698	7,633	$89.3	17,346	8,213	$142.5	105.15
2032	29,860	77	107	8,261	246.7	12,034	7,915	$95.3	17,826	8,494	$151.4	108.05
2033	30,679	77	110	8,556	262.5	12,365	8,209	$101.5	18,314	8,790	$161.0	111.02
2034	31,495	78	113	8,865	279.2	12,688	8,515	$108.0	18,807	9,101	$171.2	114.07
2035	32,299	79	117	9,188	296.8	12,998	8,831	$114.8	19,301	9,429	$182.0	117.21
2036	33,080	79	120	9,524	315.1	13,293	9,158	$121.7	19,786	9,770	$193.3	120.43
2037	33,831	80	123	9,873	334.0	13,570	9,495	$128.9	20,261	10,126	$205.2	123.74
2038	34,542	81	126	10,233	353.5	13,826	9,842	$136.1	20,716	10,495	$217.4	127.14
2039	35,206	81	130	10,605	373.4	14,059	10,197	$143.4	21,148	10,877	$230.0	130.64
2040	35,816	82	134	10,988	393.5	14,267	10,561	$150.7	21,550	11,271	$242.9	134.23
2041	36,367	83	137	11,380	413.9	14,449	10,933	$158.0	21,918	11,675	$255.9	137.93
2042	36,856	83	141	11,783	434.3	14,606	11,313	$165.2	22,250	12,091	$269.0	141.72
2043	37,281	84	145	12,194	454.6	14,738	11,700	$172.4	22,543	12,518	$282.2	145.62
2044	37,642	84	149	12,615	474.9	14,847	12,095	$179.6	22,795	12,954	$295.3	149.62
2045	37,930	85	153	13,042	494.7	14,929	12,496	$186.5	23,002	13,397	$308.1	153.73
2046	38,159	85	157	13,477	514.3	14,991	12,904	$193.4	23,169	13,849	$320.9	157.96
2047	38,331	86	161	13,922	533.6	15,033	13,320	$200.2	23,299	14,310	$333.4	162.31
2048	38,440	86	166	14,372	552.5	15,054	13,742	$206.9	23,386	14,778	$345.6	166.77
2049	38,498	87	171	14,829	570.9	15,059	14,171	$213.4	23,439	15,253	$357.5	171.36
2050	38,509	87	175	15,293	588.9	15,048	14,605	$219.8	23,462	15,734	$369.1	176.07
2051	38,481	87	180	15,761	606.5	15,024	15,045	$226.0	23,458	16,220	$380.5	180.91
2052	38,429	87	185	16,238	624.0	14,991	15,493	$232.3	23,437	16,715	$391.7	185.88
2053	38,347	88	190	16,721	641.2	14,951	15,946	$238.4	23,396	17,215	$402.8	191.00
2054	38,244	88	195	17,209	658.1	14,906	16,405	$244.5	23,338	17,722	$413.6	196.25
2055	38,126	88	201	17,704	675.0	14,858	16,869	$250.6	23,268	18,237	$424.3	201.65
2056	37,997	88	206	18,205	691.7	14,811	17,338	$256.8	23,186	18,759	$434.9	207.19
2057	37,863	88	212	18,715	708.6	14,766	17,814	$263.0	23,097	19,291	$445.6	212.89
2058	37,727	88	218	19,232	725.6	14,725	18,296	$269.4	23,002	19,832	$456.2	218.74
2059	37,603	88	224	19,759	743.0	14,693	18,787	$276.0	22,909	20,382	$466.9	224.76
2060	37,485	88	230	20,293	760.7	14,670	19,284	$282.9	22,815	20,942	$477.8	230.94
2061	37,378	88	236	20,836	778.8	14,656	19,790	$290.0	22,722	21,510	$488.8	237.29
2062	37,293	88	243	21,392	797.8	14,656	20,309	$297.6	22,637	22,094	$500.1	243.82
2063	37,230	88	249	21,962	817.6	14,668	20,842	$305.7	22,562	22,690	$511.9	250.52
2064	37,198	88	256	22,546	838.7	14,697	21,391	$314.4	22,501	23,301	$524.3	257.41
2065	37,189	88	263	23,144	860.7	14,738	21,957	$323.6	22,451	23,924	$537.1	264.49
2066	37,208	88	270	23,760	884.1	14,791	22,542	$333.4	22,416	24,564	$550.6	271.76
2067	37,254	87	278	24,400	909.0	14,858	23,154	$344.0	22,397	25,226	$565.0	279.24
2068	37,327	87	286	25,063	935.5	14,934	23,792	$355.3	22,393	25,911	$580.2	286.91
2069	37,432	87	293	25,755	964.0	15,024	24,462	$367.5	22,408	26,621	$596.5	294.81
2070	37,556	87	301	26,472	994.2	15,122	25,162	$380.5	22,434	27,355	$613.7	302.91
2071	37,691	88	310	27,214	1,025.7	15,225	25,890	$394.2	22,466	28,111	$631.5	311.24
2072	37,838	88	318	27,986	1,058.9	15,331	26,653	$408.6	22,507	28,894	$650.3	319.80
2073	37,997	88	327	28,793	1,094.0	15,437	27,449	$423.7	22,560	29,713	$670.3	328.60
2074	38,169	88	336	29,637	1,131.2	15,544	28,283	$439.6	22,625	30,567	$691.6	337.63
2075	38,339	88	345	30,513	1,169.8	15,646	29,152	$456.1	22,693	31,451	$713.7	346.92
2076	38,509	88	355	31,422	1,210.0	15,741	30,052	$473.1	22,768	32,370	$737.0	356.46
2077	38,674	88	365	32,368	1,251.8	15,830	30,987	$490.5	22,845	33,325	$761.3	366.26
2078	38,819	89	375	33,344	1,294.4	15,906	31,952	$508.2	22,913	34,310	$786.2	376.33
2079	38,953	89	385	34,354	1,338.2	15,974	32,949	$526.3	22,979	35,330	$811.9	386.68
2080	39,066	89	396	35,392	1,382.6	16,028	33,971	$544.5	23,038	36,380	$838.1	397.32
2081	39,153	89	406	36,456	1,427.4	16,070	35,019	$562.8	23,083	37,457	$864.6	408.24
2082	39,216	90	418	37,548	1,472.5	16,099	36,089	$581.0	23,116	38,564	$891.5	419.47
2083	39,255	90	429	38,666	1,517.8	16,116	37,179	$599.2	23,139	39,701	$918.6	431.00
2084	39,270	90	441	39,806	1,563.2	16,123	38,287	$617.3	23,147	40,865	$945.9	442.86
2085	39,268	90	453	40,970	1,608.8	16,124	39,417	$635.5	23,144	42,051	$973.2	455.03
2086	39,251	90	465	42,156	1,654.7	16,120	40,568	$653.9	23,131	43,263	$1,000.7	467.55
2087	39,225	90	478	43,366	1,701.0	16,113	41,738	$672.5	23,112	44,502	$1,028.5	480.41
2088	39,187	90	491	44,597	1,747.6	16,105	42,926	$691.3	23,082	45,763	$1,056.3	493.62


Cash Inflow and Outflow, GET Model, Low Earnings Estimates
$6,000.0
$5,000.0
$4,000.0
$3,000.0
$2,000.0
$1,000.0
$0.0
Millions of Dollars
2015
2017
2019
2021
2023
2025
2027
2029
2031
2033
2035
2037
2039
2041
2043
2045
2047
2049
2051
2053
2055
2057
2059
2061
2063
2065
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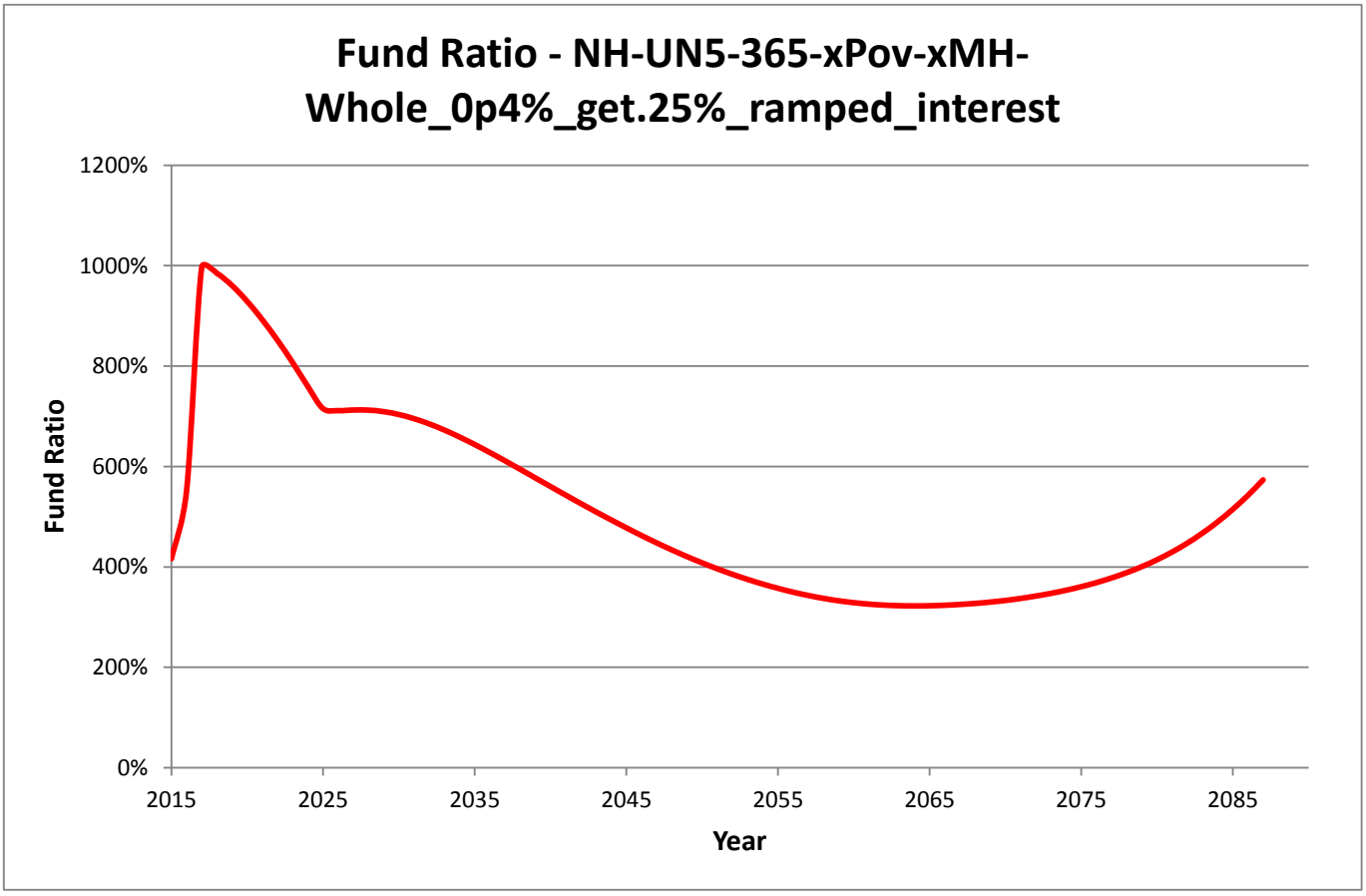
2073
2075
2077
2079
2081
2083
2085
2087
Year
Total Income
Total Outgo


Fund Ratio - NH-UN5-365-xPov-xMH-Whole_0p4%_get.25%_ramped_interest
1200%
1000%
800%
600%
400%
200%
0%
Fund Ratio
2015
2025
2035
2045
2055
2065
2075
2085
Year

Payroll Working Population LTSS Social Insurance Option

The illustrations in this section present the parameter settings of the working population model, give the inflation adjustments for benefits and for premiums, and illustrate the tracking of income and outgo. There is a preliminary table of estimated home care benefits that would be delivered, based on the frailty and disability levels of each age group in the Hawaii population. Finally, an illustration of the long-run solvency of the program trust fund is given by the Loss Ratio plot, which graphs the balance in the trust fund every year divided by the year's benefit and administrative cost requirements. The rule of thumb here is that the fund ratio line should be pointing up at the end of the analysis period, and should be three or four times the funds required during the coming year.

Work status was taken by estimating employment and labor force status for the population by age. The population estimate thus obtained targets the number of workers by Bureau of Labor Statistics definitions.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	**Policy Options for the Hawaii Long-Term Care program**												
2													
3	**I. SCENARIO**												
4	NH-UN5-365-xPov-xMH-Whole-0.4%												
5													
6	**II. COVERAGE**												
7	**A. Coverage parameters**												
8	2015	First year of taxes											
9	2016	First year of benefits											
10	10	Years required for full vesting											
11	25	Lowest age at which premiums (taxes) are required											
12	98	Highest age at which premiums (taxes) are required											
13	99	Maximum intial covered age											
14	1	= 0 for whole population and 1 for working population (applies to premium payers only)											
15	3	Covered services (1 = HC Only, 2 = HC + ARCH Only, 3 = HC + ARCH + NH)											
16	100%	Spouses coverage percent											
17	0	Coverage below the poverty line (0 = no premium and no benefits, 1 = no premium but receive benefits, 2 = premium + benefits)											
18	1	= 0 for no devesting, 1 for devesting (details specified below)											
19	24	Lower bound age for continue paying parameter											
20	5%	Percent at age above that continue paying if move out of Hawaii (linear interpolation between ages)											
21	65	Upper bound age for continue paying parameter											
22	95%	Percent at age above that continue paying if move out of Hawaii											
23	10	Years for complete devesting											
24	1	Grace period before devesting begins											
25													
26	**III. BENEFIT OPTIONS**												
27	**A. Benefit Eligibility Requirement**												
28	2	= Number of ADLs											
29	1	=Cogitive Impairment (including Alzheimer's and Senility) (0=No Cognitive, 1= With Cognitive)											
30	0	=Definition of Failure (0=Hands On, 1=Supervision, can be any number between 0 and 1)											
31	1	= Mental Exclusion (0=No Exclusion, 1=Exclusion) (working population model assumes =1)											
32	0	= Medical Necessity (0=No Medical Necessity, 1= Medical Necessity)											
33	**B. Deductible**												
34	30	= Days (calendar days)											
35	**C. Lifetime Maximum**												
36	365	= Days (service days)											
37													
38	**D. Percent of Days in which benefits are received (Note: Days below trigger are not used)**												
39		**ADL=0 Cog.=Y**	**ADL=1 Cog.=N**	**ADL=1 Cog.=Y**	**ADL=2 Cog.=N**	**ADL=2 Cog.=Y**	**ADL=3 Cog.=N**	**ADL=3 Cog.=Y**					
40		28.6%	42.9%	57.1%	71.4%	78.6%	85.7%	100.0%	This line is read by model				
41													
42	**IV. Expense Factors**												
43	4.0%	Expenses as a percent of benefits											
44	4.0%	Expenses as a percent of taxes											
45													
46	**V. Yearly Parameters**		5.00%	2.75%	2.75%								
47	**1**	**0**	**0**	Indicate whether Payroll Tax (applies to workers only), Premium (can apply to either workers or whole population), a									
48	Year	HI LTC Payroll Tax Rate	Monthly Premium ($)	Maximum Daily Nursing Home Benefit	Maximum Daily Home Care Benefit	Required Fund Ratio (eoy)	GET Tax Rate						
49	2014	0.00%	0.00	0.00	0.00	100.00%	0.00%						
50	2015	0.40%	5.00	0.00	0.00	100.00%	0.25%						
51	2016	0.40%	5.25	70.00	70.00	100.00%	0.25%						
52	2017	0.40%	5.51	71.93	71.93	100.00%	0.25%						
53	2018	0.40%	5.79	73.90	73.90	100.00%	0.25%						
54	2019	0.40%	6.08	75.94	75.94	100.00%	0.25%						
55	2020	0.40%	6.38	78.02	78.02	100.00%	0.25%						
56	2021	0.40%	6.70	80.17	80.17	100.00%	0.25%						
57	2022	0.40%	7.04	82.37	82.37	100.00%	0.25%						
58	2023	0.40%	7.39	84.64	84.64	100.00%	0.25%						
59	2024	0.40%	7.76	86.97	86.97	100.00%	0.25%						
60	2025	0.40%	8.14	89.36	89.36	100.00%	0.25%						
61	2026	0.40%	8.55	91.82	91.82	100.00%	0.25%						
62	2027	0.40%	8.98	94.34	94.34	100.00%	0.25%						

Table 1: Trust Fund Operations (in millions)

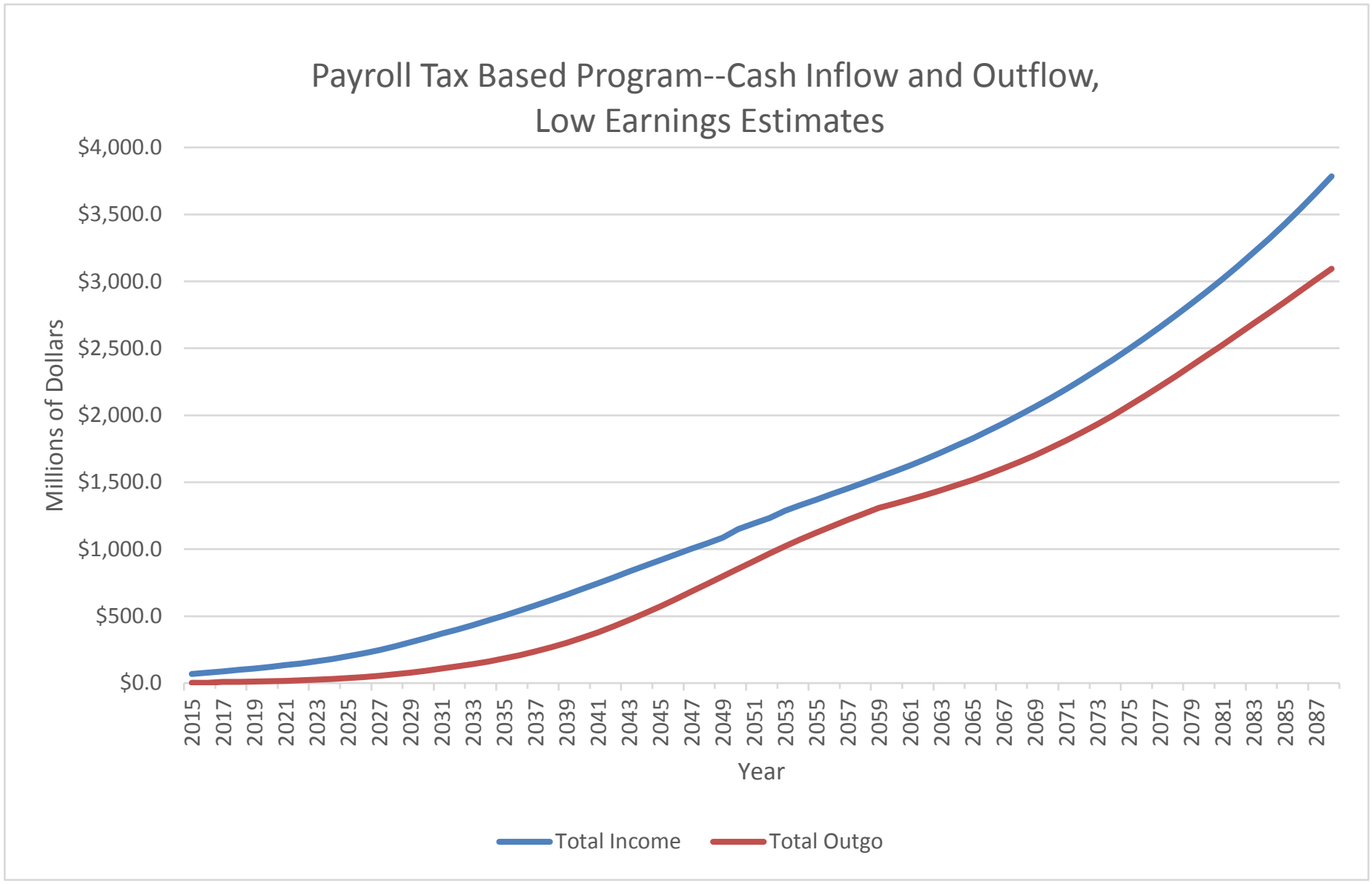
Payroll workers only_ramped_interest

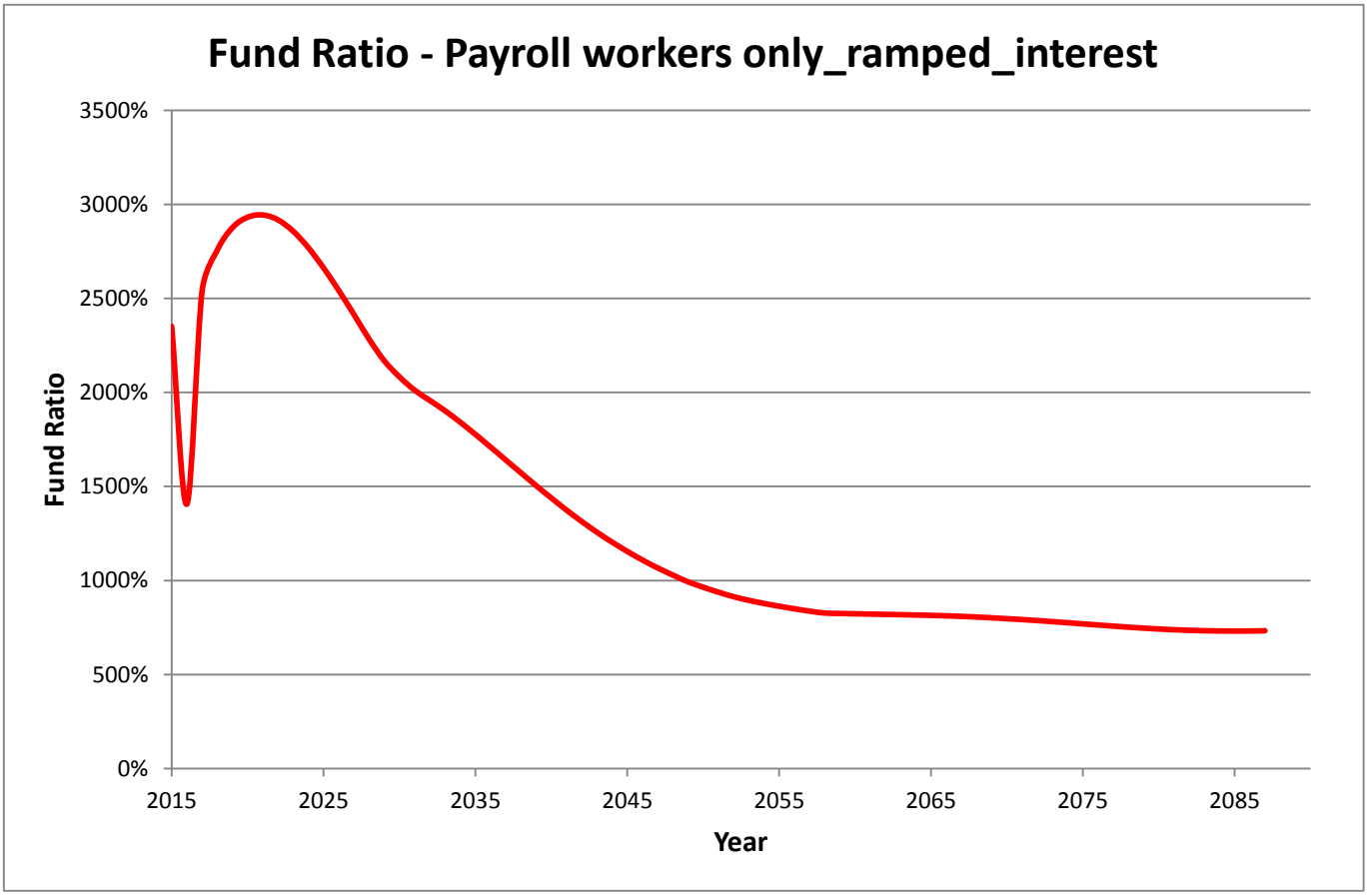
Year	Premiums	Payroll Taxes	GET Taxes	Interest	TOTAL INCOME	Benefits	Admin Expenses	TOTAL OUTGO	INCREASE IN FUND	FUND BALANCE (EOY)	FUND RATIO (BOY)
									0		
2015	$0.0	$65.8	$0.0	$2.6	$68.3	$0.0	$2.6	$2.6	$65.7	$65.7	0%
2016	0.0	69.8	0.0	8.1	77.9	0.0	2.8	2.8	75.1	140.8	2351%
2017	0.0	74.0	0.0	14.1	88.1	6.8	3.2	10.0	78.1	218.9	1406%
2018	0.0	78.1	0.0	20.7	98.8	5.3	3.3	8.6	90.1	309.1	2538%
2019	0.0	81.7	0.0	28.0	109.8	7.6	3.6	11.2	98.5	407.6	2756%
2020	0.0	85.3	0.0	36.1	121.4	10.3	3.8	14.2	107.2	514.8	2876%
2021	0.0	89.0	0.0	44.8	133.8	13.5	4.1	17.6	116.3	631.1	2932%
2022	0.0	92.9	0.0	54.3	147.3	17.0	4.4	21.4	125.8	756.9	2944%
2023	0.0	97.8	0.0	64.6	162.4	21.2	4.8	25.9	136.5	893.4	2918%
2024	0.0	104.4	0.0	75.8	180.2	26.0	5.2	31.3	148.9	1,042.3	2857%
2025	0.0	112.3	0.0	87.9	200.2	31.9	5.8	37.6	162.6	1,204.9	2770%
2026	0.0	121.2	0.0	101.2	222.4	38.9	6.4	45.3	177.2	1,382.1	2662%
2027	0.0	131.3	0.0	115.7	247.0	47.2	7.1	54.4	192.6	1,574.7	2542%
2028	0.0	142.7	0.0	131.4	274.1	57.2	8.0	65.2	208.9	1,783.6	2415%
2029	0.0	155.6	0.0	148.4	304.0	69.1	9.0	78.1	225.9	2,009.5	2284%
2030	0.0	169.4	0.0	166.8	336.3	82.6	10.1	92.7	243.6	2,253.1	2168%
2031	0.0	181.9	0.0	186.5	368.4	97.0	11.2	108.2	260.2	2,513.3	2083%
2032	0.0	193.4	0.0	207.5	400.9	112.7	12.2	124.9	276.0	2,789.3	2012%
2033	0.0	204.1	0.0	229.7	433.9	129.2	13.3	142.5	291.4	3,080.7	1958%
2034	0.0	215.0	0.0	253.1	468.1	147.4	14.5	161.9	306.2	3,386.9	1903%
2035	0.0	226.3	0.0	277.6	503.9	168.1	15.8	183.9	320.0	3,706.9	1842%
2036	0.0	238.0	0.0	303.1	541.1	191.4	17.2	208.6	332.5	4,039.4	1777%
2037	0.0	250.1	0.0	329.6	579.7	217.6	18.7	236.3	343.4	4,382.8	1710%
2038	0.0	262.7	0.0	356.8	619.5	246.7	20.4	267.1	352.5	4,735.3	1641%
2039	0.0	275.8	0.0	384.7	660.5	278.9	22.2	301.1	359.4	5,094.7	1573%
2040	0.0	289.6	0.0	413.0	702.6	314.4	24.2	338.6	364.0	5,458.6	1505%
2041	0.0	303.8	0.0	441.6	745.3	353.1	26.3	379.4	365.9	5,824.6	1439%
2042	0.0	318.4	0.0	470.2	788.6	395.1	28.5	423.7	364.9	6,189.5	1375%
2043	0.0	333.4	0.0	498.6	831.9	440.1	30.9	471.0	360.9	6,550.4	1314%
2044	0.0	348.6	0.0	526.5	875.1	487.6	33.4	521.1	354.1	6,904.4	1257%
2045	0.0	364.1	0.0	553.9	918.0	537.3	36.1	573.4	344.6	7,249.1	1204%
2046	0.0	380.2	0.0	580.4	960.6	588.8	38.8	627.6	333.1	7,582.1	1155%
2047	0.0	397.0	0.0	605.9	1,002.9	642.1	41.6	683.7	319.2	7,901.4	1109%
2048	0.0	414.2	0.0	630.3	1,044.6	696.0	44.4	740.4	304.1	8,205.5	1067%
2049	0.0	432.1	0.0	653.5	1,085.6	750.1	47.3	797.4	288.1	8,493.6	1029%
2050	0.0	473.2	0.0	676.3	1,149.5	804.0	51.1	855.1	294.4	8,788.0	993%
2051	0.0	493.0	0.0	698.8	1,191.8	857.1	54.0	911.1	280.7	9,068.7	965%
2052	0.0	513.1	0.0	720.2	1,233.3	909.7	56.9	966.6	266.7	9,335.4	938%
2053	0.0	546.5	0.0	741.1	1,287.5	960.9	60.3	1,021.2	266.4	9,601.7	914%
2054	0.0	567.9	0.0	761.5	1,329.5	1,010.0	63.1	1,073.1	256.4	9,858.1	895%
2055	0.0	589.7	0.0	781.3	1,371.0	1,057.0	65.9	1,122.9	248.1	10,106.3	878%
2056	0.0	611.9	0.0	800.5	1,412.3	1,102.1	68.6	1,170.6	241.7	10,347.9	863%
2057	0.0	634.4	0.0	819.1	1,453.5	1,146.5	71.2	1,217.7	235.8	10,583.8	850%
2058	0.0	657.6	0.0	837.4	1,495.0	1,190.4	73.9	1,264.3	230.7	10,814.5	837%
2059	0.0	681.9	0.0	855.4	1,537.3	1,231.1	76.5	1,307.6	229.7	11,044.2	827%
2060	0.0	707.1	0.0	873.9	1,581.0	1,260.3	78.7	1,339.0	242.0	11,286.1	825%
2061	0.0	733.0	0.0	893.3	1,626.4	1,290.3	80.9	1,371.3	255.1	11,541.2	823%
2062	0.0	759.7	0.0	913.8	1,673.5	1,321.8	83.3	1,405.0	268.5	11,809.8	821%
2063	0.0	787.5	0.0	935.4	1,722.9	1,354.7	85.7	1,440.4	282.5	12,092.3	820%
2064	0.0	816.2	0.0	958.0	1,774.3	1,389.6	88.2	1,477.8	296.4	12,388.7	818%
2065	0.0	845.6	0.0	981.8	1,827.4	1,426.3	90.9	1,517.2	310.2	12,698.9	817%
2066	0.0	876.2	0.0	1,006.6	1,882.8	1,465.2	93.7	1,558.9	324.0	13,022.9	815%
2067	0.0	908.1	0.0	1,032.5	1,940.6	1,506.7	96.6	1,603.3	337.3	13,360.2	812%
2068	0.0	941.2	0.0	1,059.4	2,000.6	1,550.9	99.7	1,650.6	350.0	13,710.2	809%
2069	0.0	975.8	0.0	1,087.2	2,063.0	1,598.6	103.0	1,701.5	361.4	14,071.7	806%
2070	0.0	1,012.3	0.0	1,116.0	2,128.2	1,649.0	106.5	1,755.4	372.8	14,444.5	802%
2071	0.0	1,050.8	0.0	1,145.6	2,196.4	1,701.9	110.1	1,812.0	384.4	14,828.9	797%
2072	0.0	1,091.1	0.0	1,176.1	2,267.2	1,757.6	113.9	1,871.5	395.7	15,224.6	792%
2073	0.0	1,133.1	0.0	1,207.5	2,340.6	1,816.3	118.0	1,934.2	406.4	15,631.0	787%
2074	0.0	1,176.7	0.0	1,239.7	2,416.4	1,878.3	122.2	2,000.5	415.9	16,046.9	781%
2075	0.0	1,221.9	0.0	1,272.6	2,494.5	1,942.7	126.6	2,069.3	425.2	16,472.1	775%
2076	0.0	1,268.9	0.0	1,306.2	2,575.1	2,009.6	131.1	2,140.7	434.4	16,906.5	769%
2077	0.0	1,317.7	0.0	1,340.6	2,658.3	2,078.9	135.9	2,214.8	443.6	17,350.1	763%
2078	0.0	1,368.1	0.0	1,375.7	2,743.8	2,149.4	140.7	2,290.1	453.7	17,803.8	758%
2079	0.0	1,420.2	0.0	1,411.6	2,831.9	2,221.9	145.7	2,367.6	464.3	18,268.1	752%
2080	0.0	1,474.5	0.0	1,448.5	2,922.9	2,295.3	150.8	2,446.1	476.8	18,744.9	747%
2081	0.0	1,530.8	0.0	1,486.4	3,017.1	2,369.4	156.0	2,525.4	491.7	19,236.5	742%
2082	0.0	1,589.0	0.0	1,525.5	3,114.5	2,444.1	161.3	2,605.4	509.2	19,745.7	738%
2083	0.0	1,649.3	0.0	1,566.2	3,215.5	2,518.9	166.7	2,685.6	529.9	20,275.6	735%
2084	0.0	1,711.7	0.0	1,608.6	3,320.3	2,593.8	172.2	2,766.0	554.3	20,829.9	733%
2085	0.0	1,776.1	0.0	1,653.1	3,429.2	2,669.2	177.8	2,847.0	582.2	21,412.1	732%
2086	0.0	1,842.4	0.0	1,699.9	3,542.3	2,745.1	183.5	2,928.6	613.7	22,025.8	731%
2087	0.0	1,911.1	0.0	1,749.3	3,660.5	2,821.8	189.3	3,011.1	649.3	22,675.1	731%
2088	0.0	1,982.7	0.0	1,801.8	3,784.5	2,898.9	195.3	3,094.2	690.3	23,365.4	733%

Table 4B. Summary of Home Care Benefits

Payroll workers only_ramped_interest

	TOTAL					MALE			FEMALE			
Year	Total Number of HC Beneficiaries	Average Benefit Days Per Year	Average Daily Benefit	Average Yearly Benefit	Benefit Payments (millions)	Total Number of HC Beneficiaries	Average Yearly Benefit	Benefit Payments (millions)	Total Number of HC Beneficiaries	Average Yearly Benefit	Benefit Payments (millions)	Maximum Daily Benefit
2015	$0	$0	$0	$0	$0.0	$0	$0	$0.0	$0	$0	$0.0	$0
2016	0	0	0	0	0.0	0	0	$0.0	0	0	$0.0	70.00
2017	9,191	87	6	457	4.2	3,988	470	$1.9	5,204	446	$2.3	71.93
2018	9,858	49	9	391	3.9	4,270	403	$1.7	5,588	381	$2.1	73.90
2019	10,576	50	12	523	5.5	4,577	539	$2.5	5,998	510	$3.1	75.94
2020	11,342	51	14	655	7.4	4,910	675	$3.3	6,432	640	$4.1	78.02
2021	12,156	52	17	790	9.6	5,268	812	$4.3	6,888	772	$5.3	80.17
2022	13,012	54	20	926	12.1	5,648	952	$5.4	7,364	907	$6.7	82.37
2023	13,930	55	22	1,067	14.9	6,056	1,094	$6.6	7,874	1,046	$8.2	84.64
2024	14,928	56	25	1,213	18.1	6,492	1,244	$8.1	8,435	1,190	$10.0	86.97
2025	16,007	57	28	1,371	21.9	6,957	1,405	$9.8	9,051	1,344	$12.2	89.36
2026	17,168	59	31	1,543	26.5	7,446	1,583	$11.8	9,721	1,512	$14.7	91.82
2027	18,402	61	34	1,732	31.9	7,960	1,781	$14.2	10,442	1,695	$17.7	94.34
2028	19,702	62	38	1,940	38.2	8,494	2,000	$17.0	11,207	1,894	$21.2	96.93
2029	21,058	64	42	2,170	45.7	9,043	2,245	$20.3	12,015	2,114	$25.4	99.60
2030	22,457	66	45	2,403	54.0	9,598	2,494	$23.9	12,859	2,336	$30.0	102.34
2031	23,882	67	48	2,619	62.6	10,150	2,730	$27.7	13,732	2,538	$34.9	105.15
2032	25,319	69	51	2,830	71.7	10,696	2,970	$31.8	14,623	2,728	$39.9	108.05
2033	26,742	71	53	3,031	81.1	11,227	3,206	$36.0	15,515	2,905	$45.1	111.02
2034	28,131	72	56	3,247	91.3	11,737	3,461	$40.6	16,394	3,093	$50.7	114.07
2035	29,465	74	59	3,491	102.9	12,218	3,747	$45.8	17,247	3,309	$57.1	117.21
2036	30,733	75	62	3,767	115.8	12,666	4,068	$51.5	18,067	3,557	$64.3	120.43
2037	31,923	77	65	4,079	130.2	13,075	4,426	$57.9	18,848	3,838	$72.3	123.74
2038	33,020	78	69	4,429	146.2	13,442	4,822	$64.8	19,577	4,158	$81.4	127.14
2039	34,012	79	74	4,820	163.9	13,767	5,258	$72.4	20,245	4,522	$91.5	130.64
2040	34,896	80	79	5,256	183.4	14,050	5,736	$80.6	20,846	4,933	$102.8	134.23
2041	35,668	81	84	5,741	204.8	14,289	6,257	$89.4	21,378	5,396	$115.4	137.93
2042	36,856	83	88	6,188	228.1	14,606	6,768	$98.8	22,250	5,807	$129.2	141.72
2043	37,281	84	95	6,786	253.0	14,738	7,382	$108.8	22,543	6,397	$144.2	145.62
2044	37,642	84	101	7,424	279.5	14,847	8,029	$119.2	22,795	7,030	$160.3	149.62
2045	37,930	85	108	8,100	307.2	14,929	8,705	$130.0	23,002	7,707	$177.3	153.73
2046	38,159	85	116	8,808	336.1	14,991	9,403	$141.0	23,169	8,423	$195.2	157.96
2047	38,331	86	123	9,551	366.1	15,033	10,125	$152.2	23,299	9,182	$213.9	162.31
2048	38,440	86	131	10,316	396.5	15,054	10,857	$163.4	23,386	9,968	$233.1	166.77
2049	38,498	87	138	11,094	427.1	15,059	11,593	$174.6	23,439	10,774	$252.5	171.36
2050	38,509	87	146	11,883	457.6	15,048	12,329	$185.5	23,462	11,596	$272.1	176.07
2051	38,481	87	153	12,674	487.7	15,024	13,060	$196.2	23,458	12,426	$291.5	180.91
2052	38,429	87	161	13,472	517.7	14,991	13,789	$206.7	23,437	13,268	$311.0	185.88
2053	38,347	88	169	14,263	546.9	14,951	14,505	$216.9	23,396	14,109	$330.1	191.00
2054	38,244	88	176	15,036	575.0	14,906	15,197	$226.5	23,338	14,932	$348.5	196.25
2055	38,126	88	183	15,788	601.9	14,858	15,866	$235.7	23,268	15,738	$366.2	201.65
2056	37,997	88	190	16,523	627.8	14,811	16,512	$244.6	23,186	16,530	$383.3	207.19
2057	37,863	88	198	17,257	653.4	14,766	17,154	$253.3	23,097	17,322	$400.1	212.89
2058	37,727	88	205	17,988	678.6	14,725	17,789	$261.9	23,002	18,116	$416.7	218.74
2059	37,603	88	212	18,670	702.0	14,693	18,396	$270.3	22,909	18,845	$431.7	224.76
2060	37,485	88	218	19,175	718.8	14,670	18,884	$277.0	22,815	19,363	$441.8	230.94
2061	37,378	88	224	19,689	735.9	14,656	19,379	$284.0	22,722	19,889	$451.9	237.29
2062	37,293	88	230	20,216	753.9	14,656	19,888	$291.5	22,637	20,429	$462.5	243.82
2063	37,230	88	236	20,756	772.7	14,668	20,410	$299.4	22,562	20,981	$473.4	250.52
2064	37,198	88	243	21,309	792.7	14,697	20,947	$307.9	22,501	21,546	$484.8	257.41
2065	37,189	88	249	21,876	813.5	14,738	21,502	$316.9	22,451	22,121	$496.6	264.49
2066	37,208	88	256	22,459	835.6	14,791	22,075	$326.5	22,416	22,712	$509.1	271.76
2067	37,254	87	263	23,065	859.3	14,858	22,674	$336.9	22,397	23,324	$522.4	279.24
2068	37,327	87	270	23,693	884.4	14,934	23,299	$347.9	22,393	23,955	$536.4	286.91
2069	37,432	87	278	24,348	911.4	15,024	23,955	$359.9	22,408	24,611	$551.5	294.81
2070	37,556	87	286	25,027	939.9	15,122	24,640	$372.6	22,434	25,288	$567.3	302.91
2071	37,691	88	293	25,730	969.8	15,225	25,354	$386.0	22,466	25,985	$583.8	311.24
2072	37,838	88	301	26,463	1,001.3	15,331	26,100	$400.2	22,507	26,709	$601.1	319.80
2073	37,997	88	310	27,227	1,034.6	15,437	26,880	$414.9	22,560	27,465	$619.6	328.60
2074	38,169	88	318	28,027	1,069.8	15,544	27,697	$430.5	22,625	28,253	$639.2	337.63
2075	38,339	88	327	28,857	1,106.3	15,646	28,548	$446.7	22,693	29,070	$659.7	346.92
2076	38,509	88	336	29,718	1,144.4	15,741	29,429	$463.3	22,768	29,918	$681.2	356.46
2077	38,674	88	345	30,614	1,184.0	15,830	30,345	$480.4	22,845	30,800	$703.6	366.26
2078	38,819	89	355	31,539	1,224.3	15,906	31,290	$497.7	22,913	31,711	$726.6	376.33
2079	38,953	89	365	32,495	1,265.8	15,974	32,267	$515.4	22,979	32,653	$750.4	386.68
2080	39,066	89	375	33,478	1,307.8	16,028	33,268	$533.2	23,038	33,624	$774.6	397.32
2081	39,153	89	385	34,486	1,350.2	16,070	34,294	$551.1	23,083	34,619	$799.1	408.24
2082	39,216	90	396	35,519	1,392.9	16,099	35,342	$569.0	23,116	35,642	$823.9	419.47
2083	39,255	90	407	36,577	1,435.8	16,116	36,410	$586.8	23,139	36,694	$849.0	431.00
2084	39,270	90	418	37,657	1,478.8	16,123	37,496	$604.5	23,147	37,769	$874.2	442.86
2085	39,268	90	429	38,757	1,521.9	16,124	38,602	$622.4	23,144	38,866	$899.5	455.03
2086	39,251	90	441	39,880	1,565.3	16,120	39,729	$640.4	23,131	39,985	$924.9	467.55
2087	39,225	90	453	41,025	1,609.2	16,113	40,875	$658.6	23,112	41,129	$950.6	480.41
2088	39,187	90	466	42,189	1,653.3	16,105	42,039	$677.0	23,082	42,295	$976.2	493.62


Payroll Tax Based Program--Cash Inflow and Outflow,
Low Earnings Estimates
$4,000.0
$3,500.0
$3,000.0
$2,500.0
$2,000.0
$1,500.0
$1,000.0
$500.0
$0.0
Millions of Dollars
2015
2017
2019
2021
2023
2025
2027
2029
2031
2033
2035
2037
2039
2041
2043
2045
2047
2049
2051
2053
2055
2057
2059
2061
2063
2065
2067
2069
2071
2073
2075
2077
2079
2081
2083
2085
2087
Year
Total Income
Total Outgo


Fund Ratio - Payroll workers only_ramped_interest
3500%
3000%
2500%
2000%
1500%
1000%
500%
0%
Fund Ratio
2015
2025
2035
2045
2055
2065
2075
2085
Year

Flat Premium, Working Population LTSS Social Insurance Option

The illustrations in this section present the parameter settings of the working population model, give the inflation adjustments for benefits and for premiums, and illustrate the tracking of income and outgo. There is a preliminary table of estimated home care benefits that would be delivered, based on the frailty and disability levels of each age group in the Hawaii population. Finally, an illustration of the long-run solvency of the program trust fund is given by the Loss Ratio plot, which graphs the balance in the trust fund every year divided by the year's benefit and administrative cost requirements. The rule of thumb here is that the fund ratio line should be pointing up at the end of the analysis period, and should be three or four times the funds required during the coming year.

Work status was taken by estimating employment and labor force status for the population by age. The population estimate thus obtained targets the number of workers by Bureau of Labor Statistics definitions.

Policy Options for the Hawaii Long-Term Care program

I. SCENARIO

NH-UN5-365-xPov-xMH-Whole-0.4%

II. COVERAGE

A. Coverage parameters

2015	First year of taxes
2016	First year of benefits
10	Years required for full vesting
25	Lowest age at which premiums (taxes) are required
98	Highest age at which premiums (taxes) are required
99	Maximum intial covered age
1	= 0 for whole population and 1 for working population (applies to premium payers only)
3	Covered services (1 = HC Only, 2 = HC + ARCH Only, 3 = HC + ARCH + NH)
100%	Spouses coverage percent
0	Coverage below the poverty line (0 = no premium and no benefits, 1 = no premium but rece
1	= 0 for no devesting, 1 for devesting (details specified below)
24	Lower bound age for continue paying parameter
5%	Percent at age above that continue paying if move out of Hawaii (linear interpolation betwe
65	Upper bound age for continue paying parameter
95%	Percent at age above that continue paying if move out of Hawaii
10	Years for complete devesting
1	Grace period before devesting begins

III. BENEFIT OPTIONS

A. Benefit Eligibility Requirement

2	= Number of ADLs
1	=Cogitive Impairment (including Alzheimer's and Senility) (0=No Cognitive, 1= With Cognitive
0	=Definition of Failure (0=Hands On, 1=Supervision, can be any number between 0 and 1)
1	= Mental Exclusion (0=No Exclusion, 1=Exclusion) (working population model assumes =1)
0	= Medical Necessity (0=No Medical Necessity, 1= Medical Necessity)

B. Deductible

30 = Days (calendar days)

C. Lifetime Maximum

365 = Days (service days)

D. Percent of Days in which benefits are received (Note: Days below trigger are not used)

ADL=0 Cog.=Y	ADL=1 Cog.=N	ADL=1 Cog.=Y	ADL=2 Cog.=N	ADL=2 Cog.=Y	ADL=3 Cog.=N	ADL=3 Cog.=Y	
28.6%	42.9%	57.1%	71.4%	78.6%	85.7%	100.0%	This line is

IV. Expense Factors

4.0%	Expenses as a percent of benefits
4.0%	Expenses as a percent of taxes

V. Yearly Parameters 3.90% 2.75% 2.75%

0	1	0	Indicate whether Payroll Tax (applies to workers only), Premium (can a

Year	HI LTC Payroll Tax Rate	Monthly Premium ($)	Maximum Daily Nursing Home Benefit	Maximum Daily Home Care Benefit	Required Fund Ratio (eoy)	GET Tax Rate
2014	0.00%	0.00	0.00	0.00	100.00%	0.00%
2015	0.40%	9.00	0.00	0.00	100.00%	0.25%
2016	0.40%	9.35	70.00	70.00	100.00%	0.25%
2017	0.40%	9.66	71.93	71.93	100.00%	0.25%
2018	0.40%	10.04	73.90	73.90	100.00%	0.25%
2019	0.40%	10.43	75.94	75.94	100.00%	0.25%
2020	0.40%	10.83	78.02	78.02	100.00%	0.25%
2021	0.40%	11.26	80.17	80.17	100.00%	0.25%
2022	0.40%	11.70	82.37	82.37	100.00%	0.25%
2023	0.40%	12.15	84.64	84.64	100.00%	0.25%
2024	0.40%	12.63	86.97	86.97	100.00%	0.25%
2025	0.40%	13.12	89.36	89.36	100.00%	0.25%
2026	0.40%	13.63	91.82	91.82	100.00%	0.25%
2027	0.40%	14.16	94.34	94.34	100.00%	0.25%

ive benefits, 2 = premium + benefits)

en ages)

e)

read by model

apply to either workers or whole population), an

Table 1: Trust Fund Operations (in millions)

Premium workers only_ramped_interest_3.9_9

Year	Premiums	Payroll Taxes	GET Taxes	Interest	TOTAL INCOME	Benefits	Admin Expenses	TOTAL OUTGO	INCREASE IN FUND	FUND BALANCE (EOY)	FUND RATIO (BOY)
									0		
2015	$100.2	$0.0	$0.0	$4.1	$104.3	$0.0	$0.0	$0.0	$104.3	$104.3	-297%
2016	104.9	0.0	0.0	12.8	117.6	0.0	0.0	0.0	117.6	221.9	-297%
2017	109.8	0.0	0.0	22.3	132.1	6.8	0.3	7.1	125.0	346.8	3128%
2018	115.6	0.0	0.0	32.7	148.3	5.4	0.2	5.6	142.8	489.6	6232%
2019	121.6	0.0	0.0	44.5	166.1	7.8	0.3	8.1	158.1	647.7	6059%
2020	127.9	0.0	0.0	57.5	185.4	10.6	0.4	11.0	174.4	822.1	5885%
2021	134.4	0.0	0.0	71.8	206.2	13.8	0.6	14.4	191.8	1,013.9	5710%
2022	141.0	0.0	0.0	87.6	228.6	17.6	0.7	18.3	210.3	1,224.2	5535%
2023	148.0	0.0	0.0	104.8	252.8	22.0	0.9	22.9	229.9	1,454.1	5349%
2024	155.2	0.0	0.0	123.6	278.8	27.2	1.1	28.3	250.5	1,704.6	5142%
2025	162.7	0.0	0.0	144.1	306.8	33.4	1.3	34.8	272.0	1,976.6	4904%
2026	170.5	0.0	0.0	166.2	336.8	40.9	1.6	42.6	294.2	2,270.8	4642%
2027	178.7	0.0	0.0	190.1	368.8	50.0	2.0	52.0	316.9	2,587.6	4368%
2028	187.3	0.0	0.0	215.8	403.1	60.9	2.4	63.3	339.8	2,927.4	4089%
2029	196.2	0.0	0.0	243.3	439.5	73.9	3.0	76.8	362.7	3,290.1	3811%
2030	205.5	0.0	0.0	272.6	478.1	88.7	3.5	92.2	385.9	3,676.0	3568%
2031	215.2	0.0	0.0	303.8	518.9	104.6	4.2	108.8	410.2	4,086.2	3379%
2032	225.3	0.0	0.0	336.9	562.1	122.0	4.9	126.8	435.3	4,521.5	3222%
2033	235.8	0.0	0.0	372.0	607.7	140.4	5.6	146.0	461.8	4,983.2	3097%
2034	246.7	0.0	0.0	409.1	655.8	160.9	6.4	167.3	488.5	5,471.8	2979%
2035	258.0	0.0	0.0	448.4	706.5	184.2	7.4	191.6	514.9	5,986.7	2857%
2036	269.9	0.0	0.0	489.7	759.6	210.6	8.4	219.0	540.6	6,527.3	2733%
2037	282.3	0.0	0.0	533.0	815.3	240.3	9.6	250.0	565.3	7,092.6	2611%
2038	295.1	0.0	0.0	578.2	873.2	273.7	10.9	284.6	588.6	7,681.2	2492%
2039	308.3	0.0	0.0	625.1	933.4	310.8	12.4	323.2	610.2	8,291.4	2376%
2040	322.1	0.0	0.0	673.6	995.7	351.9	14.1	366.0	629.7	8,921.1	2266%
2041	336.3	0.0	0.0	723.6	1,059.9	397.1	15.9	413.0	646.9	9,568.0	2160%
2042	351.0	0.0	0.0	774.8	1,125.8	446.5	17.9	464.4	661.3	10,229.3	2060%
2043	366.2	0.0	0.0	827.0	1,193.2	499.9	20.0	519.9	673.3	10,902.6	1967%
2044	382.0	0.0	0.0	880.0	1,262.0	557.0	22.3	579.3	682.7	11,585.3	1882%
2045	398.2	0.0	0.0	933.8	1,332.0	617.4	24.7	642.1	689.8	12,275.2	1804%
2046	415.0	0.0	0.0	987.9	1,403.0	680.9	27.2	708.1	694.8	12,970.0	1733%
2047	432.4	0.0	0.0	1,042.4	1,474.8	747.3	29.9	777.2	697.6	13,667.6	1669%
2048	450.4	0.0	0.0	1,097.1	1,547.5	815.6	32.6	848.2	699.3	14,366.9	1611%
2049	469.0	0.0	0.0	1,151.9	1,620.9	885.1	35.4	920.5	700.4	15,067.4	1561%
2050	488.3	0.0	0.0	1,206.8	1,695.0	955.3	38.2	993.5	701.5	15,768.9	1517%
2051	508.2	0.0	0.0	1,261.7	1,769.9	1,025.5	41.0	1,066.6	703.4	16,472.3	1478%
2052	528.8	0.0	0.0	1,316.9	1,845.7	1,096.0	43.8	1,139.9	705.8	17,178.1	1445%
2053	550.1	0.0	0.0	1,372.3	1,922.4	1,165.7	46.6	1,212.3	710.1	17,888.2	1417%
2054	572.2	0.0	0.0	1,428.2	2,000.3	1,233.7	49.3	1,283.0	717.3	18,605.5	1394%
2055	595.0	0.0	0.0	1,484.7	2,079.7	1,299.9	52.0	1,351.9	727.9	19,333.4	1376%
2056	618.7	0.0	0.0	1,542.2	2,161.0	1,364.3	54.6	1,418.9	742.1	20,075.4	1363%
2057	643.4	0.0	0.0	1,601.0	2,244.3	1,428.0	57.1	1,485.1	759.2	20,834.7	1352%
2058	668.9	0.0	0.0	1,661.2	2,330.1	1,490.9	59.6	1,550.6	779.5	21,614.2	1344%
2059	695.4	0.0	0.0	1,723.2	2,418.6	1,551.3	62.1	1,613.4	805.2	22,419.4	1340%
2060	723.0	0.0	0.0	1,787.8	2,510.8	1,600.8	64.0	1,664.8	846.0	23,265.4	1347%
2061	751.7	0.0	0.0	1,855.8	2,607.5	1,651.5	66.1	1,717.6	889.9	24,155.3	1355%
2062	781.6	0.0	0.0	1,927.2	2,708.8	1,704.2	68.2	1,772.4	936.5	25,091.8	1363%
2063	812.6	0.0	0.0	2,002.5	2,815.0	1,758.9	70.4	1,829.3	985.8	26,077.5	1372%
2064	844.8	0.0	0.0	2,081.7	2,926.5	1,816.1	72.6	1,888.8	1,037.7	27,115.2	1381%
2065	878.4	0.0	0.0	2,165.0	3,043.4	1,875.7	75.0	1,950.8	1,092.7	28,207.9	1390%
2066	913.3	0.0	0.0	2,252.8	3,166.1	1,938.2	77.5	2,015.7	1,150.4	29,358.3	1399%
2067	949.6	0.0	0.0	2,345.2	3,294.8	2,004.0	80.2	2,084.2	1,210.6	30,569.0	1409%
2068	987.2	0.0	0.0	2,442.4	3,429.6	2,073.2	82.9	2,156.2	1,273.4	31,842.4	1418%
2069	1,026.2	0.0	0.0	2,544.6	3,570.8	2,146.6	85.9	2,232.5	1,338.3	33,180.8	1426%
2070	1,066.8	0.0	0.0	2,652.0	3,718.8	2,223.5	88.9	2,312.4	1,406.4	34,587.2	1435%
2071	1,109.0	0.0	0.0	2,764.9	3,873.9	2,303.5	92.1	2,395.6	1,478.3	36,065.5	1444%
2072	1,152.8	0.0	0.0	2,883.6	4,036.4	2,386.9	95.5	2,482.4	1,554.0	37,619.5	1453%
2073	1,198.1	0.0	0.0	3,008.3	4,206.4	2,473.9	99.0	2,572.8	1,633.6	39,253.1	1462%
2074	1,245.0	0.0	0.0	3,139.5	4,384.5	2,564.7	102.6	2,667.3	1,717.2	40,970.3	1472%
2075	1,293.5	0.0	0.0	3,277.4	4,570.9	2,658.3	106.3	2,764.7	1,806.2	42,776.5	1482%
2076	1,343.7	0.0	0.0	3,422.4	4,766.1	2,754.8	110.2	2,865.0	1,901.1	44,677.6	1493%
2077	1,395.6	0.0	0.0	3,575.2	4,970.8	2,854.2	114.2	2,968.3	2,002.4	46,680.0	1505%
2078	1,449.2	0.0	0.0	3,736.2	5,185.4	2,955.1	118.2	3,073.3	2,112.1	48,792.1	1519%
2079	1,504.6	0.0	0.0	3,906.1	5,410.8	3,058.4	122.3	3,180.7	2,230.1	51,022.2	1534%
2080	1,562.1	0.0	0.0	4,085.7	5,647.8	3,163.0	126.5	3,289.5	2,358.3	53,380.5	1551%
2081	1,621.5	0.0	0.0	4,275.8	5,897.3	3,268.4	130.7	3,399.2	2,498.1	55,878.6	1570%
2082	1,683.2	0.0	0.0	4,477.3	6,160.4	3,374.8	135.0	3,509.8	2,650.6	58,529.2	1592%
2083	1,747.0	0.0	0.0	4,691.2	6,438.3	3,481.8	139.3	3,621.0	2,817.2	61,346.4	1616%
2084	1,813.2	0.0	0.0	4,918.8	6,732.0	3,589.3	143.6	3,732.9	2,999.1	64,345.5	1643%
2085	1,881.8	0.0	0.0	5,161.3	7,043.1	3,698.0	147.9	3,845.9	3,197.2	67,542.8	1673%
2086	1,952.9	0.0	0.0	5,420.0	7,372.9	3,807.7	152.3	3,960.0	3,412.9	70,955.7	1706%
2087	2,026.8	0.0	0.0	5,696.3	7,723.1	3,918.9	156.8	4,075.7	3,647.4	74,603.1	1741%
2088	2,103.4	0.0	0.0	5,991.8	8,095.1	4,031.4	161.3	4,192.6	3,902.5	78,505.6	1779%

Table 4B. Summary of Home Care Benefits

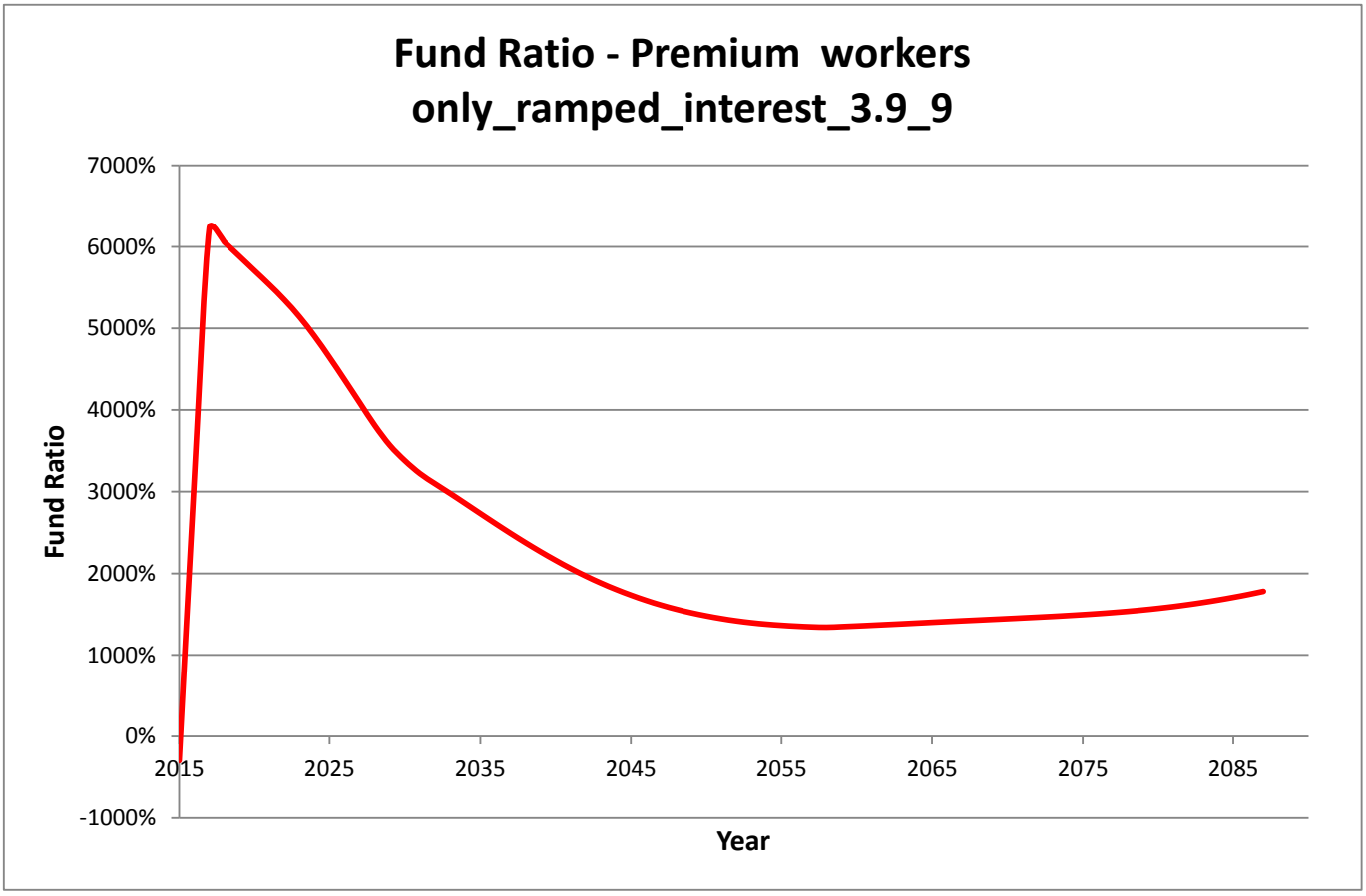
Premium workers only_ramped_interest_3.9_9

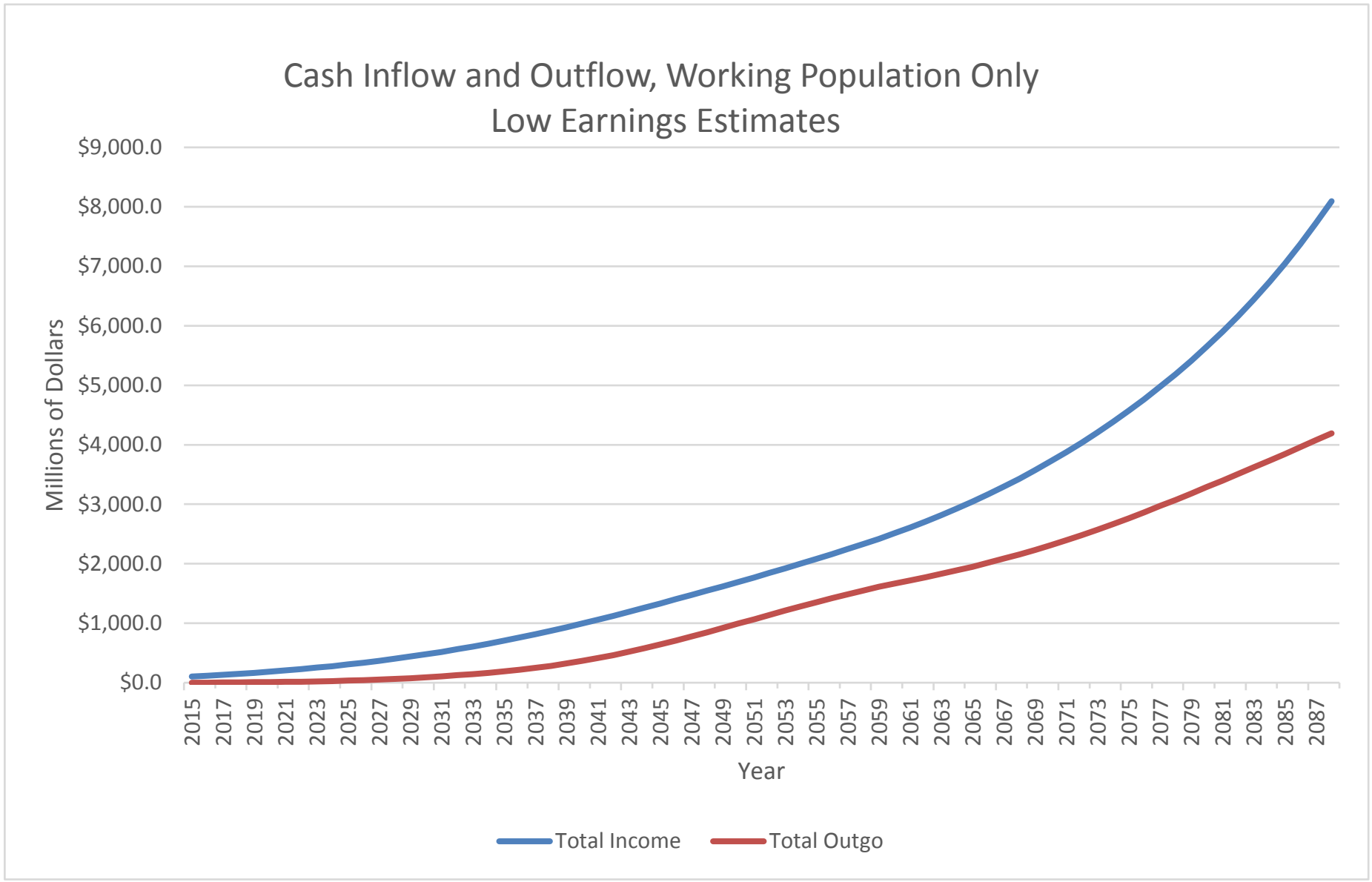
Year	TOTAL					MALE		
	Total Number of HC Beneficiaries	Average Benefit Days Per Year	Average Daily Benefit	Average Yearly Benefit	Benefit Payments (millions)	Total Number of HC Beneficiaries	Average Yearly Benefit	Benefit Payments (millions)
2015	$0	$0	$0	$0	$0.0	$0	$0	$0.0
2016	0	0	0	0	0.0	0	0	$0.0
2017	9,236	87	6	457	4.2	4,008	471	$1.9
2018	9,951	49	9	392	3.9	4,313	404	$1.7
2019	10,720	50	12	525	5.6	4,645	541	$2.5
2020	11,542	51	14	659	7.6	5,004	679	$3.4
2021	12,415	52	17	796	9.9	5,388	819	$4.4
2022	13,334	53	20	936	12.5	5,798	961	$5.6
2023	14,320	55	23	1,080	15.5	6,237	1,108	$6.9
2024	15,392	56	26	1,231	19.0	6,707	1,263	$8.5
2025	16,552	57	29	1,394	23.1	7,208	1,430	$10.3
2026	17,802	59	32	1,573	28.0	7,737	1,615	$12.5
2027	19,135	60	35	1,770	33.9	8,294	1,820	$15.1
2028	20,546	62	39	1,987	40.8	8,878	2,048	$18.2
2029	22,025	63	43	2,228	49.1	9,480	2,303	$21.8
2030	23,561	65	47	2,472	58.2	10,094	2,562	$25.9
2031	25,140	67	50	2,697	67.8	10,713	2,805	$30.1
2032	26,747	68	53	2,917	78.0	11,331	3,053	$34.6
2033	28,357	70	55	3,125	88.6	11,941	3,295	$39.3
2034	29,950	71	58	3,349	100.3	12,536	3,556	$44.6
2035	31,505	73	61	3,601	113.4	13,110	3,849	$50.5
2036	33,012	74	64	3,884	128.2	13,656	4,174	$57.0
2037	34,459	75	68	4,202	144.8	14,170	4,536	$64.3
2038	35,831	77	72	4,557	163.3	14,649	4,934	$72.3
2039	37,117	78	77	4,952	183.8	15,092	5,371	$81.1
2040	38,314	79	82	5,391	206.6	15,500	5,848	$90.6
2041	39,416	80	87	5,876	231.6	15,870	6,365	$101.0
2042	40,952	81	92	6,327	259.1	16,323	6,874	$112.2
2043	41,740	82	98	6,920	288.8	16,597	7,478	$124.1
2044	42,479	83	105	7,548	320.7	16,851	8,111	$136.7
2045	43,160	83	112	8,213	354.5	17,083	8,770	$149.8
2046	43,793	83	119	8,907	390.1	17,297	9,448	$163.4
2047	44,378	84	126	9,632	427.5	17,495	10,146	$177.5
2048	44,905	84	134	10,376	466.0	17,673	10,853	$191.8
2049	45,384	85	141	11,131	505.2	17,836	11,562	$206.2
2050	45,813	85	149	11,893	544.9	17,981	12,269	$220.6
2051	46,198	85	156	12,655	584.7	18,112	12,970	$234.9
2052	46,552	86	163	13,420	624.7	18,232	13,665	$249.2

2053	46,867	86	171	14,176	664.4	18,342	14,347	$263.1
2054	47,152	86	178	14,912	703.1	18,445	15,007	$276.8
2055	47,410	86	185	15,628	740.9	18,543	15,645	$290.1
2056	47,642	86	192	16,325	777.7	18,637	16,262	$303.1
2057	47,854	86	199	17,014	814.2	18,731	16,873	$316.0
2058	48,048	86	206	17,695	850.2	18,825	17,476	$329.0
2059	48,246	86	212	18,337	884.7	18,926	18,059	$341.8
2060	48,441	86	218	18,845	912.8	19,033	18,552	$353.1
2061	48,635	86	224	19,362	941.7	19,148	19,055	$364.9
2062	48,840	86	230	19,894	971.6	19,273	19,574	$377.2
2063	49,058	86	237	20,439	1,002.7	19,407	20,108	$390.2
2064	49,296	86	243	20,999	1,035.2	19,554	20,658	$404.0
2065	49,549	86	250	21,573	1,068.9	19,710	21,226	$418.4
2066	49,821	86	257	22,165	1,104.3	19,875	21,813	$433.5
2067	50,115	86	264	22,779	1,141.6	20,050	22,426	$449.6
2068	50,425	86	271	23,416	1,180.7	20,231	23,064	$466.6
2069	50,760	86	279	24,078	1,222.2	20,422	23,731	$484.6
2070	51,105	86	286	24,765	1,265.6	20,616	24,424	$503.5
2071	51,452	87	294	25,475	1,310.7	20,810	25,145	$523.3
2072	51,802	87	302	26,213	1,357.9	21,004	25,896	$543.9
2073	52,152	87	311	26,980	1,407.1	21,191	26,676	$565.3
2074	52,503	87	319	27,778	1,458.5	21,375	27,490	$587.6
2075	52,842	87	328	28,605	1,511.6	21,549	28,334	$610.6
2076	53,168	87	337	29,461	1,566.4	21,711	29,205	$634.1
2077	53,477	88	346	30,347	1,622.9	21,862	30,108	$658.2
2078	53,755	88	356	31,260	1,680.4	21,995	31,037	$682.7
2079	54,011	88	366	32,202	1,739.3	22,116	31,995	$707.6
2080	54,234	88	376	33,170	1,798.9	22,218	32,977	$732.7
2081	54,421	88	386	34,160	1,859.0	22,304	33,982	$757.9
2082	54,575	89	397	35,175	1,919.7	22,374	35,008	$783.3
2083	54,696	89	408	36,214	1,980.8	22,428	36,054	$808.6
2084	54,788	89	419	37,275	2,042.2	22,470	37,119	$834.1
2085	54,856	89	430	38,358	2,104.1	22,503	38,206	$859.8
2086	54,904	89	442	39,462	2,166.7	22,531	39,315	$885.8
2087	54,939	89	454	40,591	2,230.0	22,554	40,444	$912.2
2088	54,960	89	467	41,741	2,294.1	22,574	41,594	$939.0

FEMALE			
Total Number of HC Beneficiaries	Average Yearly Benefit	Benefit Payments (millions)	Maximum Daily Benefit
$0	$0	$0.0	$0
0	0	$0.0	70.00
5,227	447	$2.3	71.93
5,637	382	$2.2	73.90
6,075	512	$3.1	75.94
6,538	644	$4.2	78.02
7,026	779	$5.5	80.17
7,536	916	$6.9	82.37
8,084	1,058	$8.6	84.64
8,685	1,207	$10.5	86.97
9,344	1,367	$12.8	89.36
10,064	1,541	$15.5	91.82
10,841	1,731	$18.8	94.34
11,668	1,940	$22.6	96.93
12,545	2,170	$27.2	99.60
13,467	2,405	$32.4	102.34
14,427	2,617	$37.8	105.15
15,416	2,817	$43.4	108.05
16,416	3,002	$49.3	111.02
17,413	3,200	$55.7	114.07
18,395	3,424	$63.0	117.21
19,356	3,680	$71.2	120.43
20,289	3,969	$80.5	123.74
21,182	4,296	$91.0	127.14
22,025	4,665	$102.7	130.64
22,814	5,080	$115.9	134.23
23,546	5,546	$130.6	137.93
24,628	5,964	$146.9	141.72
25,143	6,551	$164.7	145.62
25,628	7,179	$184.0	149.62
26,077	7,848	$204.7	153.73
26,496	8,554	$226.6	157.96
26,884	9,298	$250.0	162.31
27,232	10,067	$274.1	166.77
27,549	10,852	$299.0	171.36
27,832	11,651	$324.3	176.07
28,087	12,453	$349.8	180.91
28,319	13,262	$375.6	185.88

28,525	14,066	$401.2	191.00
28,707	14,852	$426.3	196.25
28,867	15,617	$450.8	201.65
29,005	16,365	$474.6	207.19
29,123	17,104	$498.1	212.89
29,223	17,835	$521.2	218.74
29,320	18,516	$542.9	224.76
29,408	19,034	$559.7	230.94
29,487	19,561	$576.8	237.29
29,567	20,102	$594.3	243.82
29,651	20,656	$612.5	250.52
29,742	21,223	$631.2	257.41
29,839	21,802	$650.6	264.49
29,946	22,398	$670.7	271.76
30,065	23,015	$691.9	279.24
30,194	23,652	$714.1	286.91
30,338	24,312	$737.6	294.81
30,489	24,995	$762.1	302.91
30,642	25,699	$787.5	311.24
30,798	26,429	$814.0	319.80
30,961	27,188	$841.8	328.60
31,128	27,977	$870.9	337.63
31,293	28,792	$901.0	346.92
31,456	29,637	$932.3	356.46
31,615	30,512	$964.6	366.26
31,760	31,415	$997.7	376.33
31,895	32,346	$1,031.7	386.68
32,015	33,303	$1,066.2	397.32
32,116	34,285	$1,101.1	408.24
32,200	35,292	$1,136.4	419.47
32,268	36,326	$1,172.2	431.00
32,318	37,383	$1,208.1	442.86
32,352	38,463	$1,244.4	455.03
32,374	39,565	$1,280.9	467.55
32,385	40,693	$1,317.9	480.41
32,386	41,844	$1,355.1	493.62


Fund Ratio - Premium workers only_ramped_interest_3.9_9
7000%
6000%
5000%
4000%
3000%
2000%
1000%
0%
-1000%
Fund Ratio
2015
2025
2035
2045
2055
2065
2075
2085
Year


Cash Inflow and Outflow, Working Population Only
Low Earnings Estimates
Millions of Dollars
$9,000.0
$8,000.0
$7,000.0
$6,000.0
$5,000.0
$4,000.0
$3,000.0
$2,000.0
$1,000.0
$0.0
2015
2017
2019
2021
2023
2025
2027
2029
2031
2033
2035
2037
2039
2041
2043
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2057
2059
2061
2063
2065
2067
2069
2071
2073
2075
2077
2079
2081
2083
2085
2087
Year
Total Income
Total Outgo

Flat Premium, Whole Population LTSS Social Insurance Option

The illustrations in this section present the parameter settings of the whole population model, give the inflation adjustments for benefits and for premiums, and illustrate the tracking of income and outgo. There is a preliminary table of estimated home care benefits that would be delivered, based on the frailty and disability levels of each age group in the Hawaii population. Finally, an illustration of the long-run solvency of the program trust fund is given by the Loss Ratio plot, which graphs the balance in the trust fund every year divided by the year's benefit and administrative cost requirements. The rule of thumb here is that the fund ratio line should be pointing up at the end of the analysis period, and should be three or four times the funds required during the coming year.

In this model, benefits are allowed to increase at most 2.75% per year, consistent with wage improvement for lower skill workers, premiums increase at 3.8% per year to cover benefit increases and the continuing aging of the population.

Policy Options for the Hawaii Long-Term Care program

Flat Premium, Whole Population

I. SCENARIO

NH-UN5-365-xPov-xMH-Whole-0.4%

II. COVERAGE

A. Coverage parameters

2015 First year of taxes
2016 First year of benefits
10 Years required for full vesting
25 Lowest age at which premiums (taxes) are required
98 Highest age at which premiums (taxes) are required
99 Maximum intial covered age
0 = 0 for whole population and 1 for working population (applies to premium payers only)
3 Covered services (1 = HC Only, 2 = HC + ARCH Only, 3 = HC + ARCH + NH)
100% Spouses coverage percent
0 Coverage below the poverty line (0 = no premium and no benefits, 1 = no premium but receive benefits, 2 = premium + benefits)
1 = 0 for no devesting, 1 for devesting (details specified below)
24 Lower bound age for continue paying parameter
5% Percent at age above that continue paying if move out of Hawaii (linear interpolation between ages)
65 Upper bound age for continue paying parameter
95% Percent at age above that continue paying if move out of Hawaii
10 Years for complete devesting
1 Grace period before devesting begins

III. BENEFIT OPTIONS

A. Benefit Eligibility Requirement

2 = Number of ADLs
1 =Cogitive Impairment (including Alzheimer's and Senility) (0=No Cognitive, 1= With Cognitive)
0 =Definition of Failure (0=Hands On, 1=Supervision, can be any number between 0 and 1)
1 = Mental Exclusion (0=No Exclusion, 1=Exclusion) (working population model assumes =1)
0 = Medical Necessity (0=No Medical Necessity, 1= Medical Necessity)

B. Deductible

30 = Days (calendar days)

C. Lifetime Maximum

365 = Days (service days)

D. Percent of Days in which benefits are received (Note: Days below trigger are not used)

ADL=0 Cog.=Y	ADL=1 Cog.=N	ADL=1 Cog.=Y	ADL=2 Cog.=N	ADL=2 Cog.=Y	ADL=3 Cog.=N	ADL=3 Cog.=Y	
28.6%	42.9%	57.1%	71.4%	78.6%	85.7%	100.0%	This line is read by model

IV. Expense Factors

4.0% Expenses as a percent of benefits
4.0% Expenses as a percent of taxes

V. Yearly Parameters 3.80% 2.75% 2.75%

0 **1** **0** Indicate whether Payroll Tax (applies to workers only), Premium (can apply to either workers or whole population), and/or GET (applies to whole population only) (No=0), (Yes=1)

Year	HI LTC Payroll Tax Rate	Monthly Premium ($)	Maximum Daily Nursing Home Benefit	Maximum Daily Home Care Benefit	Required Fund Ratio (eoy)	GET Tax Rate
2014	0.00%	0.00	0.00	0.00	100.00%	0.00%
2015	0.40%	16.00	0.00	0.00	100.00%	0.25%
2016	0.40%	16.61	70.00	70.00	100.00%	0.25%
2017	0.40%	17.24	71.93	71.93	100.00%	0.25%
2018	0.40%	17.89	73.90	73.90	100.00%	0.25%
2019	0.40%	18.57	75.94	75.94	100.00%	0.25%
2020	0.40%	19.28	78.02	78.02	100.00%	0.25%
2021	0.40%	20.01	80.17	80.17	100.00%	0.25%
2022	0.40%	20.77	82.37	82.37	100.00%	0.25%
2023	0.40%	21.56	84.64	84.64	100.00%	0.25%
2024	0.40%	22.38	86.97	86.97	100.00%	0.25%
2025	0.40%	23.23	89.36	89.36	100.00%	0.25%
2026	0.40%	24.12	91.82	91.82	100.00%	0.25%
2027	0.40%	25.03	94.34	94.34	100.00%	0.25%
2028	0.40%	25.98	96.93	96.93	100.00%	0.25%
2029	0.40%	26.97	99.60	99.60	100.00%	0.25%
2030	0.40%	27.99	102.34	102.34	100.00%	0.25%
2031	0.40%	29.06	105.15	105.15	100.00%	0.25%
2032	0.40%	30.16	108.05	108.05	100.00%	0.25%
2033	0.40%	31.31	111.02	111.02	100.00%	0.25%
2034	0.40%	32.50	114.07	114.07	100.00%	0.25%
2035	0.40%	33.73	117.21	117.21	100.00%	0.25%
2036	0.40%	35.02	120.43	120.43	100.00%	0.25%
2037	0.40%	36.35	123.74	123.74	100.00%	0.25%
2038	0.40%	37.73	127.14	127.14	100.00%	0.25%
2039	0.40%	39.16	130.64	130.64	100.00%	0.25%

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	**Table 4. Program Income**															
2	Premium_whole population_ramped_interest															
3																
4																
5	Year	Population	Domestic Population of Contributing Age	Domestic Premium Payers	Emigrant Premium Payers	Annual Premium	Workers	Average Wage	Average Taxable Wage	Payroll Tax Rate	GET Tax Base (millions)	GET Tax for LTC Program	Premiums (millions)	Payroll Tax (millions)	GET Tax (millions)	PROGRAM INCOME (millions)
6																
7	2015	1,393,860	968,879	927,513	0	192	462,365	$42,975	$35,553	0.40%	$72,907	0.25%	$178.1	$0.0	$0.0	$178.1
8	2016	1,399,462	976,987	934,557	0	200	476,180	45,373	37,398	0.40%	76,796	0.25%	$186.6	$0.0	$0.0	$186.6
9	2017	1,404,895	984,489	940,951	6,244	208	492,375	47,805	39,381	0.40%	80,679	0.25%	$196.7	$0.0	$0.0	$196.7
10	2018	1,410,154	991,964	947,318	12,532	216	511,901	50,184	41,364	0.40%	84,474	0.25%	$207.3	$0.0	$0.0	$207.3
11	2019	1,415,240	998,989	953,255	18,869	225	536,493	52,373	43,235	0.40%	88,080	0.25%	$218.4	$0.0	$0.0	$218.4
12	2020	1,420,124	1,005,342	958,512	25,269	234	569,157	54,546	45,108	0.40%	91,621	0.25%	$229.8	$0.0	$0.0	$229.8
13	2021	1,424,767	1,011,022	963,143	31,763	243	608,100	56,803	47,024	0.40%	95,180	0.25%	$241.7	$0.0	$0.0	$241.7
14	2022	1,429,157	1,015,882	967,011	38,423	253	647,885	59,019	48,897	0.40%	98,715	0.25%	$254.0	$0.0	$0.0	$254.0
15	2023	1,433,269	1,020,342	970,537	45,305	263	689,160	61,279	50,766	0.40%	102,387	0.25%	$266.9	$0.0	$0.0	$266.9
16	2024	1,437,102	1,024,640	973,895	52,398	273	732,003	63,640	52,718	0.40%	106,165	0.25%	$280.5	$0.0	$0.0	$280.5
17	2025	1,440,627	1,028,639	977,012	59,737	284	776,159	66,113	54,764	0.40%	110,107	0.25%	$294.7	$0.0	$0.0	$294.7
18	2026	1,443,827	1,032,090	979,724	67,266	296	808,056	68,720	56,920	0.40%	114,243	0.25%	$309.5	$0.0	$0.0	$309.5
19	2027	1,446,689	1,035,225	982,158	74,998	307	816,095	71,467	59,192	0.40%	118,437	0.25%	$325.0	$0.0	$0.0	$325.0
20	2028	1,449,202	1,038,384	984,643	82,790	320	819,335	74,336	61,564	0.40%	122,725	0.25%	$341.3	$0.0	$0.0	$341.3
21	2029	1,451,358	1,041,176	986,786	90,556	332	822,731	77,315	64,030	0.40%	127,181	0.25%	$358.2	$0.0	$0.0	$358.2
22	2030	1,453,140	1,043,423	988,465	98,324	346	825,692	80,408	66,590	0.40%	131,788	0.25%	$375.8	$0.0	$0.0	$375.8
23	2031	1,454,530	1,045,278	989,880	105,992	360	827,443	83,619	69,247	0.40%	136,576	0.25%	$394.1	$0.0	$0.0	$394.1
24	2032	1,455,523	1,046,832	991,075	113,589	374	828,229	86,961	72,011	0.40%	141,545	0.25%	$413.1	$0.0	$0.0	$413.1
25	2033	1,456,108	1,048,042	991,988	121,095	389	828,477	90,434	74,886	0.40%	146,775	0.25%	$432.9	$0.0	$0.0	$432.9
26	2034	1,456,294	1,048,897	992,508	128,460	405	828,567	94,029	77,861	0.40%	152,216	0.25%	$453.4	$0.0	$0.0	$453.4
27	2035	1,456,085	1,049,700	992,989	135,663	421	828,442	97,760	80,948	0.40%	157,920	0.25%	$474.8	$0.0	$0.0	$474.8
28	2036	1,455,491	1,050,463	993,579	142,701	438	828,024	101,622	84,143	0.40%	163,985	0.25%	$497.1	$0.0	$0.0	$497.1
29	2037	1,454,537	1,050,864	993,950	149,560	455	827,361	105,636	87,464	0.40%	170,338	0.25%	$520.3	$0.0	$0.0	$520.3
30	2038	1,453,240	1,050,900	994,065	156,257	473	826,292	109,817	90,922	0.40%	177,016	0.25%	$544.4	$0.0	$0.0	$544.4
31	2039	1,451,638	1,050,593	993,863	162,764	492	825,222	114,156	94,512	0.40%	183,922	0.25%	$569.2	$0.0	$0.0	$569.2
32	2040	1,449,747	1,049,964	993,381	169,083	512	824,382	118,670	98,246	0.40%	191,235	0.25%	$595.0	$0.0	$0.0	$595.0
33	2041	1,447,590	1,048,977	992,598	175,215	532	823,310	123,359	102,125	0.40%	199,034	0.25%	$621.6	$0.0	$0.0	$621.6
34	2042	1,445,204	1,047,641	991,462	181,081	554	822,017	128,229	106,152	0.40%	207,245	0.25%	$649.1	$0.0	$0.0	$649.1
35	2043	1,442,618	1,046,014	990,084	186,780	576	820,290	133,285	110,334	0.40%	215,801	0.25%	$677.6	$0.0	$0.0	$677.6
36	2044	1,439,862	1,044,204	988,481	192,310	599	818,205	138,522	114,664	0.40%	224,514	0.25%	$707.0	$0.0	$0.0	$707.0
37	2045	1,436,939	1,042,142	986,575	197,665	623	816,012	143,942	119,146	0.40%	233,526	0.25%	$737.5	$0.0	$0.0	$737.5
38	2046	1,433,903	1,039,816	984,424	202,841	648	814,099	149,566	123,796	0.40%	243,186	0.25%	$768.9	$0.0	$0.0	$768.9
39	2047	1,430,776	1,037,357	982,131	207,838	674	812,603	155,410	128,627	0.40%	253,515	0.25%	$801.5	$0.0	$0.0	$801.5
40	2048	1,427,568	1,034,753	979,729	212,656	700	811,175	161,489	133,652	0.40%	264,424	0.25%	$835.3	$0.0	$0.0	$835.3
41	2049	1,424,322	1,032,060	977,251	217,299	729	810,065	167,809	138,876	0.40%	275,761	0.25%	$870.2	$0.0	$0.0	$870.2
42	2050	1,421,046	1,029,317	974,684	221,769	758	809,499	174,370	144,300	0.42%	287,630	0.25%	$906.5	$0.0	$0.0	$906.5
43	2051	1,417,757	1,026,471	971,969	226,066	788	808,682	181,186	149,933	0.42%	300,025	0.25%	$944.0	$0.0	$0.0	$944.0
44	2052	1,414,490	1,023,608	969,192	230,195	819	807,557	188,274	155,793	0.42%	312,790	0.25%	$982.9	$0.0	$0.0	$982.9
45	2053	1,411,243	1,020,757	966,408	234,156	852	806,567	195,640	161,880	0.43%	326,126	0.25%	$1,023.2	$0.0	$0.0	$1,023.2
46	2054	1,408,042	1,017,920	963,571	237,953	886	805,341	203,278	168,194	0.43%	339,794	0.25%	$1,065.0	$0.0	$0.0	$1,065.0
47	2055	1,404,897	1,015,159	960,719	241,585	922	803,867	211,193	174,733	0.43%	353,784	0.25%	$1,108.3	$0.0	$0.0	$1,108.3
48	2056	1,401,814	1,012,483	957,985	245,055	959	802,223	219,408	181,521	0.43%	368,326	0.25%	$1,153.3	$0.0	$0.0	$1,153.3
49	2057	1,398,811	1,009,917	955,389	248,365	997	800,304	227,953	188,581	0.43%	383,381	0.25%	$1,200.2	$0.0	$0.0	$1,200.2
50	2058	1,395,892	1,007,418	952,846	251,514	1,037	798,439	236,845	195,926	0.43%	399,120	0.25%	$1,248.8	$0.0	$0.0	$1,248.8
51	2059	1,393,090	1,005,075	950,476	254,506	1,078	796,815	246,088	203,564	0.43%	415,549	0.25%	$1,299.4	$0.0	$0.0	$1,299.4
52	2060	1,390,390	1,002,944	948,348	257,348	1,122	795,319	255,686	211,494	0.43%	432,549	0.25%	$1,352.2	$0.0	$0.0	$1,352.2
53	2061	1,387,792	1,000,949	946,389	260,041	1,166	793,587	265,655	219,728	0.43%	450,052	0.25%	$1,407.1	$0.0	$0.0	$1,407.1
54	2062	1,385,304	999,080	944,596	262,594	1,213	791,682	276,005	228,277	0.43%	468,061	0.25%	$1,464.3	$0.0	$0.0	$1,464.3
55	2063	1,382,918	997,323	942,919	265,010	1,262	789,956	286,747	237,150	0.43%	486,703	0.25%	$1,523.9	$0.0	$0.0	$1,523.9
56	2064	1,380,645	995,763	941,426	267,282	1,312	788,159	297,890	246,354	0.43%	505,710	0.25%	$1,585.8	$0.0	$0.0	$1,585.8
57	2065	1,378,459	994,410	940,141	269,417	1,364	786,147	309,448	255,900	0.43%	525,020	0.25%	$1,650.4	$0.0	$0.0	$1,650.4
58	2066	1,376,358	993,198	939,023	271,413	1,419	784,266	321,457	265,816	0.43%	545,330	0.25%	$1,717.7	$0.0	$0.0	$1,717.7
59	2067	1,374,328	992,075	938,005	273,271	1,476	782,531	333,938	276,122	0.43%	566,686	0.25%	$1,787.6	$0.0	$0.0	$1,787.6
60	2068	1,372,350	990,923	936,949	274,990	1,535	780,776	346,914	286,837	0.43%	588,818	0.25%	$1,860.2	$0.0	$0.0	$1,860.2
61	2069	1,370,436	989,841	935,966	276,576	1,596	779,205	360,414	297,984	0.43%	612,030	0.25%	$1,935.5	$0.0	$0.0	$1,935.5
62	2070	1,368,550	988,947	935,168	278,033	1,660	778,123	374,462	309,582	0.43%	636,539	0.25%	$2,014.0	$0.0	$0.0	$2,014.0
63	2071	1,366,671	988,178	934,483	279,368	1,727	777,469	389,074	321,647	0.43%	662,392	0.25%	$2,095.7	$0.0	$0.0	$2,095.7
64	2072	1,364,788	987,426	933,810	280,590	1,796	777,046	404,260	334,185	0.43%	689,775	0.25%	$2,180.5	$0.0	$0.0	$2,180.5
65	2073	1,362,885	986,585	933,044	281,703	1,867	776,662	420,046	347,218	0.43%	718,443	0.25%	$2,268.4	$0.0	$0.0	$2,268.4
66	2074	1,360,963	985,698	932,225	282,716	1,942	776,254	436,460	360,769	0.43%	748,277	0.25%	$2,359.5	$0.0	$0.0	$2,359.5
67	2075	1,358,988	984,717	931,285	283,642	2,020	775,805	453,520	374,853	0.43%	779,394	0.25%	$2,453.9	$0.0	$0.0	$2,453.9
68	2076	1,356,964	983,586	930,166	284,482	2,101	775,345	471,271	389,507	0.43%	812,069	0.25%	$2,551.4	$0.0	$0.0	$2,551.4
69	2077	1,354,891	982,384	928,974	285,248	2,185	774,849	489,739	404,754	0.43%	846,123	0.25%	$2,652.6	$0.0	$0.0	$2,652.6
70	2078	1,352,744	981,000	927,610	285,949	2,272	774,111	508,948	420,610	0.43%	881,291	0.25%	$2,757.2	$0.0	$0.0	$2,757.2
71	2079	1,350,556	979,472	926,109	286,594	2,363	773,269	528,932	437,108	0.43%	917,994	0.25%	$2,865.4	$0.0	$0.0	$2,865.4
72	2080	1,348,308	977,879	924,539	287,185	2,457	772,468	549,718	454,268	0.43%	956,466	0.25%	$2,977.6	$0.0	$0.0	$2,977.6
73	2081	1,346,011	976,214	922,909	287,730	2,556	771,634	571,329	472,107	0.43%	996,557	0.25%	$3,094.0	$0.0	$0.0	$3,094.0
74	2082	1,343,673	974,508	921,249	288,238	2,658	770,716	593,786	490,647	0.43%	1,038,205	0.25%	$3,214.7	$0.0	$0.0	$3,214.7
75	2083	1,341,305	972,763	919,547	288,718	2,764	769,714	617,138	509,923	0.43%	1,081,484	0.25%	$3,339.9	$0.0	$0.0	$3,339.9
76	2084	1,338,917	970,962	917,788	289,175	2,875	768,608	641,429	529,974	0.43%	1,126,461	0.25%	$3,469.7	$0.0	$0.0	$3,469.7
77	2085	1,336,528	969,118	915,992	289,616	2,990	767,326	666,696	550,832	0.43%	1,172,831	0.25%	$3,604.5	$0.0	$0.0	$3,604.5
78	2086	1,334,146	967,262	914,185	290,041	3,109	765,874	692,950	572,502	0.43%	1,220,528	0.25%	$3,744.4	$0.0	$0.0	$3,744.4
79	2087	1,331,785	965,439	912,409	290,454	3,234	764,390	720,236	595,025	0.43%	1,270,054	0.25%	$3,889.7	$0.0	$0.0	$3,889.7
80	2088	1,329,444	963,571	910,597	290,858	3,363	762,949	748,660	618,487	0.43%	1,322,116	0.25%	$4,040.6	$0.0	$0.0	$4,040.6

Table 4B. Summary of Home Care Benefits

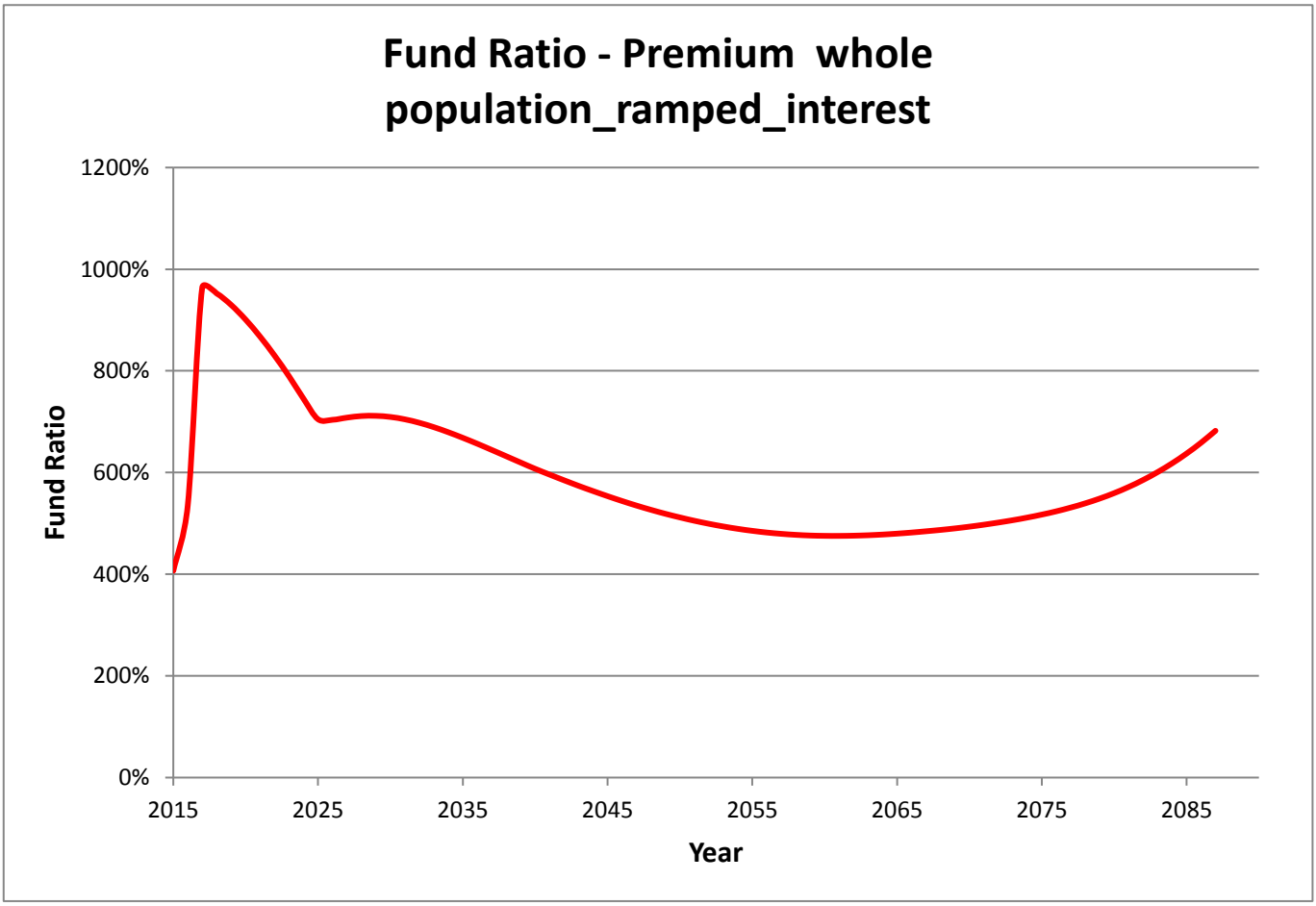
Premium, whole population, ramped, interest

	TOTAL					MALE			FEMALE			
Year	Total Number of HC Beneficiaries	Average Benefit Days Per Year	Daily Benefit	Average Yearly Benefit	Benefit Payments (millions)	Total Number of HC Beneficiaries	Average Yearly Benefit	Benefit Payments (millions)	Total Number of HC Beneficiaries	Average Yearly Benefit	Benefit Payments (millions)	Maximum Daily Benefit
2015	$0	$0	$0	$0	$0.0	$0	$0	$0.0	$0	$0	$0.0	$0
2016	19.694	161	6	1.023	20.1	7.603	975	$7.4	12.091	1.053	$12.7	70.00
2017	20.275	117	13	1.517	30.8	7.827	1.437	$11.2	12.447	1.567	$19.5	71.93
2018	21.025	73	20	1.435	30.2	8.088	1.340	$10.8	12.937	1.493	$19.3	73.90
2019	21.545	73	28	1.974	42.5	8.317	1.841	$15.3	13.227	2.058	$27.2	75.94
2020	22.087	73	35	2.543	56.2	8.562	2.369	$20.3	13.525	2.654	$35.9	78.02
2021	22.653	73	44	3.142	71.2	8.822	2.926	$25.8	13.832	3.280	$45.4	80.17
2022	23.254	73	52	3.773	87.7	9.098	3.515	$32.0	14.155	3.940	$55.8	82.37
2023	23.892	73	61	4.438	106.0	9.394	4.138	$38.9	14.498	4.632	$67.2	84.64
2024	24.579	73	71	5.139	126.3	9.711	4.797	$46.6	14.868	5.362	$79.7	86.97
2025	25.318	73	81	5.880	148.9	10.050	5.498	$55.3	15.268	6.130	$93.6	89.36
2026	26.110	73	90	6.584	171.9	10.408	6.191	$64.4	15.702	6.844	$107.5	91.82
2027	26.958	74	93	6.899	186.0	10.786	6.551	$70.7	16.172	7.132	$115.3	94.34
2028	27.859	74	96	7.138	198.9	11.183	6.785	$75.9	16.676	7.375	$123.0	96.93
2029	28.814	74	99	7.372	212.4	11.595	7.023	$81.4	17.219	7.606	$131.0	99.60
2030	29.825	75	102	7.617	227.2	12.018	7.273	$87.4	17.806	7.849	$139.8	102.34
2031	30.873	75	104	7.877	243.2	12.450	7.536	$93.8	18.423	8.108	$149.4	105.15
2032	31.960	76	107	8.153	260.6	12.887	7.811	$100.7	19.074	8.385	$159.9	108.05
2033	33.072	76	110	8.443	279.2	13.330	8.099	$108.0	19.742	8.676	$171.3	111.02
2034	34.197	77	113	8.748	299.2	13.768	8.399	$115.6	20.429	8.983	$183.5	114.07
2035	35.320	77	117	9.067	320.2	14.197	8.709	$123.6	21.123	9.307	$196.6	117.21
2036	36.429	78	120	9.398	342.4	14.613	9.029	$131.9	21.816	9.645	$210.4	120.43
2037	37.513	79	123	9.742	365.4	15.013	9.359	$140.5	22.500	9.997	$224.9	123.74
2038	38.568	80	127	10.097	389.4	15.394	9.697	$149.3	23.173	10.362	$240.1	127.14
2039	39.578	80	130	10.462	414.1	15.755	10.043	$158.2	23.824	10.739	$255.8	130.64
2040	40.536	81	134	10.838	439.3	16.091	10.397	$167.3	24.445	11.128	$272.0	134.23
2041	41.437	81	137	11.223	465.0	16.404	10.759	$176.5	25.033	11.526	$288.5	137.93
2042	42.249	82	141	11.611	490.5	16.688	11.126	$185.7	25.561	11.928	$304.9	141.72
2043	43.003	83	145	12.008	516.4	16.949	11.500	$194.9	26.054	12.339	$321.5	145.62
2044	43.698	83	149	12.414	542.5	17.187	11.881	$204.2	26.511	12.760	$338.3	149.62
2045	44.325	84	153	12.827	568.6	17.401	12.269	$213.5	26.924	13.188	$355.1	153.73
2046	44.896	84	157	13.248	594.8	17.596	12.664	$222.8	27.300	13.625	$372.0	157.96
2047	45.412	84	162	13.679	621.2	17.771	13.067	$232.2	27.640	14.072	$388.9	162.31
2048	45.865	85	166	14.115	647.4	17.927	13.477	$241.6	27.938	14.525	$405.8	166.77
2049	46.268	85	171	14.560	673.6	18.066	13.893	$251.0	28.202	14.986	$422.6	171.36
2050	46.620	85	175	15.010	699.8	18.188	14.317	$260.4	28.431	15.454	$439.4	176.07
2051	46.930	86	180	15.467	725.9	18.297	14.745	$269.8	28.633	15.928	$456.1	180.91
2052	47.210	86	185	15.933	752.2	18.396	15.183	$279.3	28.814	16.411	$472.9	185.88
2053	47.456	86	190	16.405	778.5	18.487	15.627	$288.9	28.969	16.901	$489.6	191.00
2054	47.676	86	195	16.884	804.9	18.572	16.077	$298.5	29.104	17.399	$506.4	196.25
2055	47.875	86	201	17.370	831.6	18.653	16.534	$308.4	29.221	17.905	$523.2	201.65
2056	48.055	86	206	17.865	858.5	18.733	16.997	$318.4	29.321	18.419	$540.1	207.19
2057	48.224	86	212	18.369	885.8	18.815	17.469	$328.7	29.409	18.944	$557.1	212.89
2058	48.382	86	218	18.881	913.5	18.899	17.950	$339.2	29.483	19.478	$574.3	218.74
2059	48.547	86	224	19.403	942.0	18.992	18.440	$350.2	29.555	20.022	$591.7	224.76
2060	48.711	86	230	19.935	971.1	19.091	18.940	$361.6	29.621	20.577	$609.5	230.94
2061	48.880	86	236	20.478	1,000.9	19.198	19.451	$373.4	29.682	21.142	$627.5	237.29
2062	49.065	86	243	21.035	1,032.1	19.318	19.977	$385.9	29.747	21.722	$646.2	243.82
2063	49.269	86	250	21.607	1,064.6	19.448	20.519	$399.1	29.821	22.317	$665.5	250.52
2064	49.499	86	256	22.196	1,098.7	19.593	21.079	$413.0	29.906	22.927	$685.7	257.41
2065	49.747	86	264	22.801	1,134.3	19.747	21.657	$427.7	30.000	23.553	$706.6	264.49
2066	50.017	86	271	23.424	1,171.6	19.911	22.256	$443.1	30.105	24.197	$728.5	271.76
2067	50.310	86	278	24.072	1,211.1	20.086	22.881	$459.6	30.224	24.865	$751.5	279.24
2068	50.620	86	286	24.744	1,252.6	20.267	23.531	$476.9	30.353	25.554	$775.7	286.91
2069	50.956	86	294	25.443	1,296.5	20.458	24.211	$495.3	30.498	26.270	$801.2	294.81
2070	51.301	86	302	26.168	1,342.4	20.652	24.919	$514.6	30.649	27.009	$827.8	302.91
2071	51.649	87	310	26.917	1,390.2	20.847	25.654	$534.8	30.802	27.771	$855.4	311.24
2072	52.000	87	319	27.695	1,440.1	21.040	26.420	$555.9	30.959	28.561	$884.2	319.80
2073	52.350	87	327	28.504	1,492.2	21.229	27.217	$577.8	31.122	29.382	$914.4	328.60
2074	52.703	87	336	29.347	1,546.6	21.412	28.047	$600.5	31.290	30.236	$946.1	337.63
2075	53.042	87	346	30.219	1,602.9	21.587	28.908	$624.0	31.455	31.119	$978.9	346.92
2076	53.368	87	355	31.122	1,660.9	21.749	29.797	$648.0	31.620	32.033	$1,012.9	356.46
2077	53.678	88	365	32.057	1,720.8	21.899	30.718	$672.7	31.779	32.980	$1,048.1	366.26
2078	53.956	88	375	33.021	1,781.7	22.033	31.666	$697.7	31.924	33.955	$1,084.0	376.33
2079	54.213	88	385	34.015	1,844.0	22.153	32.643	$723.2	32.060	34.963	$1,120.9	386.68
2080	54.437	88	396	35.036	1,907.2	22.256	33.645	$748.8	32.181	35.998	$1,158.4	397.32
2081	54.625	88	407	36.082	1,970.9	22.343	34.670	$774.6	32.282	37.059	$1,196.3	408.24
2082	54.779	89	418	37.153	2,035.2	22.412	35.717	$800.5	32.367	38.147	$1,234.7	419.47
2083	54.901	89	430	38.250	2,100.0	22.467	36.784	$826.4	32.435	39.265	$1,273.6	431.00
2084	54.993	89	441	39.370	2,165.1	22.508	37.871	$852.4	32.485	40.408	$1,312.7	442.86
2085	55.062	89	454	40.513	2,230.7	22.542	38.979	$878.7	32.520	41.576	$1,352.0	455.03
2086	55.111	89	466	41.680	2,297.0	22.570	40.110	$905.3	32.542	42.768	$1,391.7	467.55
2087	55.147	89	479	42.871	2,364.2	22.593	41.262	$932.2	32.554	43.987	$1,432.0	480.41
2088	55.168	89	492	44.085	2,432.1	22.614	42.435	$959.6	32.555	45.231	$1,472.5	493.62

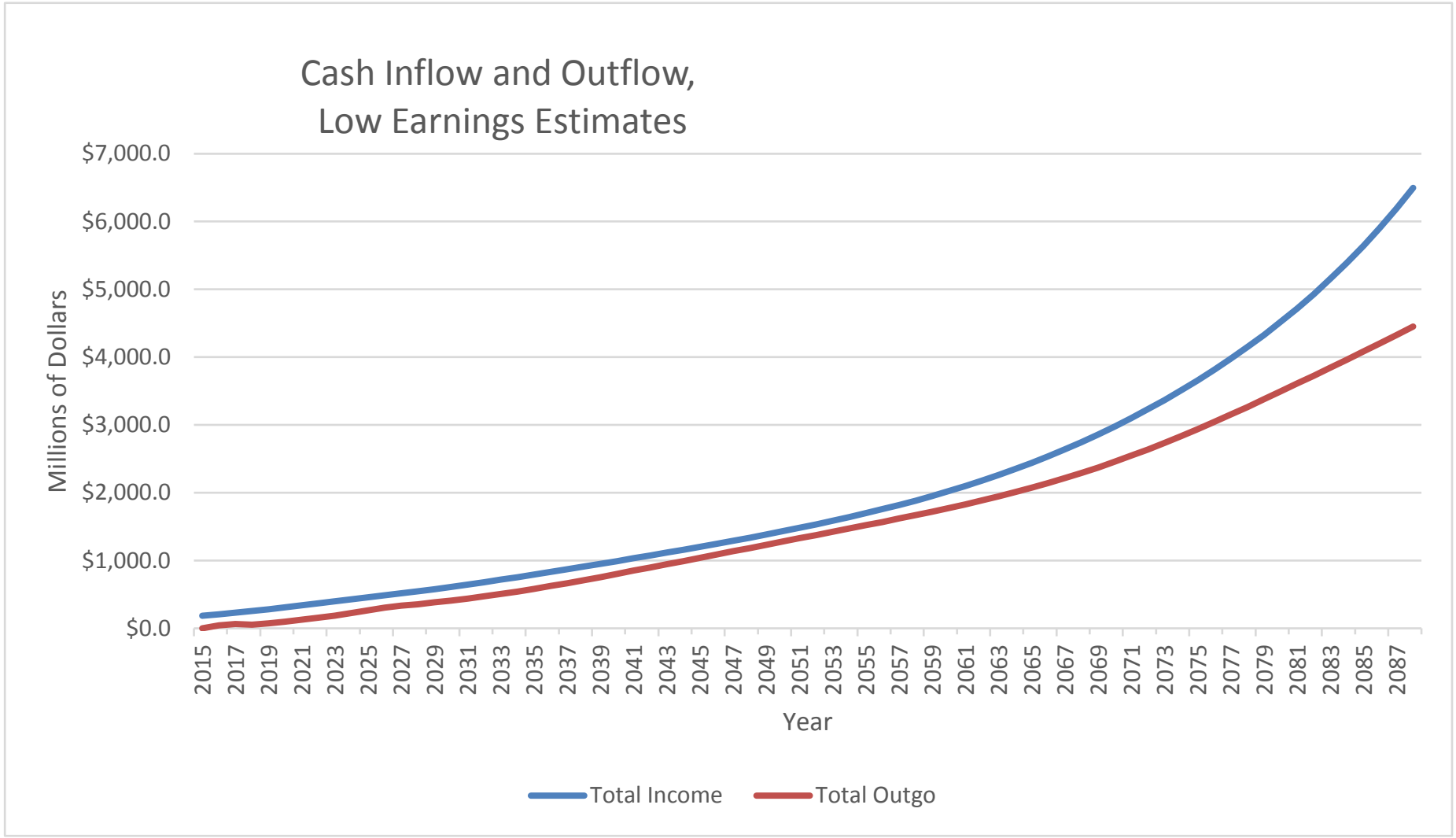
2016

age	HC Residents	Fraction Eligible	HC Prevalence Rate	PopJuly	Emigrant Contributors	PR	age	HC Residents	Fraction Eligible	HC Prevalence Rate	PopJuly	Emigrant Contributors	PR	HC Residents	Pop	PR
Total	7.603			533.822	0	1.4%	Total	12.091			539.590	0	2.2%	19.694	1.073.412	1.8%
20	0	70%	0.00000	8.678	0	0.0%	20	0	0.69997098	0.00000	7.849	0	0.0%			
21	0	70%	0.00000	9.545	0	0.0%	21	0	0.69997098	0.00000	8.709	0	0.0%			
22	0	70%	0.00000	10.322	0	0.0%	22	0	0.69997098	0.00000	9.253	0	0.0%			
23	0	70%	0.00000	10.950	0	0.0%	23	0	0.69997098	0.00000	9.457	0	0.0%			
24	0	70%	0.00000	11.380	0	0.0%	24	0	0.69997098	0.00000	9.420	0	0.0%			
25	26	70%	0.00221	11.813	0	0.0%	25	21	0.69997098	0.00213	9.800	0	0.0%			
26	27	70%	0.00222	11.990	0	0.0%	26	21	0.69997098	0.00211	10.134	0	0.0%			
27	26	70%	0.00224	11.527	0	0.0%	27	20	0.69997098	0.00212	9.618	0	0.0%			
28	25	70%	0.00226	10.917	0	0.0%	28	20	0.69997098	0.00218	9.233	0	0.0%			
29	24	70%	0.00229	10.590	0	0.0%	29	21	0.69997098	0.00229	9.253	0	0.0%			
30	24	70%	0.00232	10.307	0	0.0%	30	22	0.69997098	0.00243	9.201	0	0.0%			
31	23	70%	0.00234	9.839	0	0.0%	31	23	0.69997098	0.00256	9.017	0	0.0%			
32	22	70%	0.00237	9.383	0	0.0%	32	23	0.69997098	0.00267	8.783	0	0.0%			
33	22	70%	0.00242	9.268	0	0.0%	33	24	0.69997098	0.00272	8.693	0	0.0%			
34	23	70%	0.00249	9.294	0	0.0%	34	24	0.69997098	0.00273	8.650	0	0.0%			
35	23	70%	0.00257	9.038	0	0.0%	35	24	0.69997098	0.00275	8.582	0	0.0%			
36	24	70%	0.00264	8.907	0	0.0%	36	24	0.69997098	0.00279	8.612	0	0.0%			
37	23	70%	0.00269	8.452	0	0.0%	37	24	0.69997098	0.00286	8.300	0	0.0%			
38	22	70%	0.00273	8.029	0	0.0%	38	23	0.69997098	0.00295	7.944	0	0.0%			
39	22	70%	0.00279	8.065	0	0.0%	39	24	0.69997098	0.00308	7.874	0	0.0%			
40	23	70%	0.00290	7.828	0	0.0%	40	24	0.69997098	0.00325	7.435	0	0.0%			
41	25	71%	0.00311	7.881	0	0.0%	41	25	0.70941938	0.00350	7.254	0	0.0%			
42	26	72%	0.00339	7.620	0	0.0%	42	28	0.71886778	0.00380	7.459	0	0.0%			
43	28	73%	0.00373	7.404	0	0.0%	43	31	0.72831619	0.00414	7.503	0	0.0%			
44	32	74%	0.00415	7.804	0	0.0%	44	35	0.7377646	0.00452	7.800	0	0.0%			
45	38	75%	0.00464	8.212	0	0.0%	45	42	0.74721301	0.00494	8.590	0	0.0%			
46	45	76%	0.00518	8.784	0	0.0%	46	51	0.75666142	0.00546	9.366	0	0.0%			
47	50	77%	0.00573	8.655	0	0.0%	47	57	0.76610979	0.00607	9.312	0	0.0%			
48	51	78%	0.00624	8.208	0	0.0%	48	60	0.7755582	0.00676	8.816	0	0.0%			
49	56	79%	0.00671	8.399	0	0.0%	49	65	0.78500661	0.00752	8.647	0	0.0%			
50	62	79%	0.00713	8.672	0	0.0%	50	71	0.78500661	0.00824	8.627	0	0.0%			
51	70	79%	0.00761	9.147	0	0.0%	51	80	0.78803957	0.00900	8.908	0	0.0%			
52	76	79%	0.00815	9.309	0	0.0%	52	89	0.79107255	0.00973	9.098	0	0.0%			
53	80	79%	0.00872	9.196	0	0.0%	53	94	0.7941055	0.01044	8.983	0	0.0%			
54	86	80%	0.00928	9.295	0	0.0%	54	99	0.79713845	0.01110	8.947	0	0.0%			
55	92	80%	0.00979	9.359	0	0.0%	55	107	0.80017143	0.01170	9.142	0	0.0%			
56	100	80%	0.01029	9.725	0	0.0%	56	119	0.80320439	0.01227	9.682	0	0.0%			
57	105	81%	0.01075	9.739	0	0.0%	57	125	0.80623734	0.01280	9.764	0	0.0%			
58	106	81%	0.01116	9.506	0	0.0%	58	131	0.80927032	0.01332	9.800	0	0.0%			
59	110	81%	0.01148	9.563	0	0.0%	59	140	0.81230327	0.01389	10.049	0	0.0%			
60	112	81%	0.01175	9.522	0	0.0%	60	148	0.81230327	0.01445	10.226	0	0.0%			
61	116	82%	0.01213	9.535	0	0.0%	61	158	0.82225814	0.01530	10.296	0	0.0%			
62	118	83%	0.01258	9.374	0	0.0%	62	163	0.83221301	0.01628	10.014	0	0.0%			
63	122	84%	0.01312	9.282	0	0.0%	63	172	0.84216788	0.01740	9.871	0	0.0%			
64	125	85%	0.01375	9.105	0	0.0%	64	179	0.85212278	0.01867	9.581	0	0.0%			
65	125	86%	0.01450	8.652	0	0.0%	65	183	0.86207765	0.02015	9.077	0	0.0%			
66	133	87%	0.01546	8.597	0	0.0%	66	195	0.87203252	0.02185	8.938	0	0.0%			
67	141	88%	0.01671	8.427	0	0.0%	67	204	0.88198739	0.02383	8.551	0	0.0%			
68	148	89%	0.01827	8.073	0	0.0%	68	214	0.89194226	0.02613	8.182	0	0.0%			
69	156	90%	0.02017	7.755	0	0.0%	69	228	0.90189713	0.02874	7.943	0	0.0%			
70	151	90%	0.02221	6.820	0	0.0%	70	224	0.90189713	0.03128	7.164	0	0.0%			
71	154	91%	0.02473	6.212	0	0.0%	71	231	0.90583396	0.03416	6.775	0	0.0%			
72	169	91%	0.02768	6.101	0	0.0%	72	248	0.90993708	0.03727	6.644	0	0.0%			
73	173	91%	0.03112	5.568	0	0.0%	73	247	0.9131076	0.04060	6.074	0	0.0%			
74	171	92%	0.03502	4.883	0	0.0%	74	239	0.91684443	0.04417	5.411	0	0.0%			
75	170	92%	0.03934	4.319	0	0.0%	75	236	0.92058128	0.04800	4.916	0	0.0%			
76	177	92%	0.04410	4.018	0	0.0%	76	243	0.9243181	0.05207	4.672	0	0.0%			
77	182	93%	0.04924	3.706	0	0.0%	77	243	0.92805493	0.05631	4.306	0	0.0%			
78	182	93%	0.05473	3.318	0	0.0%	78	241	0.93179175	0.06064	3.967	0	0.0%			
79	180	94%	0.06054	2.972	0	0.0%	79	241	0.93552858	0.06494	3.707	0	0.0%			
80	178	94%	0.06638	2.685	0	0.0%	80	240	0.93552858	0.06888	3.486	0	0.0%			
81	188	94%	0.07353	2.551	0	0.0%	81	262	0.93749115	0.07627	3.431	0	0.0%			
82	196	94%	0.08171	2.405	0	0.0%	82	283	0.93945375	0.08740	3.243	0	0.0%			
83	200	94%	0.09058	2.209	0	0.0%	83	316	0.94141632	0.09975	3.165	0	0.0%			
84	204	94%	0.10016	2.036	0	0.0%	84	364	0.9433789	0.11327	3.217	0	0.0%			
85	211	95%	0.11044	1.907	0	0.0%	85	398	0.9453415	0.12795	3.108	0	0.0%			
86	219	95%	0.12135	1.806	0	0.0%	86	421	0.94730407	0.14385	2.926	0	0.0%			
87	214	95%	0.13281	1.612	0	0.0%	87	435	0.94926664	0.16105	2.701	0	0.0%			
88	205	95%	0.14473	1.418	0	0.0%	88	438	0.95122924	0.17941	2.444	0	0.0%			
89	196	95%	0.15706	1.250	0	0.0%	89	435	0.95319182	0.19876	2.186	0	0.0%			
90	181	95%	0.16937	1.070	0	0.0%	90	412	0.95319182	0.21831	1.885	0	0.0%			
91	175	95%	0.18108	966	0	0.0%	91	389	0.94890577	0.23715	1.641	0	0.0%			
92	155	94%	0.19290	805	0	0.0%	92	359	0.94461972	0.25601	1.402	0	0.0%			
93	127	94%	0.20479	620	0	0.0%	93	311	0.94033366	0.27469	1.133	0	0.0%			
94	106	94%	0.21671	488	0	0.0%	94	271	0.93604761	0.29306	924	0	0.0%			
95	83	93%	0.22862	364	0	0.0%	95	235	0.93176156	0.31112	755	0	0.0%			
96	64	93%	0.24050	268	0	0.0%	96	203	0.92747551	0.32891	617	0	0.0%			
97	46	93%	0.25345	183	0	0.0%	97	156	0.92747551	0.34805	447	0	0.0%			
98	32	93%	0.26637	121	0	0.0%	98	116	0.92747551	0.36709	317	0	0.0%			
99	0	93%	0.00000	79	0	0.0%	99	0	0.92747551	0.00000	231	0	0.0%			
100	0	93%	0	134	0	0.0%	100	0	0.92747551	0	420	0	0.0%			

Long Term Solvency Test: Ratio of Fund Balance to Year's Requirements



Flat Premium Program for the Whole Population--Tracking of Income and Outgo



Long-Term Supports and Services Financing Feasibility Analysis

Appendix D- Review of Long-Term Care Insurance and Partnership Programs

(Draft October 2014)

Omar Bird

Introduction

This report examines notions behind purchasing long-term care insurance. Many people cannot afford long-term care insurance and are forced to pay out-of-pocket for care. Others rely on Medicaid, a public assistance program that provides long-term care for those that qualify under strict income and wealth limits. Medicaid was designed to be a safety net for individuals with low income and assets and the medically indigent. However, the barriers to purchasing private insurance are increasing Medicaid expenditures and compromising the safety net. As the older population grows rapidly, it is important to consider the drastic financial, social, and policy implications of providing access to long-term care.

In addition, this report examines the existence of public-private partnerships. Initially, these programs were designed to provide a solution for financing long-term care. Though at first public-private partnerships were popular among public officials, administrators, and the general public, these programs have not met expectations. At best, the impact of public-private partnership programs has been modest for wealthier segments of the population and has had virtually no impact on the society at large. Currently, 43 states have implemented public-private partnerships, but only 9 percent of all long-term care insurance policies are partnerships. This report will address issues associated with the use of public-private partnerships.

Finally this report will conclude with possible suggestions for the future and how these issues relate to the state of Hawai'i. Presently, the Hawai'i Long-Term Care Commission (HLTCC) does not recommend the implementation of the partnership program and reasons are discussed. There are high expectations for the program, but overall, there are various constraints that have ineffective results for the primary target population, the middle-class. This is a direct response to the H.B. No.1 H.D.2-S.D.2. In the Bill of 2013 a direct statement is recommended to address the Medicaid or long-term care public-private partnership plan that has been adopted in other states.

Background

The United States is experiencing a long-term care (LTC) financing crisis. The systemic problems associated with long-term care insurance (LTCI) place persons in need of long-term care in a predicament of financial summersaulting and uncertainty in medical services. LTC

reform has been a concern for the United States for more than 20 years, as the baby boomer generation reaches ages 55 and above (Moses, 2005; Feder, Komisar, & Niefeld, 2000). LTCI provides limited coverage of overall LTC costs. High premiums discourage many people from purchasing private policies. Yet, for those who have LTCI and receive benefits, the insurer pays for a significant amount of the care received. Studies show that individuals who own LTCI can obtain benefits that pay between 60 and 75 percent of care at a time (AHIP, 2012).

Unlike most health services, LTC is not constructed to treat an illness or physical/cognitive condition. LTC is designed to assist with daily activities (e.g., bathing, mobility, eating) or other personal activities (e.g., shopping, household chores, cooking) (Johnson & Uccello, 2005). Since the enactment of the Health Insurance Portability and Accountability Act of 1996 (HIPAA), policyholders cannot receive benefits from their insurance packages until they need considerable assistance with at least two of the six activities of daily living (ADLs), that would last for 90 days or more, or if assistance is needed for consistent supervision over chronic cognitive disabilities. Presently, the United States faces a growing financial and health crisis as 77 million baby boomers reach near elderly and elderly ages (Moses, 2005). In 2011, the older baby boomer turned 65 (Hagen, 2013).

Similar to other medical insurance policies, under private LTCI, the insurance company provides needed benefits in exchange for monthly premiums paid by the insured. Over the past 20 years, the private LTCI market has grown considerably, but only a small pool of the elderly purchase private insurance (Brown & Finkelstein, 2008, 2009). Despite its steady growth, only about 11 percent of LTC spending is funded by private insurance purchased by the elderly (Hagen, 2013). Among all United States adults that number is even lower. Only 3 percent of adults had LTC insurance in 2011 (Hagen, 2013). The majority of the younger population is hesitant to buy LTCI decades in advance (AHIP, 2012). People who do not buy LTC insurance are more likely to overestimate the cost and their risk in needing services (Hagen, 2013; AHIP, 2012).

In 2010, 7 to 9 million elderly people purchased LTCI covering a wide array of services (e.g., nursing homes, assisted living facilities and in the home) (Ujvari, 2012). Across the United States, insurance packages that limit a beneficiary to only one form of service, nursing home or other alternative institutions are virtually nonexistent. In the past five years, insurance packages have been reformed to allow policyholders to spread their benefits across multiple services (Ujvari, 2012; AHIP, 2012).

The purchasing rate of LTCI does not rise alongside life expectancy or quantity of elders residing in the United States (Hagen, 2013). The quantity of people age 85 or older will grow much faster over the coming decades (Hagen, 2013. By 2050, 4 percent of the U.S. population will be 85 or older, that is 10 times higher than it was in 1950 (Hagen, 2013). Medicaid expenditures are increasing for various reasons and the near-elderly and elderly populations are hesitant to buy LTCI. Since the decision to buy LTCI is usually made when the need is not of highest priority (before risk), purchasers make potentially risky and uncertain decisions (Brown & Finkelstein, 2009). Brown and Finkelstein (2009) states, on average, utilization of LTC begins 15 years after purchase.

Challenges to and Implications of Purchasing Insurance

Three main themes in the literature address the question: *why aren't people purchasing long term care insurance?* These include (1) the tendency of people to believe they may rely on Medicare for LTC, (2) means of receiving LTC through Medicaid, caregiving, and other options which people use as a substitute for LTCI, and (3) misperception of risk and lack of public knowledge about LTCI.

More recently, there has been public expression of distrust over various forms of private LTCI, as represented in policyholder lawsuits against LTC insurers arguing fraud or breach of contract (Ball, Ashinoff, & Gugig, 2009). No one purchasing private insurance would expect that their rates would increase if their policy says so, the notion of a "Filed-Rate Doctrine" is a policy that insurance companies use to avoid direct communication between the insurer and the policyholder. There are challenges to the Filed Doctrine that creates unreasonable reliance on side of the policyholder. The Filed-Rate Doctrine or Filed Tariff Doctrine is defined as:

> "a common law rule which provides that any entity that is required to file tariffs governing the rates, terms, and conditions of service must adhere strictly to those terms. This principle forbids a regulated entity from charging a rate other than the one on file with the appropriate federal regulatory authority" Retrieved October 2nd, 2014 (http://definitions.uslegal.com/f/filed-rate-doctrine/).

Considering that insurance entities are obliged to adhere to these rules, they often hide behind this policy in order to separate themselves from public discussion. On the side of the insurance company, they argue that if there were no Medicaid program then more people would purchase private insurance. However, the question should be, should anyone ever buy LTC insurance under the circumstances that rates are not fixed and purchasing this form of insurance that is infrequently used; this could put many citizens in a financial bind. Presently, the emergence of private insurance is not an experimental product. During the 1970's this may have been the case, but now through litigation and further research we are able to understand the insurance market more clearly.

There has been ample Congressional involvement in the wake of increased private LTCI litigation (Ball, Ashinoff, & Gugig 2009). During a Congressional hearing in July 2008, Chairman Dingell (D-MI) stated:

> "This hearing will demonstrate that more Americans should consider [LTC] protection if they can afford to do so and qualify for coverage. However, we must ensure that they are protected from unscrupulous and unethical conduct by some insurance companies and their salesmen" (Ball, Ashinoff, and Gugig 2009).

Unethical conduct on part of the insurance company has lead to policyholders filing complaints of fraud and breach of contract. Each case has asserted that fraud and/or other claims that allow for the prospective nuisance of punitive damages (Ball, Ashinoff, & Gugig, 2009). When policyholders are suing insurance companies general plaintiff theories are as follows: (1) insurers knowingly sold policies at "low ball" prices, (2) policies were

"experimental," (3) the "guaranteed renewable" language was ultimately meaningless, and (4) the "rate spiral" or "death spiral" that leads to more frequent rate increases (Ball, Ashinoff, & Gugig, 2009). As we head into the future to address issues with premium increases and pricing of entire policies more attention needs to be paid to state and federal regulation on private LTCI (Ball, Ashinoff, & Gugig, 2009). Regulations in each state can vary, which adds another burden for policyholders to understand pricing policies for insurance companies across state lines. Regulators are changing their policies rather quickly under the pressure from consumers, this is an evolving process in the insurance market and consumers need to be aware of their policies. For example, in most states including California, Florida, and New York, regulators need to approve LTC rate increase requests. In these states premium rate increases cannot occur without direct approval from the official state regulator (Ball, Ashinoff, & Gugig, 2009), whereas in states such as Colorado, Idaho, and Missouri, regulators do not have the legitimate authority to approve or disapprove of rate increase requests (Ball, Ashinoff, & Gugig, 2009). Yet, these regulators may review rate increases with requests for compliance with regulations and may neglect to accept a filing (Ball, Ashinoff, & Gugig, 2009). Furthermore, in state such as Delaware, Pennsylvania, and Texas, rate increases are acknowledged as approved unless officially disapproved by the state regulator within a specific number of days. Finally, in the state of Alaska there is no rate increase regulations exist nor are regulatory filings are required to implement a rate increase (Ball, Ashinoff, & Gugig, 2009). It is quite obvious how these uneven policies can cause confusion and problems within the LTC insurance market across state lines. One way to solve this issue is to have a larger presence of federal oversight in the insurance market. An additional way to address these concerns is to hold insurance companies more accountable in their language within their contracts when relaying information to their consumers.

Some general theories when the policyholder is the defendent are as follows: (1) unambiguous contract language permitting class-wide rate increases, (2) the Filed-Rate Doctrine, (3) statue of limitations, and (4) lack of reasonable reliance on claimed promises that rates would not increase in light of express policy language (Ball, Ashinoff, and Gugig 2009). Claims handling litigation is likely to increase as the private LTCI expands and consumers are steadily trying to figure out the entirety of their insurance plans (Ball, Ashinoff, & Gugig, 2009). The National Association of Insurance Commissioners (NAIC) is considering implementing a required independent external review when LTC benefits are denied; the state of Iowa presently has an independent review requirement (Ball, Ashinoff, & Gugig, 2009). Insurance companies need to disclose the potential for rate increases early and often. This is one step in a long process of insurance oversight and an attempt to address other issue related to purchasing insurance.

Reliance on Medicare and Medicaid

Medicare and Medicaid are both publically funded programs. Medicaid provides LTC for people who cannot afford LTCI or to pay out-of-pocket for care. Medicare does not provide LTC but instead provides LTC health benefits for a short period of time under limited circumstances (Ng, Harrington, & Kitchener, 2010). Unlike private insurance companies, Medicaid and

Medicare do not provide full asset protection in the event of a catastrophic medical episode (Feder, Komisar, & Niefield, 2000; Johnson, 2008; Calmus, 2013).

Though Medicare and Medigap (Medicare supplement) provide very limited LTCI, people believe they may rely on Medicare for LTC (Johnson 2008). A survey conducted by the AARP in 2002 found that among adults' ages 45 and older, 55 percent believed that Medicare covered extended nursing home visits for age related or chronic conditions, and 41 percent believed that Medigap (Medicare Supplement) also insured LTC, which it does not (AARP, 2002). Through skilled nursing facilities (SNF) and home benefits, Medicare only provides short-term rehabilitative care for hospital stays and outpatient services (Feder et al., 2000). Medicare only covers a persons first one hundred days in a nursing home after a minimum three day hospitalization and very limited home health benefits (Feder et al., 2000; Johnson, 2008).

There are numerous LTC options that people use as a substitute to LTCI: self-insuring, informal care (e.g., provided by a spouse or children), and Medicaid (for individuals who have low income). Public funds, like Medicaid for those eligible and informal care decrease demand for insurance (Johnson & Uccello, 2005). Fourteen percent of seniors have Medicaid and 19 percent of seniors with LTC needs rely on Medicaid to provide needed services (Cramer & Jensen, 2006).

Medicaid covers the cost of services for elderly people who cannot afford to pay for long-term care out-of-pocket or through private insurance (Brown & Finkelstein, 2009; Mic, 2009; Donlan 2012). Medicaid is strictly responsible for people who have low incomes, or who *spend down* their assets to receive medical services under the program. Spending down refers to the practice of depleting ones assets and income to as low as $2000 (depending on eligibility requirements which vary by state) on medical costs to become Medicaid eligible (Wiener et al., 2013). People who spend down to Medicaid eligibility are often of low income and have significantly fewer assets than people who do not (Wiener et al., 2013).

Spending down assets draws people into a world of financial uncertainty (Brown & Finkelstein, 2007). Some elderly populations who cannot afford LTCI must impoverish themselves in order to become Medicaid eligible. The Medicaid spend-down effect can have serious financial consequences for individuals forced to deplete their income and assets. The occurrence of an unexpected event (e.g., sudden illness, employed to retiree, restricted income) can quickly put a near elderly or elderly person in a vulnerable financial and/or health situation. Depending on circumstances of the individual, one accident can plunge a vulnerable individual into a severe downward financial spiral (Brown & Finkelstein, 2007). Spending down to Medicaid eligibility may result in unexpected events as people relinquish their assets to become eligible for an insurance plan they may or may not use (Brown & Finkelstein, 2007). Many middle-class individuals, who spend their lives saving income and assets to build a financial foundation to bequeath to their children, find themselves in an economic whirlwind (Brown & Finkelstein 2009; Lin & Prince, 2013; Tennyson & Yang, 2014).

Brown and Finkelstein (2009) emphasize how the scarcity of purchasing private insurance packages puts a heavy burden on federal and state budgets. Some local governments are spending more money on Medicaid expenditures than K-12 education (Brown & Finkelstein,

2009). Because many people cannot afford private insurance packages, there has been an increase in Medicaid expenditures, Medicaid beneficiary asset depletion, lapsed policies and limits on funds and services that Medicaid can provide to a growing aging population.

Navigating the LTCI Market

There is uncertainty surrounding the need for LTC and purchasing LTCI. It is important to note the effect of nontraditional or irrational patterns of behavior on insurance demand. Misconception of probabilities, myopia, and information processing limitations are other cognitive related barriers to purchasing (Tennyson and Yang 2014). People may experience psychological impairments in older age that lead to incoherence, which makes navigating the healthcare system difficult (Tennyson and Yang 2014). Some individuals may feel highly optimistic of their physical and cognitive capabilities heading into the future (Tennyson and Yang 2014). In addition, people's uncertainty regarding how premiums are determined and the high cost associated with private LTCI may prevent them from purchasing coverage (Cramer and Jensen 2006). Does the increased likelihood of purchasing insurance have more to do with increased awareness and knowledge of risks and insurance or is there an emotional response to utilization of informal care? Future research needs to address these issues to provide better understanding of other factors in LTCI purchasing.

High premiums are not the only problem associated with the LTCI market. Other significant factors in LTCI purchasing pose threats to acquiring the proper insurance package. Elderly persons, who may not be technologically savvy, are struggling with cognitive and/or physical impairments, and/or misconceptions about their own state of health and necessity for LTC services, may delay purchase of insurance. Cramer and Jensen (2006) consider that psychosocial factors and macro level factors influence the low volume of LTCI purchasing while controlling for price and demand for insurance coverage. The demand for coverage is important for nonelderly persons and elderly persons alike.

The health care environment is an unstable and changing space to traverse. Finkelstein and McGarry (2006) examine this issue more closely and suggest that public information on LTCI is lacking, generally inaccurate, and inconsistent due to poor administration. There is growing concern about the overwhelming amount of information and high cost of obtaining accurate information about LTCI (Finkelstein & McGarry, 2006). In addition to coverage being expensive, the purchasing system is not consistently accessible to the elderly (Jensen 1998; Johnny & Uccello, 2005; Ujvari, 2012).

Tennyson and Yang (2014) explore the relationship between earlier life experiences (knowledge, informal care, risk perception) and insurance demand. Their study assessed insurance demand reactions across all types of consumers. Information on respondents' includes life histories of work, family, health leisure and measures of demand for LTCI (Tennyson & Yang, 2014). They found that various behaviors affect perception and insurance demand. Lifetime risks vary for different people and people tend to have low probability of realization for needing LTCI early in life (Tennyson & Yang, 2014). In addition, upon the realization of the need for LTC, costs are high (Tennyson & Yang, 2014).

Is LTCI a Luxury Product?

More wealthy segments of the population are purchasing LTCI (Lin & Prince, 2003). Purchasers of private LTCI are overwhelming upper class wealthy individuals who can afford insurance benefits and services outside of Medicaid. According to a 2012 study conducted by the American Health Insurance Plans foundation, 57 percent of people who make over $75,000 have purchased private insurance and 79 percent of buyers who have over $100,000 in liquid assets also have private LTCI (AHIP, 2012). Among individuals who fall into these categories, 69 percent have college degrees (AHIP, 2012). In contrast, non-buyers tend to have lower assets, lower income, and a lower number of college graduates (AHIP 2012, **see Figure 1**). Affording LTCI remains a concern for households in the middle income and asset bracket that desire quality LTC coverage at a reasonable price (AHIP, 2012; Meiners, 2009).

Considering the expenses associated with LTCI, the risk pool of people who have coverage tends to be small (Merlis, 2003; Brown & Finkelstein, 2008). On an individual basis, high insurance demand does not correlate with high LTC utilization. In fact, more educated and affluent members in society tend to utilize LTC services the least, yet these consumers purchase private insurance the most (Brown & Finkelstein, 2008; AHIP, 2012; Hagen, 2013). Affluent members of society purchase some form of private insurance as an investment that may be used to protect their estates in the event of a catastrophic medical episode or an extensive nursing home stay (Moses, 2001; Moses, 2008).

There are advantages and disadvantages to promoting purchase of private insurance. Supporters of LTCI promotion claim that increased coverage rates will reduce Medicaid expenditures on the federal and state level while protecting policyholders against potential financial loses in spending down to Medicaid eligible and/or nursing home stays (Merlis, 2003). In contrast, adversaries contend that initiatives such as tax incentives or any other new tax expenditure may only attract affluent members of society because they are capable of buying large comprehensive insurance packages. Thus, the small market for private insurance and the decrease in new policies per year since 1999 would suggest that LTCI is becoming a niche product (Merlis, 2003).

Figure 1- Socio-Demographic Characteristics of Individual Long-Term Care Insurance Buyers, Non Buyers, and the General Population Age 50 and Older, 2010

Socio-Demographic Characteristics	Buyers	Non-Buyers	General Population Age 50 and older
Average Age	59	67	64
Under 50	13%	2%	—
50-54	15	6	23%
55-64	47	38	36
65-69	17	14	12
70-74	5	15	9
75 and Older	3	25	20
Gender			
Male	46%	44%	46%
Female	54	56	54
Marital Status			
Never Married	8%	8%	8%
Married	69	57	61
Divorced/Separated	11	16	17
Widowed	9	18	15
Domestic Partner	3	1	—
Income Status			
Less than $20,000	2%	13%	12%
$20,000-$24,999	3	11	5
$25,000-$34,999	7	15	10
$35,000-$49,999	11	15	14
$50,000-$74,999	20	22	19
$75,000 and Over	57	24	40
Total Liquid Assets			
Less than $20,000	5%	28%	37%
$20,000-$29,999	3	7	7
$30,000-$49,999	4	9	—
$50,000-$74,999	6	7	7
$75,000-$99,999	3	5	5
$100,000 and Over	79	44	44
Education Level			
Less than High School	1%	4%	16%
High School Graduate	7	21	31
Post High School	21	32	27
College Graduate	71	43	26
Someone in Household Employed	69%	37%	51%

Sources: LifePlans, Inc. analysis of AHIP 2010 buyer and non-buyer surveys (based on sample size of 1,493 buyers and 408 non-buyers) and the following U.S. Census Bureau documents: "Annual Estimates of the Resident Population by Sex and Five-Year Age Groups for the United States: April 1, 2000 to July 1, 2009"; "2009 American Community Survey, Sex by Marital Status by Age for the Population 15 Years and Older"; "Current Population Survey, 2010 Annual Social and Economic Supplement"; "2009 American Community Survey, Sex by Age by Educational Attainment for the Population 18 Years and Older"; "2009 American Community Survey, Sex by Age by Employment Status for the Population 16 Years and Older." Notes: Data for income, education, and employment are based on people age 45 and older. Data for liquid assets are based on 500 surveyed individuals from the general population age 50 and older. Average age for 2010 buyers was based on analysis of 8,099 individual long-term care insurance policies.

(AHIP, 2012, p.15)

Current State of Medicaid and Medicare on Long-Term Care Insurance

Presently, the existence of Medicaid acts a safety net for individuals who are not financially able to pay for LTC services on their own accord. However, in recent decades, Medicaid estate planning, by which individuals artificially move their assets around in order to become Medicaid eligible without eliminating nearly all their assets, has put pressure on

Medicaid. As Medicaid takes up more consumers who employ this method of gaining eligibility, the public program experiences financial strain to provide adequate services to those in need. Additionally, the mere existence of Medicaid is an incentive to not purchase private LTCI because Medicaid will take up the cost. Why would someone elect to pay for expensive nursing home visits if a public insurance program would do the same? Even though Medicare pays for short visits, Medicaid will cover long-term residents. In effect, Medicaid pays approximately 80 percent of all nursing home patient days (Moses, 2008).

Even though Medicare and Medicaid are publicly funded, the programs are poorly coordinated, overlapping services in some areas while seeing existing gaps in others (Ng et al., 2010). Ng and colleagues (2010) explored the patterns in services and spending under both programs for institutional care, home and community facilities and other services. They conclude that there needs to be a reduction in the fragmentation and lack of coordination between Medicare and Medicaid in order to have a better structure for providing LTC (Ng et al., 2010). As previously mentioned, Medicare provides short-term after hospitalization for postacute care. Postacute care refers a series of medical care services that aid the individual's continued recovery from management of a chronic illness or disability. Medicare also provides hospice services in the "end of life" stage in nursing homes, at home, or in other community/residential settings.

During 1999 to 2007, there was a 10 percent increase in the total number of Medicare beneficiaries and approximately 5 million, 15 percent, received postacute services out of a total 32 million in 2007 (Ng et al., 2010 **see Figure 2**).

Figure 2- National Medicare Postacute And Hospice Care Spending And Beneficiaries, Adjusted For Inflation, Selected Years 1999-2007

Program/measure	1999	2003	2007	Percent change, 1999–2007
Total Medicare beneficiaries (thousands)	29,363[a]	32,587	32,223	10%
Total Medicare spending (millions of dollars)	$207,408	$262,360	$288,504	39
Total Medicare postacute[b] beneficiaries (thousands)	4,074	4,347	4,924	21
Total Medicare postacute[b] spending (millions of dollars)	$21,626	$28,255	$37,829	75
Nursing facility beneficiaries (thousands)	1,390	1,662	1,828	32
Nursing facility spending (millions of dollars)	$11,785	$16,818	$22,152	88
Home health beneficiaries (thousands)	2,684	2,685	3,096	15
Home health spending (millions of dollars)	$9,840	$11,437	$15,677	59
Home health beneficiaries as percent of Medicare postacute beneficiaries	66%	62%	63%	−5
Home health spending as percent of Medicare postacute spending	46%	40%	41%	−9
Hospice beneficiaries (thousands)	474	729	996	110
Hospice spending (millions of dollars)	$3,142	$6,346	$10,345	229

SOURCE Centers for Medicare and Medicaid Services. Medicare data compendium, 2008. Baltimore (MD): CMS; 2008 [cited 2009 Nov 16]. Available from: http://www.cms.hhs.gov/DataCompendium/. **NOTES** Consumer Price Index (CPI)–adjusted spending reported in constant 2007 dollars. See Technical Appendix 1 for full details (Note 6 in text). [a]Estimated data. [b]Includes nursing facilities and home health. See Technical Appendix 1.

(Ng et al., 2010, p. 24)

Medicaid's LTC spending and participation has also expanded. Medicaid spending grew 48 percent, while total LTC spending grew only 39 percent between 1999 and 2007 (**see Figure**

3). However, there was no change in Medicaid institutional participants, even though there was a 15 percent increase in spending (Ng et al., 2010). Ng and colleagues (2010) argue that the stagnation in the number of institutionalized residents is reflective of the reduction in the use of intermediate care facilities for the developmentally disabled, yet there has been a small growth in nursing home patients. Unfortunately, the utilization of nursing homes does not parallel the growth in the aged population between 1999 and 2007. Although there are constraints on Medicaid institutional spending, 39 percent of institutional recipients used 61 percent of total Medicaid LTC spending in 2006 (Ng et al., 2010, **see Figure 3**).

Figure 3- National Medicaid Long-Term Care (LTC) And Hospice Care Spending And Participants, Adjusted For Inflation, Selected Years 1999-2007

Program/measure	1999	2003	2007	Percent change, 1999–2007
Total Medicaid participants (thousands)[a]	40,300	51,971	56,825[b]	41%
Total Medicaid spending (millions of dollars)[a]	$211,156	$275,566	$311,848	48
Total Medicaid LTC[c] participants (thousands)	3,641	4,359	–[d]	29[e]
Total Medicaid LTC[c] spending (millions of dollars)	$72,079	$89,603	$100,118	39
Institutional[f] participants (thousands)[a]	1,745	1,805	1,747[b]	0.1
Institutional[f] spending (millions of dollars)[g]	$50,684	$57,744	$58,301	15
Home and community-based services[h] participants (thousands)[i]	1,896	2,554	[d]	51[e]
Home and community-based services[h] spending (millions of dollars)[i]	$21,395	$31,859	$41,817[g]	95
Medicaid home and community-based services participants as percent of Medicaid LTC participants	53%	59%	[d]	15[f]
Medicaid home and community-based services spending as percent of Medicaid LTC spending	30%	36%	42%	40
Hospice participants (thousands)[a]	60	125	187[b]	212
Hospice spending (millions of dollars)[a]	$393	$1,005	$1,901[b]	384

SOURCES See below. **NOTES** Consumer Price Index (CPI)–adjusted spending reported in constant 2007 dollars. Medicaid LTC includes institutional care, hospice, and home and community-based services. [a]Centers for Medicare and Medicaid Services MSIS data. Available from: http://msis.cms.hhs.gov/ [b]Estimated data for Hawaii, North Dakota, Maine, Ohio, and Utah. [c]LTC includes institutional care and home and community-based services. [d]Not available. [e]Percentage change, 1999–2006. [f]Institutional data include intermediate care facilities for the developmentally disabled and nursing facilities. [g]Burwell B, Sredl K, Eiken S. Medicaid LTC expenditures in FY 2007. Eagan (MN): Thomson Medstat; 2008 Sep. [h]Includes waivers, home health, and personal care services (PCS) state plan. [i]University of California, San Francisco (UCSF), Annual Waiver Program Survey; and UCSF Annual Survey of State Medicaid Home Health and PCS state plan programs.

(Ng et al., 2010, p. 25)

Considering that nursing home care is Medicaid's most expensive service, trends over recent years have seen a rise in home and community-based services. In 2007, total Medicaid spending on home and community services increased to $41.8 billion, which is a 95 percent increase since 1999 (Ng et al., 2010). For institutional care, spending grew about 1 percent whereas community-based spending grew about 8 percent per year (Hagen, 2013). From 2013 to 2023, Congressional Budget Office (CBO) experts project Medicaid spending to increase about 5.5 percent per year (Hagen, 2013). During the same period for Medicare and postacute services, spending is expected to increase by 6.5 percent per year (Hagen, 2013). Medicaid and

Medicare cover a more significant share of long-term services and supports (LTSS)[1] and other LTSS related services than any other source of payment (not including informal care) combined (Hagen, 2013). The demand for community-based care is growing quickly.

Changes in consumer preferences and pricing have led to increased demand for home and community-based care over nursing home stays (Ng et al., 2010). In 1999 the U.S. Supreme Court ruled in the Olmstead case that individuals have the right to live in the comfort of their own home or in the community if they are physically and mentally able to do so and choose to do so, rather than being placed in an institutional setting by the government (Ng et al., 2010). Since this court case, the federal government has provided a number of initiatives and additional resources to increase access and affordability to home and community services via waiver programs and other federal projects (Ng et al., 2010).

Medicaid has made vast improvements expanding home and community-based services (Ng et al., 2010). Changes in consumer preferences, policies to reduce institutional services, and other limitations of Medicaid have resulted in Medicaid's lower growth rates in institutional participants and spending compared to Medicare. Medicare pays for a substantial part of total public spending on nursing home care and short-term postacute services, which reflects increased demand for Medicare's short hospital stay and rehabilitation services rather than Medicaid's LTC services.

Medicare and Medicaid trends vary depending on policies and eligibility requirements across states. Shifting efforts from institutional to home or community-based services may prove problematic as states also vary in their concern to rebalance LTC spending, policy implementation, and other resources. Ultimately, this becomes a compounded issue as Medicaid and Medicare routinely lack coordination and proper communication to alleviate spending trends on both ends (Ng et al., 2010). Medicare focuses on limiting postacute care use and costs, thus shifting the burden of care onto Medicaid. Meanwhile, Medicaid has no incentive to reduce Medicare's utilization of hospitals and emergency rooms (Ng et al., 2010).

The disproportionality in spending on Medicaid institutional services compared to home and community-based services has been the focus for state and federal policy makers, but the coordination between Medicare and Medicaid is largely dysfunctional. Hospitals that discharge patients as soon as possible in order to reduce costs, frequently release patients before adequate postacute care or LTC services can be provided (Ng., et al., 2010). For Medicare, rehospitalization is a growing concern that adds another layer in the national LTC financing crisis. Policy changes are needed to better integrate the two programs.

Medicaid Planning

Another great inhibitor of responsible LTC planning is Medicaid estate planning. Medicaid estate planning refers to the transferring of assets to shield wealth from any form of Medicaid estate recovery (Moses, 2008). In effect, welfare resources cannot be accumulated

[1] Due to recent convention, the term "Long-Term Care" has been modified to "Long-Term Services and Supports." In recent years, it has been determined by the aging and healthcare disciplines that the word "care" implies sickness, which does not apply to everyone who uses services. Throughout this paper, LTSS is used instead of LTC when referring to more recent literature.

and do not recycle back into the system (Moses, 2008). This form of Medicaid planning allows individuals the ability to rearrange their assets while artificially spending down their assets to become Medicaid eligible. This practice allows consumers who could otherwise afford their own private insurance and/or initially could not become Medicaid eligible because of their income, the ability to receive Medicaid benefits. Elderly people, who do not have functional limitations, typically have higher income and may have purchased LTC insurance to avoid having to use their savings if they need assistance later in life (Hagen, 2013). These individuals also tend to have higher education and access to more resources (Hagen, 2013). This is important to note since higher education and higher income gives affluent members of society the ability to make more choices than people who are less educated and are limited to less choices because of their income (Hagen, 2013; AHIP, 2012).

Since private insurance is expensive, wealthy elderly people who do not want to buy private insurance have the ability to use other strategies to rely on the publicly funded system. Legal services, lawyers and other public officials promote this financial strategy so that wealthy individuals do not have to spend down their income and wealth to $2,000 to be a recipient of Medicaid. However, this practice is problematic because it leaves fewer resources for the people that Medicaid was designed for (the sick and poor), and it eliminates the ability for the government to recover any assets in the event of death of the policyholder.

Some strategies lawyers and financial advisors use are: (1) purchasing items that will be excluded as personal effects or household goods (e.g., jewelry, furniture, clothes); (2) purchasing of burial plots; (3) "Two Mercedes Rule," purchase a motor vehicle, or trade it away for a more expensive one, buy another and give the vehicles away to his/her heir; (4) trusts (e.g., a special needs trust for a disabled person under the age of 65); (5) pay off your mortgage on an exempt home or other debts (Moses, 2008). The ability to avoid financial impoverishment and to pass along estate and other possessions to one's heir is the main goal of these economic strategies.

Medicaid estate planning has become a marketing device. This also shrinks the pool of individuals who are able to purchase private insurance. As of 2008, more than four-fifths of seniors own a home (Moses 2008). In the United States, about 79 percent own a home while in South Carolina, Florida, Tennessee, North Carolina, Georgia, and Virginia more than 80 percent of seniors own a home (Moses, 2008). Financial advisors argue that thousands of dollars are wasted on nursing home stays and other medical expenses, rather than spent on the patient's family, to make Medicaid estate planning appeal to affluent individuals. Once the money is spent in a nursing home, a person can never get it back. With Medicaid estate planning, people can protect much of their assets and pass on assets and possessions to their spouse or heirs.

How can insurance agents and other public officials persuade people to purchase LTCI decades in advance while other elderly populations are wedged into free or publicly subsidized financed care? The poor struggle with the system and become welfare recipients due to spending down all they have to $2,000. Meanwhile, the affluent individual has the assistance of legal services to enable them to become Medicaid eligible. Public officials have a moral and economic responsibility to the state and federal taxpayers to eradicate these practices in order to make Medicaid more effective.

On February 8th, 2006, President Bush signed the Deficit Reduction Act of 2005 (DRA). This law was an attempt to solve some of the LTC financing problems. In order to have a more rational LTC financing policy, some provisions in the DRA were aimed at making transferring assets more difficult. There is a penalty for transferring assets for less than fair market value during the *look back period,* for the purpose of qualifying for Medicaid. The look back period refers to the heavy review of a Medicaid applicant's transfer of assets. If a transfer is questioned upon review, under penalty, the individual is prevented from receiving benefits until the look back period is over. Individuals who employ these Medicaid estate-planning strategies used to have to wait three years to apply for Medicaid (Moses, 2008). Now, the look back period is pushed back from three to five years, making the process more difficult (Moses, 2008).

Over recent decades there have been multiple laws to make Medicaid's transfer of assets more strenuous. In 1982, the Tax Equity and Financial Responsibility Act allowed states to enforce a transfer of assets penalty up to 2 years for assets inappropriately transferred within the previous 2 years of applying for Medicaid. In 1988, the Medicare Catastrophic Coverage Act made the transfer penalty mandatory for state Medicaid programs to impose and extended the look back period to 30 months (Moses, 2006). It was not until 1993, when the Omnibus Budget Reconciliation Act extended the look back period to a full 3 years for general transfers and 5 years for transfers into trusts.

The further into the future people have to plan ahead to give away their wealth in order to qualify for Medicaid, the less likely they are willing to do so, which protects the safety net of Medicaid. Intentional self-impoverishment is not likely to happen when the look back period is extended to 5 years, although public officials argue these provisions will not eliminate the practice entirely (Moses, 2008). As long a person remains physically and mentally healthy, he or she tends to be less willing to give up control of assets in anticipation of LTC in the future. At earlier stages in life people can qualify financially and medically for private insurance. However, Medicaid planners throughout the country advise the public to divest or shield their assets entirely (Moses, 2008).

Impact of Public-Private Partnerships

The Partnership for Long-Term Care is an agreement between states and private insurers to reduce the public's dependence on Medicaid for financing LTSS. A state's partnership program allows policyholders to maintain large amounts of assets, without having to spend down to Medicaid eligibility and still qualify once the private insurance (primary payer) benefits are exhausted. In the early 1990's, the idea of a joint program captivated many public officials, administrators, and even the public to potentially turn around the medical crisis in LTC. Many goals that were proposed by the partnership program never formed into reality and this complex social problem quickly snowballed. This section will provide an overview of this partnership program and analyze its objectives, shortcomings and successes as we move into the future. Partnership programs have seen recent attraction, but the overall impact has not been fulfilled (Moses 2001; Lin & Prince, 2013). Despite the programs expansion across the United States since 2005 and increase in purchases, research suggests there is still limited

empirical evidence of substantial benefits to the overall LTC financing reform efforts (Moses, 2001; Mieners 2009; Roehrich, Lewis, & George, 2013).

In 1987, the Robert Wood Johnson Foundation (RWJF) supported the Partnership for Long-Term Care. By 1992, four states initiated the program, California, Connecticut, Indiana, and New York. At the time, social insurance programs and investing in private insurance were both critical strategies for financing LTC. As Stephen A. Moses puts it, social insurance programs are, "seductively attractive, but unaffordable and politically infeasible" (Moses, 2001, p.1). Meanwhile, advocating for encouragement of private insurance would not be a general solution. Relying on the self-interest and will of the public could buffer the added load on public programs, Medicaid and Medicare, but private LTCI is voluntary, expensive, and attainable by certain individuals who can qualify medically.

The influence of this partnership program could potentially fuse the benefits of public and private insurance while simultaneously nullifying the negative consequences associated with both programs. Key elements of the partnership program are as follows: (1) allow elders to avoid impoverishing themselves on medical expenses to become eligible for Medicaid; (2) improves access to insurance protection; (3) unification of private and public funds to strengthen LTC delivery systems; (4) maximizing personal choice for elders as they plan out their LTC needs for the future; (5) by easing the burden on middle-class elders dependency on Medicaid, this would conserve public resources for those truly in need; and (7) breakdown the incentive for elders to "game the system" or transfer assets to become eligible for Medicaid (Meiners & McKay, 1990).

Since the 90's, there has been a modest effect on private insurance purchases and the middle-class virtually had no response (Lin & Prince, 2013; Brown & Finkelstein, 2009). Medicaid estate planning is still a significant concern (Moses 2001, 2005, 2008), and LTC delivery systems are still disjointed as multiple organizations try to understand and navigate their own individual concerns (RWJF, 2007)

Wider use of these programs could shift the burden from individuals who are ill equipped to pay for insurance out-of-pocket, and the state from squeezing Medicaid funds. Congress was skeptical on the partnership provisions and questioned whether the program had the capability of saving states money on Medicaid. Congress was also hesitant to approve a program that would potentially use Medicaid funds for the enactment of the partnership. In 1993, Congress passed the Omnibus Budget Reconciliation Act (OBRA), which halted the development of the program to other states. After modifications in 2005, DRA enabled the expansion of this program across the country and currently more than half the country has some form of a partnership program in place (RWJF, 2010; Lin & Prince 2013).

The primary targets of this program are moderate-income individuals or those at risk of future dependability on Medicaid to cover long-term services. The partnership program is an incentive for consumers who would not otherwise purchase LTCI, while allowing consumers to become Medicaid eligible as long as the states income and functional eligibility requirements are still met. Additionally consumers must be aware that, although a partnership policy may cover some forms of care, Medicaid coverage may only cover them to care in a nursing facility.

These stipulations vary from state to state, which also makes partnership programs a hassle to navigate (RWJF, 2007).

As baby boomers age, the provision of asset protection with partnership programs remains a selling tool to entice consumers to take action in preparing for their LTC needs more effectively. Consumers may qualify for Medicaid under special eligibility rules while retaining a fixed amount of assets. Thus policyholders can avoid the burden of spending down.

These partnerships provide two forms of asset protection, dollar-for-dollar model and total asset protection model. California, Connecticut, and Indiana originally started the dollar-for-dollar model. In this case, the amount of insurance purchased would equal the amount of assets that are protected, if the consumer were to exhaust all their private insurance benefits and needed to utilize Medicaid (RWJF, 2007; Meiners ,2009). For instance, if a person buys an insurance package of $200,000, they would be permitted $200,000 worth of home or community based care or nursing home care. In the event the policyholder exhausts the contract benefit, an amount of assets equal to the value of the policy will be disregarded. The policyholder may then access Medicaid with his ($200,000) asset package protected from recognition or assessment by Medicaid.

In the beginning trials of the partnership, New York used the total asset protection model. In this scenario, consumers are required to purchase an extensive benefit package that would cover their services over an extended period of time and this benefit package is constructed by the state. Originally the state mandated the insurance package to cover six years of home-health care, which would additionally ease the burden of friends and family members who are informal caregivers, or three years of nursing home care (RWJF, 2007). As a result, anyone purchasing this policy would be able to protect all of his/her assets when applying for Medicaid. By the year 1998, Indiana and New York initiated hybrid programs, where consumers could pick between the two insurance models.

Are Partnerships Effective?

Unfortunately, the overall objectives (e.g., increasing the risk pool, ensuring insurance coverage for middle-income individuals, and lifting barriers to Medicaid) of the partnership program have not been accomplished and private insurance uptake has been modest at best (Lin & Prince, 2013). Lin and Prince (2013) examine the impact of U.S. states' adoption of partnership programs and their impact on private insurance coverage per household across different wealth distributions. Results show that the program has influenced a modest increase in private insurance purchases but only by the wealthiest 20% of consumers (Lin and Prince 2013).

Although LTC encompasses the largest portion of Medicaid expenditures, only about 10% of elderly Americans have private LTC insurance (Brown and Finkelstein 2007; Lin and Prince 2013; Moses 2005). This speaks to two general themes in the public private partnership literate and LTC reform: (1) welfare loses due to under-insurance because of lack of understanding the utilization of LTC and (2) rising Medicaid costs. In the early stages of these partnerships, the intention was that these programs would enable middle-class Americans

more access to private LTC insurance because it would make them more eligible for Medicaid (RWJF, 2007). However, these programs have failed in that area. Some critics say that Medicaid needs to become the primary payer in LTC, rather than being a secondary payer after private insurance benefits are exhausted (Lin & Prince, 2013). If Medicaid becomes the primary payer under partnership programs, then it is plausible that Medicaid could see some savings (Lin & Prince 2013; Meiners, 2009).

Middle-class Americans are the primary targets of the partnership program. The middle-class is in a precarious position as they have valuable assets that have been acquired through their working years but are only two or three paychecks away from financial instability in the private insurance market. Low-income households are not likely to respond to this program since they can rely on the safety net of Medicaid. The wealthy, to some degree, are not primary targets either because they are not readily able to be Medicaid eligible (Lin and Prince, 2013; Meiners, 2009).

Currently, politicians and other researchers will argue that the low purchasing rate of private LTCI is due to the Medicaid crowd-out effect (Pauly 1990; Brown and Finkelstein, 2007), however, Medicaid being a significant factor in the low purchasing rate is unknown (Kemper, Komisar, & Alecxih, 2005). As a requirement for the partnership program, a policyholder needs to have some form of private insurance, but the magnitude to which Medicaid impacts current private insurance purchase is highly contested. In the one study that used national survey data that analyzes actual purchasing behavior found that there was a small negative impact on private LTCI among people age 70 and older, but the effect was too small to explain the overall low purchasing rate (Kemper et al., 2005). Additionally, this study found no empirical evidence of a Medicaid crowd-out effect for people age 51 to 61 (Kemper et al., 2005).

Understanding the vulnerable position of the middle-class and their purchasing behavior extends far beyond the existence of Medicaid. More importantly, it is the wide variation in the projected need for LTC that poses a challenge to both individuals and policymakers (Kemper et al., 2005). Generally, premiums are high relative to the financial resources of retirees (Kemper et al., 2005). Similarly, the safety net of Medicaid coverage of LTC for people who exhaust their resources may provide a disincentive for some people to purchase private LTCI. The role of private LTCI and the balance it has with the Medicaid program can cause various obstacles for purchasing private insurance. There are multiple factors that need to be considered when examining the causes for the low purchasing rate of private LTCI. Presently there is not enough empirical evidence to support a direct Medicaid crowd-out effect correlation. Future research will need to focus on actual behavior on the national level across age groups and income/wealth levels (Kemper et al., 2005; AHIP, 2012). Kemper and colleagues (2005) argue that there is an unequal distribution of resources allocated to the public that additionally influence purchasing behavior and attitudes about private LTCI. This is a critical component to the existence of the middle-class as being the target market for partnership programs. This is also important because this negates the notion that there is a potential crowd-out effect of Medicaid on partnership programs overall.

The middle-class is a vulnerable population because of their unstable financial position. Middle-class households have enough assets worth protecting but do not have the necessary

wealth and additional assets to spend down to become eligible for Medicaid. The idea of "asset protection" in these partnership programs is not an effective selling pitch to low income households because they typically do not have assets to protect. Low-income households have a better chance of becoming Medicaid eligible and do not have to rely as heavily on private insurance companies (Lin & Prince, 2003).

Currently, it is difficult to assess the effects of the partnership program because of varying state provisions and because the effects of these partnerships are still in infancy. In other words, it is too early to see any drastic impacts of the program, considering the DRA act was implemented only nine years ago. The collection of data on sales did not begin until 2009, consulting firms, research institutions and local governments are still monitoring its effects (Hagen, 2013). Even though partnership participation has grown considerably in response to the DRA provisions, partnership policies only accounted for about 11 percent of all LTC policies in 2011 (Hagen, 2013). Some of this increase is due to policyholders converting their conventional insurance policies to the partnership policy. The recent conversions have had no effect on the overall increase in total sales (Hagen, 2013).

In 2005, the first year of the programs expansion across the country, approximately 172,000 policies were bought in the four demonstration states (RWJF, 2007). According to the Hawai'i Long-Term Care Commission Report, HLTCC, (2012), as of June 30th 2011, 43 states adopted the program and about 630,000 partnership policies were sold. Additionally, insurance companies are seeing relatively few policyholders needing long-term care services through this program (RWJF 2007). Yet, Calmus (2013) reports that more policyholders have died while receiving long-term care than policyholders that have exhausted their LTCI benefits from their primary payer (the private insurance company). This suggests that the Partnership for Long-Term Care program may be experiencing some success in extinguishing the publics need for Medicaid access in long-term care. Future research needs to examine this more closely. Roehrich and colleagues (2013) argue that future research needs to develop a better understanding of the circumstances for building alliances between private and public sectors from a strategy perspective, examine the impact of incentive mechanisms and risk management procedures on health services through the entire duration of the project. In effect this would create a cooperative environment to foster inter-project learning (Roehrich et al., 2013). Additionally, future work should examine the causes behind the partnership failures by comparing programs in other countries (e.g., Europe) (Roehrich et al., 2013).

The main priority of Partnership programs is to attract moderate asset and income consumers to purchase private insurance. In effect, Medicaid would save money, individuals could save the value in their assets without spending down and impoverishing themselves, and more people can have quality health insurance and become Medicaid eligible sooner. However, partnerships have been slow to accomplish such tasks. Out of the 43 states that have adopted the partnership program, only 9% of all LTCI policies are partnerships (Calmus, 2013). Regardless of the varying state regulations on Medicaid and partnerships, there has been virtually no effect on the middle-income consumers that this program initially targeted (Lin & Prince, 2013; Brown and Finkelstein 2009).

Consumers have been buying insurance at a younger age (58-60), compared to twenty years ago (68-70), which shows some degree of increased knowledge about private insurance (AHIP, 2012). Yet, there is still a substantial segment of the elderly population who believe that public forms of health, Medicare, will cover their LTC costs (AHIP, 2012). There is still room for improvement for public officials and administrators to relay information properly to consumers as multiple organizations coordinate with one another (RWJF, 2007). The functionality of the partnership program depends heavily on the near elderly and elderly populations to purchase private insurance. Policyholders who convert their conventional insurance to a partnership are improving the partnership market (Hagen, 2013; Roehrich et al., 2013). More importantly, non-insured persons who buy into the program contribute more effectively to the overall partnership program (Hagen, 2013; Roehrich et al., 2013).

Inflation Protection

Typically, people buy LTCI in their 50s and 60s, but do not utilize these services until they are in their 80s (Brown & Finkelstein, 2008, 2009). Thus, prior to collecting on benefits, people are paying into premiums decades before they will have to use the service. Regardless if an individual stays in a nursing home, receives care at home or in an assisted living facility, he or she will be paying for a services far in advance. In the end, paying for some type of coverage in advance will be worth far less by the time the individual makes a claim on his/her insurance. To ensure that a purchased insurance plan is valuable in the future, it is critical to have inflation protection. Buying inflation protection protects the value of the coverage, as it is likely that the value will diminish overtime.

Part of the long-term care crisis is that premiums increase the later you begin to purchase LTCI (Merlis, 2003). Calculating the rising cost of LTC can be difficult and will certainly affect the rate at which premiums are priced, but these costs are manageable. Purchasing some form of inflation protection with LTCI is a provision written into LTCI insurance policies that holds that benefits will increase over time and that protection guarantees that benefits will remain intact. People who can afford to pay for LTCI need to consider purchasing LTCI with inflation protection, since LTC costs are likely to increase (RWJF, 2007). Inflation protection can be used to market private insurance (RWJF, 2007). Depending on a person's age, partnership policies mandate that contracts must include some form of compounded inflation protection. For example, a person under the age of 61 is mandated to purchase 3 or 5 percent (depending on the state) inflation protection policy. Some protection is required for individuals between ages 61 and 74, but though they may still have an incentive to purchase inflation protection, it is not required for those over age 74 (RWJF, 2007).

Inflation protection packages range from simple to compounded protection plans. There are two main types of inflation protection in the case of Partnerships and LTCI, the future-purchase option (FPO or guaranteed purchase option) or the automatic benefit increase (ABI) (RWJF, 2007). With ABI protection the amount of coverage increases automatically by a specific amount every year. Once the policy is bought the benefit increases are built into the premium. Therefore the premiums rates remain fixed. However, ABI protection policies are initially more

expensive but the payoff comes later in the process as it ensures adequate coverage to cover services in the future (RWJF, 2007).

In the case of the former, FPO consumers agree to pay for a premium for a specific amount of coverage. Every couple of years after the purchase of this policy, the policymaker increases the coverage package and in return, the premium increases. In other words, over time the beneficiary can rely on an expanded benefit package, but will see increases in their premiums (RWJF, 2007). If the consumer chooses to pay for the expanded coverage, benefits remain balanced, as the cost of services is likely to increase. The incentive to increase one's coverage periodically is to avoid additional medical underwriting practices. Depending on the age and time of when the policy is bought, the premiums on the additional coverage can fluctuate (Ujvari, 2012). Insurers only allow the beneficiary two or three times to decline the offer of increases their insurance package. Even though the initial premium of an FPO is cheaper than automatic inflation protection, their premiums spike substantially if the offer is accepted and the policy is increased. If the consumer rejects the offer, his or her insurance policy may not keep up with the rising cost of services (Ujvari, 2012). Even though this may be a costly endeavor for some consumers, it is imperative to have a sound insurance plan.

In either case, affording inflation protection can be costly for some individuals. Unfortunately, small crowd-out effect may occur for Partnerships that prevents younger consumers (under age 61) from purchasing this form of LTCI, as it further increases this expense when their utilization of services are much further into the future comparatively to a person buying insurance at age 74. Prior to the age of 61, the DRA required these consumers to purchase ABI inflation protection. However, there has been some debate whether FPO policies would bring the same benefit (RWJF, 2007). Considering that ABI insurance is more expensive, it is conceivable to see why this could be a factor inhibiting younger individuals from buying into the program.

Without inflation protection, the value in benefits is likely to decrease (Ujvari, 2012). Since LTC costs have outgrown the rate of inflation, experts say that 5 percent compounded automatic inflation protection is the most sensible. Through this level of protection, 90 percent of home care or assisted living is covered compared to 70 percent of nursing care costs (Ujvari, 2012). Even with inflation protection, there is still a wealth gap in who can afford such protection and who cannot. About 79 percent of consumers who make $75,000 or more buy inflation protection compared to 38 percent of buyers with incomes below $25,000 buy protection. There is also an age disparity, buyers who are 55 to 64 are more likely to buy inflation protection than older buyers. People who are older than 75, only 22 percent have purchased inflation protection (Ujvari, 2012).

Young v. Old, When and What Type of LTCI to Buy

In a Kaiser Family Foundation report, Merlis (2003) examines who should buy LTCI and what type of policies they should purchase. The concerns over LTCI not only affect the elderly population but also younger generations that need to plan for the future. Since people at or near retirement age are faced with different concerns than people who are younger and can be potential buyers, Merlis (2003) looks at these groups separately. Regardless of the type of LTC

service (e.g., nursing home, home care, or community care), Brown and Finkelstein (2008) find that people who are 65 years old typically will not receive any form of care for more than two years (see **Figure 4)**. Yet, the probability of having some form of functional limitation (physical or cognitive) increases significantly with age. A report from the Congressional Budget Office (CBO) finds that on average 33 percent of people age 65 or older report a functional limitation of some kind, and among people who are 85 and older about 66 percent of people report some form of functional limitation (Hagen, 2013). This dramatic increase in functional limitations will have an effect on the demand for long-term care services.

Figure 4- Descriptive Statistics of Care Utilization for 65-Year Old From Robinson Model

			Among users						
		Probability of ever using	Mean age of first use	Mean years in care	Probability of using care for:			Probability of leaving care alive	Mean number of spells
Type of care					> 1 year	> 3 years	> 5 years		
Nursing home	Men	0.27	83	1.3	0.33	0.12	0.05	0.65	1.28
	Women	0.44	84	2.0	0.42	0.22	0.12	0.66	1.39
Assisted living	Men	0.12	82	0.58	0.16	0.04	0.01	0.90	1.18
	Women	0.20	85	0.48	0.13	0.04	0.01	0.93	1.26
Home health	Men	0.29	79	1.9	0.52	0.22	0.09	0.67	1.45
care	Women	0.35	81	2.3	0.52	0.28	0.15	0.77	1.68
Any care	Men	0.40	80	2.9	0.77	0.37	0.17	0.33	1.20
	Women	0.54	82	4.2	0.85	0.53	0.31	0.35	1.27

Notes: All statistics are for an individual who at 65 is medically eligible to buy private long-term care insurance. Care utilization is defined as care that meets the criteria to be reimbursable by private long-term care insurance. See text for more details.

(Brown and Finkelstein, 2008)

The private insurance market is lacking younger audiences and other segments of the population who could use such services, opposed to being uninsured or relying on various forms of informal care (Merlis, 2003, Tennyson & Yang, 2014, Mellor 2001). Since middle-class individuals and families are concerned over their financial capability to purchase extensive comprehensive insurance packages, what is actually feasible for this group? Merlis (2003) begins to address these concerns. Extensive educational efforts may increase the likelihood of earlier purchase of insurance when coverage is more affordable, but this may prove problematic as long-term care services change and the needs of consumers also change (Merlis, 2003). Working-age adults may be able to afford these policies in theory but they also need to prepare for retirement. Paying into a program 20 plus years before ever having to need LTC services may financially strain individuals when other forms of preventive and end of life policies are available and needed. For example, Merlis (2003) argues that having a private disability income plan may be preferable since Social Security disability benefits replace only a portion of earned income. Additionally, policyholders who have dependents may find having a life insurance policy more attractive in their younger years. These policies should take precedence over LTCI during mid-life (Merlis, 2003).

Hawai'i Long-Term Care Commission

There are multiple solutions to financing long-term care. The state of Hawai'i is in a position to utilize different approaches, partnerships is just one of them. There are advantages in advocating for a partnership program, but there also barriers to encouraging the purchase of private insurance which inevitably draws back the full potential of a partnership. As more wealthy people flood the Medicaid market through various means and the middle-class remains apprehensive and disjointed in their long-term care purchasing (or lack thereof), it is difficult to assess the true potential in this program.

According to the final report of the Long-Term Care Reform in Hawai'i in 2012 conducted by the Hawai'i Long-Term Care Commission (HLTCC), here is what was stated about public-private partnerships:

"The Hawai'i Long-Term Care Commission considered this option but decided to neither recommend nor oppose this type of public-private partnership for Hawai'i. Although it has some features to recommend it, this approach does not appear to be an effective way to increase purchase of long-term care insurance." (HLTCC, 2012, p. 32).

Considering this stance, it is likely that Hawai'i will not join the other 43 states to initiate this program. However, the implications of the advantages and disadvantages of this program speak to the broader issues concerning partnership programs and will also shed some light on the topic of private insurance.

Advantages

1. Integration of the public and private sector. As benefits are collected, the private sector takes care of the front-end risk and the public sector (Medicaid) picks up the back-end. In this scenario the private insurance company would handle short periods of long-term care (e.g., 1 to 3 years), while Medicaid finances the remaining needed coverage.

2. With the added benefit of making lifetime coverage more affordable, there is an incentive here for people to purchase private insurance. This is one of the most important goals of this program

3. Medicaid savings are possible if more people purchase private insurance who would otherwise not have; this approach is a low-cost option compared to a tax-incentive program.

4. This provides lifetime asset protection equal to the amount of coverage purchases by the policyholder. Without having to purchase a lifetime coverage up front via private insurance (which is more expensive) this would reduce the price of the private insurance coverage that is needed. Thus, maximizing the potential for the middle-class individual/family to buy into the program at a more affordable rate

(HLTCC, 2012)

Disadvantages

1. Reports find that only 3.2% of the population that is 65 and older have purchased a partnership policy in the original four states that initiated this program, which would suggest that there has been no significant change in the private insurance market.

2. A policy providing a $200 a day nursing home and home care coverage for 3 years purchased at age 60, with a 5% compound inflation protection and a 90-day elimination period would cost about $3,000 a year for coverage that's worth $219,000 (Federal Long-Term Care Insurance Program, 2011). These policies are still expensive even with a short period of insurance coverage.

3. The idea of asset protection may not be a sound selling pitch to middle-income consumers. Yes, they do have asset that are important to them but their insurance purchasing patterns (or lack thereof) would suggest that they have other reasons for buying private insurance (e.g., autonomy later in life, not being a hassle for their children). More importantly, partnerships aside, the public has more options for coverage that could possibly be even cheaper (Merlis, 2003)

4. Considering Medicaid stigma and discrepancies in the quality of care, or perceived experience compared to other private insurance companies, older people may not want to be associated with Medicaid. Even though this is an integration of private and public sectors, private insurance is marketed as an option other than Medicaid.

5. Unfortunately, partnership programs are turning out to be a niche product for people who are fortunate enough to purchase this form of coverage. According to the U.S. Government Accountability Office (2005), the majority of purchasers of this program in California, Connecticut and Indiana have more than $350,000 in assets. Medicaid should not be used as a safety net for wealthy individuals seeking an option to protect their assets through a means-tested welfare program.

(HLTCC, 2012)

Proponents believe that partnership programs would solve many of the long-term care financing issues that the country is facing. The two main objectives, increasing private insurance purchases, and expanding the insurance market to middle and low income family members did not result from the implementation of the program. There is some structural maneuvering that can take place in order for some of the barriers to fall but overwhelmingly there has been no ripple effect that was originally anticipated. One of the biggest barriers to this program is the existence of Medicaid estate planning. The incentive that this program can make the process of becoming Medicaid eligible much easier, without having to wash out one's assets is a huge incentive for people who need asset protection in the event of a catastrophic episode or anticipating nursing home visits (e.g., wealthy consumers). Wealthy people who would otherwise purchase private insurance are able to flood the Medicaid market, indirectly disrupting the insurance market, especially for partnership programs.

Furthermore, the concern over expensive insurance packages is a deterrent, considering that once the policy is bought, options are then limited. This is a large risk, especially for young

consumers who are saving for retirement and should purchase other means of services that may not entail long-term care supports (Merlis, 2003). Young consumers can purchase disability insurance and life insurance that may be more beneficial for individuals planning for the future.

Finally, the concern over increased Medicaid outlays is a central point to the partnership program. Medicaid expenditures are likely to increase if the insurance coverage is used to pay for services for home care and other supports for people who would otherwise not have insurance (HLTCC, 2012). These individuals would rely on informal care or have reached the point of being medically indigent, which in that case would fall on Medicaid anyway. Therefore, leaving insured individuals at a severe financial risk if nursing home stays occur. Although studies suggest that more people have died while relying on their private insurance company during the utilization of LTC services before the use of Medicaid, there is still speculation if this saves states and the federal government a significant amount of money over time (Government Accountability Office, 2005).

The objectives that were proposed for these partnership programs were sound, but the course that has transpired has not been beneficial to the target market. In order for partnerships to gain some ground in the insurance market, there needs to be an extensive reform to the general landscape of long-term care insurance. Increasing the look back period on assets from 3 years to 5 is a starting point to weeding out individuals displacing their assets, but more is needed for the program to be effective in its original tasks.

Key Considerations in Partnerships and Long-Term Care

Gleckman (2010) provides an extensive overview of comparing LTCI initiatives worldwide. There are numerous lessons that we can learn from countries such as Japan, France, Netherlands, and the U.K. Gleckman (2010) argues that there needs to be an overall consensus on the public for sufficient participation in order for any LTC program not to fail. Expanding the risk pool is imperative for insurance programs to stay afloat. Additionally, the United States can learn from LTCI programs in other countries that have adopted a universal mandated insurance program.

Another area of concern is how local governments (municipalities) are going to be able to communicate and form a transparent long term contract with insurance companies. Outside of the public domain there are also administrative issues. Bloomfield (2006) investigates some of these concerns.

Local governments need to have a strong foundation in order to manage insurance concerns for a growing and aging population. These governments need to invest in: (1) independent, unbiased specialists who will protect the interests of companies seeking long term contracts from local governments; (2) careful oversight, resources, and management are important to administer these contracts; (3) new arrangements and transparency structures need to be in place. Being competent in addressing the publics need is a catalyst in public participation (Bloomfield, 2006)

There is feasibility in financing LTCI packages. Arling, Hagan Bahaug (1992), point out some preliminary conditions for partnership programs:

1. Public or private needs to add to total LTC costs. Especially for private plans. Psychological effects of impoverishment will be reduced (since more people can afford it) and in turn would lower administrative costs.
2. A new financing plan may bring about new LTC use, either through adverse selection or insurance induced demand. The smallest increase (as little as 1 or 2 percent) can increase Medicaid expenditures
3. If fewer people divest their assets then Medicaid spend-down would be reduced and savings might offset the pricing of increased utilization.

The United States will need more diverse LTC programs in the future to assist the concerns for older adults. Some of the causes underlying the increasing demand for LTC care are as follows: (1) changes in the growing population; (2) social and economic circumstances in families; (3) increasing analysis of federal and state government financial involvement of long-term care (e.g., DRA and other laws); (4) changes consumer preferences and increasing demands (Sultz & Young, 2011). LTC services have also become more specialized, which allows providers to focus on becoming experts in meeting specific needs for specific populations (e.g., AIDS, Alzheimer's disease, rare forms of cancer, among other diseases) (Sultz & Young, 2011). Unfortunately, to some degree, specialization may lead to fragmentation and duplication of services, while added pressure is put on medical services to categorize patients into specific niche services (Sultz & Young, 2011). Transitional health care services after hospitalization for LTC patients are seeking greater need for more appropriate supportive care settings. This has been the current trend since hospitals are being pressured to discharge their patients more quickly (Ng et al., 2010; Sultz & Young, 2011).

Considering the healthcare industry's unmet needs and rising demands, future research will need to reform insurance agents on caregiving, education and awareness, healthy aging, and LTC financing (Sultz & Young 2011). The unification of post-hospitalization care with hospitalization into one episode of care provided through one service is occurring more frequently, whether this trend is leading to a cycle of continued care will remain under study (Sultz & Young, 2011). People with chronic disabilities and frail older adults will be a serious concern as the United States focuses on delivery, development of responsive, patient-centered, quality-driven, accessible, affordable, and cost effective health care services for all citizens (Sultz & Young, 2011). Future years will bring a period of innovation, experimentation and change in the overall long-term health care system (Johnson & Uccello, 2005; Sultz & Young, 2011)

REFERENCES

AARP Public Policy Institute. (2002). *Beyong 50.02 A Report to the Nation on Trends in Health Security.* Washington D.C.

America's Health Insurance Plans. (2012). *Who Buys Long-Term Care Insurance in 2010-2011?* Washington D.C.

Arling, G., Hagan, S., & Buhaug, H. (1992). The feasibility of a public-private long-term care financing plan. *Medical Care*, 699–717.

Bloomfield, P. (2006). The Challenging Business of Long-Term Public-Private Partnerships: Reflections on Local Experience. *Public Administration Review*, *66*(3), 400.

Brown, J. R., Coe, N. B., & Finkelstein, A. (2007). Medicaid crowd-out of private long-term care insurance demand: Evidence from the health and retirement survey. In *Tax Policy and the Economy, Volume 21* (pp. 1–34). MIT Press. Retrieved from http://www.nber.org/chapters/c0045.pdf

Brown, J. R., & Finkelstein, A. (2008). The Interaction of Public and Private Insurance: Medicaid and the Long-Term Care Insurance Market. *The American Economic Review*, *98*(3), 1083–1102. doi:10.2307/29730107

Brown, J. R., & Finkelstein, A. (2009). The Private Market for Long-Term Care Insurance in the United States: A Review of the Evidence. *Journal of Risk and Insurance*, *76*(1), 5–29.

Cramer, A. T., & Jensen, G. A. (2006). Why don't people buy long-term-care insurance? *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *61*(4), S185–S193.

Calmus, D. (2013) *The Long-Term Care Financing Crisis*. Retrieved from http://www.heritage.org/research/reports/2013/02/the-long-term-care-financing-crisis

Donlan, T. G. (2012). *A Medicaid Mess*. Retrieved from http://online.barrons.com/news/articles/SB50001424052748704284404577157103378830154

Feder, J., Komisar, H. L., & Niefeld, M. (2000). Long-term care in the United States: an overview. *Health Affairs*, *19*(3), 40–56. doi:10.1377/hlthaff.19.3.40

Finkelstein, A., & McGarry, K. (2006). Multiple Dimensions of Private Information: Evidence from the Long-Term Care Insurance Market. *The American Economic Review*, *96*(4), 938–958.

Gleckman, H., & He, D. (2010). *Long-term care financing reform: Lessons from the US and abroad.* Commonwealth Fund Washington, DC.

Gross, J. (2005). In Effort to Pare Medicaid, Long-Term Care Is Focus. Retrieved from http://www.globalaging.org/health/us/2005/effort.htm.

Hagen, S. (2013). *Rising Demand for Long-Term Services and Supports for Elderly People.* Congressional Budget Office of the United States Washington D.C.

Hawaii Long-Term Care Commission. (2012). *Long-Term Care Reform in Hawaii: Final Report of the Hawaii Long-Term Care Commission*. Honolulu, HI.

Jensen, G. A. (1998). Health Insurance of the near Elderly: A Growing Concern. *Medical Care*, *36*(2), 107–109. doi:10.2307/3767174

Johnson, R. W. (2008). The Strains and Drains of Long-Term Care. *Virtual Mentor*, *10*(6), 397.

Johnson, R. W., & Uccello, C. E. (2005). *Is Private Long-Term Care Insurance the Answer?* (Vol. 29). Center for Retirement Research at Boston College. Retrieved from http://www.taxpolicycenter.org/UploadedPDF/1000795.pdf

Lin, H., & Prince, J. (2013). The impact of the partnership long-term care insurance program on private coverage. *Journal of Health Economics*, *32*(6), 1205–1213. doi:10.1016/j.jhealeco.2013.09.010

Mellor, J. M. (2001). Long-term care and nursing home coverage: are adult children substitutes for insurance policies. *Journal of Health Economics*, *20*(4), 527–547.

Meiners, M. (2009). Long-term care insurance partnership: considerations for cost-effectiveness. Center for Health Care Strategies. Inc, Issue brief.

Meiners, M. R., & McKay H. L. (1990). Private Versus Social LTC Insurance: Beware The Comparison. *Generations*, 14(2).

Mic, F. (2009). The Future of Long Term Care and Medicaid in US. Retrieved from http://ezinarticles.com/?The-Future-of-Long-Term-Care-and-Medicaid-in-US&id=2339807

Moses, S. A. (2001). The Long-Term Care Partnership Program: Why It Failed and How to Fix It, in Neida McCall, editor, Who Will Pay for Long-Term Care?: Insights from the Partnership Program. *Health Administration Press*, 207-222.

Moses, S. A. (2005). *Aging America's Achilles' Heel*. Cato Institute. Washington D.C.

Moses, S. A. (2008). *Long-Term Care Financing in North Carolina: Good Intentions, Ambitious Efforts, Unintended Consequences*. John Locke Foundation. Raleigh, North Carolina.

Moses, S. A. (2012). *The Maine Thing About Long-Term Care: Is That Federal Rules Preclude a High Quality, Cost-Effective Safety Net*. Center for Long-Term Care Reform. Seattle, Washington.

Ng, T., Harrington, C., & Kitchener, M. (2010). Medicare And Medicaid In Long-Term Care. *Health Affairs*, *29*(1), 22–8.

Robert Wood Johnson Foundation, 2007. Long-term Care Partnership Expansion: A New Opportunity for States. Issue brief.

Roehrich, J. K., Lewis, M. A., & George, G. (2014). Are public–private partnerships a healthy option? A systematic literature review. *Social Science & Medicine*, *113*, 110–119. doi:10.1016/j.socscimed.2014.03.037

Sultz, H. A., & Young, K. M. (2011). *Health Care USA: Understanding Its Organization and Delivery.* Mississauga, Ontario: Jones & Bartlett Learning, LLC.

Tennyson, S., & Yang, H. K. (2014). The role of life experience in long-term care insurance decisions. *Journal of Economic Psychology*, *42*(0), 175–188. doi:10.1016/j.joep.2014.04.002

Ujvari, K. (2012). *Long-Term Care Insurance: 2012 Update.* AARP Public Policy Institute. Washington, D.C. Retrieved from http://www.aarp.org/health/medicare-insurance/info-06-2012/long-term-care-insurance-2012-update.html

Wiener, J. M., Anderson, W. L., Khatutsky, G., Kaganova, Y., & O'Keeffe, J. (2013). Medicaid Spend Down: Implications for Long-Term Services and Supports and Aging Policy. *Long Beach, CA: The Scan Foundation. Http://www. Thescanfoundation. Org/sites/thescanfoundation. Org/files/tsf_ltc-Financing_medicaid-Spend-down-Implications_wiener-tumlinson_3-20-13_0. Pdf*. Retrieved from https://www.rti.org/pubs/tsf_ltc-financing_medicaid-spend-down-implications_wiener-tumlinson_3-20-13_0.pdf

Long-Term Supports and Services Financing Feasibility Analysis

Appendix E—A Review of Literature on Long-Term Care Coverage: Tax Incentives and Other Financing Options, Barriers to Private Long-Term Care Insurance, and Hawaii's Long-Term Care System

(Draft October 2014)

Noreen Kohl

Introduction

With the rapidly growing elderly population in the United States, the number of older individuals with functional and cognitive limitations increases as does the need for long-term care services and supports. However, most people cannot afford to pay for long-term care insurance and many who qualify for public assistance programs impoverish themselves paying for services. First, this report provides an overview of literature on the need for long-term care, low coverage rates, and purchasing private long-term care insurance. Next, this report examines problems associated with the private long-term care market, the use of tax incentives to encourage the purchase of private long-term care insurance, and the long-term care system in Hawaii.

This report is a response to the recommendation from the Bill of 2013: H.B. No. 1 H.D. 2 S.D. 2 to include a statement on tax incentives for the purchase of long-term care insurance. The Hawaii Long-Term Care Commission (HLTCC) recommends against the use of tax incentives for purchasing private long-term care insurance. Overall, tax incentive increase coverage rates of long-term care among a limited population of wealthy individuals. In addition, other problems associated with the use of tax incentives to encourage the purchase of private long-term care insurance limit their overall effect.

Background

With the rapidly growing elderly population in the United States, the number of older individuals with functional and cognitive limitations increases as does the need for long-term care (Hagen 2013). However, most people cannot afford to pay for long-term care insurance and many who qualify for public assistance programs impoverish themselves paying for services (Johnson and Uccello 2005; Johnson 2008; Baer and O'Brien 2010). The elderly, or individuals 65 years and older, will account for 20 percent of the total U.S. population in 2050, compared to 12 percent in 2000 (Hagen 2013). Without private insurance to cover the cost of care or other financial resources to pay for services, many individuals go without formal long-term care (Weiner et al. 2013). Long-term care, or long-term services and supports,[1] refers to help with

[1] Recent convention in the aging and long-term care services disciplines use "long-term services and supports" in place of "long-term care" to refer to the category of healthcare which provides supportive services to people who need assistance with activities of daily living (ADLs). The majority of the sources in this review of literature use the

activities of daily living (ADLs) which include bathing, eating, dressing, using the toilet, and transferring one's self out of bed or out of a chair and assistance with tasks associated with independent living like shopping, cooking, and housework (Johnson and Uccello 2005; Cramer and Jensen 2006). It is not uncommon for older individuals to need help with one or more of these activities and/or tasks on a daily basis (Hagen 2013; Weiner et al. 2013).

In the United States, nearly ten million people need long-term care—over 6 million of these individuals are 65 years and older (Baer and O'Brien 2010). Coverage rates for long-term care insurance are low in the United States (Hagen 2013). Between just 7 and 9 million Americans had private long-term care insurance in 2012 (AHIP 2012). Like other types of health insurance, long-term care health insurance is available through individual and group markets as a financial contract available to buyers who agree to pay regular premium payments in order to receive benefits covered under the purchased policy (Johnson and Uccello 2005). Most long-term care insurance plans begin providing benefits when the policyholder needs assistance with two or more ADLs or becomes cognitively impaired (Johnson and Uccello 2005; Cramer and Jensen 2006).

Many people misunderstand what aspects of long-term care are covered by insurance and falsely assume that other types of insurance cover such services (Baer and O'Brien 2010). Long-term care insurance coverage is not intended to treat illnesses or conditions (Johnson and Uccello 2005; Cramer and Jensen 2006). Long-term care insurance usually covers skilled care such as nursing care and professional therapy and can also cover personal care services, household services, and custodial services as provided by a nursing home, assisted living facility, or at home care (Cramer and Jensen 2006). Most long-term care recipients live at home independently or with their families (Johnson and Uccello, 2005).

Most of the elderly population with disabilities in the United States is covered by Medicare, the country's social health insurance program financed by a combination of payroll taxes, general revenues, and insurance beneficiary programs (Baer and O'Brien 2010; Gleckman 2010). Medicare does not pay for long-term care services, though many Americans falsely believe that it covers extended care services such as those provided in a nursing home (Baer and O'Brien 2010). Rather, Medicare covers short-term assistance with post-acute care services, including limited nursing home and home health care (Baer and O'Brien 2010).

Specifically, Medicare covers just the first 100 days in a certified skilled nursing home after hospitalizations and provides limited home health benefits such as medically necessary skilled nursing care, physical therapy, speech language services, and occupational therapy for homebound beneficiaries (Johnson 2008). In 2011, nursing home care costs for a semi-private room increased to $214 per day or $78,110 per year and higher for a private room at $239 per day or $87, 235 per year (MetLife Mature Market Institute 2011). The cost of having a home health aid who provides assistance with personal care activities is over $14,000 annually (Johnson and Uccello 2005). Unlike Medicare, Medicaid does finance long-term care (Baer and O'Brien 2010).

Medicaid is the United States' means-tested social healthcare program designed to serve low-income individuals with limited resources by providing assistance with the cost of

term "long-term care" and so this paper uses "long-term care. For purposes of this paper, it may be understood that "long-term care" and "long-term supports and services" are interchangeable.

care (Baer and O'Brien 2010; Gleckman 2010; Goda 2011). Thus, Medicaid is not insurance (Baer and O'Brien 2010). The program spends more than $100 billion on long-term care per year, paying for almost half of long-term care costs (Goda 2011). Medicaid spends most on institutional care even though for individuals who qualify under strict income and asset tests, Medicaid does cover nursing home care, home health services, and non-medical home- and community-based care designed to keep aged and disabled individuals in the community rather than in institutions (Johnson and Uccello 2005; Johnson 2008). Individuals who need long-term care services must deplete their savings and pay for the cost of care out-of-pocket before they can qualify for Medicaid (Baer and O'Brien 2010).

Due to the limited conditions under which Medicare and Medicaid finance long-term care, much of long-term care costs are paid for out-of-pocket (Johnson and Uccello 2005; Johnson 2008; Baer and O'Brien 2010). In 2005, Medicaid covered nearly half of the $206.6 billion spent on long-term care in the United States, while Medicare covered nearly 20 percent and individuals and their families paid for the remaining cost out-of-pocket (Baer and O'Brien 2010). That year, about seven million individuals had long-term care insurance (Baer and O'Brien 2010). Individuals who do not qualify for Medicaid are responsible for paying the entire cost of services that Medicare does not cover as well as Medicare deductibles and co-payments (Johnson and Uccello 2005). Today, this is still the case (Weiner et al. 2013). Some individuals spend down in order to meet Medicaid's income and wealth qualifications while others receive informal, unpaid care from family (Weiner et al. 2013). Many people are otherwise forced onto welfare as a result of paying for care out-of pocket (Weiner et al. 2013).

Using Tax Incentives to Encourage Purchase of Long-Term Care Insurance

In order to promote private long-term care insurance and reduce the population without long-term care coverage, policyholders have suggested the use of tax incentives for long-term care insurance (Johnson and Uccello 2005; Johnson 2008; Goda 2011). However, there are numerous problems associated with the use of tax incentives to encourage the purchase of private long-term care insurance that limit their overall effect (Goda 2010; HLTCC 2012). First, tax incentives have proven to increase coverage among only a limited population of high-income, asset rich individuals (Goda 2010; HTLCC 2012). Second, problems associated with the private long-term care insurance market of lacking inflation protection and probability of lapse render the long-term benefit of coverage purchased using tax incentives unknown (Merlis 2003; HLTCC 2012). Third, tax incentives do not protect against premium rate increase on entire classes of policyholders, which contributes to rise in lapse rates and may financially burden policyholders who purchased private long-term care using them (Johnson and Park 2011). Finally, substantial tax loss results from using tax incentives to finance long-term care (Goda 2010; HLTCC 2012).

The Hawaii Long-Term Care Commission (HLTCC) recommends against the use of tax incentives to finance long-term care (HLTCC 2012). First, the HLTCC (2012) is concerned with tax incentives' minimal effect on the number of people with long-term care insurance. Second, tax incentives are regressive, which makes them more valuable among higher-income, asset rich individuals rather than low- and moderate-income people, increasing inequality in coverage (HTLCC 2012). Third, the HLTCC (2012) shows that the use of tax incentives for all people with

private long-term care insurance would result in other tax increases or cuts in other state spending, which limits their overall effectiveness.

Problems with the Long-Term Care System

In 1988, Rivlin and Wiener outlined problems of the current system for financing long-term care, which apply today. First, those who need extensive long-term care and their family members carry the financial burden associated with it and end up straining income and depleting life savings (Rivlin and Wiener 1988). The anxiety embedded in the experience of becoming disabled or providing care for a disabled loved one is compounded by the problem of paying for care out-of-pocket (Rivlin and Wiener, 1988). Second, they expressed concern over rising public cost associated with long-term care, namely Medicaid, which was not originally designed to finance long-term care for the elderly (Rivlin and Wiener 1988). Third, a "two-class system" of long term care results from dependence on Medicaid and care paid for out-of-pocket (Rivlin and Wiener 1988: 8). Nursing homes whose majority of patients pay out-of-pocket tend to provide higher quality care (Rivlin and Wiener 1988). Fourth, there are issues associated with access to care like the expensive nature of care for severely disabled individuals (Rivlin and Wiener 1988). Fifth, long-term care expenditures are majorly spent on nursing home care, despite the preference of elderly individuals to remain in the home (Rivlin and Wiener 1988). Lastly, the long-term care system lacks a comprehensive system for home care (Rivlin and Wiener 1988).

Rivlin and Wiener (1988) support the coverage of long-term care under a general social insurance program. Like Medicare, this would establish near-universal long-term care coverage among elderly people (Rivlin and Wiener 1988). This system of public insurance would foster understanding that use of long-term care is a normal, insurable aspect of growing old (Rivlin and Wiener 1988). Rivlin and Wiener (1988) recommend public insurance for long-term care that would be financed by a system of cost-sharing to control use of services (Rivlin and Wiener 1988). They point out that use of services among the many disabled elderly might substantially increase with the option of free or nearly free care and advise against this (Rivlin and Wiener 1988).

Rivlin and Wiener (1988) proposed two financing strategies for long-term care. One option would require significant cost-sharing for all users a public program that would provide nursing home and home care coverage for elderly people who become disabled ((Rivlin and Wiener 1988). Under another option, an expanded private insurance market would provide long-term care coverage for a limited period of time and public insurance would then cover the cost of care for those who require longer periods of nursing home or home care (Rivlin and Wiener 1988). As Rivlin and Wiener (1988) note, the second option would require a dependable private insurance market.

Burden of Caregiving

Considering low levels of Medicare coverage of long-term care expenditures and barriers to coverage associated with Medicaid eligibility rules, elderly people in the U.S. without private insurance are most likely to have to depend on receiving their long-term care informally

from family members, or have to pay out-of-pocket for long-term care services (Tennyson and Yang 2014). Due to limited public benefits, care recipients and their family members must cope with the substantial financial burden associated with long-term care costs and stress associated with informal caregiving (Elder et al. 1996; Johnson and Uccello 2005). Spillman and Black (2005) estimate 93 percent of U.S. elderly individuals with disabilities living in the community receive some form of informal care—two-thirds of whom depend solely on informal care.

Family members are the most common source of informal care (Kaye, Harrington, and Laplante 2010). In 2005, unpaid help from family and friends totaled in value about $103 billion (Johnson 2008). The burden associated with family caregiving continues to rise as family members struggle to balance work and other responsibilities with caregiving (Johnson and Uccello 2005). As women, who are more commonly caregivers than men, are spending more time in the workforce, they in particular struggle to uphold both their roles at work and at home providing care (Johnson and Uccello 2005). Women often manage the home and work full-time in addition to providing care for an elderly family member or loved one (Elder, George, and Shanahan 1996).

The burden associated with caregiving can contribute to declining health and financial burden on the caregiver (Elder et al. 1996). Caregiving is associated with stress that may lead to new health problems and exacerbate preexisting stress experienced by the caregiver, especially for women (Elder et al. 1996). Time spent caregiving can result in reduced hours at work which contributes to the financial, social, and psychological strain on caregivers (Nixon 2008). Caregivers may face other consequences of reduced hours at work like less opportunities for advancement; less retirement savings and social security income; and less time to pursue one's goals (Nixon 2008).

Mellor (2001) argues that family members do not substitute long-term care insurance policies and that the moral hazard associated with individuals receiving care from family members does not significantly explain low levels of private long-term care insurance coverage. Research shows that expectations of receiving care from family members may discourage less wealthy people from purchasing insurance but have no effect on people with higher wealth (Mellor 2001). Individuals may be less likely to purchase long-term care as they rely on their children for future care (Cramer and Jensen 2006). However, informal long-term care provided by family members does not offset the need for long-term care insurance (Mellor 2001; Cramer and Jensen 2006). That is, care provided by children or other family members of older individuals in need does not substitute formal long-term care (Mellor 2001).

HIPAA and Long-Term Care Tax Deductions

Generally, taxpayers receive federal tax benefits for long-term care insurance by taking an itemized deduction for medical expenses, like long-term care insurance premiums (Baer and O'Brien 2010). However, most long-term care insurance plans sold now use stipulations of the Health Insurance Portability and Accountability Act of 1996 (HIPAA), which makes only a small population eligible for long-term care insurance tax subsidies (Johnson and Uccello 2005; Baer and O'Brien 2010; Goda 2011). HIPAA designates that premiums for long-term care insurance may only be counted as a federal tax deduction for unreimbursed medical expenses that reach over 7.5 percent of an individual's adjusted gross income (AGI) (Johnson and Uccello 2005;

Courtemanche and He 2009; Goda 2011). In addition, only taxpayers who itemize unreimbursed medical expenses on their federal tax returns qualify (Baer and O'Brien 2010). This limits the deduction to a considerably small population of individuals whose medical expenses are high relative to their income (Baer and O'Brien 2010).

In order to qualify for the tax breaks, policyholders of long-term care insurance have to have a taxable income, considerably high medical expenses, and be able to itemize deductions rather than take the standard deduction, which significantly limits the population eligible (Baer and O'Brien 2010). Older, more affluent individuals are more likely to be able to claim the deduction (Baer and O'Brien 2010). Individuals with long-term care insurance with modest incomes, who do not have taxable income or do not itemize medical expenses are unlikely to receive a federal subsidy that may be used towards their long-term care insurance premiums (Baer and O'Brien 2010). Using data from the Health and Retirement Study, the AARP Public Policy Institute estimates that in 2006, while the majority, or 89 percent, of individuals ages 65 years and older who have private long-term care insurance filed a federal tax return, only about a third, or 36 percent, claimed an itemized deduction for medical expenses (Baer and O'Brien 2010).

Barriers to benefiting from the federal, itemized medical deduction are strengthened by age-based limits on the amount that can be deducted that prevents long-term care insurance policyholders from being able to deduct the full amount of their premiums even if expenses, including premiums, exceed 7.5 percent of adjusted growth income (Baer and O'Brien 2010). Younger taxpayers receive smaller subsidies compared to older taxpayers paying the same premium (Baer and O'Brien 2010). In 2007, the size of the deduction ranged from just $290 for individuals under 41 years of age to $3,680 for those 71 years and older (see Figure 1) (Baer and O'Brien 2010).

Figure 1: Maximum Long-Term Care Insurance Premium Deduction in 2007

Maximum Long-Term Care Insurance Premium Deductions in 2007	
Taxpayer's Age	**2007**
Under 41	$290
41 to 50	$550
51 to 60	$1,110
61 to 70	$2,950
71 and Older	$3,680
Source: Internal Revenue Service, http://www.irs.gov/formspubs/article/0,,id=177999,00.html	

Source: AARP (Baer and O'Brien 2010)

The tax incentive varies across different individuals (Courtemanche and He 2009). Under employer sponsored long-term care insurance, the employee can exclude the employer's contribution to the premium from taxable income (Courtemanche and He 2009). Within the

bounds of maximum caps, self-employed individuals can deduct an above-the-line portion of long-term care insurance premiums (Courtemanche and He 2009). For those whose long-term care insurance premiums do not qualify for exclusion or above-the-line deduction, premiums may be treated as itemized deductions, which are capped under HIPAA (Johnson and Uccello, 2005; Courtemanche and He 2009). A decade after the implementation of HIPAA, only 10 percent of the elderly have long-term care insurance, showing that HIPAA has not substantially increased the market for long-term care coverage (Courtemanche and He 2009).

HIPAA determines that in order to qualify for tax breaks, policy holders must wait until their disabilities reach levels specified in their contracts to collect benefits (Johnson and Uccello 2005). Under these plans, beneficiaries must need substantial assistance with at least two of six activities of daily living and their disabilities must be expected to last 90 or more days or they must require regular supervision due to cognitive impairment (Johnson and Uccello 2005). About three quarters of all individual plans purchased in 2000 delay collection of benefits after the onset of a qualified disability, and of those plans, two thirds required policyholders to wait between 90 and 100 days to collect benefits (Johnson and Uccello 2005).

Purchasing Long-Term Care Insurance

Potential buyers are deterred from getting long-term care insurance coverage, which they tend not to expect to need until decades after they consider purchasing it, for various reasons (Johnson 2008). Since individuals who expect to need long-term care are more likely to purchase coverage and receive benefits, premiums tend to be expensive and individuals who do not expect to need coverage end up discouraged from purchasing long-term care insurance due to high premiums (Johnson 2008). Expenses paid by Medicaid often exceed the beneficiary's financial resources, which also obviates individuals from purchasing coverage (Johnson 2008).

The decision to purchase long-term care insurance must be made in considerable advance of the need for care and thus involves a "multi-period planning problem under risk and uncertainty" (Tennyson and Yang 2014: 177). Many policyholders purchase coverage decades before they will receive benefits, so rise in long term care costs can diminish the value of insurance policies over time (Johnson and Uccello 2005). Many policies do not have inflation protection because it is not selected by the consumer at purchase (Merlis 2003; Johnson and Uccello 2005; HLTCC 2012). In 2000, only 4 in 10 policyholders purchased inflation protection (Johnson and Uccello 2005). If prices of long term care services rise particularly fast, some policyholders end up with less coverage than they initially expected to have since inflation protection is usually a fixed percentage increase per year (Johnson and Uccello 2005).

Long-Term Care Insurance Policy Pricing

The typical policy is purchased at a much higher premium relative to expected benefits and provides limited coverage compared to the total expenditure risk (Brown and Finkelstein 2007). Insurance policies are priced well above actuarially fair levels, meaning that under these policies, the expected value of premiums paid into the insurance company do not equal the expected value of benefits paid to the policyholder (Brown and Finkelstein, 2007; Brown and

Finkelstein 2009). Brown and Finkelstein (2007) estimate that on average, the buyer of the typical policy purchased by a 65-year old will only get back 82 cents in expected present discounted value benefits for every dollar paid in expected present discounted value premiums. When accounting for the fact that most policies are not held until death, this loss increases substantially (Brown and Finkelstein 2007).

Age and health of the policyholder determine how insurance companies price policies: premiums increase in price alongside age at the time of purchase and worse health of the individual (Johnson and Uccello 2005; Cramer and Jensen 2006). Insurance companies are reluctant to offer individuals in poor health coverage and when they do, often raise premiums making policies unaffordable (Johnson and Uccello 2005). Insurance companies tend to deny people in observably poor health, including individuals who need help with activities of daily living (Finkelstein, McGarry, and Sufi 2005). In addition to facing issues of unaffordability, individuals with poor health status are often turned away from insurance companies whose screening processes and eligibility restrictions regarding preexisting conditions make purchasing insurance policies difficult (Mellor 2001). Explanations for the high cost of premiums in the current long-term care insurance market include that insurance companies mark up prices in the face of adverse selection and moral hazard and to cover high administrative and other costs (Brown and Finkelstein 2009).

Experts recommend purchasing long-term care insurance only if the policyholder can expect to be able to afford the premiums for the rest of his/her life as there is no benefit to having a lapsed policy (Cramer and Jensen 2006). Cramer and Jensen (2006) suggest that higher income individuals are better able to afford policy premiums and in turn are more likely to purchase long-term care insurance. They found that price is a significant predictor of likelihood to purchase a new long-term care insurance policy (Cramer and Jensen 2006). Since the price of long-term care insurance policies rise alongside age at the time of purchase (see Figure 2), buyers can effectively reduce the annual premium of their policies by purchasing long-term care insurance earlier in life (Merlis 2003; Cramer and Jensen 2006). However, purchasers acquire early coverage only with additional exposure to the risk of lapse and loss of all coverage (Merlis 2003).

Figure 2: Average Long-Term Care Insurance Premiums, by Age at Purchase (2007)

Average Long-Term Care Insurance Premiums, by Age at Purchase, 2007

Age Group	Average Annual Premium
All ages	$2,207
Under age 40	$881
40 to 49	$1,781
50 to 59	$1,982
60 to 64	$2,249
65 to 69	$2,539
70 and older	$3,026

Source: National Clearinghouse for Long-Term Care Information, http://www.longtermcare.gov/LTC/Main_Site/Paying_LTC/Private_Programs/LTC_Insurance/index.aspx.

Source: AARP (Baer and O'Brien, 2010)

While policies are guaranteed renewable and insurance companies cannot raise premiums due to declining health of a single policyholder, if the insurer shows that their claims exceed revenue from premiums, the insurer can raise premium rates for an entire class of policyholders (Johnson and Park 2011). Merlis (2003) finds that presumably affordable insurance packages for middle-income seniors are unlikely to protect against impoverishment for those who experience an especially costly nursing home stay. There is significant need for more comprehensive policies with flexible, innovative options for purchasers of long-term care insurance to choose from (Merlis 2003). Alternatively, LTCI policies may become a more dependable protection from the costs of care if more critical consumer protections' are required in every LTCI contract (Merlis 2003).

Coverage Limits

Instead of providing lifetime benefits, most long-term care insurance policies limit the number of days individuals can receive benefits, specified by a "maximum benefit period," which is usually between one and five years (Johnson and Uccello 2005; Brown and Finkelstein 2007). Long-term care policies are also written to provide payments up to a specific "maximum daily benefit" to cover the cost of care (Brown and Finkelstein 2009). Over half of policy daily maximum benefit caps do not rise alongside long-term care costs, which have historically grown faster than the inflation rate (Brown and Finkelstein 2009). Due to the limited benefit structure, policies tend not to be very comprehensive (Brown and Finkelstein 2009).

Brown and Finkelstein (2007) figure that the typical policy purchased, if held until death, covers only about a third of expected long-term care expenditures. Brown and Finkelstein (2007) attribute the limited nature of coverage to the limited daily benefit cap rather than to

the maximum benefit period or deductible. They show that when the $100 daily benefit cap is maintained and the deductible and maximum benefit period are eliminated, the comprehensiveness of coverage rises from 34 to only 49 percent but when the deductible and maximum benefit period are maintained and the limited daily benefit cap is eliminated, the comprehensiveness rises to 68 percent (Brown and Finkelstein 2007).

Policies are designed to cover specific services in the delivery and financing environment of the time at which they are bought, which can limit the value of a policy when the policyholder eventually does need care or result in lack of access to newer service options for individuals who bought their policies early (Merlis 2003).While the average daily cost of a nursing home was $143 per day and higher for a private room in 2002, the average maximum daily benefit purchased for nursing home care was $109 in 2000 (Brown and Finkelstein 2007; Brown and Finkelstein 2009). Brown and Finkelstein (2007) find that considering nursing home costs exceed the maximum daily benefit cap, by the time the 65-year old purchaser utilizes care, on average 20 years after purchasing, the $100 daily benefit cap will only cover one third of daily nursing home costs (Brown and Finkelstein 2007). Individuals who drop their coverage to purchase a new policy, such as in the case that one desires a policy with more up-to-date features, must pay the price of the new policy based on his/her current age (Merlis 2003).

Merlis (2003) provides a hypothetical example of a 40 year old individual to demonstrate the limits of the private long-term care market. This individual could have bought a long-term care insurance policy without inflation protection in 2002 for $168 or wait until he or she is 60 years old and pay $562, or $394 more annually. For the $100 daily benefit on most policies, this price would not likely increase (Merlis 2003). Merlis (2003) shows that this individual could have put the $168 into a retirement account earning 5 percent interest per year and by the time he or she turns 60 years old, under which case the individual would have $5,883—more than enough to cover the higher premium cost of purchasing later in life. With inflation protection, this individual would face an annual cost of $593 and the policy's daily benefit amount would rise to $265 by the time he or she reaches age 60 and would continue to increase (Merlis 2003). It would be nearly impossible for an individual to make up this difference (Merlis 2003).

Who Needs Long-Term Care?

Numerous reports point to the widespread need for long-term care as well as the unaffordability of it. In 2009, 10 million Americans living in the community needed long-term care (Johnson and Park 2011). Of those needing long-term care, 5.2 million were 65 years and older and 1.7 million were 85 years and older (Johnson and Park 2011). About 7 in 10 individuals 65 years and older can expect to need long-term care sometime in the future (Kemper, Komisar, and Alecxih 2005). Kemper and colleagues (2005) expect that people turning 65 years old at the time of their study will need on average three years of long-term care before they die.

Kemper and colleagues (2005) predicted that for about two thirds of total years that the cohort of individuals in their study will need long-term care, individuals will receive informal care from family members at home exclusively or in addition to receiving at home paid care.

They expect the remaining one third of years of care will be nursing home care or that provided by assisted living facilities (Kemper et al. 2005). Of the total care received at home or in nursing homes and assisted living facilities, 55 percent will be paid by public programs and private insurance (Kemper et al. 2005). Those in need will be left to pay for the remaining 45 percent of long-term care costs out-of-pocket, according to their projections (Kemper et al. 2005).

Women are at a higher risk for needing long-term care and for a longer period of time compared to men (Kemper et al. 2005). On average, women 65 years and older will need long-term care for about 3.7 years compared to men who will need care for about 2.2 years (Kemper et al. 2005). Kemper and colleagues (2005) estimate that compared to 58 percent of men, 79 percent of women turning 65 can expect to need long-term care before they die. Overall, among those turning 65 years old, about 35 percent of individuals will not ever need long-term care while 20 percent of individuals will need care for more than five years (Kemper et al. 2005). Given the variation in the need for long-term care, it is important to consider the catastrophic costs associated with paying for long-term care out-of-pocket especially for women and others who, on average, need care for a longer period of time (Kemper et al. 2005; Johnson and Park 2011).

Can Those in Need Afford Long-Term Care?

The majority of individuals in need of long-term care cannot afford to pay for coverage out-of-pocket (Johnson 2013). In 2010, about 11 percent of the elderly had private long-term care insurance and in 2011, just about 3 percent of the adult population had coverage (Hagen 2013). One study finds that when insurance premiums are "affordable" at no more than 5 percent of income, just 14 percent of older households are able to afford long-term care insurance coverage (Merlis 2005). In the current long-term care climate, people tend to have to pay for services themselves, spending all of their resources on long-term care before they can qualify for Medicare and Medicaid (Johnson et al. 2006). As people in the labor force become ill or their family members become ill, they may feel a need to quit their jobs to provide or receive care while having to pay out-of-pocket, for which the financial consequences can be catastrophic (Johnson et al. 2006).

Older Americans with disabilities are of substantially lower income and less wealth compared to those without disabilities (Johnson 2013). The average income for individuals 65 years and older living in the community who reported difficulty with at least two ADLs was $29,400 in 2009 compared to $44,900 for those who did not report any difficulty with ADLs (see Figure 3) (Johnson 2013). Few older Americans with disabilities have more income or wealth prior to their being disabled (Johnson 2013). Compared to individuals without ADL limitations, those with two or more ADL limitations have considerably less wealth (see Figure 4) (Johnson 2013). Johnson (2013) finds that most older recipients of nursing home care through Medicaid have low income and very little wealth at least a decade before entering the nursing home and while they are in care, which suggests that most Medicaid nursing home residents were unable to establish savings prior to their entering the program.

Figure 3: Annual Per Capita Household Income of Adults Ages 65 and Older Living in the Community by Disability Status in 2009 (in 2012 Constant Dollars)

	No ADL limitations	Two or more ADL limitations
Average value	44,909	29,399
Percentiles of the income distribution		
10th	9,966	7,063
25th	16,053	11,019
50th (median)	27,236	18,206
75th	49,740	33,711
90th	93,022	56,596
Number of observations	*7,675*	*1,538*

Source: Author's computations from the Health and Retirement Study.
Note: For married adults, per capita income equals total household income divided by two. Activities of daily living include walking across a room, getting in and out of bed, dressing, eating, bathing, and toileting. Respondents are considered to have a limitation if they report any difficulty with these activities.

Source: Johnson (2013)

Figure 4: Average Household Wealth of Adults Ages 65 and Older Living in the Community by Disability Status 2010 (in 2012 Constant Dollars)

	No ADL Limitations	Two or More ADL Limitations
Home equity	173,920	94,843
Financial assets	183,161	109,120
Other wealth	233,561	105,795
Total	590,642	309,758
Number of observations	*8,017*	*1,564*

Source: Author's computations from the Health and Retirement Study.
Note: Activities of daily living include walking across a room, getting in and out of bed, dressing, eating, bathing, and toileting. Respondents are considered to have a limitation if they report any difficulty with these activities.

Source: Johnson (2013)

As household wealth is unevenly distributed across the population, (see figure 5), average wealth values do not accurately represent typical households (Johnson 2013). Among individuals ages 51 to 61, the onset of health related work limitations, as well as divorce and job layoffs, can substantially reduce household wealth (Johnson et al. 2006). More than 75 percent of individuals 51 to 61 years old experience widowhood, divorce, new health problems, layoff from jobs, or parents or in-laws becoming frail at the beginning of the ten year period (Johnson et al. 2006). Over two-thirds of individuals 70 years and older experience at least one of these negative shocks over a nine year period (Johnson et al. 2006). Elderly, unemployed individuals with disabilities resulting from work and other long-term care needs are especially vulnerable to the financial consequences of such life events (Johnson et al. 2006).

Figure 5: Distribution of Household Wealth of Adults Ages 65 and Older Living in the Community by Disability Status, 2010 (in 2012 Constant Dollars)

	Total household wealth		Nonhousing wealth	
Percentiles of the income distribution	No ADL limitations	Two or more ADL limitations	No ADL limitations	Two or more ADL limitations
10th	7,656	0	842	-369
25th	90,024	2,632	15,478	106
50th (median)	280,601	65,280	115,820	12,635
75th	680,182	294,816	438,854	132,141
90th	1,316,140	757,255	1,007,640	550,434
Number of observations	*8,017*	*1,564*	*8,017*	*1,564*

Source: Author's computations from the Health and Retirement Study.
Note: Activities of daily living include walking across a room, getting in and out of bed, dressing, eating, bathing, and toileting. Respondents are considered to have a limitation if they report any difficulty with these activities.

Source: Johnson (2013)

Married people are at greater risk for incidence of these negative life events because their spouses can develop health problems or lose their jobs (Johnson et al. 2006). Incidence of negative shocks experienced by an individual's spouse can threaten one's financial security as much as individual shocks (Johnson et al. 2006). The loss of earnings and spousal income forces many individuals to tap into and deplete much of their savings on long-term care and other health costs (Johnson et al. 2006).

Married women 70 years and older who enter a nursing home lose about $40,000, which is over one third of the median baseline wealth among individuals in Johnson and colleagues' (2006) study. Individuals with limited education experience higher rates of negative

shocks at older ages (Johnson et al. 2006). Because individuals with limited education are more likely to engage in risky health behaviors and are likely to have jobs which expose them to greater health risk, it is not uncommon for them to have functional limitations in older age (Hagen 2013). While college graduates are just as likely as high school dropouts to lose their jobs, among individuals 51 to 61 years old who did not complete high school, 40.3 percent develop health-related work problems compared to 23.4 percent of their counterparts with a college degree (Johnson et al. 2006).

Many families who could afford to purchase long-term care insurance do not prepare for retirement or are not protected against possible future life events that alter health and financial security before retirement (Merlis 2003). Regardless of health status, younger people set aside less of their income for healthcare compared to older people (Johnson et al. 2006). As working age individuals need to save for retirement and face other financial responsibilities, they face more immediate financial risks associated with paying for long-term care insurance (Merlis 2003). For example, most working age adults must consider that they need health insurance, disability insurance, and ought to have life insurance when weighing their options on purchasing long-term care (Merlis 2003). These needs take precedence over the need for long-term care for individuals who do not expect to need coverage until the distant future (Merlis 2003). Merlis (2003) found that three out of four couples technically can afford long-term care insurance, but just one in five is protected in other areas such as those mentioned.

Who Purchases Long-Term Care?

Though long-term care costs remain one of "the most significant sources of financial uncertainty" for which the U.S. elderly population is most at risk, elderly households continue to not purchase long-term care insurance (Brown and Finkelstein 2009: 25). Individuals with a risk of needing long-term care who do not have private long-term care insurance face significant financial uncertainty later in life (Tennyson and Yang, 2014). Long term care risk is not usually realized early in life, involves a lifetime risk that varies across individuals, and can be financially burdensome at the point of realization (Tennyson and Yang, 2014).

Late-middle-aged individuals in middle income households are in need of long-term care insurance because they are unlikely to be eligible for Medicaid and they are unlikely to be able to finance long-term care (Tennyson and Yang 2014). While the average age for purchasing long-term care insurance is 62 years old (SOA and LIMRA International 2006), only about 10 percent of individuals 60 years or older own private long-term care insurance (Brown and Finkelstein 2007). More people renew existing policies than purchase new long-term care insurance plans (Cramer and Jensen 2006). According to Cramer and Jensen (2006), only 4 percent of individuals purchase new long-term care insurance but most policyholders renew existing policies. Even after previously lapsing coverage, Cramer and Jensen (2006) found that individuals who had previously purchased long-term care insurance are likely to purchase again.

Pointing to limitations of the demand side of the market**,** Brown and Finkelstein (2008) suggest that even if the long-term care insurance market offered actuarially fair prices, the majority of individuals would not purchase policies. Experts have posed various explanations for the demand (or lack thereof) issue of the long-term care insurance market. One explanation is that individuals do not purchase insurance even when it is in their interest to do so because of

limited consumer knowledge and rationale (Brown and Finkelstein 2009). Another explanation holds that their state-dependent utility leads individuals not to purchase insurance (Brown and Finkelstein 2009).

The lack of demand has also been attributed to potential substitutes for formal care provided by insurance such as family provided informal financial or "in-kind insurance," housing equity that may be liquidated to pay for care, and the "Medicaid crowd-out effect" (Brown and Finkelstein 2009). It is important to consider that many older adults who cannot afford to pay for long-term care either out-of-pocket or through private insurance may be focused on more pressing financial needs than long-term care, like paying for health insurance, life insurance, or disability insurance (Merlis 2005). For these individuals, other financial responsibilities may take precedence over the already expensive long-term care insurance, and thus they do not plan for future long-term care needs (Merlis 2005).

Medicaid and Long-Term Care Insurance

The availability of Medicaid for low- and middle- income adults crowds out demand for private long-term care insurance (Cramer and Jenson 2006). However, Medicaid requires a 100 percent tax on most assets for whom it provides long term care, putting individuals who save into their old age at a disadvantage (Johnson and Uccello 2005). Thus Medicaid provides a better option for receiving coverage among lower-income and less wealthy individuals (Finkelstein and McGarry 2006). Affluent adults can better afford insurance premiums and are more likely to have private long term care coverage because they would have to diminish their assets to qualify for Medicaid (Johnson and Uccello 2005).

There is considerable strain associated with transitioning from non-Medicaid to Medicaid status (Weiner et al. 2013). Spending down to become Medicaid eligible means diminishing one's income and assets while dealing with illness and/or disability (Weiner et al. 2013). Compared to individuals who do not spend down to Medicaid eligibility, those who do are disproportionately lower income and have less assets (Weiner et al. 2013). Those who spend down have characteristics associated with having lower income and less assets: they are disproportionately black, Hispanic, unmarried, and have lower levels of education, which contradicts that middle-class individuals are most likely to spend down (Weiner et al. 2013).

Individuals who prefer to remain in their own homes over living in a nursing home are less likely to intend to purchase long term care insurance (Tennyson and Yang 2014). Medicaid rules tend to prevent frail older adults from receiving subsidized care at home (Johnson and Uccello 2005). Under federal law, special Medicaid initiatives to provide home and community based services to individuals with disabilities are prohibited from increasing Medicaid expenditures (Johnson and Uccello 2005). Thus, states limit eligibility for home and community based care coverage and individuals often cannot financially afford to remain in the community on the small monthly stipend provided by Medicaid to cover their living expenses (Johnson and Uccello 2005).

The Value in Purchasing Long-Term Care Insurance

A 2006 report from the Society of Actuaries (SOA) and LIMRA International suggests that individuals may be starting to better understand the value of purchasing long-term care insurance at a younger age, as the average age for purchasing long-term care insurance at the time of the report is 62 years, compared to 66 years for individual plans in 2000-2001 (SOA and LIMRA International 2006). Individuals are more likely to purchase long-term care insurance policies when substantial savings would accrue from purchasing now rather than a year from now (Cramer and Jensen 2006). For example, Cramer and Jensen (2006) found that if an individual would save $100 on the following year's annual premium, the probability of purchase rose. Cramer and Jensen (2006) suggest that lowering policy prices might encourage purchasing of long-term care insurance.

Older, higher income and asset rich individuals are more likely to have long-term care insurance (Mellor 2001; Baer and O'Brien 2010). In 2006, a quarter of individuals 65 years or older whose annual income exceeded $81,300, or those in the top quartile of income earners in the table below (see Figure 6), had long-term care insurance (Baer and O'Brien 2010). The tax deductibility of premiums influences decisions to purchase long-term care insurance (Cramer and Jensen 2006). Individuals who itemize deductions on their tax returns can deduct a portion of their long-term care insurance premiums (Cramer and Jensen 2006). Both individuals who itemized deduction on their tax returns and those who believe they will leave a bequest are significantly more likely to purchase long-term care insurance compare to those who cannot itemize deductions and do not expect to leave a bequest (Cramer and Jensen 2006).

Figure 6: Share of People Ages 50+ with Long-Term Care Insurance by Age and Family Income Quartile (2006)

Share of People Ages 50+ with Long-Term Care Insurance, 2006
By Age and Family Income Quartile

Age	Bottom Quartile $21,248 or less	Second Quartile >$21,248 to $42,700	Third Quartile >$42,700 to $81,300	Top Quartile More than $81,300	All Incomes
50 and older	5%	11%	13%	18%	12%
50 to 64	5%	7%	9%	16%	10%
65 and older	6%	14%	19%	25%	14%
65 to 74	6%	13%	18%	24%	15%
75 and older	5%	15%	22%	27%	13%

Source: AARP Public Policy Institute estimates based on 2006 data from the Health and Retirement Study.

Source: AARP (Baer and O'Brien 2010)

Personal Experiences, Characteristics, and Likelihood of Purchase

It is not uncommon for near-elderly individuals to provide care for family members or to have previously provided care for their own parents (Tennyson and Yang 2014). Tennyson and Yang (2014) examine the role of earlier life experience with providing informal long-term care to others, like family members, in determining demand for long-term care insurance. As

previous experiences with giving and receiving care affect individuals' knowledge, attitudes, and risk perceptions, they may affect decisions surrounding insurance (Tennyson and Yang 2014).

Tennyson and Yang (2014) find that among late middle-aged individuals, previous experience providing informal care for others is associated with an increased likelihood to purchase long-term care for themselves. Individuals who have provided informal care to others may have better understanding of the need for planning, long-term care service benefits, and more access to sources of information about long-term care financing, which contributes to increased demand for long-term care insurance (Tennyson and Yang 2014). Individuals' experiences with providing long-term care for others may also lead to emotional reactions to the prospect of receiving long-term care from others themselves, in which case it is these emotions rather than increased awareness and access to information that increases the demand for long-term care insurance (Tennyson and Yang 2014).

Individuals characterized as "cautious," or those who engage in risk-reducing behavior measured either by their investment in preventative healthcare or seatbelt use, are more likely to own long-term care insurance (Finkelstein and McGarry 2006). These cautious individuals are also less likely to enter a nursing home and no more likely to utilize long-term care services (Finkelstein and McGarry 2006; Tennyson and Yang 2014). As mentioned earlier, wealthy individuals also more likely to own long-term care insurance coverage and are less likely to use long-term care services (Finkelstein and McGarry 2006). Insurance companies do not consider either of these characteristics in pricing long-term care insurance (Finkelstein and McGarry 2006).

Finkelstein and McGarry (2006) find that "cautious" individuals who invest in preventative healthcare, like getting a flu shot, tend to overestimate their risk probability relative to actual experience. Individuals who perceive that they are higher risk are more likely to own long-term care insurance (Finkelstein and McGarry 2006). However, Finkelstein and McGarry (2006) find that an insurance company's prediction of an individual's risk is negatively associated with insurance coverage. Conditional on the individual's risk assessment, this suggests that a higher prediction of an individual's risk by the insurance company may result in policy pricing that is higher than what the individual perceives is actuarially fair (Finkelstein and McGarry 2006). Thus, the individual may be discouraged from purchasing coverage (Finkelstein and McGarry 2006).

Using Home Equity to Finance Long-Term Care Insurance

Most buyers currently purchase long-term care insurance through installment premiums using current income (Merlis 2005). However, most older households cannot afford to pay for long-term care insurance using retirement income (Spillman and Murtaugh 2007). Considering the increasingly high cost of good quality coverage in older age and low coverage rates among the elderly, combined with the reality that older individuals have fixed retirement income, people are looking to use their assets as a way to fund and prefund long-term care (Spillman and Murtaugh 2007). A reverse mortgage may be used as a mechanism for drawing upon home equity to pay for long-term care for older individuals who lack other financial resources to pay for coverage (Merlis 2005; Spillman and Murtaugh 2007).

Under a reverse mortgage, an older person receives money in advance from a lender in exchange for a future claim on the older person's home (Merlis 2005). Individuals who do not yet need long-term care may use the money from a reverse mortgage loan to pay long-term care insurance policy premiums while those who have functional disabilities may use the funds to pay for personal care costs, home modifications, and other assistance necessary for them to remain in the home (Merlis 2005). Older individuals who are beginning to experience physical problems may be drawn to the concept of an annuity as they are usually able to obtain considerable equity through reverse mortgages due to their shorter life expectancy (Spillman and Murtaugh 2007).

Home Equity Conversion Mortgages (HECM), offered by banks and insured by the Department of Housing and Urban Development, are the most common type of reverse mortgage sold (Merlis 2005; Spillman and Murtaugh 2007). Under an HECM, the homeowner receives money from the lender in advance as a lump-sum, in the form of periodic payments over time, a line of credit with interest on unused amounts, or a combination of both (Merlis 2005; Spillman and Murtaugh 2007). Borrowers of HECMs are not required to make any payments on the loan until they leave the home (Merlis 2005). When the borrower or his or her estate eventually sells the house, the lender collects a loan balance which includes interest and other charges (Merlis 2005).

Reverse mortgages come with high loan costs and limits on the amount of equity that may be taken out (Spillman and Muraugh 2007). Borrowers of HECMs are limited in the amount of home equity they can borrow against based on the median local home value of the county in which they live (Merlis 2005; Spillman and Murtaugh 2007). Additionally, under an HECM, individuals may only borrow a fixed percentage of the allowed home equity determined by age at the time of application and the expected interest rate of the loan (Merlis 2005). Merlis' (2005) calculations show that a 62 year old individual could borrow up to 63 percent of his or her home's value if the expected future interest rate of the HECM was 5.5 percent, while an 80 year old individual could borrow 78 percent at the same rate. When couples purchase an HECM, such that the home is dually owned, the younger member's age is used in all determinant calculations (Merlis 2005).

At age 65, 36 percent and at age 75, only 26 percent of individuals meet long-term care insurance purchase requirements due to restrictions associated with their level of income (Spillman and Murtaugh 2007). So, Spillman and Murtaugh (2007) suggests that for individuals 75 years old, using assets to purchase a combined annuity might prove to be a valuable option. In the face of high premiums resulting from purchase at older age and the likelihood that these individuals will not pass conventional long-term care insurance underwriting, using annuity to purchase coverage may be appealing (Spillman and Murtaugh 2007).

Assuming willingness and ability to use up to 100 percent of their housing equity, Spillman and Murtaugh (2007) find that at both ages 65 and 75, no more than 45 percent of the population has the resources to cover the premiums for a combined annuity, while about 30 percent could afford the premiums without using their home equity. However, individuals of high wealth tend to use less costly ways of financing long-term care than reverse mortgages to access home equity as they have the financial means to choose among other methods of providing for future long-term care (Spillman and Murtaugh 2007). About 25 percent of individuals at both ages 65 and 75 in the higher wealth population in Spillman and Murtaugh's

study could "comfortably" afford a combined annuity, most of whom did not need to use housing equity while retaining substantial liquidity (Spillman and Murtaugh 2007: 22).

However, for many individuals, using an HECM to finance long-term care means losing most or all of their greatest assets, leaving them without another financial safeguard against risks other than the need for long-term care (Merlis 2005). In older age, individuals may need to use an HECM for other costs that are not covered by retirement income, such as to maintain their standard of living or to pay for costs associated with home upkeep (Merlis 2005). For those who intend to pass their home onto their children or other heirs, the HECM could eliminate the largest piece of an individual's bequest (Merlis 2005).

Who is Eligible for an HECM?

Of older households, 59 percent are eligible for an HECM (Merlis 2005). In order to be eligible for an HECM, the owner or owners of the house must by 62 years or older (Merlis 2005). Merlis (2005) estimates that over 40 percent of the 24 million households headed by an individual 65 years or older either lack the home equity necessary, do not meet age requirements to qualify for, or would not have closing costs covered by the maximum loan amount of a HECM and thus are ineligible for the HECM. Many individuals are ineligible for HECMs for reasons such that another homeowner's name is on the deed or because the loan amount available to them is not enough to cover closing and other costs (Merlis 2005).

Not all potential borrowers are necessarily likely to use an HECM, especially in the face of high long-term costs (Merlis 2005). Of the 14.2 million households eligible households for an HECM, 1.6 million potential borrowers are very low income and do not have many financial resources in addition to their homes (Merlis 2005). These individuals would qualify for Medicaid should they need expensive long-term care, if they are not already Medicaid recipients (Merlis 2005). Merlis (2005) shows that older homeowners in the top quartile of by financial assets, or 3.8 million households with $275,000 or more, are unlikely to want or need an HECM because they already have the financial resources to pay for long-term care. After eliminating the wealthier population and those with very low income and limited other financial resources, the 14.2 million population eligible are diminished down to 8.8 million households who could potentially borrow an HECM (Merlis 2005).

The final loan balance, which is payable when the borrower's home is sold, may be substantially higher than the loan amount received by the borrower as a result of the upfront charges associated with borrowing an HECM and the loan's compounding interest (Merlis 2005). Merlis (2005) shows that a 70 year old HECM borrower with a life expectancy of fifteen years whose home equity is $80,000, the median for his or her age, could opt for a loan which pays $380 over his or her life expectancy. By the end of those fifteen years, the borrower would owe $103,523 but have received just $68,392, or owe $1.51 for every dollar he or she received (Merlis 2005). Had the loan been for a shorter duration, this ratio would have been even higher (Merlis 2005).

Numerous costs financed by the loan proceeds diminish the resulting loan available to many individuals to literally nothing (Merlis 2005). The upfront mortgage insurance premium and other closing costs for an HECM are financed through the loan (Merlis 2005). Borrowers must use loan proceeds to pay off any existing mortgage and to finance any needed repairs on

the house (Merlis 2005). In addition, money is set aside from loan proceeds for future bank service charges (Merlis 2005). After these charges, the available loan amount may be zero (Merlis 2005).

HECMs and Medicaid Expenditures

Some argue that the use of HECMs could reduce Medicaid expenditures (Merlis 2005). While the use of an HECM would delay an individual's use of Medicaid, HECMs do not necessarily reducing Medicaid spending (Merlis 2005). Individuals can qualify for Medicaid and receive an HECM at the same time, in which case use of Medicaid is not postponed and expenditures are not reduced (Merlis 2005). Regardless of what an individual spends his or her loan proceeds on, they are not treated as income (Merlis 2005). Thus, loan proceeds do not affect Medicaid eligibility unless the borrower saved enough loan payments to exceed Medicaid eligibility restrictions on non-housing assets (Merlis 2005). Before assuming that the use of HECMs reduce Medicaid expenditures, it is also important to consider that Medicaid has priority over the home equity of older long-term care recipients (Merlis 2005). HECMs use such a substantial portion of an individual's home equity towards interest and other loan costs that in some cases, it is more cost-effective for an individual in need of care to use Medicaid to finance the care and recover expenditures in the future rather than purchase an HECM (Merlis 2005).

Merlis (2005) points out the reverse mortgages will not solve the long-term care funding problems associated with Medicaid. Reverse mortgages could serve as a mechanism for using home equity to make long-term care insurance more affordable for many households (Merlis 2005; Spillman and Murtaugh 2007). However, individuals whose homes are their largest asset are not likely to want to mortgage it to pay for long-term care insurance which is considerably expensive relative to limited benefit (Merlis 2005). In addition, other financial needs such as those previously mentioned take precedence over the desire to mortgage one's homes to pay for long-term care insurance (Merlis 2005).

Long-Term Care Insurance Policy Lapse

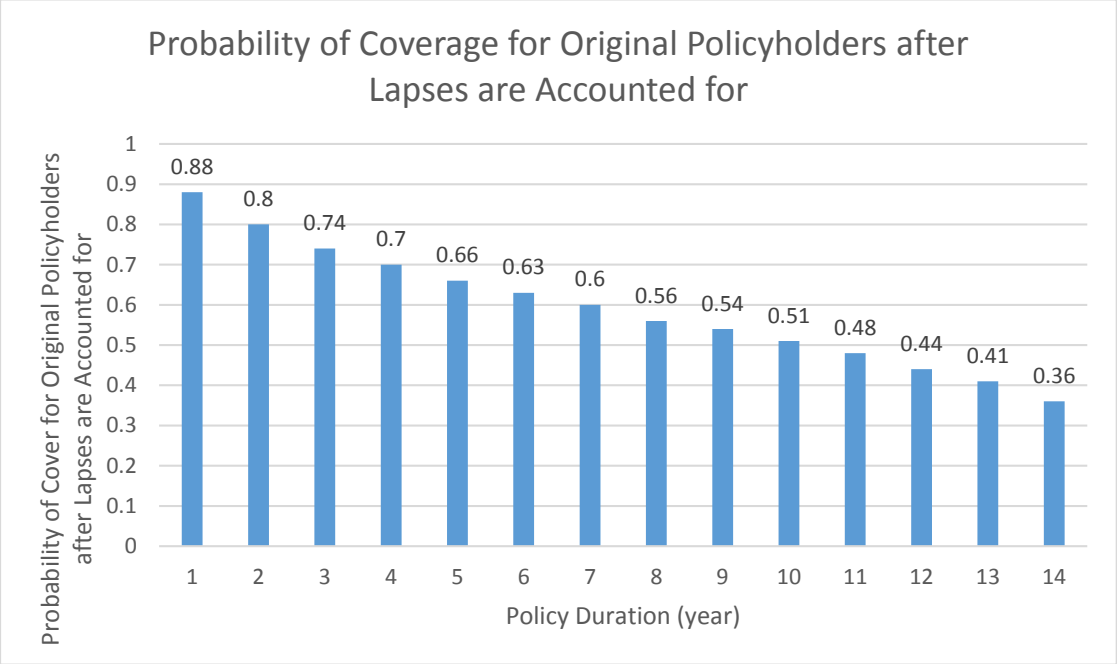
Early purchase of long-term care insurance can prevent buyers from paying higher premium rates associated with policies bought in older age (Johnson and Uccello 2005; Cramer and Jensen 2006). Individuals also benefit from purchasing long-term care insurance early in life due to less risk of failing underwriting screenings, which can prevent elderly individuals from accessing coverage due to frailty, having more disabilities, and risk compared to younger individuals (Merlis 2003). However, by purchasing coverage at a younger age, people pay insurance premiums over a considerable period of time throughout which they may not think they will ever utilize services, which may lead individuals to lapse, or terminate the policy (Merlis 2003). As Merlis (2003) points out, a 40 year old buyer of long-term care insurance may not need care until he/she reaches 75 or 80 years old, which could mean decades of paying for care and not utilizing it and thus many opportunities for policy lapse.

As specified in a report from The Society of Actuaries (SOA) and LIMRA International (2006), voluntary lapse refers to termination of a policy for any reason other than death.

Reasons policies lapse include that the policy is terminated due to nonpayment of the premium, expiration of benefits, the policy is transferred to “reduced paid up” or “extended term status,” and the policy is terminated for an unknown reason (SOA and LIMRA International 2006). Individuals forfeit any rights to future benefits when they stop paying premiums (Brown and Finkelstein 2007).

During the years 2002- 2004, voluntary lapse rates averaged 4.3 percent for individual plans, 7.5 percent for group plans, and 5.2 percent for all plans combined (SOA and LIMRA International 2006). A large portion of policies that lapse are terminated for unknown reasons (SOA and LIMRA International 2006). Total termination of individual long-term care insurance plans tends to increase substantially after the sixth year of having a policy (see figure 7) (SOA and LIMRA International 2006).

Figure 7 Probability of Coverage for Original Policyholders after Lapses are Accounted for

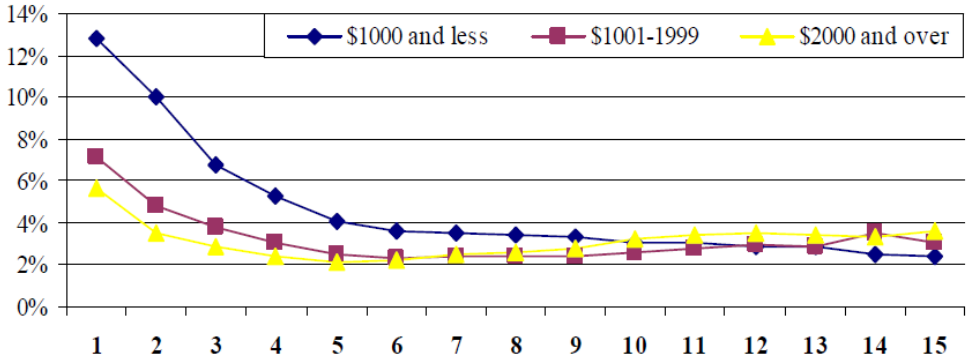


Source: Adapted from AARP (Baer and O'Brien 2010), Society of Actuaries (2002) Long-Term Care Experience Committee intercompany study 1984- 1999. Schaumburg, IL: Society of Actuaries, 2002**.**

Policyholders who voluntarily and involuntarily lapse effectively "cross-subsidize" individuals who remain in the long-term care insurance pool (Merlis 2003: v). Contributions of those who lapse their policies continue to fund care for others who maintain their policies (Merlis 2003). Merlis (2003) argues the reduced cost of purchasing earlier in life would largely diminish if all owners of long-term care insurance maintained their policies through old age.

Voluntary lapse rates are greater among policies with lower premiums compared to those with higher annual costs (SOA and LIMRA International 2006). As shown in Figure 8 below, lapses are significantly higher among individual plans with premiums under $1000 per year (SOA and LIMRA International 2006). Lapse rate increases alongside the number of premium payments an individual policyholder pays per year (SOA and LIMRA International 2006). The SOA and LIMRA International (2006) suggest that with increased frequency of bills, come more opportunities to question the purchase decision.

Figure 8 Voluntary Lapse Rates by Policy Year and Annual Premium Level for Individual Plans



Source: SOA and LIMRA International (2006)

A study reported by SOA and LIMRA International shows that voluntary lapse rates do not differ very much by age at issue of the policy until beyond age 79, when mortality tends to more greatly impact lapse rates (2006). On average, the voluntary lapse rate for policies sold without a marital discount was 30 percent higher compared to those sold with a marital discount (SOA and LIMRA International 2006).

SOA and LIMRA International (2006) reported that of the insurance policies examined in their study, those with a maximum daily benefit of $100 or less had the highest lapse rates while policies with a maximum daily benefit of $150 or greater, had the lowest lapse rate (2006). Policies with limited lifetime benefits have higher lapse rates compared to those with unlimited benefits (SOA and LIMRA International 2006).

Individuals who lapse and purchase another insurance policy are less likely to use nursing home care compared to those who lapse and do not purchase another policy (Finkelstein, McGarry, and Sufi 2005). Compared to individuals who drop coverage and do not purchase another insurance policy, those who have long-term care insurance coverage end up facing lower nursing home stay costs (Finkelstein, McGarry, and Sufi 2005).

Insurance policies with the richest inflation protection tend to be the most persistent (SOA and LIMRA International 2006). Lapse rates for policies sold with inflation protection are 40 percent lower compared to policies without a plan for increasing benefits over time (SOA and LIMRA International 2006). SOA and LIMRA International (2006) suggest that buyers of plans with inflation protection better understand the value of long-term care insurance coverage.

Tax Incentives for Long-Term Care Insurance

Until 1997, when a limited federal subsidy was designated to long-term care for the first time, tax preferences did not support long-term care (Goda 2011). By 2008, twenty four states and the District of Columbia had tax subsidies for long-term care insurance premiums (Goda 2011). As higher rates of private insurance coverage lower out-of-pocket expenditure risk, financing long-term care through tax subsidies can improve access and quality to care, lower reliance on informal caregiving, and reduce adverse selection (Goda 2011). By expanding tax

incentives, policy makers could promote private long-term care insurance and reduce the number of uninsured individuals (Johnson and Uccello 2005; Johnson 2008; Goda 2011). Americans might be better encouraged to prepare for their future long-term care needs if Congress would enhance tax incentives for purchasing private long-term care insurance (Johnson 2008). For example, lowering the premiums policyholders pay after taxes would encourage individuals to purchase coverage (Johnson 2008).

However, tax incentives do not have a significant impact on enrollment in long-term care insurance plans among individuals of low and moderate income (Goda 2011; Johnson 2008). Research suggests that tax incentives encourage purchasing of long-term care insurance, boosting coverage rates by 28 percent, but mostly among high income, asset-rich individuals who are less likely to rely on Medicaid (Goda 2011). Tax incentives should target less wealthy populations in order to increase private insurance coverage among individuals at risk of spending down in order to be eligible for Medicaid (Goda 2011).

That tax subsidy induced increase in insurance coverage varies with wealth suggests that tax incentives are not likely to substantially reduce government spending (Goda 2011). However, Goda (2011) explains that given the problems associated with Medicaid eligibility requirements, using tax subsidies, instead of Medicaid, to finance long-term care could improve efficiency, even if government long-term care expenditures remain the same. "If Medicaid's eligibility requirements distort savings and work decisions or overall nursing home quality is lower because Medicaid pays facilities less than the market prices," then tax subsidies could improve long-term care efficiency (Goda 2011: 745).

Twenty states and the District of Columbia, not including Hawaii, provide a unique long-term care insurance deduction which is structured differently than the federal deduction and thus reaches more taxpayers (Baer and O'Brien 2010). For those who qualify, the state tax incentives can provide a substantial supplement to the federalized itemized deduction (Baer and O'Brien 2010). Most states with the deduction allow most taxpayers to file a deduction from gross income rather than itemizing in order to claim the deduction and do not limit the amount of the premium which can be deducted by age or the deductibility to only those with high medical expenses (Baer and O'Brien 2010).

Compared to federal tax subsidies, more policyholders are eligible for state tax subsidies for private long-term care insurance but the tax benefit provided at the state level tends to be small relative to the federal tax benefit (Baer and O'Brien 2010). Most state tax deductions do not reduce long-term care insurance costs by more than 10 percent (Baer and O'Brien 2010). In states that use tax credits to provide more generous tax subsidies for private long-term care insurance, subsidies can reduce after-tax price of long-term care insurance for individuals, including those who do not itemize deductions to qualify for federal incentives, by 15 to 25 percent (Baer and O'Brien 2010).

Most of the nine states that offer tax credits, not including Hawaii, allow tax payers with long-term care insurance to claim a credit equal to a fixed percentage, ranging from 15 to 25, percent of their premium (Baer and O'Brien 2010). The tax credits are nonrefundable and may only be used to reduce the amount of taxes a policyholder owes, which does not hugely reduce costs for low- and moderate- income individuals but does help limit government expenditures (Baer and O'Brien 2010). Many individuals do not take advantage of the deduction in states which offer them, which may result from many policyholders having low or no taxable income,

or because seniors who qualify to benefit from state tax incentives may not be aware that they can claim a subsidy (Baer and O'Brien 2010).

Courtemanche and He (2009) found that the tax incentive determined by HIPAA increased purchase of private long-term care insurance by 25 percent, but only among those eligible under HIPAA rules. Despite the strong response among those who qualify for the HIPAA tax incentive to purchase long-term care insurance, Courtemanche and He (2009) suggest tax incentives alone will not substantially expand the market. Assuming that the response rate among the general population would mimic that of the response rate to the HIPAA tax incentive, they find that even an above-the-line tax deduction would not increase the coverage rate of long-term care insurance among seniors by more than 13 percent (Courtemanche and He 2009). Courtemanche and He (2009) found that among those eligible for the HIPAA tax incentive, up-take of long-term care insurance increased substantially but that the market for long-term care insurance did not increase as a result of the tax treatment in HIPAA. It is important to consider that only a small population of individuals is eligible for the tax incentive determined by HIPAA (Baer and O'Brien 2010). Only about 14 percent of the individuals in Courtemanche and He's (2009) sample itemized medical expenses that year.

Courtemanche and He (2009) suggest against using tax subsidies to expand the private long-term care insurance market due to the excess in savings that goes to Medicaid through tax incentives. The tax incentive in HIPAA reduced Medicaid expenditures on long-term care insurance (Courtemanche and He 2009). Courtemanche and He (2009) found that the financial loss in tax revenue exceeds Medicaid savings by nearly $150 per senior. However, Goda (2011) shows that for each dollar of state tax expenditures, Medicaid saves $0.84, most of which goes to the federal government.

As federal tax incentives are largely limited to individuals who itemize deductions and whose medical expenses are large, they are not available to most people in most states or are very small for those who qualify (Baer and O'Brien 2010). For a small population of older, affluent Americans, tax subsidies can provide a nearly 50 percent after-tax discount (Baer and O'Brien 2010). Courtemanche and He (2009) note that HIPAA's particularly "stringent requirement suggests that the deductibility of medical expenses may apply only in the years when one experiences unexpected negative health shocks" (Courtemanche and He 2009: 297). Thus, it is understood that "favorable tax treatment" for those who itemize medical expenses may not affect a majority of individuals' purchasing decisions (Courtemanche and He 2009: 297). This points to the importance of creating tax incentives that would apply to less wealthy individuals (Goda 2011). It is important to consider that when tax incentives increase probability of coverage, the compound probability of lapse remains and may diminish the expected beneficial effect of coverage (Merlis 2003).

Long-Term Care in Hawaii

Since Medicare and private health insurance do not cover long-term care and due to the high cost of private long-term care insurance, many people in the U.S., including Hawaii, do not have long-term care insurance (HLTCC 2012). The HLTCC reported that "the long-term care system in Hawaii is broken," noting that most people cannot afford the expensive cost of

coverage (HLTCC 2012: 8). Over the next ten years, the number of Hawaii residents age 65 and older will increase by 40 percent, increasing the population in need of long-term care (Bonner and Dierenfield 2011).

The population with the greatest need for long-term care in Hawaii are individuals 85 years and older (HLTCC 2012). Between 2007 and 2030, this population will increase by almost two-thirds (HLTCC 2012). Half or more of Hawaii residents over age 50 are not confident that they can afford the cost of long-term care in a nursing home or in their own home for one year (AARP 2012). The AARP (2012) found that among those who responded to their 2012 survey, Hawaii residents 50 years and older believe they will rely most heavily on Medicaid and then personal savings and assets to pay for long-term care.

The high cost of long-term care insurance policies is the most frequently cited reason for not purchasing coverage among Hawaii residents 50 years and older who do not have a policy (AARP 2012). The majority of Hawaii residents 50 years and older believe they will need long-term care at some point in the future (AARP 2012). Most Hawaii residents 50 years and older believe they will begin to need services for long-term care at age 75 or older (AARP 2012). Over half of Hawaii residents 50 years and older do not have a long-term care insurance policy (AARP 2012). Among those respondents who did not have a long-term care insurance policy at the time of AARP's 2012 survey, 38 percent said they did not have coverage because policies are too expensive, 8 percent said they never considered purchasing a policy, and just 5 percent said they do not have a policy because they do not believe they will ever need long-term care (AARP 2012).

High Cost of Care in Hawaii

Long-term care services are substantially more expensive in Hawaii compared to the rest of the United States (HLTCC 2012). The average cost of a private room in a Hawaii nursing home is nearly 50 percent higher than in the rest of the United States as a whole (HLTCC 2012). In addition, Hawaii has considerably fewer nursing home beds per older population compared to the rest of the U.S. (HLTCC 2012). As of 2012, the ratio of home beds per 1,000 people ages 75 and older in Hawaii is about half of the national average (HLTCC 2012). The high cost of land and the prevalence of three-generation households may contribute to the lower supply of beds in Hawaii (HLTCC 2012). The lack of nursing homes beds has led to high occupancy rates, difficulty finding placements among high-need individuals, and nursing home residents being more disabled in Hawaii compared to other states (HLTCC 2012).

While Hawaii does have state programs dedicated to providing long-term care to its residents, many individuals go without coverage or services (HLTCC 2012). For example, designed to help frail older adults who do not qualify for Medicaid, Kupuna Care is a state funded program (HLTCC 2012). Kupuna Care provides services to help elderly individuals who need assistance from family or formal services in order to remain in the home like personal care, adult day care, assisted transportation, attendant care which refers to a volunteer companion, case management, chore services, home-delivered meals, and housekeeping (HLTCC 2012).

Most people in Hawaii have limited knowledge about their risk of needing long-term care as well as the services and financing options available to them (HLTCC 2012). The HLTCC

(2012) suggest that the risk of needing long-term care should be treated as a normal risk of life and older age. Individuals and their families often experience severe financial distress upon realizing the need for long-term care, while at the same time they must cope with illness and disease (HLTCC 2012). “People should know how their long-term care expenses will be paid” (HLTCC 2012: 13). Perhaps one of the reasons why people are ill informed or have limited knowledge on long-term care coverage is that long-term care insurance has been available for a relatively short period of time, only for about 25 years, compared to life insurance which has been available for 200 years (HLTCC 2012).

Caregiving in Hawaii

Hawaii caregivers spend more time than a half-time job requires per week, 22 hours, providing informal care (HTLCC 2012). It is important to consider the implications of various societal trends for the state of informal care in Hawaii (HLTCC 2012). As well as women’s increased participation in the labor force, high divorce rates, low marriage rates, family mobility, and less children per family all impact family caregiving (HLTCC 2012). Without financial or government support, caregivers are left to provide the majority of care without the financial resources necessary to do so (HLTCC 2012). Older individuals fear that they will become a burden on their families should they need long-term care in the future (HLTCC 2012). In Hawaii, residents 50 years and older say they do not want to depend on family and friends for informal long-term care, but they do not plan for future long-term care needs and they believe that family and friends would provide care for them in the future (AARP 2012).

Due to Asian and Pacific Islander cultural influence in the state, Hawaii’s population values informal caregiving for elderly people (Bonner and Dierenfield 2011). Like most of the elderly population living in the United States, older people in Hawaii who need long-term care prefer to remain in the home rather than enter nursing homes or assisted living facilities (Bonner and Dierenfield 2011; HLTCC 2012). Many Hawaii residents prefer to live out life in the home so as to maintain connections to family, services, and community (Bonner and Dierenfield 2011). An AARP report points to the unique implications of aging in Hawaii in the face of expensive real estate, where the desire to remain in the home for those who have limited mobility without assistance is made more difficult by the lack of affordable alternatives to older Hawaii residents’ current homes (Bonner and Dierenfield 2011).

Hawaii Medicaid and Long-Term Care

Despite the desire of many older individuals to remain in their own homes, Medicaid spending on long-term care in Hawaii is mostly dedicated to institutional care (HLTCC 2012). Though Hawaii’s Medicaid Quest program intended to improve access to home and community based services, the state’s spending on these services for individuals ages 75 and older is considerably low (HLTCC 2012). Of Medicaid long-term care spending for both older and younger individuals with physical disabilities in Hawaii, just 19 percent was on home and community based services, compared to the national average of 32 percent (HLTCC 2012). Medicaid considerably limits the financial resources of older individuals who benefit from its long-term care services (HLTCC 2012). Under Medicaid rules in Hawaii, single individuals with

more than $2,000 and couples with more than $3,000 in financial assets are ineligible to be beneficiaries (Walker and Accius 2010). Medicaid beneficiaries in Hawaii nursing homes are allowed just $50 per month for personal needs and must contribute all other income towards the cost of care (Walker and Accius 2010).

Tax Incentives to Finance Long-Term Care in Hawaii

The HLTCC (2012) argues that if other sources of funding are not made available, in order to provide long-term care to the increasingly large aging population in Hawaii and other states, the government must spend more on long-term care. With the understanding that people are more likely to purchase a service at a lower price, the HLTCC (2012) notes that the use of tax subsidies could make private long-term care insurance more affordable by reducing the net price of policies. However, the HLTCC (2012) recommends against the use of tax incentives to finance long-term care for various reasons discussed in the next section of this review.

Instead of using tax incentives to support long-term care insurance purchase, the HLTCC suggests that research should look for ways to encourage employers to provide and pay for long-term care for employees (HLTCC 2012). The Commission developed various recommendations for the problems associated with long-term care in Hawaii (HLTCC 2012). These include proposals for improving public awareness and education, private and public funding, providing protection against the out-of-pocket costs associated with long-term care, and the organization of state administrative responsibilities regarding long-term care (HLTCC 2012). Specifically, the HLTCC (2012) recommends the following strategies to meet these criteria: (1) using life insurance as a source of funding for long-term care insurance; (2) support funding for Kupuna Care; (3) development of a limited, mandatory public long-term care insurance program in Hawaii; (4) reform of regulation of various care facilities including nursing homes, assisted living facilities, Adult Residential Care Homes, Extended Care Adult Residential Care Homes, and Community Care Foster; (5) the consolidation of state departments which handle long-term care into a single agency; (6) a long-term care education and awareness campaign; and (7) improve the efficiency and utilization of aging and disability resource centers.

People in Hawaii support the use of tax incentives for private long-term care insurance (Khatutsky et al. 2010; HLTCC 2012). Among respondents of the Hawaii Long-Term Care Survey, 80 percent favored tax incentives for purchasing long-term care insurance (Khatutsky et al. 2010). Almost a quarter of respondents said they favor reducing state income taxes for people who provide a lot of care to their disabled relatives (Khatutsky et al. 2010). In addition, most Hawaii residents who responded to the survey said the state sales tax should be used to improve long-term care in the state (Khatutsky et al. 2010). The estate tax and state income tax were the second and third most popular choices respectively (Khatutsky et al. 2010).

Tax incentives may come in two forms, either as deductions or tax credits (HLTCC 2012). Through deductions taxpayers subtract all or part of their premium from their income (HLTCC 2012). Deductions provide a premium subsidy at the marginal tax rate of the household and are more beneficial to higher income people, because they have higher marginal tax rates compared to lower income taxpayers (HLTCC 2012). A tax credit is a direct reduction in the amount of tax owed by an individual which could be given for the purchase of long-term care

insurance (HLTCC 2012). However, low and moderate income individuals may not be able to afford the high price of premiums up front and thus would not be able to claim the tax credit (HLTCC 2012).

Previous attempts to expand coverage of long-term care include the Community Living Assistance Services and Supports (CLASS) Act, which was designed as voluntary program for those in need of long-term care services and supports to remain at home to be financed by monthly premiums paid by participating beneficiaries (Gleckman 2010; Khatutsky et al. 2010). The majority of Hawaii residents who responded to the Hawaii Long-Term Care Survey were in favor of the CLASS Act (Khatutsky et al. 2010). However, the CLASS Act, which would have paid a considerably low benefit, was not implemented due to adverse selection and other issues rendering it not fundable (Moses 2011; HLTCC 2012).

In addition to the possible effect of tax incentives on lowering the net price of long-term care insurance, there are various advantages to using tax incentives to increase the availability of long-term care (HLTCC 2012). Tax incentives may help individuals who previously viewed long-term care insurance as overpriced to pay for coverage (HLTCC 2012). Tax incentives would be easy to implement, as they would require adding only a few lines to the state income tax form in Hawaii if the state used the federal government definition of qualifying long-term care insurance policies (HLTCC 2012).

By expanding the use of private long-term care, tax incentives would facilitate individual responsibility for financing care (HLTCC 2012). However, the tax incentives would need to be considerably large to have a major impact on people with long-term care insurance (HLTCC 2012). In addition, by preventing individuals from spending down to Medicaid eligibility, tax incentives could reduce Medicaid expenditures and save state government money (HLTCC 2012). However, most people who respond to tax incentives for purchasing long-term care insurance are wealthier individuals who may already own long-term care insurance (Goda 2011).

Overall Effect of Tax Incentives on Long-Term Care

The Hawaii Long-Term Care Commission (HLTCC) recommends against enacting tax incentives for the purchase of long-term care insurance (HLTCC 2012). The HLTCC (2012) lists three main reasons for their recommendation. First, based on the conclusions of several studies, the Commission stresses that tax incentives do not significantly increase the number of people with long-term care insurance and thus are ineffective (HLTCC 2012). Second, tax incentives are regressive as they are more valuable to higher-income individuals compared to low- and moderate-income individuals (HLTCC 2012). Third, the HLTCC (2012) states that the tax loss from the use of tax incentives for all people with private long-term care insurance would lead to other tax increases or cuts in other state spending. The Commission explains that their basis for recommending against the use of tax incentives due to their regressive nature, the second point made above, is to prevent the increase of inequality with the implementation of initiatives to increase long-term care coverage (HLTCC 2012).

As discussed throughout earlier sections of this review, there are various disadvantages associated with the use of tax incentives to finance long-term care, which limit their overall effectiveness (HLTCC 2012). First, research shows that tax incentives have a small impact on the

number of people with long-term care insurance and are most popular among wealthier individuals (Goda 2010). Second, the long-term benefit of coverage using tax incentives remains unclear (Merlis 2003). The use of tax incentives do not protect against private long-term care insurance problems associated with inflation protection and probability of lapse and thus may be wasted on policyholders who drop coverage (Merlis 2003; HLTCC 2012). Third, tax incentives do not protect against premium rate increase on entire classes of policyholders who purchase private long-term care insurance using them (Johnson and Park 2011). Fourth, using tax incentives to finance long-term care is associated with a substantial tax loss (Goda 2010; HLTCC 2012). Tax incentives may need to be "extremely large" in order to have a substantial impact on the number of people with long-term care insurance (HLTCC 2012: 38).

Tax incentives are primarily made available to higher-income, asset-rich people, thus limiting their overall effect (Goda 2011; HLTCC 2012). When tax deductions are not refundable, they do not apply to older individuals who pay no federal income taxes because a portion or all of Social Security benefits are not taxed (HLTCC 2012). While tax credits are not necessarily as regressive as tax deductions, the reality which makes them worth more to higher-income people is that low- and moderate-income taxpayers are likely to not be able to afford to pay for long-term care insurance premiums out-of-pocket throughout the year. Therefore, many low- and moderate-income people are not eligible to claim the tax credit at the year's end (HLTCC 2012). The exclusive nature of tax deductions makes them likely to increase inequality in utilization of long-term care services (HLTCC 2012).

Research shows that even the most generous tax subsidy would not likely increase coverage among the population without adequate long-term care insurance (Goda 2011). Despite the effect of increasing purchase rates by about 28 percent, the overall effectiveness of tax incentives cannot be comprehensively measured without taking into account that the response to tax incentives is highest among high income, asset-rich individuals (Goda 2011). Considering that the wealthier population is most responsive to tax incentives, factors that determine Medicaid eligibility can result in differences in average responsiveness (Goda 2011). Since tax subsidies do not prove to increase the proportion of individuals with private long-term care insurance, people who benefit are mostly those who would have bought insurance without the incentive (Goda 2010; HLTCC 2012).

Using tax incentives to encourage the purchase of private long-term care insurance results in no effective long-term benefit (HLTCC 2012). The increasingly high cost of long-term care insurance and the potential for premiums to rise year to year puts financial strain on policyholders (Merlis 2003). Even with the tax incentive to purchase coverage, policyholders still face the possibility of lapse, which can lessen or eliminate the expected benefits associated with coverage (Merlis 2003). Those who do not renew their policies receive nothing in exchange for having paid premiums over the duration of their policy (Johnson and Uccello 2005). When accounting for the timing of expenditures relative to cost, the possibility of lapse later among those who receive a tax subsidy to purchase long-term care insurance would diminish net savings (Goda 2011). In addition, many policyholders who have inflation protection still end up with less benefits than expected, since inflation protection is usually a fixed percentage per year (Johnson and Uccello 2005).

Premium rate increases among entire classes of policyholders, or "books of business," of private long-term care insurance are not uncommon and can increase lapse rates (Johnson and

Uccello 2005). A book of business is defined as the total insurance accounts that a company or agency writes (Health Insurance Online). Though premiums are priced according to benefits and the policyholder's age and health at the time of purchase, private long-term care insurers can raise premiums for an entire class of policyholders when they demonstrate that claims are higher than premium revenue (Johnson and Park 2011). Since many policies do not include nonforfeiture benefits, which guarantee partial benefits for those who lapse, many policyholders who lapse receive nothing after paying premiums over the course of their policy (Johnson and Uccello 2005). That tax incentives do not protect against premium rate increase or probability of lapse renders their long-term benefit unknown (Merlis 2003). Overall, tax incentives are likely to be ineffective, generate high costs, and provide a benefit nearly exclusive to higher income, asset-rich taxpayers (HTLCC 2012).

References

AARP Public Policy Institute. 2012. *Survey of Hawaii 50+ Residents on Long-Term Care*. Washington, D.C.

America's Health Insurance Plans. 2012. *Who Buys Long-Term Care Insurance in 2010-2011?* Washington, D.C.

Baer, David and Ellen O'Brien. 2010. *Federal and State Income Tax Incentives for Private Long-Term Care Insurance*. Washington, D.C.: AARP Public Policy Institute.

Bonner, Aisha and Dierenfield, Laura. 2011. *Successful Aging in Hawaii: A Survey of Developers, Landowners, and Other Land Use Stakeholders*. Washington, D.C.: AARP Research and Strategic Analysis.

Brown, Jeffrey R. and Finkelstein, Amy. 2007. "Why is the market for long-term care insurance so small?" *Journal of Public Economic* 91: 1967-1991.

Brown, Jeffrey R. and Amy Finkelstein. 2009. "The Private Market for Long-Term Care Insurance in the United States: A Review of the Evidence. *Journal of Risk and Insurance* 76: 5–29.

Courtemanche, Charles and Daifeng He. 2009. "Tax Incentives and the Decision to Purchase Long-Term Care Insurance." *Journal of Public Economics* 93: 296–310.

Elder, Glen H., Jr., Linda K. George, and Michael J. Shanahan. 1996. "Psychological Stress Over the Life Course." Pp. 247-292 in *Psychological Stress: Perspectives of Structure, Theory, Life-Course, and Methods* H.B. Kaplan (Ed.). San Diego: Academic Press.

Finkelstein, Amy and Kathleen McGarry. 2006. "Multiple Dimensions of Private Information: Evidence from the Long-Term Care Insurance Market." *The American Economic Review* 96: 938–958.

Finkelstein, Amy, Kathleen McGarry, and Amir Sufi. 2005. *Dynamic Inefficiencies in Insurance Markets: Evidence from Long-Term Care Insurance*. National Bureau of Economic Research.

Gleckman, Howard. 2010. *Long-Term Care Financing Reform: Lessons from the US and Abroad*. Washington, D.C.: Commonwealth Fund.

Goda, Gopi S. 2011. "The Impact of State Subsidies for Private Long-Term Care Insurance on Coverage and Medicaid Expenditures." *Journal of Public Economics* 95: 744–757.

Hagen, Stewart. 2013. *Rising Demand for Long-Term Services and Supports for Elderly People.* Washington, D.C.: Congressional Budget Office of the United States.

Hawaii Long-Term Care Commission. 2012. *Long-Term Care Reform in Hawaii: Final Report of Hawaii Long-Term Care Commission.* Honolulu, HI.

Health Insurance Online. Definition of the Insurance Term Book of Business. Resources, Insurance Dictionary. Retrieved October 2, 2014 (ttp://www.online-health-insurance.com/health-insurance-resources/dictionary/book-of-business.htm).

Johnson, Richard W. 2013*. Income and Wealth of Older Adults Needing Long-Term Care Services and Supports*. Washington, D.C.: Urban Institute.

Johnson, Richard W., Gordon B.T. Mermin, and Cori E. Uccello. 2006. *When the Nest Egg Cracks: Financial Consequences of Health Problems, Marital Status Changes, and Job Layoffs at Older Ages*. Washington, D.C.: Urban Institute.

Johnson, Richard W. 2008. "The Strains and Drains of Long-Term Care." *Virtual Mentor* 10: 397-400.

Johnson, Richard W. and Janice S. Park. 2011. *Who Purchases Long-Term Care*? Washington, D.C.: Urban Institute.

Johnson, Richard W., and Cori E. Uccello. 2005. Is Private Long-Term Care Insurance the Answer? Boston College: Center for Retirement Research at Boston College.

Kaye, H. Stephen, Charlene Harrington, and Mitchell P. LaPlante. 2010. "Long-Term Care: Who Gets It, Who Provides It, Who Pays, and How Much? Health Affairs 29: 11–21.

Kemper, Peter, Harriet L. Komisar, and Lisa Alecxih. 2005. "Long-Term Care Over an Uncertain Future: What Can Current Retirees Expect?" *Inquiry* 42: 335–350.

Khatutsky, Galina, Joshua Wiener, Heather Best, and Joseph McMichael. 2010. *Assessing long-term care policy options in Hawaii: Results from the Hawaii long-term care survey*. Hawaii Long-Term Care Commission. Washington, D.C.: RTI International.

LIMRA International and the Society of Actuaries Long-Term Care Experience Committee. 2006. *Long-Term Care Insurance Persistency Experience*. Connecticut: LIMRA International.

Mellor, Jennifer M. 2001. "Long-Term Care and Nursing Home Coverage: Are Adult Children Substitutes for Insurance Policies?" *Journal of Health Economics*: 20: 527–547.

Metlife Mature Market Institute. 2011. *The Market Suvey of Long-Term Care Costs: The 2011 Metlife Market Survey of Nursing Home, Assisted Living, Adult Day Services, and Home Care Costs.* New York, NY.

Merlis, Mark. 2003. *Private Long-Term Care Insurance: Who Should Buy it and What Should They Buy*? Menlo Park, CA: The Kaiser Family Foundation.

Merlis, Mark. 2005. *Home Equity Conversion Mortgages and Long-Term Care.* Georgetown University Long-Term Financing Project. Washington D.C.: Health Policy Institute Georgetown University.

Moses, Stephen A. 2011. *The CLASS Act and the Future of Long-Term Care Financing*. The Society of Actuaries.

Nixon, David C. 2008. *Tax Incentives for Family Caregivers: A Cost-Benefit Analysis*. University of Hawaii Public Policy Center. Retrieved from http://www.publicpolicycenter.hawaii.edu/projects-programs/_long-term-care/family-caregiver-tax-credits.pdf.

Rivlin, Alice M. and Joshua M. Wiener. 1988. *Caring for the Disabled Elderly*: *Who Will Pay?* Washington, D.C.: The Brookings Institution.

Spillman, Brenda C. and Kirsten J. Black. 2005. *Staying the Course: Trends in Family Caregiving*. Washington, D.C.: AARP Public Policy Institute. Retrieved from http://infoassist.panpha.org/docushare/dsweb/Get/Document-13628/Staying%20the%20Course.pdf

Spillman, Brenda C. and Christopher M. Murtaugh. 2007. *Simulation Modeling on Life Care Annuity: Final Report*. Office of Disability, Aging, and Long-Term Care Policy, Office of the Assistant Secretary for Planning and Evaluation. Washington, D.C.: U.S. Department of Health and Human Services.

Tennyson, Sharon and Hae Kyung Yang. 2014. "The Role of Life Experience in Long-Term Care Insurance Decisions." *Journal of Economic Psychology* 42: 175–188.

Walker, Lina and Jean Accius. 2010. *Access to Long-Term Services and Supports: A 50-State Survey of Medicaid Financial Eligibility Standards.* Insight on the Issues, I-44, 1-28. Washington D.C.: AARP Public Policy Institute.

Wiener, Joshua M., Wayne L. Anderson, Galina Khatutsky, Yevgeniya Kaganova, Janet O'Keeffe, Anne Tumlinson, Eric Hammelman, and Elana Stair. 2013. *Medicaid Spend Down: Implications for Long-Term Services and Supports and Aging Policy*. Long Beach, CA: The Scan Foundation.

Long Term Supports and Services Financing Feasibility Analysis

Appendix C: A Review of Assistive Technology Research

Draft, October 2, 2014

Ivan Sanidad

Assistive technology may be a possible avenue of care service provision. Particularly, deployment of assistive technologies could provide care that could be employed before serious loss of functionality (i.e. ADL's) and may delay or prevent further decline. In the interest of further investigating the potential of assistive technology use, this essay will provide a review of assistive technology literature.

In recent decades there has been a significant increase in international interest in assistive technology. This interest may stem, in large part, from concerns of how to cope with an aging population (Barfai and Boman 2011; Gramstad, Storli, and Hamram 2013; Layton and Wilson 2009; Mann and Mello 2010; Marschollek et al. 2009). International interest to aid the large number of people, of any age, living with disabilities has also arisen (Andrich et al. 2013; Benedict et al. 1999; Fifty-Eighth World Health Assembly 2005; Parette and Brotherson 2004; Wallace 2011; Wise 2012).

As a result of the increased interest a great deal of research on assistive technology has emerged. This essay will review how assistive technology may be defined then detail three themes in assistive technology literature: 1) deficits in assistive technology outcomes research, 2) differences in the views and use of assistive technology devices, and 3) what outcomes research indicates about assistive technology use.

Assistive Technology: Defined

While operational definitions of assistive technology may vary between organizations, academic and professional disciplines, and particular users, some definitions have wide spread acceptance due to the proposing organization's influence and the definitions encompassing nature. Some definitions of assistive technology may have particular salience due to the influence of their proposing organization. What follows is a brief description of the definitions of assistive technology, and related terms, provided by the United States government, the World Health Organization, and the combined definitions used by the Association for the Advancement of Assistive Technology in Europe (AAATE) and the European Assistive Technology Information Network (EASTIN).

In the United States, federal recognition of assistive technologies began with the Technology Related Assistance Act of 1988, which was later re-authorized/amended in 1994, 1998, and 2004. According to the Technology Related Assistance Act, assistive technology refers to "technology designed to be utilized in an assistive technology device or assistive technology service" (Technology-Related Assistance for Individuals with Disabilities Act Amendments of 2004, P.L. 108-364 2004:4). Assistive technology device refers to "any item, piece of equipment, or product system, whether acquired commercially, modified, or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities" (Technology-Related Assistance for Individuals with Disabilities Act Amendments of 2004, P.L. 108-364 2004:4). Assistive technology service refers to "any service that directly assists an individual with a disability in the selection, acquisition, or use of an assistive technology device" (Technology-Related Assistance for Individuals with Disabilities Act Amendments of 2004, P.L.

108-364 2004:4). The Technology Related Assistance Act provides the definitions of assistive technology, assistive technology device, and assistive technology service used for governmental laws and policies dealing with disability (Wallace 2011).

The World Health Organization provides a global model for measuring health through functional status, named the International Classification of Functioning, Disability and Health (ICF), which includes consideration of the use of assistive technologies (World Health Organization 2002). According to the World Health Organization, assistive technology can refer to "any device or system that allows individuals to perform tasks they would otherwise be unable to do or increases the ease and safety with which tasks can be performed" (World Health Organization 2004:10). Assistive device refers to "equipment that enables an individual who requires assistance to perform daily activities essentials to maintain health and autonomy and to live as full a life as possible" (World Health Organization 2004:10). The ICF provides a useful means of framing health outcomes, without relying on the presence or absence of disability, while including consideration of the use of assistive technology devices as an aspect of normal functioning (Lenker and Paquet 2003).

In Europe, AAATE and EASTIN provide another means of identifying assistive technology. AAATE defines assistive technology as "any product or technology- based service that enables people of all ages with activity limitations in their daily life, education, work or leisure" (Andrich et al. 2013:130). Additionally, many European national information systems and EASTIN identify assistive technologies through the International Organization for Standardization (ISO) which has a special product category (ISO 9999) to identify assistive technology devices. ISO 9999 identifies products for people with disabilities with a primary function of assisting

functionality and preventing further disability.

Each of the definitions described by the United States government, the World Health Organization, and AAATE/EASTIN, may be used by different nations, organizations, and people for different purposes (be they legal, academic, economic, or therapeutic and rehabilitative). However, each definition shares two common defining themes. First, the definitions of assistive technology are focused on the application of an object, service, or combination object and service system toward improving the functioning of a person. Second, each definition remains widely encompassing. Examples of assistive technology can range from eye glasses, hearing aids, canes, walkers, electric powered scooters, railings, elongated shoe horns, smart phones, automatic ambient lighting, prosthetic limbs, to the list of services dealing with assistive device employment (e.g., medical assessment, diagnosis, and prescription, the services dealing with procurement, funding, and delivery of an assistive device, as well as the services dealing with training and educating a person in the use of assistive devices, upkeep and maintenance of the device, and future assessments dealing with device use). Even devices not necessarily designed for people with disabilities may fit under the definition of assistive technology (Andrich et al. 2013). No matter what particular definition is used, the term assistive technology refers to an array of devices and services each of which may provide for distinctly different outcomes for users.

Assistive Technology Outcomes Research: A Disconnect

The wide definition of assistive technology and its many related domains (health, social, political, economical) leads to a wide variety of stakeholders (e.g., the individual, family,

caretakers, medical personal, retailers, academics, public servants, etc.) invested in a variety of different outcomes. Some stakeholders might be more interested in how devices and services impact physical functioning (Kloos, Kegelmeyer, White, and Kostyk 2012), or the social-psychological benefits of assistive technology use (de Joode et al. 2010), the perspectives of the device consumer (Lenker et al. 2013), or the system by which assistive technology and service might be implemented (Borg et al. 2012), or the potential monetary benefit in reducing long term care costs and further disability (Agree et al. 2005; Anderson and Wiener 2013). The result of too many interests with too little mutual standardization is that assistive technology research has been criticized as lacking over the past two decades (Blake and Bodine 2002; de Joode et al. 2010; Furher 2007; Kelly and Smith 2011; Lenker et al. 2010; Lenker et al. 2012; Rust and Smith 2005; Smith 1996; Steel and Gray 2009). Assistive technology research has been lacking in terms of not having an appropriate theory/model and having no standard methods and outcomes.

Assistive Technology Models and Perspectives

There are few theories and models that directly address the use of assistive technology devices and fewer that classify assistive technology services (Lenker and Paquet 2003, Lenker et al. 2012; Smith 1996). In research, a theory or model is necessary to advance assistive technology knowledge and practice by delineating variables needing to be considered and suggesting possible relationships between those variables. The importance of theory lies in its ability to frame the entirety; a solid theory or model of understanding situates all salient components of a system that results in action. As Lenker et al. (2012:131) describe:

> The scarcity of theory hampers the field's ability to identify and refine conceptual relationships among interventions and across populations, and to develop a

> systematized knowledge base. Clinicians and researchers cannot defend or improve upon intervention strategies about which they do not, or cannot, articulate a causal understanding.

Several different theories and models have been proposed and used, to varying effect, in assistive technology outcomes research.

An early, influential, and not necessarily the best fit theoretical model used in research is the medical model (Smith 1996). The medical model assumes that the end goal of a treatment or intervention should be recovery to full health without disability. While assistive technologists may agree with the direction of the model, that implementation of assistive technology should result in moving a patient towards fuller health, assistive technologists tend toward the view that the outcome should be increased functionality rather than full health (Hocking 1999; Smith 1996). Assistive technology is not a permanent medical cure for disability.

Additionally, there are other measurable outcomes by which assistive technology may be judged. To illustrate, Fuhrer et al. (2003) designed a framework to assess continued device use rather than health. The framework starts with procurement of an assistive device followed by introductory use which results in a range of short term outcomes and then followed by long term use and a range of long term outcomes. Furer et al. (2003) meant for the framework to be used as a conceptual structure through which to develop better assistive technology outcome models, not necessarily a theoretical model in and of itself.

A review by Lenker and Paquet (2003) examined six conceptual models that have been commonly used in assistive technology outcomes research. First, the Human Activity-Assistive Technology model (HAAT) focuses on assistive technology system performance (rather than the performance of a user or device). HAAT conceptualizes three interacting aspects of assistive

technology use: the human user, the activity the user wants to attempt, and the assistive technology being used. Second is the World Health Organization's ICF, described earlier, which provides a framework for assessing functionality. Third, the Matching Persons and Technology Model (MPT) is supposedly meant to help best match persons with assistive technology devices to ensure a successful experience. MPT takes into account milieu (environmental) factors, individual (user) factors, and assistive technology device characteristics. Fourth, Gitlin's Career Path model conceptualizes users along a temporal trajectory of assistive technology use. The model begins with novice users who are first introduced to assistive technology in a hospital setting. Three additional steps of user type follow after being released home and relate to time spent using the technology: early users (1-5 months), experienced users (7-12 months), and expert users (more than a year). The particular skills or outcomes associated with each user step are not defined. Fifth, Lenker and Paquet (2003) aggregate psychological models that predict behavior into what they call "social cognition models." The trend of these social cognition models is that they will predict assistive technology use if the user perceives some form of benefit from using the technology. Sixth, Roger's Perceived Attributes Theory predicts assistive technology adoption and use according to seven interacting attributes. Adaptation and use of assistive technology is considered dependent on the technology's: relative advantage (the perceived benefit of use), compatibility (the degree to which the technology agrees with the users socio-cultural environment), complexity (the users perception of ease of use), triability (the chance for users to preview the technology before adoption), observability (how visible the technology use is), re-invention (the degree to which the technology can be reconfigured to better fit the user), and change agents (influential people to

the user). Each of these models provides a distinct framework for researchers to orient assistive technology devices, services, and use with environmental and individual factors. How these aspects of assistive technology interact, though, differs. Theoretical models may also involve different perspectives that place emphasis on different aspects of assistive technology.

Several different perspectives have substantial influence in directing the foci of assistive technology research. The perspective inherent in the medical model focused attention on physical health outcomes (Smith 1996). The functional perspective favored by assistive technologists emphasizes improving the functional ability of users for daily living (Hocking 1999; Layton and Wilson 2009; Smith 1996). In the social sciences, a psychological perspective has increased concern on how the use of assistive technologies interact with individual's identity, values and attitudes, and associated meaning (Hocking 1999). Anthropological and sociological perspectives seek to add to assistive technology research by bringing in concepts of roles and norms (Hocking 1999) and highlighting the social determinants of disability (Wise 2012). There has also been more interest in examining the perspective of the assistive technology consumer and what the use of assistive technology means to the user (Hocking 1999; Lenker et al. 2013).

Currently the field of assistive technology research lacks a dominant theoretical perspective that unites every stakeholder and frames common standards of interest (Lenker and Paquet 2003). Multiple stakeholders with preferences for different perspectives and theoretical models makes it difficult for any research to adequately cover every interest. The variety of assistive technology theories, models, and perspectives has further implications on the methods and outcomes used in research.

Assistive Technology Methods

Aside from the theoretical perspective, there is also a deficiency in acceptable research methods for assistive technology outcomes (Rust and Smith 2005; Smith 1996; Steel and Gray 2009). With multiple stakeholders and views concerning assistive technology there are a variety of opinions on how assistive technology outcomes research should be conducted, what variables should be accounted for, and how to measure the variables. A major reason why assistive technology research is lacking is due to uncertainty over appropriate research methods and outcomes, a lack of appropriate measures, and considerations of ethical concerns.

One point of contention in assistive technology research is over which is the most appropriate form of research method: a scientific experiment (such as randomized control trials favored by medical research) or an observational study (such as a cross-sectional survey) (Brandt and Alwin 2012). There are supporters for both sides. Experimental research is highly praised for its rigour and randomized control trials are considered the highest form of evidence for judging the outcomes of medical interventions (Anttila et al. 2012; Kelly and Smith 2011; Steel and Gray 2009). Currently, randomized control trials are not common in assistive technology outcomes research, possibly due to the complex situations of those with disabilities making experiments unfeasible (Anttila et al. 2012). Observational studies, particularly those with qualitative elements and taking place in non-clinical environments, have been cited for having findings that are more generalizable and representative of users' actual living conditions (Aloulou et al. 2013; Vincent and Ruthier 2012). The most useful research model may depend on the specific type of assistive technology outcome the research is trying to investigate.

Assistive Technology Outcomes

Multiple stakeholders have interests in multiple kinds of assistive technology outcomes,

the full breadth of which is too expansive to discuss here. Smith (1996) identified five different categories of outcomes measured in assistive technology research. The first potential outcome category to measure deals with the performance of intervention device or service, which could be either an objective (e.g., how many more or less falls occurs with a walker) or subjective (e.g. how useful the user feels the device has been) measurement. Second, user performance with the assistive device or service may be measured, which may also be objective (e.g. the amount of time it takes a user to put on shoes using an extra long shoe horn) or subjective (e.g. how appropriately the doctor thinks the patient is using the device). Third, measures dealing with the support environment resources and performance measured objectively (e.g. the availability of assistive devices to potential users) or subjectively (e.g. do family and friends think positively of device and service use). Fourth, measures dealing with costs of assistive devices and services may be objective (e.g. a dollar amount in user costs for a service) or subjective (e.g. whether the user's family feels that devices or services are too expensive or not worth the costs). Finally, outcomes research could also deal with combinations of the four previously stated outcomes categories and combinations of subjective or objective measures of each.

For further illustration of the outcome categories, some examples of research using each of the five different outcome categories will be briefly described. An example of research focusing on the performance of the assistive technology intervention would be Kloos et al. (2012) who examined the use of different walkers and canes in stabilizing the walking gait of people with Huntington's disease. Kloos et al. (2012) utilized spatial and temporal measures of gait, making the research quantitative. Hocking (1999) argued for focus on the outcome of user performance emphasizing the importance of psycho-social factors in determining whether or

not people adopt (i.e. use) assistive technology devices. Whether a person uses, does not use, or misuses an assistive technology device or service all depend on the users themselves. An example of research looking at the fourth outcome category (costs), can be found in Lansley et al. (2004). Lansley et al (2004) estimated how home improvements could save on costs of care. This is a quantitative measure of costs as it tried to compare monetary care costs for the disabled elderly who has versus those who do not have assistive technology additions made to the home. The third outcome category (support environment) tends to be measured in combination with other outcomes. Two combination outcomes research pieces will be mentioned to illustrate both combination (category five) and support environment (category three) outcomes. Possibly, Lee (2014) is an example of the fifth type of outcome category using a combination of the first and third categories. Lee (2014) examined user satisfaction with assistive technology devices and services, which would primarily be an example of the first category of outcomes. But, measurements included for consideration also involve socio-demographic factors and availability of services that could be considered evaluations of environmental context. Benedict, Lee, Marrujo, and Farel (1999) examined how assistive technology use for young children impacted the child user and the child's family, also used a combination of first and third category outcomes. Benedict et al. (1999) examined the intervention performance through an objective measure of the child's functional skills and the support environment through a subjective measure of care-giver's satisfaction with assistive device use. The interest here is to consider the various outcome measures research might consider. Discussion of research on the effects of assistive technology use will follow later in this essay.

Another aspect of assistive technology outcome that could use more research, is assistive technology's impact on risk. Assistive technology use may increase or decrease the potential risk of injury. The use of assistive technologies may, in a way, extend the risk period of critical failure for users (cite email). This additional risk may be seen in that nursing home falls are most common among those in rehabilitation (P. Blanchette, personal communication, September 22, 2014). The chances for falls become grater among those being rehabilitated because they are engaging in activities meant to build strength and encourage mobility. If the rehabilitative patients had remained prone rather than trying to move, they would not be in as much risk of falling. Alternatively, there is also the possibility that use of assistive technology may reduce risk by providing a fail-safe (P. Blanchette, personal communication, September 22, 2014). A person could use a cane or walker to re-establish balance when it has been lost, preventing a fall that would have had happened in the absence of assistive technology.

One final note on the multiplicity in research outcomes, it may be useful to keep in mind that the use of assistive devices is only one method by which a disability may be addressed. An individual may be using several methods of coping throughout their day that may or may not require use of assistive devices or services. Smith (1996) provides an example of how a person with cerebral palsy that limits verbal speech might cope in ordering food at a fast food restaurant. The use of an assistive device (a speech synthesizer in this case) was one of five approaches. The person could also cope with the cerebral palsy issues with trying to reduce the impairment (by rehabilitating dysarthria functional vocalization), building compensatory skills (using gestures to communicate or point at menus to order), change the task or task expectation (go to a cafeteria restaurant which would not require verbal communication), or

have person assistance (have someone else communicate for the individual). The use of assistive devices and services may be one aspect of life for people with disabilities that are connected to and can have impact on many other aspects of life.

Assistive Technology Measures

Aside from the choice of outcomes, another aspect of research includes the measures available to quantify salient aspects of assistive technology use. Assistive technology outcomes research can use a number of different measures to assess for aspects of devices, services, and outcomes. However, the availability of tested measures that specifically assess assistive technology is somewhat limited (Agree and Freeman 2011; Lenker et al. 2012; Rust and Smith 2005).

Rust and Smith (2005) assessed 100 widely used (in publications across scholastic disciplines) health and rehabilitation outcome instruments that measured functionality based on the concept of independence. They found that of those instruments 30% did not include consideration of assistive technologies relevantly in their scoring methodology. Of the 70% of instruments that did consider assistive technologies, assistive technology was treated inconsistently with 44% treating assistive technology use as conveying a health deficit (i.e. that a person uses assistive technology shows that the individual is not performing with independence), 22% allowed assistive technology use to potentially indicate better health (if use improved functionality), and 4% included assistive technology and function together but not on a basis of independence. Rust and Smith (2005) further criticize the 44% of instruments that consider assistive technology use as a health deficit as being unsupported by research and theory. They support the view that assistive technology use is generally supportive of functional

independence (as autonomy and self-sufficiency). Taking this stance, only 22% of the instruments examined properly considered assistive device use. Currently, existing health outcome measures may vary widely in how assistive devices are conceptualized if, indeed, they are conceptualized at all.

In terms of measures for large scale research, Agree and Freeman (2011) note a lack of assistive device outcome measures that can be administered on a population-level. Previous research has tended to use measures of received personal assistance which may confound the effects of assistive technology. To meet the need for population-level measures Agree and Freedman (2011) develop a scale to measure life satisfaction hinged specifically upon assistive device use.

Finally, the service aspect of assistive technology has been somewhat neglected in research. The service aspect of assistive technology deals not with some sort of concurrent care provided by people to supplement assistive technology use, but, refers to the people services necessary to use assistive technology. The use of assistive technology can be understood as comprising of two parts: the assistive device and the services surrounding device acquisition, education, and training in use (Lenker et al. 2012). To illustrate, a person who uses a walker has an assistive device (the walker). The service aspect of using the walker device can encompasses the provider of that walker (be it who provided the funds for the purchase of the walker and the company that makes, sells, and delivers the walker), the instructions given to the person on how to use and care for the walker, and the ongoing assessment and maintenance to ensure that the walker remains a fitting device for the person to use (i.e., that the person should be using that particular type of walker and not some other type or a wheelchair) and that the

walker remains functional (i.e., to ensure that the walker is being maintained and does not need fixing or replacement). An accurate picture of assistive technology use requires consideration of (often ongoing) assistive technology delivery services (Furher 2007). At this time there are no adequate research tools to quantify the service aspect of assistive technology (Lenker et al. 2012).

Assistive Technology Considerations of Ethics

There are several aspects of assistive technology use that touch upon ethical concerns. Some governments and organizations view the development of assistive technologies as filling a moral imperative to help the many people who live with some form of disability (Andrich et al. 2013; Fifty-Eighth World Health Assembly 2005; Wallace 2011). In research there may be difficulties in using experimental methods as withholding assistive technology from a control group may impinge on subjects' rights for care. (Anttila et al. 2012).

As larger numbers of people become disabled and utilize assistive technology, there is a greater need for attention on the ethics surrounding assistive technologies (Schulke, Plischke, and Kohls 2010). Zwijsen, Niemeijer, and Hertogh (2011) conducted a systematic literature review on the ethical considerations of assistive technology use and generally found that ethical debate was not a priority in assistive technology research with little to no mention in articles. What discussion there was of ethics tended to center around the three subjects of personal living environment (involving the ideas of privacy, autonomy, and obtrusiveness), the outside world (involving the ideas of stigma and human contact), and the design of assistive technology devices (involving the ideas of individual approach, affordability, and safety). Much of the ethical concern discussed revolved around the concepts of autonomy and obtrusiveness, both

of which come with complications.

For the elderly, the predominant users of assistive technology, the use of assistive technology may be the best of poor choices (Zwijsen et l. 2011). If the choice is between assistive technology and a nursing home or similar constrained living environment, the most preferable choice to maintain independence and autonomy may have to be using assistive technology. Just because it is the best choice though does not make it an ethically sound choice as it is forcing the choice. The choice may not allow a "choose neither" or "right to rot" choice. Furthermore, the conceptualization autonomy for the elderly is problematic as people, particularly those with disabilities, may not be totally self-determined or self-sufficient. People may live social lives filled with multiple forms of dependence and reciprocity. Total autonomy may not be appropriately applied to real living situations of those who are frail or with disability (Zwijsen et al. 2011).

The concept of obtrusiveness, in turn, has been used as a catchall term to encompass all ethical objects by users (Zwijsen et al. 2011). That is to say, the literature uses the term obtrusiveness to refer to the reasons that make potential assistive technology users refuse to use assistive technology. Zwijsen et al. (2011) argue that this using obtrusiveness as a catchall reflects a designer perspective (that ethical complications are a hurdle that needs to be overcome) and complicates ethical consideration. Obtrusiveness aggregates many different concepts such as privacy, autonomy, stigmatization, human contact, individual approach and affordability. Proper ethical consideration may need to examine each concept separately (Zwijsen et al. 2011).

Differences in the Use of Assistive Technology

A Differences in Devices

As reflected in the definitions of assistive technology given earlier, there is a multitude of devices that can be considered assistive technology. Within specific domains of effect there may be many different but similar assistive devices (i.e., there is not only one type of hearing aid or wheelchair). Additionally, the research backing the efficacy of similar devices may have different results. That one particular assistive device had a positive outcome cannot be easily generalized to suggest similar devices would have the same outcome. Nor could it be said that just because some assistive devices are shown to have a positive outcome that all assistive devices are likely to have a positive outcome (Anttila et al. 2012).

Wheelchairs and similar wheeled mobile devices can be very similar in structure and function and there is evidence that such devices can improve mobility (Anttila et al. 2012). However some additions to the wheelchair could change the potential benefit. Wheelchair seat restraints, which are supposed to help with positioning people and preventing falls, have been linked to asphyxia deaths and damage (Anttila et al. 2012). Other additions may not have any appreciable effect at all. Seat boards and wheelchair cushions have not been shown to benefit wheelchair users (Anttila et al. 2012).

Different types of canes and walkers often appear similar to each other and both types of devices tend to share the function of aiding mobility. But, the particular means by which the canes and walkers aid mobility can vary. Bradley and Hernandex (2011) provide descriptions of the form and function of various walking aids. A standard straight cane can help with balance for users that do not need aid to bear weight. Offset canes with a curved neck can help users

who occasionally need help in bearing weight while walking. Quadripod (four-legged) canes can help users who need the cane to help bear more weight more frequently than an offset cane but can be more awkward to use as all four points of the base must touch the ground to work properly. Different cane handles may also change cane use. A standard umbrella cane handle (curved necked), if used to bear weight, could increase risk of carpal tunnel syndrome because it focuses weight into the palm of the hand. A shotgun handle (a flat handle) distributes borne weight across the hand making it easier to bear weight onto the cane. There are also some specialty handles with finger and thumb grooves in order to prompt users to use the cane in a particular hand.

Walkers aid in mobility by increasing user's base support and supporting the user's weight (Bradley and Hernandex 2011). Walkers differ from canes in that they require more attentional demands and the larger size walkers can make it be cumbersome to use and navigate stairs. Standard walkers with four posts and no wheels are the most stable walkers but need to be completely lifted off the ground to use which may be difficult for those with decreased upper body strength. Front-wheeled walkers (walkers with the front two posts replaced with wheel ends) are less stable than standard walkers but helps to maintain a more normal gait patterns and does not need to be fully lifted off the ground to use. Four-wheeled walkers (also called rollator) have four wheels instead of posts and often come with a seat and basket can be useful for high functioning users who need to stop and rest at times. The wheels allow the four-wheel walker to roll forward unexpectedly and are not recommended for users who have balance problems, cognitive impairments, or need the walker to bear weight. There exist also smart walkers with robotic and electronic components that may provide sensory,

cognitive, health monitoring, and interface assistance (Martins, Santos, Frizera-Neto, and Ceres 2012). Again, while canes and walkers have similar structure and function to help with mobility, small differences make each device focus on particular forms of impairment.

It is an important point that particular assistive devices and services are meant to deal with particular limitations. A smartphone application may help with memory (De Joode et al. 2010;: Gillespie, Best, and O'Neill 2012), better home lighting may help with vision and vision related pitfalls (Schulke et al. 2010), a walker may help with walking gait (Kloos et al. 2012), but, a smartphone and lights are not meant to help with walking gait.

A Difference for Assistive Technology Users

With the wide scope of devices available, it is possible for a variety of people to use assistive technology. Recent research has brought to light some interesting connections between user and assistive technology. Users of assistive technology can differ according to user's disability and need, socio-demographic and psycho-social factors, and health status.

The causes of disability may be manifold and, likewise, a single cause of disability may result in multiple forms of disability (Martins et al. 2012). For example, multiple sclerosis can potentially lead to impairments in vision, hearing, and vocal functioning (dysarthria), chronic pain, heat intolerance, fatigue, dysphagia (difficulty swallowing), tremors, seizures, vertigo, paralysis, and other forms of disability. Each of the possible manifestations of multiple sclerosis impairment may be aided by a variety of (different) assistive technologies (Blake and Bodine 2002). There may be an aspect of comorbidity in impairments due to underlying health status that influences the type and number of assistive devices a person may use.

The process of adopting or not adopting assistive technologies is not a straight forward

process between need and use. Trying to understand the unmet assistive technology needs of the elderly, Gramstad, Storli, and Hamram (2013) found that the elderly who had not adopted assistive technology viewed their difficulties as difficulties of daily living. The elderly without assistive technologies did not consider themselves deprived of a resource but tried to get by through adjusting their habits and expectations, getting aid from others, or just forging through their lives as best as possible. In Gramstad, Storli, and Hamram's (2013) research, the elderly began the adoption process after someone in their social environment (family, friends, or health professional) suggested assistive technology use. After the introduction, the elderly continued to consider the possibility of assistive technology use and navigate the new possibilities and changes to their lives.

There are a variety of reasons people may have when considering assistive technology use. Jensen (2014), in looking at letters from people applying for assistive technology, identified a range of core aspects coloring users perspectives of assistive device use including quality of life, personal goals, retaining roles, positive self-image and personal dignity, independence, continuing occupational participation, self-care and security, lack of access to surroundings, cultural stigma, and cumbersomeness of devices. A literature review by Damodaran and Olphert (2010) found that people tended to adopt assistive technologies when they had concerns about their health and ability to cope with health problems and don't think they have adequate social support, or if they wanted to be less dependent and less of a burden on friends and family, or because using assistive technology gave them peace of mind and made them feel more independent. But, they also found that people may reject assistive technology use over concerns of loss of privacy and confidentiality, loss of social interaction in care, a lack of trust in

AT institutions, or social stigma attached to assistive technology use.

The reasons people have for adopting or rejecting assistive technology use can be highly individualized. People's predispositions, expectations, and reactions to assistive technology are rooted in their needs, desires, abilities, and knowledge and experience of/with assistive technology (Scherer, Craddock, and Mackeogh 2011). Some background characteristics, be it personal psycho-social factors or broader socio-demographic factors, have been shown to relate to assistive device use (Steel and Gray 2009).

In terms of psycho-social factors, Scherer et al. (2011) found that subjective well-being scores and several personal characteristics associated positively with better assistive technology use and matching. Personal characteristics that were examined included measures of mood, temperament, self-esteem, self-determination and autonomy, family support, friend support, and readiness and motivation to use support.

In terms of socio-demographics, the elderly are the primary assistive technology users (Zwijsen et l. 2011). Also, females, those with supplemental insurance, and those with both income and social security are more likely to use assistive devices (Mathieson, Kronenfeld, and Keith 2002). Income without social security is linked with less likelihood of using assistive technology. Other socio-demographic factors can also determine how assistive technologies are utilized. In looking at wheeled mobility devices, Karmarkar et al. (2011) found several relationships between socio-demographic factors and use between types of wheelchairs. Older people, females, those living at home, and those with spinal cord conditions were more likely to use a manual wheelchair than a powered one. Older people, females, those with neurological conditions or cardiovascular and pulmonary condition, and those living in institutions were

more likely to use standard rather than customized wheelchairs. Those with spinal cord conditions were more likely to use customized wheelchairs. When it came to powered wheelchair versus scooter use, those with primary cardiovascular and pulmonary conditions were more likely to use scooters and no age or gender differences were observed.

Even the structure of a person's home may influence assistive technology use. Seplaki et al. (2013) found that, among elderly women, living alone or with people did not relate to assistive device use. But, larger, multi-level homes did reduce the odds of using assistive devices.

It may also be of interest that there are socio-demographic differences between assistive devices users who report and do not report difficulty with daily activities (Cornman, Freedman, and Agree 2005). Cornman et al. (2005), using data from the 2000 Health and Retirement Survey, found that only about half of those who report using assistive devices also report having difficulty with activities of daily living. For example, when considering people aged 65 or older who report using any assistive device for walking or transferring, 15% report using a device but when restricted only to those who have difficulties with activities of daily living the prevalence rate drops to 7.6%. By percentages, people who reported difficulties in activities of daily living were more likely to use assistive devices than those who did not report difficulties (70.3% of those with difficulties used assistive devices while 8.3% of those not reporting difficulties used assistive devices). But, since the larger share of the elderly population did not have difficulties in activities of daily living, the number of those with difficulties and those without who used assistive devices effectively equaled out. When it comes to use of assistive devices, Cornman et al. (2005) find that, in terms of population percentages, older

respondents, women, Blacks, those who are not married, and respondents with less than a high school education were more likely to report using an assistive device but not report having difficulties with activities of daily living. In terms of odds, there was a consistent relationship with education level. The more educated are more likely to report using an assistive device but not having functional difficulties with activities of daily living.

Functionality and health status is anther aspect linked to assistive technology use. It is understandable to link need with use. People with more health needs (and more impairments and disabilities) are more likely to use assistive technologies (Goins et al. 2010). However, as has been discussed earlier, adoption is not necessarily straightforward. Matheison et al. (2002) found that limitations in activities of daily living had a curvilinear relationship with assistive technology use. People with more limitations in activities in daily living tended to use assistive devices until a point, in which the more heavily impaired stopped using assistive devices. Similar relationships have been found in other work. Healthier people see assistive technology more positively while the sicker see it negatively (Harrefors, Axelsson, and Savenstedt 2010). Healthier people may even use assistive devices better than the sicker (Scherer et al. 2005).

Differences in Delivery Systems

People can't use assistive technology if there is no system in place to provide and deliver assistive devices and services. Considering the entirety of the delivery system that distributes assistive technology can be daunting. A seminal paper by Barry Rodgers from the University of Wisconsin written in 1985 detailed 19 components in assistive technology provision (as cited in Smith 1996). Provision can encompass everything from identifying potential device users, to delivering and training users to use a device, to maintaining, updating, and replacing devices as

more appropriate devices enter the market.

The literature has indicated that there can be some difficulties with delivery systems. For example, in the United States, even with various federal and state aid programs assistive technology acquisition has been difficult (Finlayson and Hammel 2003). Largely, there are difficulties in getting information about assistive technologies and getting the funds to purchase and maintain assistive devices. Similarly, in the United Kingdom, Demain et al. (2013), using focus groups at an assistive technology exhibit, found that potential users and their families often had difficulty getting information about assistive technologies and funding the acquisition of devices. The lack of information about assistive devices may be one of the most important deficits to consider in assistive technology service systems. If people do not know assistive technology exists they will not seek it out or make preparations for acquirement and use.

A couple of other interesting research findings highlight how differences in delivery of assistive devices may influence assistive device outcomes and how delivery systems may place a differential in prescription of assistive devices. A study in Bangladesh found that user involvement (being involved in prescription of the device and trained in its use) resulted in a more improved quality of life for wheelchair users but not for hearing aid users (Borg et al. 2012). In Sweden, Gosman-Hedstrom, Claesson, and Blomstrand's (2002) randomized study of elderly stroke patients found that patients sent to a stroke ward for care were significantly more likely than patients sent to a general ward for care to be prescribed assistive care devices within three months of being admitted. When measured a year after the stroke, people from both wards were equally likely to have been prescribed assistive devices. That assistive device prescription occurs at different times in the recovery process depending on patient placement

in the medical institution may impact the total recovery process.

Assistive Technology Research Findings

The past couple decades, criticisms notwithstanding, have seen an abundance of research on assistive technology outcomes. This last section will focus on detailing what research has indicated as the effects of assistive technology. Research on the potential costs/saving related to assistive technology use will be discussed then the results of recent assistive technology literature systematic reviews will be summarized.

Findings on the use of assistive technology and healthcare costs have been mixed. Savings from the use of assistive technology has been attributed to projected savings from assistive technology users spending less time in formal (paid) care (Agree and Freedman 2000; Agree and Freeman 2003; Hoenig et al. 2003; Lansley et al. 2004). However, recent research has indicated that assistive technology use cannot replace formal care and will not reduce the time spent in formal care (Agree et al. 2005; Anderson and Wiener 2013). Furthermore, estimates of savings potential from assistive technology use may also require reliance on assumptions that have yet to be fully proven in research (Lansley et al. 2004). Thus, the effect of assistive technology on overall costs of care remains inconclusive.

A series of recent systematic reviews of assistive technology research have indicated that, generally, using assistive technology results in a range of better health and functionality outcomes. Systematic reviews are useful for providing collections of general information for clinicians, educators, and policy and decision makers but less useful in determining intervention recommendations (Anttila et al. 2012). Aggregations of multiple studies may obscure the

specifics linkages between user, device, service, and environments that determined intervention outcomes. But, for purposes of providing an overview of research findings, systematic reviews are exemplary.

One of the most useful pieces of literature on assistive technology recently published may be Anttila et al.'s (2012) systematic review of systematic reviews. Anttila et al. (2012) reviewed 44 systematic reviews published during the period of January 2000 and April 2010 that involved assistive technologies (using the ISO:9999 definition). On personal care and protection devices, seven reviews evaluated absorbent (incontinence-related) products, hip protectors and an anti-slip shoe and found that light disposable pads are more effective than other designs for light urinary incontinence, hip protectors made older people feel safer but offer little to no protection from hip fractures and that anti-slip shoes may reduce falls more than standard winter shoes in outdoor winter conditions. In six reviews dealing with personal mobility devices it was found that people of all ages can benefit from using powered mobility devices but that the use of seat boards and cushions has no beneficial effect and the use of seat restraints may endanger users. On furnishing and home adaptations a review indicated that there was a lack of research on this type of assistive technology but there were some indications of beneficial effects. On communication and information devices, eight reviews indicated some mixed results but that technologies that enhance reading and writing may help students with literacy problems, use of alternative communication systems may aid autistic children. Fall prevention systems (using identification bracelets and bed alarms) did not prevent falls any more than usual care did. Ten reviews on hearing aids indicated that hearing aids for the hearing impaired resulted in better health outcomes, though there may be outcome

differences between different types of hearing aids used and the type of impairment users had. On visual aid devices, five reviews evaluated closed circuit TVs (CCTV), colored light filters, head-mounted magnifiers and prism spectacles and found some mixed results. Optical aids generally improve reading performance. Indoors, CCTV use improved reading performance better than light filters and magnifiers and 15 diopter prisms helped with visual performance but not with activities of daily living. Head mounted devices were less useful than optical devices and use of prism spectacles may not have any beneficial outcomes. Seven reviews that included a range of different assistive technologies encountered some methodological issues but seemed to give tentative evidence that assistive technology use may be beneficial.

Another useful systematic review that considers the connection of devices and services, Chase et al. (2012) looked at how assistive devices and services may impact fall prevention for older adults. Individually, assistive services providing physical activity intervention (i.e. exercise and training) and assistive devices (i.e. home modifications) each provided some measure of benefit in preventing falls. But it was multifactorial interventions, those that include multiple approaches of device and service use, had the strongest evidence for resulting in better outcomes.

Recent systematic reviews on the use of assistive devices to aid in cognition help to inspect a variety of devices. De Joode et al. (2010) found several articles with strong evidence for the beneficial effects of the device NeuroPage (a pager system) in aiding memory. They also found several papers indicating that PDA applications could help with several tasks (e.g. helping with memory, helping reduce verbosity, providing navigational aids). Research on voice recorders was mixed but generally found some benefits in memory. In terms of use, it was

found that there were some concerns over costs of portable electronic devices and it seems as though, for those with cognitive impairments, children and teenagers were more likely than other age groups to use assistive technology (De Joode et al. 2010).

The review of cognition related assistive technology research by Gillespie, Best, and O'Neill (2012) framed findings along the ICF cognitive function categories. In terms of attention functions, 12 clinical trials indicate that an assortment attention shifting assistive devices worked well to refocus users on goals and activities. In terms of calculation functions, there was one study that indicated devices helping users with dyscalculia perform subtractions. In terms of emotional function, six studies indicated success in using assistive devices to regulate emotions. In terms of function relating to awareness of an individual's identity and position in the environment and time, seven studies were found to indicate assistive technology aiding in awareness of environmental location (by aiding in navigational efforts). A total of 58 studies found evidence that assistive technology could aid in higher level cognitive functions (which require complex thought in abstraction, organization, and planning). Of these 58 studies, 33 studies had assistive technology assist time management and 25 studies indicated aid in organization and planning. Regarding memory function, seven studies found that assistive technologies (cameras and multimedia reminiscence devices) aided in mental processes of registering, storing and retrieving information. The Gillespie et al. (2012) research on assistive technology devices for the cognitively impaired that primarily dealt with the other ICF cognitive function categories of psychomotor functions (it is noted that devices for this category exist but have not been tested for use by those with cognitive impairment), perceptual functions, thought functions, mental functions of language, or mental function of sequencing complex

movements. There has been a lot of research examining many types of assistive technologies and, while there are many indications that assistive technologies can have some form of benefit, there are still gaps in the research to be filled.

Concluding Remarks

This essay attempted to broadly outline themes in assistive technology outcomes research. First, the expansive nature of the definitions of assistive technology, devices, and services were discussed and the definitions were provided. Second, the deficits in assistive technology outcomes research were examined. Many disparate theoretical models and perspectives used in assistive technology research (of which there is many), research methods (of which there is debate over what is appropriate), research outcomes (of which there are many), research measures (of which there are few), and ethical concerns surround assistive technology (of which there is little) were described. Third, the essay then examined the differences in the views and use of assistive technology devices found in research. It was found that there is a plethora of devices which may have specialized functions, that there may be complexity in the connection between the causes and manifestations of disability, and that user's psycho-social and socio-demographic may influence the adoption, use patterns, and end effects of assistive technologies. Fourth, and finally, the essay attempted to describe the results of assistive technology outcome research. While there have been some mixed results and gaps in the literature, the overall impression suggests that most reviews of assistive technology tends to suggest benefit more than disadvantage.

Assistive technologies have been regarded as a necessary advancement in insuring

those with impairments can live better functioning lives as a part of the larger society. For many forms of assistive technology there are indications of benefit, sometimes to an obvious degree. Glasses can allow many vision impaired to see. Wheelchairs can allow those who would be unable to walk to travel. However, the explosion of high tech and specialized assistive technologies and further demands to understand the nuances of each assistive device and service have exposed limitations in current research. There are deficits in assistive technology research at all stages (from theory, methods, and outcome measurements), difficulties in assistive technology services (with education and provision), and unaddressed ethical concerns in assistive technology deployment. In helping those with disabilities, assistive technology may be an optimistic avenue to pursue, but, it requires more research and careful consideration.

References

Agree, Emily M., and Vicki A. Freedman. 2000. "Incorporating Assistive Devices into Community-Based Long-Term Care: An Analysis of the Potential for Substitution and Supplementation." *Journal of Aging and Health* 12(3):426–50.

Agree, Emily M., and Vicki A. Freedman. 2003. "A Comparison of Assistive Technology and Personal Care in Alleviating Disability and Unmet Need." *The Gerontologist* 43(3):335–44.

Agree, Emily M., and Vicki A. Freedman. 2011. “A Quality-of-Life Scale for Assistive Technology: Results of a Pilot Study of Aging and Technology.” *Physical Therapy* 91(12):1780–88.

Agree, Emily M., Vicki A. Freedman, Jennifer C. Cornman, Douglas A. Wolf, and John E. Marcotte. 2005. “Reconsidering Substitution in Long-Term Care: When Does Assistive Technology Take the Place of Personal Care?” *The journals of gerontology. Series B, Psychological sciences and social sciences* 60(5):S272–280.

Aloulou, Hamdi, Mounir Mokhtari, Thibaut Tiberghien, Jit Biswas, Clifton Phua, Jin Hong Kenneth Lin, and Philip Yap. 2013. “Deployment of Assistive Living Technology in a Nursing Home Environment: Methods and Lessons Learned.” *BMC Medical Informatics and Decision Making* 13(1):42.

Anderson, W. L., and J. M. Wiener. 2013. “The Impact of Assistive Technologies on Formal and Informal Home Care.” *The Gerontologist*. Retrieved July 31, 2014 (http://gerontologist.oxfordjournals.org/cgi/doi/10.1093/geront/gnt165).

Andrich, Renzo, Niels-Erik Mathiassen, Evert-Jan Hoogerwerf, and Gert Jan Gelderblom. 2013. “Service Delivery Systems for Assistive Technology in Europe: An AAATE EASTIN Position Paper.” *Technology and Disability* 25:127–46.

Anttila, Heidi, Kersti Samuelsson, Anna-Liisa Salminen, and Ase Brandt. 2012. “Quality of Evidence of Assistive Technology Interventions for People with Disability: An Overview of Systematic Reviews.” *Technology and Disability* 24:9–48.

Bartfai, Aniko, and Inga-Lill Boman. 2011. “Policies Concerning Assistive Technology and Home Modification Services for People with Physical and Cognitive Disabilities in Sweden.” *NeuroRehabilitation* 28(3):303–8.

Benedict, Ruth, John Lee, S. K. Marrujo, and A. M. Farel. 1999. “Assistive Devices as an Early Childhood Intervention: Evaluating Outcomes.” *Technology and Disability* 11:79–90.

Blake, Donna Jo, and Cathy Bodine. 2002. “An Overview of Assistive Technology for Persons with Multiple Sclerosis.” *Journal of Rehabilitation Research and Development* 39(2):299–312.

Borg, Johan, Larsson Stig, Östergren Per-Olof, Rahman Asm, Bari Nazmul, and Khan Ahm. 2012. “User Involvement in Service Delivery Predicts Outcomes of Assistive Technology Use: A Cross-Sectional Study in Bangladesh.” *BMC Health Services Research* 12(1):330.

Bradley, Sara M., and Cameron R. Hernandez. 2011. “Geriatric Assistive Devices.” *American Family Physician* 84(4):405–11.

Brandt, Ase and Jeny Alwin. 2012. “Assistive Technology Outcomes Research: Contributions to Evidence-Based Assistive Technology Practice.” *Technology and Disability* (1):5–7.

Chase, Carla A., Kathryn Mann, Sarah Wasek, and Marian Arbesman. 2012. “Systematic Review of the Effect of Home Modification and Fall Prevention Programs on Falls and the Performance of Community-Dwelling Older Adults.” *The American Journal of Occupational Therapy: Official Publication of the American Occupational Therapy Association* 66(3):284–91.

Cornman, Jennifer C., Vicki A. Freedman, and Emily M. Agree. 2005. “Measurement of Assistive Device Use: Implications for Estimates of Device Use and Disability in Late Life.” *Gerontologist* 45(3):347.

Damodaran, Leela, and Wendy Olphert. 2010. “User Responses to Assisted Living Technologies (ALTs) — A Review of the Literature.” *Journal of Integrated Care* 18(2):25–32.

De Joode, E., C. van Heugten, F. Verhey, and M. van Boxtel. 2010. “Efficacy and Usability of Assistive Technology for Patients with Cognitive Deficits: A Systematic Review.” *Clinical Rehabilitation* 24(8):701–14.

Demain, Sara, Jane Burridge, Caroline Ellis-Hill, Ann-Marie Hughes, Lucy Yardley, Lisa Tedesco-Triccas, and Ian Swain. 2013. “Assistive Technologies after Stroke: Self-Management or Fending for Yourself? A Focus Group Study.” *BMC Health Services Research* 13(1):334.

Fifty-Eighth World Health Assembly. 2005. *Disability, Including Prevention, Maganement and Rehabilitation*.

Finlayson, M., and J. Hammel. 2003. “Providing Alternative Financing for Assistive Technology: Outcomes Over Twenty Months.” *Journal of Disability Policy Studies* 14(2):109–19.

Fuhrer, Marcus J., J. W. Jutai, M. J. Scherer, and F. DeRuyter. 2003. “A Framework for the Conceptual Modelling of Assistive Technology Device Outcomes.” *Disability and Rehabilitation* 25(22):1243–51.

Fuhrer, Marcus J. 2007. “Assessing the Efficacy, Effectiveness, and Cost-Effectiveness of Assistive Technology Interventions for Enhancing Mobility.” *Disability & Rehabilitation: Assistive Technology* 2(3):149–58.

Gillespie, Alex, Catherine Best, and Brian O’Neill. 2012. “Cognitive Function and Assistive Technology for Cognition: A Systematic Review.” *Journal of the International Neuropsychological Society* 18(01):1–19.

Goins, R. Turner, Melinda Spencer, Srikanth Goli, and Joan C. Rogers. 2010. “Assistive Technology Use of Older American Indians in a Southeastern Tribe: The Native Elder Care Study: American Indian Assistive Technology.” *Journal of the American Geriatrics*

Society 58(11):2185–90.

Gosman-Hedström, Gunilla, Lisbeth Claesson, and Christian Blomstrand. 2002. "Assistive Devices in Elderly People After Stroke: A Longitudinal, Randomized Study - The Göteborg 70+ Stroke Study." *Scandinavian Journal of Occupational Therapy* 9(3):109–18.

Gramstad, Astrid, Sissel Lisa Storli, and Torunn Hamran. 2013. "'Do I Need It? Do I Really Need It?' Elderly Peoples Experiences of Unmet Assistive Technology Device Needs." *Disability and Rehabilitation: Assistive Technology* 8(4):287–93.

Harrefors, Christina, Karin Axelsson, and Stefan Sävenstedt. 2010. "Using Assistive Technology Services at Differing Levels of Care: Healthy Older Couples' Perceptions: Healthy Older Couples' Perceptions." *Journal of Advanced Nursing* 66(7):1523–32.

Hocking, Clare. 1999. "Function or Feelings: Factors in Abandonment of Assistive Devices." *Technology and Disability* 11(1/2):3–11.

Hoenig, HelenTaylor Jr., Donald H.Sloan, Frank A. 2003. "Does Assistive Technology Substitute for Personal Assistance Among the Disabled Elderly?" *American Journal of Public Health* 93(2):330–37.

Jensen, Lilly. 2014. "User Perspectives on Assistive Technology: A Qualitative Analysis of 55 Letters from Citizens Applying for Assistive Technology." *WFOT Bulletin* 69:42–45.

Karmarkar, Amol, Brad E. Dicianno, Rosemarie Cooper, Diane M. Collins, Judith T. Matthews, Alicia Koontz, Emily E. Teodorski, and Rory A. Cooper. 2011. "Demographic Profile of Older Adults Using Wheeled Mobility Devices." *Journal of Aging Research* 2011:1–11.

Kelly, Stacy, M., and Derrick Smith W. 2011. "The Impact of Assistive Technology on the Educational Performance of Students with Visual Impairments: A Synthesis of the

Research." *Journal of Visual Impairment & Blindness* 105(2):73–83.

Kloos, Anne D., Deborah A. Kegelmeyer, Susan E. White, and Sandra K. Kostyk. 2012. "The Impact of Different Types of Assistive Devices on Gait Measures and Safety in Huntington's Disease" edited by Antony Bayer. *PLoS ONE* 7(2):e30903.

Lansley, Peter, Claudine McCreadie, and Anthea Tinker. 2004. "Can Adapting the Homes of Older People and Providing Assistive Technology Pay Its Way?" *Age and Ageing* 33(6):571–76.

Layton, Natasha, and Erin Wilson. 2009. "Re-Conceptualizing Disability and Assistive Technology: Australian Consumers Driving Policy Change." *Technology and Disability* 21:135–41.

Lee, Sang-Heon. 2014. "Users' Satisfaction with Assistive Devices in South Korea." *Journal of Physical Therapy Science* 26(4):509–12.

Lenker, James A., Marcus J. Fuhrer, Jeffrey W. Jutai, Louise Demers, Marcia J. Scherer, and Frank DeRuyter. 2010. "Treatment Theory, Intervention Specification, and Treatment Fidelity in Assistive Technology Outcomes Research." *Assistive Technology* 22(3):129–38.

Lenker, James A., Frances Harris, Mary Taugher, and Roger O. Smith. 2013. "Consumer Perspectives on Assistive Technology Outcomes." *Disability and Rehabilitation: Assistive Technology* 8(5):373–80.

Lenker, James A., and Victor L. Paquet. 2003. "A Review of Conceptual Models for Assistive Technology Outcomes Research and Practice." *Assistive Technology* 15(1):1–15.

Lenker James, Laura Shoemaker, Marcus Fuhrer, Jeffery Jutai, Louise Demers, Chuan Hoh Tan, and Frank DeRuyter. 2012. "Classification of Assistive Technology Services: Implications

for Outcomes Research." *Technology and Disability* (1):59–70.

Mann, William C., and Maria Aparecida Ferreira de Mello. 2010. "Assistive Technology Use by the Elderly in Brazil and the United States:" *Topics in Geriatric Rehabilitation* 26(1):62–69.

Marschollek, Michael, Klaus-Hendrik Wolf, Maik Plischke, Wolfram Ludwig, Reinhold Haux, Alex Mihailidis, and Juergen Howe. 2009. "People's Perceptions and Expectations of Assistive Health-Enabling Technologies: An Empirical Study in Germany." *Assistive technology: the official journal of RESNA* 21(2):86–93.

Martins, Maria M., Cristina P. Santos, Anselmo Frizera-Neto, and Ramón Ceres. 2012. "Assistive Mobility Devices Focusing on Smart Walkers: Classification and Review." *Robotics and Autonomous Systems* 60(4):548–62.

Mathieson, Kathleen M., Jennie Jacobs Kronenfeld, and Verna M. Keith. 2002. "Maintaining Functional Independence in Elderly Adults: The Roles of Health Status and Financial Resources in Predicting Home Modifications and Use of Mobility Equipment." *The Gerontologist* 42(1):24–31.

Parette, H. P., and M. J. Brotherson. 2004. "Family-Centered and Culturally Responsive Assistive Technology Decision Making." *Infants & Young Children: An Interdisciplinary Journal of Special Care Practices* 17(4):355–67.

Peterson, L. E., C. Goodman, E. K. Karnes, C. J. Chen, and J. A. Schwartz. 2009. "Assessment of the Quality of Cost Analysis Literature in Physical Therapy." *Physical Therapy* 89(8):733–55.

Rust, Kathy L., and Roger O. Smith. 2005. "Assistive Technology in the Measurement of

Rehabilitation and Health Outcomes: A Review and Analysis of Instruments." *American Journal of Physical Medicine & Rehabilitation / Association of Academic Physiatrists* 84(10):780–793; quiz 794–796.

Scherer, Marcia J., Ger Craddock, and Trish Mackeogh. 2011. "The Relationship of Personal Factors and Subjective Well-Being to the Use of Assistive Technology Devices." *Disability and Rehabilitation* 33(10):811–17.

Scherer, Marcia J., Caren Sax, Alan Vanbiervliet, Laura A. Cushman, and John V. Scherer. 2005. "Predictors of Assistive Technology Use: The Importance of Personal and Psychosocial Factors." *Disability and Rehabilitation* 27(21):1321–31.

Schulke, Astrid M., Herbert Plischke, and Niko B. Kohls. 2010. "Ambient Assistive Technologies (AAT): Socio-Technology as a Powerful Tool for Facing the Inevitable Sociodemographic Challenges?" *Philosophy, Ethics, and Humanities in Medicine* 5(1):8.

Seplaki, C. L., Emily M. Agree, C. O. Weiss, S. L. Szanton, K. Bandeen-Roche, and L. P. Fried. 2013. "Assistive Devices in Context: Cross-Sectional Association Between Challenges in the Home Environment and Use of Assistive Devices for Mobility." *The Gerontologist* 54(4):651–60.

Smith, R. O. 1996. "Measuring the Outcomes of Assistive Technology: Challenge and Innovation." *Assistive Technology: The Official Journal of RESNA* 8(2):71–81.

Steel, Dianne M. and Marion A. Gray. 2009. "Baby Boomers' Use and Perception of Recommended Assistive Technology: A Systematic Review." *Disability & Rehabilitation: Assistive Technology* 4(3):129–36.

Technology-Related Assistance for Individuals with Disabilities Act Amendments of 2004, P.L.

108-364 (2004)

Vincent, Claude, and François Routhier. 2012. “Designs in AT Research: Usefulness for Therapists in Clinical Practice.” *Technology & Disability* 24(1):49–58.

Vogel, T. et al. 2009. “Health Benefits of Physical Activity in Older Patients: A Review.” *International Journal of Clinical Practice* 63(2):303–20.

Wallace, Joseph. 2011. “Assistive Technology Funding in the United States.” *Neurorehabilitation* (3):295–302.

Wise, Paul H. 2012. “Emerging Technologies and Their Impact on Disability.” *The Future of Children / Center for the Future of Children, the David and Lucile Packard Foundation* 22(1):169–91.

World Health Organization. 2002. *Towards a Common Language for Functioning, Disability and Health*.

World Health Organization. 2004. *A Glossary of Terms for Community Health Care and Services for Older Persons*.

Zwijsen, Sandra A., Alistair R. Niemeijer, and Cees M. P. M. Hertogh. 2011. “Ethics of Using Assistive Technology in the Care for Community-Dwelling Elderly People: An Overview of the Literature.” *Aging & Mental Health* 15(4):419–27.

Appendix A[1] : Estimating the Cost of Risk-Pooled/Risk-Transfer Long Term Care Financing Strategies[2]

Estimating the current and future costs of risk-pooled/risk-transfer financing strategies such as long term care insurance requires detailed consideration of:

(1) The form and substance of a financing strategy: what risks are protected and concomitantly, what liabilities are created for the insurer. Conversely, what restrictions and limitations are imposed to limit and control liability exposures.
(2) The projected cost of implementing and supporting a given policy.
(3) Traditional actuarial and nuance factors that may heavily influence long-term range cost trend projections.

Policy Description

The following material provides a brief discussion of factors related to the form and substance of long term care insurance policies that significantly affect their cost.

Type of Benefit

Long term care benefits can take on the three basic forms: (1) service benefits; i.e., a fixed proportion of actual insured service costs are paid, (2) indemnity benefits; i.e., a set of maximum dollar amount is paid for insured services, and (3) disability benefits; i.e., benefits are payable based on the insured's physical condition regardless of actual use.

When service benefits are specified, the insurer guarantees to provide the covered service regardless of cost. Typically, the insured does not receive monetary payment. The insurer will usually purchase the required service from providers or the insurer may act as a primary provider of services. Service benefits are offered by Health and Maintenance Organizations (HMOs) and Continuing Care Retirement Communities (CCRCs) for long term care.

Currently marketed individual long term care insurance policies are of the indemnity type. While many variations are possible, indemnity benefits generally have a

[1] This chapter is reproduced from an appendix of similar name in the 1991 report, *Financing Long Term Care: A Report to the Hawaii State Legislature.* Executive Office on Aging, July, 1991. Dr. Melvin Sakurai was responsible for the overall drafting of that chapter. Modifications appropriate to the current issues by Lawrence H. Nitz, September, 2014

[2] In several discussions in this chapter, specific dollar amounts are quoted, typically for examination fees, data acquisition, information verification, and the like. These are 1991 estimates, and have not been updated for this printing. The effect of inflation on these costs in intervening years is recognized.

deductible period—referred to as an "elimination period," coinsurance, and a benefit maximum.

The deductible may be specified as:

(1) A minimum dollar amount paid for covered services;
(2) The use of designated services for a specified period (e.g., 60 days of nursing home care or 90 home health benefits); or
(3) A minimum number of days during which policyholder must be in a plan of care (e.g., 90 calendar days in a home health care treatment plan).

Many other specifications are conceivable. When the deductible is specified in terms of days or visits as opposed to dollar amounts, normally it is referred to as an "elimination period." This is the most commonly used form of deductible for long-term care insurance.

Coinsurance serves to protect against indifferent or causal use of insurance benefits. The rationale is that insured will be more prudent about using a service and claiming benefits when they must pay part of the charge. Coinsurance is the percentage of service costs that the insured must bear. From a slightly different perspective, co-payments are any amount over maximum benefit limits paid by the insured. Thus, policyholders will always pay coinsurance charges but if co-payments are specified, they may or may not have any expenses, depending on actual charges.

Coinsurance amounting to 20% - 25% of service charges is common for health insurance. This contrasts with long term care insurance where there is often no coinsurance requirement. The absence of a coinsurance requirement does not mean that there are no co-payments. In essence, a co-payment is generated when the indemnity amount is set below the expected cost of services.

Benefit maximums for long term insurance are most often stipulated as a lifetime limit—either in dollars or service utilization (e.g., 1,460 days of nursing home care). Maximums may also be specified on a service basis (e.g., $60 per day of nursing home confinement or $40 per home care visit). It is also possible to incorporate categorical or "inside limits." For example, a policy might provide for a maximum of 10 covered visits per week or limit home care reimbursement to $40 per day regardless of the number of visits. Inside limits may also be described for benefit periods or per calendar year.

Risk Pool

Long term care insurance may be sold to individuals, group purchasers such as an employer or association sponsoring where all premiums are paid by the insured, or an employer or other organization willing to subsidize a part of premium costs.

At present, the relevant markets are for individual policies and "group" or franchise policies where participating individuals bear the full premium cost. Under current conditions, it is very unlikely that many employers will obligate themselves voluntarily to contribute toward long term care insurance costs. There is a considerable uncertainty about potentially adverse IRS tax treatment of employer long term care insurance premium contributions. Employer contributions may not be deductible because long term care is not a statutorily mandated employment benefit. Moreover, premium contributions may be treated as taxable compensation for employees.

Another disincentive for employer contributions may be the financial standards requirement that unfunded retiree benefits be reflected as liabilities on corporate balance sheets. Stock values and credit ratings may be affected adversely as a consequence.

Experience has shown that in the absence of significant employer contributions employee participations tends to be modest. Consequently a cross-section of risks cannot be assured to limit antiselection effects against the insurer, where only the highest risk individuals purchase. A further complication is that the courts have consistently treated "certificates" issued under group policies as full statements of the contractual obligation between insurer and insured. This is essentially identical to individual insurance contracts. From an actuarial perspective, this forces insurers to adopt the same basic risk pooling principles that apply to individual policies; i.e., individual selection or the underwriting of policyholders.

Premium Requirements

In order for an individual insurance contract to be viable financially, each insured person must pay a premium that closely approximates the expected cost of the contract issued. The reason for this requirement becomes evident when we consider: (1) the financial consequences of setting premiums for any group significantly below expected costs and (2) the competitive pressures to maintain premiums that are far above expected costs.

A fundamental actuarial axiom is that each sale of an individual insurance policy must have a positive expected value for the insurer. Obviously, all products sold by an insurer must have an average positive expected value if the insurer is to remain solvent. Further, there are significant risks for the insurer who attempts to break even by offering some policies with significant negative expected values and others with substantial positive expectations. A competitor could easily undercut policies having positive expectations and fail to match the low prices of those with negative expected values. The errant insurer would be left with only high risks and the possibility of bankruptcy. This same general principle applies over the lifetime of an insurance contract as well. An insurer attempting to make up losses on older contracts with profits

from newer policies could fall prey to a new competitor who does not have any older contractual liabilities.

It follows that the pricing of individual insurance contracts must be done on a closed cohort basis; that is, priced for a single cohort of policies issues to persons in a homogenous rating group or a group that cannot be divided into distinct sub-groups differing significantly in expected benefit claims and expenses. This implies some form of screening or underwriting to classify insured into risk categories for a particular issue year (or span three to five years).

Individual insurance cannot be sold for the same premium to identifiable classes of persons having significantly different expected costs unless there is a subsidy to offset the difference in expected costs for the lowest and highest cost sub-groups. For employer-sponsored health insurance, employers provide the subsidy. For single rate Medicare supplemental policies, the subsidy may accrue from tax advantages, hospital discounts, cross-subsidies from other insured groups, or lower expense charges related to market dominance. A noteworthy exception to the principle of required subsidization are compulsory systems such as Social Security or other government insurance programs. In compulsory programs, cross-subsidization can occur across the entire risk pool up to the point of voter discontent.

In many sponsor-participating plans the employer will contribute as much as 75% and often 100% of policy cost. Heavy subsidization is necessary to assure a high level of member participation. High participation rates are essential to obtaining a cross-section of risks that will limit antiselection against the insurer, especially since limited underwriting is a major cost advantage for group policies. In essence, insurance companies are willing to relax to underwriting requirements in exchange for a high participation rate.

In the absence of employer subsidies it is still possible to offer group policies on a “franchise” basis. In that case the employer sponsors a policy but employees pay all premium charges. Since participation is expected to be low, the premiums must be priced on an individual basis. Nevertheless, group members usually will obtain a lower premium and less restrictive underwriting than they could by purchasing an individual policy independently. Cost savings result mainly from reduced sales expenses and abbreviated underwriting that relies in part on the fact that group members are “actively at work,” thus limiting the pool of unhealthy high risk persons eligible to purchase a policy.

Insurance companies may further control their liability under a franchise contract by setting minimum participation requirements or loading premiums slightly for the additional antiselection risk. (Additional premium loadings would be such that the franchise policy becomes more expensive than the average individual policy).

Method of Financing

There are two general approaches to the financing of risk obligations generated by an insurance contract: (1) term funding and (2) advance funding. For long term care insurance, these methods correspond with attained-age premiums and issue-age premiums. Term funding is most appropriate for risks that do not become prohibitively expensive as a function of policyholder age. Advance funding is best suited to risks that increase rapidly with age.

Attained-age premiums will increase regularly each year as the risk increase. For example, the cost of term life insurance increases regularly to about age 45 (expect for minor bulges in the late teens and twenties for automobile accidents) and grows exponentially thereafter. After age 65 the increase in term premiums become so large that any insurer who permitted insured persons to renew from year to year would benefit with a rapidly deteriorating risk pool. Consequently, most renewable term policies cannot be renewed after age 65, at least for the full amount. Despite this limitation, term life policies are still useful because the need for life insurance tend to be greatest at younger ages. Term or attained-age funding may not be appropriate for long term care because those policies have their greatest value or utility at advanced ages where the risk of needing services is greatest. In that case, a schedule of accelerating premiums will cause many insured to lapse their policies at precisely the time when protection is most needed.

Advanced or issue-age funding is more consistent with the nature of the accelerating age-related risk protected for long term care. Issue-age premiums allow sufficient prefunding to restrain premium increases in later years to modest levels so that the insureds are better able to keep their policies in force. A level premium that is higher than required is charged during early policy years. The resulting surplus collections are set aside and invested to provide secondary income stream to fund benefit obligations expected during later policy years. The invested surplus is referred to as “policyholder or contract” reserves.

While issue-age premiums tend to be stable they are not necessarily fixed over time. Policies sold on an issue-age basis are usually sold as “guaranteed renewable” contracts. This means that premiums can be raised, but only for an entire class of similar risks. Premiums cannot be raised for particular individuals based on their health status at the time. Adjustments are only permitted for all policies in the same class based on their aggregate claims experience. (Another form of premium guarantee is the “noncancellable” contract that does set a guaranteed premium, which cannot change.)

The use of guaranteed-renewable contracts to cover a long term care risk that increases with age can lead to abuses by insurers when appropriate regulation is lacking. Abuses can occur when insurers rely on their right to raise premiums as a basis for deliberately setting initial premiums too low. This creates a competitive advantage in

marketing their policies. Even if these premiums cannot support expected benefit claims over the lifetime of policyholders, they are still larger than the initial risk and will build substantial reserves for a time. Eventually, as benefit claims are made (but before too many), premiums will be raised. Premium increases will in turn force some policyholders to lapse their coverage. If the policy does not have a nonforfeiture provision lapse will terminate an insurer's liability immediately and some reserves can be released to pay the claims of remaining policyholders. Most of the resulting free reserves become surplus or profit.

Responsible companies will use the right to raise premiums as a means of reducing the risk involved in offering a new product for which little data are available to accurately predict expected claims experience and the effect of underwriting. Long term care is such a risk and insurers may ne reluctant to offer serious policies without means of reducing large potential losses for mistakes in risk evaluation and severe antiselection. Responsible insurers would price their policies based on best available experience projections without any expectation of raising premiums. Adjustments would only be used to correct deviations from expected projections as experience developed.

Currently, most long term care insurance policies are issued on an individual or group franchise basis, with guaranteed renewable premiums based on issue age, and no nonforfeiture provisions. Premiums may be level for life, paid up at a specific age (e.g., by age 65), or paid up at a specific duration (e.g., after 20 years of premium payments).

The Insurable Event

One of the most important elements affecting the estimated cost for long term care insurance policies is the contract language that creates a binding liability for the insurer. Virtually every aspect related to the administration of a policy can be changed as experience emerges, including the rating. This is not true of the contract itself that will remain in force and bind the insurer for many decades into the future.

The most important part of an insurance contract is the "insuring clause" i.e., the part that specifies the insurable event or the exact conditions under which benefits are paid. The insuring clause is especially important for long term contract because it cannot be amended in response to adverse Court decisions that can extend the insurer's liability beyond what was originally intended in drafting the contract. Court decisions establish a precedents that determined not only what is payable in any given year but in all succeeding years. This and the tendency to decide marginal cases in favor of defendants may cause what is often called "judicial creep."

To protect against unintended commitments, insurers often establish several lines of defense in the form of multiple tests, all of which must be satisfied before

payments are made. This process is referred to as claims adjusting. Benefit tests can require that:

(1) Patients meet a criteria of "presumptive need" for personal assistance. The ability to perform specific "Activities of Daily Living" (ADLs), i.e., bathing, dressing, incontinence, toileting, transferring from beds and chairs, and eating has come to be accepted as a measure of presumptive need. Particular attention is given to specifying what constitutes an ADL failure relative to the need for personal assistance, especially the distinction between needing active assistance from another individual as opposed to supportive mechanical devices. Expected rates of long term care service utilization will vary according to the stringency of such specifications.
(2) Patients need and actually receive personal assistance to perform deficit ADLs during each home visit or day of covered nursing home care.
(3) Personnel who provide paid assistance have specific qualifications. There will often be a requirement that personal assistance be provided through and agency or home meeting specific criteria as well. Sometimes the insurer will maintain a list of approved service providers.
(4) Attending physicians certify services as being needed due to accidental injuries or illnesses that have been diagnosed and treated. (This type of clause can work against insurers because certification may be construed as evidence that all other benefit eligibility criteria have in fact been satisfied.)
(5) Patients be unable to venture outside their home without direct physical assistance from another person.
(6) Services received be part of a treatment plan that is set or approved by the insurer.

The insurable event can be expressed in two basic policy forms—disability and use-of-services. Disability type policies pay benefits directly to the policyholder (usually a fixed dollar amount per day) based on presumptive eligibility, regardless of whether any services are actually used. Use-of-service type policies require not only presumptive eligibility but the actual use of services as preconditions for benefit payments.

Insuring clauses normally will specify both the degree of impairment and required use of services for benefit payments. They will also define eligible causes of impairment. Certain causes are excluded routinely as insurable events; e.g., self-inflicted injuries or those resulting from war. Long term care policies generally will exclude or limit coverage for impairments resulting from mental conditions. Reliable and accurate measures of many mental impairments are not available. This makes it difficult to objectively determine benefit eligibility.

Confinements resulting from organic brain syndrome (e.g., Alzheimer's Disease) have gained coverage, mainly as a consequence of regulatory pressures. The long-range implications of these regulatory changes are still unknown. Further extension of

coverage to more broadly defined and inclusive mental and nervous conditions is not likely until: (1) more reliable measures of impairment become available, (2) reliable data is assembled to indicate how much the coverage of organic brain syndromes costs, and (3) there is discernable change in public values that signal a willingness to pay the higher premiums for such coverage.

Types of Benefits Covered

Once the basic method of financing and the insuring clause are set, the next step is to specify covered benefits. For long term care policies the main benefit choices are institutionalized care (i.e., nursing home care) or noninstitutional home and community based (HCB) care. HCB care can encompass skilled care, professional therapists, unskilled personal services, homemaker services, adult day health care, respite care, managed care services, ambulance services, or medical alert systems.

In addition to the main benefits, a variety of other benefits can b covered in a long term care policy. The most common of these is a waiver of premium benefit that waives the requirement of premium payments after the beneficiary has received covered services for a specified number of days (e.g., after 90 days of nursing home confinement).

Other benefits aim at creating stake for policyholders who might otherwise receive no benefits under the policy for a variety of reasons. One concern of particularly younger potential purchasers of long term care insurance is that they will pay premiums for many years and then never claim any benefits. Death and lapse are the two main reasons for the nonreceipt of benefits under a long term care policy. One way to address this concern is through a death benefit. In its simplest form the death benefit returns to the insured's estate a given percentage of premiums paid, usually without interest, less any benefits paid. A more generous form of death benefit pays an amount based on reserves held by the insurer at the time of death; i.e., cash value.

The Effect of Lapse: Nonforfeiture Benefits

Nonforfeiture benefits are another policy provision that protect against receiving no claim benefits. This benefits provides some form of residual value in the event that a policyholder stops paying premiums and lapses. There is a real equity concern here. The incidence of benefit claims for long term care insurance policies is exponential; being fairly low and flat at younger ages but accelerating rapidly upward after about age 75. Consequently, all soundly funded long term care insurance policies accumulate large reserve to prefund this long-range future benefit obligation. Thus, the implied policyholder equity in such policies is immense. In the absence of a nonforfeiture benefit, policyholders who lapse will immediately lose all of their implied equity and receive no tangible benefits.

Nonforfeiture benefits can take the form of cash payments structured like a death benefit; i.e., a return of premium or cash value. The provision of cash benefits may have important tax implications for long term care policies. There are two other important forms of nonforfeiture benefits. These include reduced paid-up and extended term coverage which is normally available only after accumulated reserves are sufficient to provide a minimum specified benefit. Reduced paid-up benefits preserve a level of reduced coverage indefinitely for the insured who lapse. The exact level of reduced benefits is determined by the length of time that premiums were paid and the accumulated value of reserves that will finance retained future benefits. An extended term nonforfeiture benefit will continue a full rate of coverage for some specified period after premiums have ceased. Again, the period of extended coverage will depend on how much time that can be financed by accumulated reserves.

Lapse can occur for a variety of reasons:

(1) Diminished competency: Elderly persons may lose their ability to keep track of finances and simply forget to maintain premium payments current. The mild loss of mental capacity is often a precursor of more advanced frailty.
(2) Loss of spouse: Loss of a spouse or other companion who had primary responsibility for managing financial affairs increases the risk of lapse.
(3) Cash flow problems: While many elders have substantial non-liquid assets, their incomes are often very limited. This is a precarious situation that can be easily disrupted by a sudden unexpected expense. Premium increases exacerbate the risk of not being able to continue premium payments.
(4) Inability or unwillingness to pay higher premiums: Policyholders may decide that there is no longer a positive value or utility for continued long term care coverage at higher premium rates.

The Effect of Inflation: Indexed Benefits

Daily nursing home charges have risen at close to the rate of nursing personnel wage increase for more than two decades. This raises a concern about the eroding effect that rapid inflation can have on fixed benefit values. Consider the person who buys long term care insurance policy at age 65 with fixed nursing home benefits of $100 per day. If that policyholder were institutionalized immediately the policy benefit would cover nearly 100% of the charge. Unfortunately, this fortuitous outcome is unlikely because the risk of institutionalization is minimal at age 65. It is much more likely that the policyholder will be institutionalized in the eighth decade of life when the risk becomes significant. Suppose the policyholder entered a nursing home at age 85 and daily charges have risen 5.5% annually during interviewing tears. The result would be a daily rate of $295; the $100 benefit would only cover 34% of the cost.

Inflation protected benefits are difficult to include in a long term care insurance policies. This is due mainly to the advanced funding method wherein a portion of

premiums collected during yearly policy years is set aside to fund benefit obligations expected during later years. If benefit obligations were to increase unexpectedly after substantial premiums had already been collected, any resulting deficit would be extremely difficult to recover. For example, it would be virtually impossible to retroactively collect the required amount from current policyholders.

Guaranteed Issues

One means of providing inflation protection is to guarantee the issue of additional preset coverage amounts on some sort of policy anniversary date schedule. Under this strategy the insurer does not accept any inflation related risk: only the risk of severe antiselection if the optional coverage is elected primarily by those who perceive an imminent need for care. That risk can be managed by offering fixed increments, limiting the maximum age at which additional increments can be purchased, and disallowing retroactive purchase of additional units that were not purchased when offered.

The additional coverage units could be structured to yield a compounded rather than a simple addictive benefit. This would require exponentially increasing premiums that are much greater than the entry age premiums themselves, because increasingly large benefit amounts would be purchased at ever advancing ages.

A major drawback of additional benefit units as an inflation protection strategy is the accelerating rate at which age premiums increase for advanced ages. Premium rates begin to double at 5 year **age** intervals after age 70. Consequently, a large proportion of the required coverage must be purchased at advanced ages when premium rates are very high. Policyholders will also lose the benefit of compound interest earnings and morality discounts. Ever increasing portions of available income will go toward premium payments at a time when many are living on fixed incomes.

Indexed Policies

Indexing long term care benefits to a measure of inflation presents an unacceptable risk for insurers. The problem is that any unanticipated inflation (i.e., inflation not foreseen and accounted in setting initial premiums) will devalue the reserves accumulated to fund inflation protection. Insurers could not recover any deficits easily. Risks associated with open-ended benefit indexing may be reduced by specifying a maximum annual rate of indexation.

Limited Fixed Increments

Daily and lifetime maximum benefits can also be increased by a predetermined annual increment for a fixed term. Premiums are increased at the same rate as benefits to reduce the initial increment on premiums.

Expenses

Expense Estimation Approaches

Expenses associated with risk-pooled financing strategies can be approached from two very different perspectives. First, at the micro level where each task necessary to support each individual policy is enumerated and analyzed to determine minimum skill levels necessary for acceptable performance and required execution times. This analysis yields a per unit projection of salary and other associated costs for each task. Every policy can then be loaded with an expense factor for each identified task—multiplied by its expected incidence for different policy duration years. There may be additional loadings to compensate for the fact that every task cannot be identified separately and for overhead that cannot be allocated rigorously. These may be specified as dollar amounts, percentages of premiums or benefits, or in some other unit. They also differ each year.

Alternatively, a macro level approach would determine how many personnel must be hired and supported to administer a block of business. A detailed multi-year forecast subsequently is prepared of sales volume by type of policy, option, and age. These projections are then multiplied by appropriate net premiums for an aggregate budget of expenditures. Expense loadings are calculated to closely approximate budgeted expenditures for the sales forecast. Additional expense loadings must be incorporated to account for the fact that sales forecasts are seldom prepared for more than a few years into the future. The additional loadings reflect projected long run costs of policy maintenance and claims adjusting. This is especially important for policies that assess claimant service needs and managing care. It should be obvious that a top down macro approach is only partially insensitive to the effect of important claim-related expenses because relatively few claims will occur during the initial years for which expense budgets are projected and are most accurate.

The best approach is to combine both expense estimation procedures. Many cost functions are directly related to the number and types of policies sold. For example, commissions paid to independent brokers depend almost entirely on the premium volume actually sold. Recurring expenses such as the annual cost of premium collection and accounting functions are also determined by the number of policies in force and how often premiums are collected. Other more discrete functions, such as the cost of underwriting or screening applicants and issuing policies, depend primarily on the number of policies sold as well.

There are also many key expense functions that generate relatively fixed costs independent of the number of policies sold. These fixed expenses are amortized or spread over all policies so that greater volume implies relatively lower cost on a per policy basis. For example, supervisory personnel responsible for underwriting and

issuing or who monitor long-range industry development costs are another example of fixed expenses generally allocable across all policies. Finally, every insurer will have non-allocable overhead expenses that must be spread over all operations.

Given the clear bifurcation of expense types, it is most logical to analyze and classify each distinguishable expense according to the extent that it caries by number and type of policy actually sold or remains relatively constant for the short or long accounting periods. Expense loadings may be devised for each functional and overhead expense for inclusion in premium rate structures at the micro level. Appropriate expense loading factors are determined by projected sales volume for expense items that are relatively independent of sales volume composition; i.e. **an** average unit charge.

The two steams of expenditure estimates- **budgeted** expenditures and explicit expense loadings in the premium rates—are often then reconciled using the following general rules.

(1) Unit costs are adopted for functional expenses determined primarily by sales volume and composition; e.g., commissions, annual premium collections, etc.
(2) Corresponding expense allowances must be altered to approximate expense budgets for functional expenses that are relatively independent of sales volume; e.g., staff salaries, product development costs, etc.
(3) Corporate rules for allocating expenses by product line are used for general company overhead expenses; e.g., overhead may be allocated as a percentage of collected premiums or on a fixed monthly dollar amount per contract basis.

In practice, most overhead and other expense functions can be adjusted somewhat in response to volume. For example, if sales do not meet projections in the first few months, underwriting staff assignments can be reduced. The two basic expense estimation approaches are highly complementary and provide a check on the reasonableness of any loading factor developed.

Loss ratios are calculated for confirmation once the final expense loading factors have been determined. Deviations from target ratio values may be corrected by redistributing expense loadings to smooth fluctuations by age or policy type. It is also possible to modify the policy.

Types of Expenses

There are three general categories of functional expenses associated with long term care insurance:

(1) **Acquisition Costs:** encompassing all sales costs, including commissions, if applicable, promotion and advertising, and screening issuing.

(2) **Maintenance Costs:** encompassing premium collection and related accounting functions, annual valuations and regulatory reporting, corporate overhead, and taxes—both premium taxes and corporate taxes on excess disallowed reserves.
(3) **Claims Administration Costs:** encompassing claimant assessments, claims correspondence, initial eligibility determination, continuing eligibility monitoring, processing benefit payments, accounting and actuarial functions related to claims, continuing claims standards review, monitoring legal or regulatory developments relevant to payment adjudication, eligible provider evaluations if appropriate, and legal defense.

There are also three administrative expense categories that must be considered in setting premium rates for long term care insurance policies:

(1) **Product Development Costs:** including all incurred expenses prior to the first policy issue and any resulting operational deficits.
(2) **General Management and Corporate Expenses:** encompassing all expenditures directly related to the long term care insurance policy, but not clearly allocable to any particular functional area.
(3) **General Corporate Overhead:** the required return on investment for a line of long term care insurance; i.e., profit or risk charge.

In calculating premium rates, the present value of all premiums collected over the life of a contract must equal the present value of projected benefits, expenses, and desired profit, including risk related allowances.

Acquisition costs should account for all expenses related to selling and issuing the policy; including commissions payable in the first and renewal years. Maintenance costs may be stipulated on a dollar amount per policy basis for each year, as a percentage of premiums, or a combination of these. Claims administration costs can be determined on a dollar amount per claim basis, as a percentage of benefits paid, or a combination thereof.

The method selected for allocating product development expenses, general expenses, and corporate overhead is somewhat arbitrary. The only requirement is that expense allowances must reproduce overhead expenditures in total over the projected volume of policies issued. The most obvious methods of allocation are as a uniform percentage of premiums, annual dollar amounts, dollar amounts that vary by duration, age, or other characteristics, and so forth. Percentage loading on investment income may also be considered. A “conservative” projection of sales, both as to number and average premium yields, may be adopted to offset adverse consequences of incorrectly projecting expected sales volume.

The choice of allocation method for overhead expenses can be change incidence or “tilt” in the rate structure. For example, percentage loadings raise more revenue

from higher issue ages, where premiums support higher proportion of benefit outlays, compared with younger issue ages, where a large proportion of future benefits will be funded by investment earnings on reserves. Higher first year loadings will tend to result in a greater charge to older issues ages since there is less expectation of rate increases (as a function of death). Fixed annual amounts charge a higher proportion of overhead expenses to younger issue ages because they will make a greater number of separate premium payments. Inevitably, considerations of competition and marketing advantage will guide the choice of method.

Loading a greater proportion of overhead expenses as dollar factors will flatten the premium rate structure across issue age classes or scope of benefits. Conversely, flat premium rate structures will exhibit greater variation in loss ratios.

Acquisition and Development Costs

Sales Costs. Sales expenses are the first type of sales cost. This expense is affected significantly by the selected marketing method. Sales expenses **will** also tend to be lower for group type policies than for individual policies. The use of **internal** sales force instead of commissioned agents or brokers will also lower expenses Training a dedicated sales force is riskier because it represents a fixed short-term expense; if initial sales are modest the cost per day is very high.

Agent commissions for individual policies vary from 25% to 100% of the first year premium. Some of the commission can be indirect, e.g., paid as an additive volume bonus and not explicitly allocated as a commission expense. Renewal commissions may be between 5% to 25% of collected premiums. Substantial commissions may still be payable after the second year, in the range between 5% to 10%. After the firth year, most insurers pay only a nominal 1% to 2%. A few will continue paying commissions up to 25% of all subsequent premiums.

Both a sales commissions and an enrollment commission may be paid for group policies. Broker commissions can be as low as 2% to **3** % for very large groups with more than 5,000 members; increasing as group size decreases. Renewal commissions for group policies may amount to 1% of premiums. Enrollment functions may be by handled by salaried or commission representatives. Enrollment volume bonuses are customary, even for salaried personnel. Given the relatively fixed nature of this expense, a major portion or enrollment expense must be expressed as a percentage of the first year premium.

For both group and individual policies there is an additional expense for supervisory personnel to oversee the sales force. There are other additional expenses for individual policies. These include aggregate volume bonuses, other volume incentives, bonuses for sales supervisors, annual conventions, and the salaries of sales supervisors. For group policies there is the cost of providing field compensation and

presentation costs for an enroller. These can amount to between $30 to $50 per policy sold.

Finally, there are office expenses for the sales force such as rent, secretarial, telephone, answering services, and company overhead surcharges for all such related expenses.

Promotion and Advertising

This expense varies significantly from insurer to insurer, depending on the marketing philosophy and competition. At minimum, this expense will encompass the design and printing of sales brochures, amounting typically to several thousands of dollars. More expensive marketing efforts will budget for print, radio, and television advertising.

The widespread use of mass mailings and telemarketing tends to blur the distinction between advertising and selling. Nevertheless, these costs must be represented in one category or the other. Marketing expenses must be recovered over all policies sold. Consequently, the cost per policy is influenced heavily by the number of policies sold. Companies must monitor their advertising costs and sales volume closely to maintain an appropriate balance. A reasonable expense loading for marketing costs is 5% of the first year's premium plus $5.00 per policy sold. A large volume of concentrated sales would yield a substantially lower percentage.

Screening (Underwriting) and Issuing

Issuing expenses are the most transparent of these two cost items. It includes the costs of issuing an insurance contract, creating an in-force record for the policyholder, and beginning the premium billing process. This may amount to between $10 to $50 per policy issued.

Screening expenses will depend on the specific procedure followed. Generally, the expense is calculated on a per applicant basis and then adjusted to reflect the reduced number of policies actually issued. Underwriting expenses are incurred for all applicants but are recoverable only from persons actually accepted and issued a policy.

It is interesting to note that a high underwriting cost may not necessarily result in higher premiums because effective underwriting will ultimately reduce the expected utilization of services during the select period.

The weakest possible underwriting screen for long term care would be the documentation of an 'actively as work' status in conjunction with a short-term medical questionnaire for group policies. The combined cost of this procedure may be about $10 per applicant. Per applicant costs are then converted to a policy issued basis. For

example, assume that 15% of all applicants are rejected as unacceptable risks: a $10 per applicant underwriting charge would translate to $11.76 per policy issued and remaining in force for a full year (i.e., $11.76 = $10/.85).

A more extensive screening protocol can involve individual medical underwriting. This can cost as much as $150 per policy issued. Extensive underwriting is appropriate for insurers just entering the market. Early claims can then be evaluated in relation to information developed from the underwriting process to determine what factors are the best predictors of long term care use. This will help the insurer rapidly improve the underwriting process.

A thorough underwriting procedure would include:

(1) A Medical Information Bureau (MIB) check for approximately $2.
(2) An attending physician statement at about $25 to $50 per statement.
(3) Phone verification of application information and assessment of general mental status for approximately $10 per applicant.
(4) Face-to-face assessments by trained interviewers to evaluate and applicant's mental condition for early detection of Alzheimer's Disease for about $70.

These extensive charges will not necessarily be incurred for all applicants. Some applicants will be eliminated immediately while others may be deemed sufficiently good risks that a full review is not indicated.

Product Development

Product development expenses cover policy design, contract drafting, pricing, and information systems design and implementation. These costs may be budgeted out of corporate surplus or charged against policy issues anticipated in the first three to five years. Development costs may be as little as $50,000 for a "cover" type policy based on an examination of state regulatory filings. A well conceived custom designed product line can require expenditures of a million dollars or more. Usually, product development expenses are amortized over a specified number of policy issues.

Maintenance Costs, Taxes, and Profit

Maintenance costs include: (1) the direct cost of keeping policies in force—i.e., premium billing and collection, at about $1 to $3 per payment; valuations, 5% to 1.0% of premiums; and changes of address and (2) the indirect cost of company operations—corporate executive overhead, maintaining and servicing capital debt, support services, 3% to 6% of premiums.

Some taxes are also classified as maintenance costs. For example, premium taxes and the corporate taxes on unallowed surplus reserves. Corporate taxes on profit are

not normally loaded for purposes of pricing. Profits are typically projected on a before tax basis with a tax allowance that will yield the desired rate of return on capital.

All states assess a tax on premiums for long term care insurance. Many states, including Hawaii, do not tax Blue Cross and Blue Shield premiums. Tax rates vary from 2% to 3% and average around 2.5%. Domestic insurers are frequently exempt or taxed at a lower rate.

In estimating tax related costs it is important to reconcile the discrepancy between exempt reserves allowed by the Federal government and reserves determined by generally accepted accounting projects (GAAP). Because of this discrepancy, Federal taxes are applied to part of the initial positive premium cash flow that should be retained as reserves and earning interest. The two reserving bases do eventually merge and the insurer's income that is subject to Federal tax is reduced by an amount equal to that artificially taxed as income during early policy years (under any reserving system the required reserve is zero when all policyholders are lapsed or dead).

The effect of a reserve discrepancy on premiums is that the insurer cannot earn investment income on any amounts artificially collected as taxes. This loss of interest income must be accounted for in premium estimates, either an as expense item or a reduction in assumed investment income.

Insurance companies also require a return on their investment or a contribution to free reserves so that profits from one product line can be used to pay the losses of another. Profit margins or risk charges are usually in the range of 10% to 15% of premiums.

Claims Administration Costs

Claims administration generally involves the following functions and services:

(1) Eligibility determination to establish that claims are consistent with the insuring clause
(2) Case management:
    1. Assessment
    2. Counseling of care givers and relatives
    3. Arranging for community services
    4. Status monitoring
    5. Reassessments
(3) Determination that services claimed meet policy definitions and the amount payable for each
(4) Payment (preparation of documentation, cutting check, mailing check. And routine accounting of expenditures)
(5) Financial audit and routine expenditure reports

(6) Claim data entry
(7) Appeals (if provided)
(8) Legal Expenses
(9) Unanticipated benefits paid because of legal losses

Claims administration expenses are usually based on estimates of the most expensive functions—eligibility certification and case management—that have been increased by a percentage to allow for all other functions. To the extent that more effort may be expended on higher value claims, these expenses may be loaded as a percent of benefit factor. This is not generally advisable because most claims administration costs do not vary by the size of the claim. Accordingly, most of this cost should be accounted as a dollar per claim factor. It is not appropriate to load claims administration expenses as a percent of premium factor because the incidence claims administration and premium payment costs are not the same.

Eligibility Determination

The most expensive function, other than case management, is the determination of eligibility based on ADL failures or mental capacity. The best proxy for eligibility determination expenses is the cost of establishing eligibility for disability insurance, although there are differences because disability insurance applies mainly to working-age persons.

Eligibility can be established by a field assessment or desk audit, depending on circumstances. A field assessment is more expensive (about $80) than a desk audit ($10). Both methods can be used effectively in reassessing the continuing eligibility of current beneficiaries. Initial assessments require the creation of new electronic and paper record files and documentation of key facts and circumstances to support subsequent monitoring (about $25-$30 additional).

The total cost of claims administration will depend on the cost per assessment, the number of assessments required, and the relative proportion of field assessments and desk audits. These requirements will vary by the type of organization, whether eligibility is directly supervised by a long term care manager, is the responsibility of another company division, or is contracted out, and by insurer preferences.

Initial Eligibility Assessments—New Home Care Claimant Files

Perhaps 90% of new home care claimants who were not recently confined in a hospital or nursing home will require field assessments. Only a few would be a afflicted by sudden verifiable medical conditions that leave little doubt about the need for services.

New home care claimants recently confined in a hospital or nursing home are less likely to need a field assessment because the institutional documentation can be relied on to establish a need for services. Only a small percentage of previously confined claimants will undergo field assessments (perhaps 10%).

The percentage of new home care claimants confined in a hospital but not in a nursing home who would require field assessments will vary according to the restrictiveness of the insuring clause. The number will be substantially lower if three or more ADL failures are required compared with one or two. The stems from the presumption that it is easier to determine eligibility under restrictive criteria because of the previous diagnosis and treatment received. Lower ADL standards will tend to generate a larger proportion of benefit claims for which eligibility cannot be established based on hospital records alone. Hospital documentation and attending physician reports should be sufficient to establish eligibility for about 50% of these claimants.

Initial Eligibility Assessments—Nursing Home Admissions

Hospital documentation will be sufficient to establish service eligibility for a high proportion of discharges. About a third of the remainder will have been home care claimants prior to their hospital stays.

Only about a quarter of post-hospital admissions would require field assessments. Many persons admitted directly to a nursing home with no prior hospital stay suffer from debilitating conditions that would make the eligible for home care. The prior documentation for many of those who actually claimed and received home care services would be sufficient to establish nursing home benefit eligibility. In particular, all those already known to meet the ADL requirement for nursing home care due to a condition for which there is no prognosis of improvement are presumptively eligible. For many others, deterioration would be expected based on past information. The proportion for whom eligibility could be determined based on existing information is estimated to be 50% or more.

Some nursing home admissions are not preceded by either a home care claim or hospitalization. While this is the most suspect group, a determination of eligibility might sill be made for some based on available documentation, such as contracts with the nursing home or attending physician. In most cases this will involve such conditions as partial paralysis not requiring hospitalization. Aside from these exceptions, about 90% of nursing home admissions with not prior service utilization will require a field assessment.

All of the foregoing considerations lead to a conclusion that about 60% of home care claimants and 40% of nursing home admissions will require field assesments. (About 90% of home care claimants and 60% of nursing home admissions would be new

cases.) The cost of initial eligibility assessments for new home care claimants is about $75; for new nursing home admissions, about $40.

Reassessments (Continuing Benefit Eligibility)

The cost of reassessments to determine continuing benefit eligibility will depend on the frequency and extent to which field assessments are required. This will vary as a function of the diagnosis and condition of patients and as a function of the care setting; i.e., home care or in a nursing home. For home care benefits, the frequency and need for field assessments will depend on the quality of information obtainable from home care agencies.

If an exclusive service network is established within a concentrated area, it may be feasible to obtain nearly all the required information for ongoing assessments directly from the agencies. This would substantially lower the required frequency and proportion of field visits. At the other extreme, if there is a diverse and autonomous collection of service agencies more frequent assessments may be need to **police** claims; there would be a higher proportion of field visits as well. An approved **provider list** would fall between these extremes.

The frequency of reassessments and the proportion of field visits should be substantially lower for nursing home patients. This follows from the relative condition of nursing home patients and lower opportunities for abuse of benefits. A large proportion of nursing home claimants will have such poor prognosis for improvement that reassessment is unnecessary. (This contrasts with the relatively better condition of home care patients who may improve enough to affect their benefit status).

For nursing home patients a regular schedule of assessments at three month intervals would be sufficient. About 90% of those reassessments could be desk audits. When field assessments are required, a mass visit to all beneficiaries in the same facility should suffice.

Case Management

Many long term care policies provide case management benefit. But one of the necessary conditions for case management to be a meaningful component of any long term care system is a service rich environment.

The cost and effectiveness of case managers may be gauged by examining various public community programs. Nationally, community programs that coordinate care services typically assign 40 or more patients to each case manager. To evaluate this cause load we must account for the fact that a large amount of the managers' time is also devoted to complying with government regulations and preparing various filings. In addition, perhaps more time is spent attempting to line up community services or

alternate suppliers than might be expected for an insurer. It is also relevant that the average caseload status in these programs is severely impaired with more limited access to informal caregivers than is the norm.

The foregoing considerations imply a unit cost for each case of about $1,350 per patient year (assuming total annual gross costs of about $54,000/manager). This would demand a huge increase in long term care insurance premiums. If case management were limited to an initial assessment, the cost could be reduced substantially. Allowing one day for initial case management would cost about $235.

Claims Processing

The processing of nursing home claims will encompass:

(1) Determining whether services claimed meet policy conditions, and the amount payable.
(2) Payment processing (i.e., payment documentation, cutting check, mailing check, and routine expenditure accounting).
(3) Financial adjusting to assure fiscal integrity and routine expenditure reporting.
(4) Recording claims data and maintaining the claims database.

One basis for estimating claims processing expenses for nursing home benefits is the average cost of processing major medical claims. Average processing costs for major medical claims range between $5 to $15 per claim depending on the service mix (especially if prescriptions are involved), labor costs, and degree of office automation.

While major medical processing costs are a useful reference, many differences must be accounted for to arrive at a reasonable processing expense estimate for long term care nursing home claims. Major medical claims arrive in batches, often with no indication about the likelihood of related further claims. Once received, claims are processed quickly because elapsed processing time is a primary quality of service indicator for major medical carriers.

On the other hand, nursing home claims are received with great regularity and will not vary much for established patients. In that case, claims processing will mainly involve looking for changes of circumstances from previously reported claims. The regular character of nursing home care claims will greatly simplify some processing functions, such as establishing patient identity and eligibility. Once eligibility has been established, the cost of paying a nursing home claim would be negligible. The only cost function would be to determine that a patient was alive and not discharged. Most of that burden would fall on the insured or the documentation would ordinarily be received from the home under an assignment. There will also be multiple assigned claims from most nursing homes as the initial cohort of insureds age, further reducing costs.

The only significant processing cost for nursing home claims would be to establish that new admissions are actually in a home and calculating payment adjustments for the admission date and conclusion of the elimination period. These initial costs could be included in the eligibility determination function. All remaining claims processing costs for nursing home beneficiaries should amount to no more than $.50 per month per claim. Allowing for partial months of eligibility and assuming a 15-month average length of stay, the total average cost for processing nursing home claims should be about $7.50 per admission after the initial payment. (The full cost would be about $22.50 per admission, using a conservative high expense for major medical claims processing.)

Processing home care claims is more complex and subject to variation from month to month. Claims processing steps include:

(1) Determining that the claimant is a continuing patient; i.e., new and continuing claims must be segregated
(2) Determining the number of visits or visit-days eligible for payment
(3) Reconciling payments with per visit, daily, or weekly maximums
(4) Authorizing the preparation of payment vouchers and cutting of checks
(5) Preparing and sending of check
(6) Coding utilization and claim data

Despite a high degree of repetition, processing costs for home care claims cannot be reduced to a full advantage. Nevertheless, less than half the complexity of paying a major medical claim should be involved. Accordingly, a cost of $4 to $8 per month per home care claimant appears reasonable. Allowing for partial months of eligibility results in annual costs of $95 for this function (i.e., 6 x 12 months x 1.2 (vendors/claimants) x 1.1. (partial amounts) = $95.04).

Legal and Appeal Expenses

Constructing an allowance factor for the cost of administrative appeals, legal defense, and for adverse judgments is necessarily difficult to do precisely. Losses and expenses may very well exceed those for hospital surgical coverage when the variety of untested issues connected to long term care contracts are considered. The defense against unintended claims will be very difficult given that many disputes will involve old and impaired individuals.

One basis for estimating legal and appeal expenses for long term care insurance might be the actual costs and losses incurred by Medicare Supplemental and long term disability insurers. These empirical expenses must be increased for long term care policies to allow for greater uncertainties and the impact of aged beneficiaries. The resulting legal and appeal expense estimates will amount to 1% of home care benefits

and .25% or nursing home benefits, assuming that nursing home benefits are twice home care benefits and that legal costs are double that of nursing homes.

Hawaii Program Funding Consideration

The establishment of clear funding goals is central to the setting of both initial and subsequent contribution rates for any social insurance program. While sound actuarial and accounting principles must be observed they do not dictate a unique method of funding the program. Any number of different funding methods can arrive at a soundly financed program, provided they adhere to these established principles.

Actuarial Principles

A primary requirement is that the funding method must yield an adequate income stream to meet payment obligations of the fund. Assets on hand plus the present value of projected income must equal or exceed the present value of projected benefits and expenses. The fund should also maintain a certain minimum reserve balance against unanticipated experience.

There are two very important considerations in projecting future income: (1) whether new entrants to the program are assured and (2) whether the program could be terminated.

Private pension and insurance plans must adopt funding methods that do not rely on new entrants to support any current or future outlays for present participants. During the nineteenth century many “assessment societies” based their insurance schemes on recruiting new members to support benefit payments for current members. Most went bankrupt and this form of organization is no longer permitted under state laws.

A separate calculation is also necessary to assure that current funds meet all vested obligations in the event a plan were to terminate immediately. Most new pension plans confer benefits for past service to older workers. This creates an “unfunded accrued liability,” i.e., a present value benefit liability for which there are no corresponding reserve funds. Generally, unfunded liabilities are amortized over a 20 to 30 year period by additional contributions beyond normally required funding for plan solvency. These additional pension contributions tend to be paid by the employer. If a private program terminated before the amortization period ends it would not be able provide all obligated benefits. Pension funds covered by ERISA could file a claim with the Pension Benefit Guarantee Corporation (PBGC).

It is difficult to finance unfunded liabilities in social programs by assessing additional charges over a closed amortization period. That would create unacceptable inequities because the contribution rate for participants during the amortization period

would be higher than for subsequent participants. Consequently, unfunded liabilities must be spread over all future years of a social insurance program.

Social insurance programs like Social Security typically are funded on an assumption that the program is permanent. The argument is that new entrants are assured by mandatory participation requirements and plan termination is impossible because the government will not go out of existence. From another perspective, it is extremely difficult to actively anticipate program termination if the funding method is predicated on new entrants because the required contribution rate would double; to (1) pay obligations attributed to new entrants and (2) fund benefits for new entrants.

Some advocates of open-ended social insurance programs claim that the concept of an unfunded accrued liability has no meaning because such programs would never be abolished. In fact, these liabilities represent momentum against program change. While it may be true that a program would not be terminated, it is also true that termination is forestalled by the unfunded liabilities against which there would be public demand for benefits before any replacement program could be established.

Purposes of a Trust Fund

Five general functions are served by a separate independent trust fund for social insurance programs:

(1) Separation of program transactions from general government transactions: An independent trust fund provides a separate accounting of income and expense transactions for the program; segregating program revenues from general funds of the government.
(2) Float reserve: An independent trust fund provides a segregated depository for funds received, perhaps on an accrual basis, until they are expended for benefit payments on a cash basis.
(3) Fluctuation reserve: An independent trust fund provides a mechanism for leveling fluctuations in the financial experience of a program. Periods of adverse financial results can be offset by other periods with better than expected results.
(4) Contingency reserve: An independent trust fund may include a contingency margin for financial projection errors.
(5) Income earnings: An independent trust fund can provide additional program revenues if invested in productive capital assets (or debt other than those of the governmental unit administering the program).

The float reserve for social insurance programs can be relatively small in value if financing is on a pay-as-you-go basis. By contrast, float reserves for private insurance can be very small in value for yearly-renewable-term health insurance or casualty insurance policies or very large for pension programs or long term care policies where level premiums are used to finance increasing benefits.

Fluctuation reserves need not necessarily be very large, even if the program itself is large. Contingency reserves provide time for the governmental body to react when income and expense trends begin deviating increasingly from projected expectation. (Note there is distinction between stable long-range deviations and short-term fluctuations about a projected trend). For private insurance, contingency reserves cover losses that cannot be recovered by premium increases. Private insurers must fund fluctuation and contingency reserves out of their surplus or profits.

Funding Goals

The funding for a social insurance program is considered actuarially sound when the fund balance and present value of projected income equal or exceed the present value of projected expenses. Beyond this general principle, there is much latitude about the relative share of projected expenses that should be funded by assets or future projected income. For example, Social Security trust fund assets are expected to contribute only a minor part program costs with future income providing the bulk of financing. This results from the pay-as-you-go financing method, the expectation that there will always be new entrants, and the programs assumed permanence.

The calculation of appropriate program contribution rates depends on the specified level of required fund balance, assuming no external encumbrance of funds and revenue generating investments in other than sponsor debt issues. The required fund balance may be stipulated anywhere between the pay-as-you-go and “fully funded” financing. Fluctuation and contingency reserves are essentially unaffected by required fund balance levels. However, float reserves and income earnings are highly influenced by the decision to pay-as-you-go or fully fund a social insurance program.

Pay-as-you-go financing permits a minimal float reserve. A balance accrues in the float reserve for benefit payments due but not yet paid, such as claims still in process. Full funding demands a very substantial float reserve for all accrued benefits, even if they are not immediately due. With respect to income earnings, pay-as-you-go financing represents a decision not to fund any portion of benefits from past capital accumulations or potential earnings thereon. Conversely, in fully funded programs the value of reserve funds must reflect the relative portion of benefits expected to be paid by a capital return on investment.

Specific actuarial formulas for determining the required fund balance for fully funded programs always seek to have past contributions pay for past benefit accruals and future contributions pay for future benefit accruals. One of the difficulties of estimating full funding reserves is to accurately estimate how much of any future benefit payment will be accrued before and after the valuation date. This is especially difficult when the link between contributions and benefits is somewhat tenuous, as is the case for most social insurance programs.

Theoretical principles of full funding can never be realized perfectly. This is because current contributions rates are calculated by projecting the fund balance required for financing current benefits accruals. If benefit liabilities are underestimated the deficit can only be recovered by altering future contribution rates. The adjusted contribution rate must be sufficient to fund not only benefit accruals at the time of the adjustment, but the amortization of past errors (i.e., excess benefits) as well.

Full Funding

Advantages of full funding include:

(1) Contribution rates tend to be more level as opposed to beginning low and gradually increasing over time. Level contribution rates are characterized by greater intergenerational equity.
(2) A relatively lower ultimate contribution rate can be expected as a function of the funding provided by investment returns.
(3) The substantial accrued reserves may be invested in State debt **issues** or other program related investments.

Drawbacks of full funding include:

(1) The fund balance is susceptible to being appropriated for unintended uses such as financing increased benefits or other unrelated purposes, such as to offset general fund deficits. Conversions of this sort threaten the underlying principles of pre-funding. This causes a gradual shift away from full funding to pay-as-you-go financing and unscheduled contribution rate increases.
(2) Full funding creates an inordinate demand for extremely consistent investment returns. Extreme prudence is required to continuously realize any meaningful rate of investment return. The prospects of actually achieving that goal over a 30 to 40 span are daunting.
(3) Full funding has only limited capacity to cope with periods of rapid unanticipated inflation. Rapid inflation will greatly diminish the real value of fund reserves unless all asset investments are inflation resistant. This reduced ability to fulfill benefit obligations must then be compensated by an upward adjustment of contribution rates, violating the principle that future contributions should only pay for future benefits.

Pay-As-You-Go

The advantages of pay-as-you-go financing include:

(1) Relative immunity from extraneous concerns for appropriated reserves and imprudent investment strategies. This follows from the comparatively modest float reserves for pay-as-you-go financing.
(2) There is much greater flexibility to alter future benefits and adjust contribution rates because these changes are not so closely compared with accrued benefits that have already been funded. (Pre-funded accrued benefits cannot be retroactively changed without being unfair).

Both the cost of benefits and the revenue collections base (e.g., income) are likely to rise in tandem during periods of rapid inflation. Higher benefits can be provided without increasing the contribution rate. (Inflation will have little effect on fund values when future benefits are funded by future income rather than a required balance).

(3) There is less risk of public misperception about the existence of segregated contribution accounts for each participating individual. This was, and for many continues to be, the public understanding of Social Security. Some individuals felt deceived as they realized this was not rule.

Disadvantages of pay-as-you-go funding include:

(1) It may result in a relatively higher ultimate contribution rate
(2) If the program were terminated for some reason it would not be possible to fully refund contributions made by participants who had made only small or no benefit claims
(3) Young contributions may feel at risk of not having their future benefit claims honored in the face of intervening cost escalations

Required Contribution Rates

The determination of required contribution rates for the Hawai'i Programs tests on decisions concerning:

(1) The extent to which new entrants would be relied upon as a source of prospective financing
(2) The desirability of contingency funding for possible program termination
(3) The desire balance between full versus pay-as-you-go funding

Projections with no new entrants may be confusing because they are not consistent with realistic budget projections for the program. The relationship between various contribution rates and implied fund balances is likely to be of great concern. Financing could be based on long-range projections that include new entrants and assume no plan termination. Ideally, such projection would be made into perpetuity with an ultimate stationary population. Alternatively, projections could be based on the

life expectancy of new entrants as is the case for Social Security. A target fund level would then be stipulated for the period end-date.

A fully funded contribution scheme would have level contribution rate adequate to fund projected long-range benefit obligations. The determination of annually accrued benefits would not be needed. Prior service credits that may be conferred at the program's inception, as well as actuarial gains and losses or program benefit changes would be amortized into perpetuity. This will yield a relatively stable contribution rate for which there would only be small adjustments over time. A level contribution rate might be perceived as being more equitable for succeeding generous of participants.

A purely pay-as-you-go contribution scheme would initially have fairly low contribution rates that are expected to gradually rise in tandem with increasing program costs. It is also possible to adopt a funding method that begins initially with a contribution rate somewhere between that required for full and pay-as-you-go financing. Subsequently, this rate would gradually rise to a final ultimate rate.

Group Program Considerations

The group form of coverage has several attractive advantages over individual coverage forms. Most notably, these include the extension of coverage with very limited underwriting and lower relative cost. High participation rates are essential to the realization of these advantages. When nearly all members of a group participate, the risk of antiselection against the insurer is reduced substantially and concomitantly, so is the need to underwrite. There are also economies of sale (spreading administrative costs over a large group, efficient marketing etc.) that help reduce costs.

The nature of risk pooling is often misunderstood; especially as it applies to group insurance policies. A prevalent expectation is the cost of bad risks can/should be "evened out" over good risks. This is true only after the fact, never before (outcomes are leveled, not risks). A purchaser may be willing to pay an average group premium calculated for individual of similar risk provided that: (1) a lower cost policy is not available and (2) they believe that the premium reasonably approximates their true expected cost. The two conditions are closely related; in a competitive market insurers who identify a class of lower cost persons will offer a lower premium to members of that class.

When insurance is offered on a voluntary basis and there are several competing insurers, the insurer who limits enrollment to healthier applicants will have lower costs and greater ability to offer reduced premiums. It follows that if there are significantly different cost expectations for members of any given group: (1) the insurer must underwrite and limit enrollment to members having similar expected costs, or (2) there must be a subsidy to cover the higher expected cost of those members not in good health.

Policy Description Parameters

Premium Payment Options

(1) Mode: number of premiums per year, e.g., annual, semiannual, quarterly, bimonthly, monthly
(2) Paid-up by specified age; e.g.; age 65
(3) Paid-up by specified duration; e.g., 20 years

Waiting Period

(1) For pre-existing conditions: number of months after policy issue date before impairments or conditions existing before the issue date are covered
(2) For benefits: number of months after policy issue date before any benefits are covered

Exclusions

(1) Standard non-metal exclusions, such as self-inflicted injuries, benefits for which there is no legal or contractual obligation to pay, experimental procedures, etc.
(2) All mental and nervous conditions excluded
(3) Nonorganic mental & nervous conditions excluded

Pre-Coverage Conditions

(1) None
(2) Condition must initially require skilled care, such as Medicare level
(3) 3-day hospital stay
(4) Require prior nursing home stay (HCB only, specify number of days)

Degree of Impairment Required for Benefits (specify the minimum number of ADL failures requiring personal assistance) for:

(1) Nursing home benefits
(2) Home and community based case benefits

Elimination Period (may be stipulated on a per calendar year, per benefit period, or per lifetime basis):

(1) Days of prior nursing home care required before benefit coverage begins
(2) Number of days disabled at home, number of paid visits, or number of days for which there were visits before the HCBC benefits begin

(3) Method of application (specify whether nursing home days count toward the HCBC elimination period, and vice-versa).

Benefit Amounts (pure indemnity or indemnity maximum amounts):

(1) Dollar maximum per day of nursing home care
(2) Dollar maximum per day for home visit
(3) Dollar maximum per home care visit—Amounts may vary by type of service, skill level of service provider, for therapists, medical social worker, or case management services, unskilled personal care, homemaker service, adult day health care, and respite care.

Inside Benefit Limits (if any)

(1) Dollar amount per day for home care
(2) Benefit amounts scaled by degree of impairment
(3) Maximum number of visits per week
(4) Maximum number of visits per lifetime

Co-payments and Other Factors that Affect Benefit Amount

(1) Coinsurance rate (e.g., benefits are the lesser of 80% of actual charges or $100 per day of nursing home confinement)
(2) Whether benefits are fixed at a stated amount or are the lesser of the stated benefit rate and the benefit rate for reasonable and customary service charges. (The benefit rate is 100% minus the coinsurance percentage).

A service benefit—a benefit equal to the reasonable charge without any daily or service unit limit—may also be specified: although this is very rarely seen for long term care policies

Lifetime Benefit Maximums

(1) Lifetime total dollar amount payable (undifferentiated as to type of benefit claimed)
(2) Alternatively, separate lifetime dollar amounts for nursing home and home care

Waiver of Premium Benefits

(1) After specified number of nursing home days
(2) After specified number of combined nursing home days and home care visits

Death Benefit

(1) As a function of policyholder equity; i.e., similar to a life insurance “cash value”

(2) Return of premiums (specify percentage premium returned by attained age or durations, e.g., 0% for first 5 years, then 50% up to age 70, reducing to 0% by age 75)

Withdrawal Benefit

(1) As a function of policyholder equity; i.e., a "cash value" or equivalent reduced level of paid-up or extended term coverage
(2) Return of premiums specified as in death benefit

Inflation Protection

(1) Guaranteed issue of additional benefit coverage amounts as later dates
(2) Annually indexed daily and per visit benefit amounts. Specify indexing percentage and whether it simple or compounded, the number of years benefits are indexed, whether the lifetime maximum is also indexed, and if premiums are indexed. For example, if benefits and premiums are each indexed 5% per year 20 years without compounding and the lifetime maximum is constant, ultimate benefit amounts and premiums are double their initial levels.

Degree of Provider Control

(1) Only services rendered by providers belonging to insurer's exclusive network are eligible for coverage.
(2) Only services rendered by the provider's on the insurer's comprehensive approved provider list are eligible for coverage.
(3) All services rendered by providers meeting policy definitions are eligible for coverage.