# Chicago Actuarial Association
# March Workshop

## The SOA/ILTCI Linked Product Hedging Project


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Session B4 - March 13, 2012, 3:00 p.m.

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# Agenda

- Overview of the Combination Products and the Market
- The SOA/ILTCI Project on Natural Hedge Characteristics of Linked Products



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# Overview of the SOA/ILTCI Linked Product Hedging Project

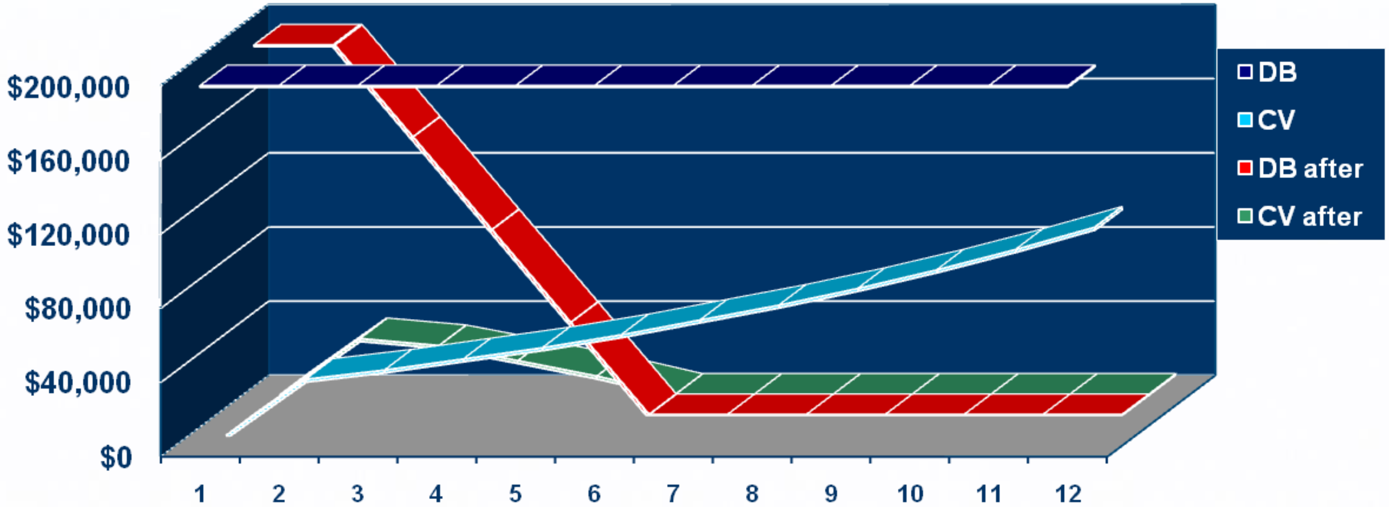
- Sponsored by the SOA and the ILTCI Conference Association
- The report, soon to be published, addresses the natural hedge characteristics of combination products that link life insurance or annuities with long-term care
- Market outlook and summary of the key design considerations
- Key pricing considerations
- Quantification of the natural hedge within these products, as measured by the impact of lapse rates, interest rates, mortality and LTC incidence and claim termination rates
- Profit measures quantified and presented: IRR, present value of post-tax profits

# Life/LTC Product Basics

- Various base plans including single premium universal life, flexible premium UL, WL, and VUL
- First Generation - Accelerated Death Benefit LTC rider (ADB)
  - Pays out a specified portion of DB per month with a proportionate reduction to CV’s
  - Charge structure typically YRT per thousand of NAR, but a growing number of states (at least 5 including FL, NC, OH, CO, and HI) are imposing level charge requirements
- Second generation - Adds Extension of benefit (EOB)
  - Asset re-positioning: Return assets, a multiple of assets (DB), or a multiple of DB (EOB)
  - Inflation option rounds out the coverage and addresses the comprehensive LTC need

# Life/LTC Product Basics

**_Life Insurance Values (Year 3 claim)_**

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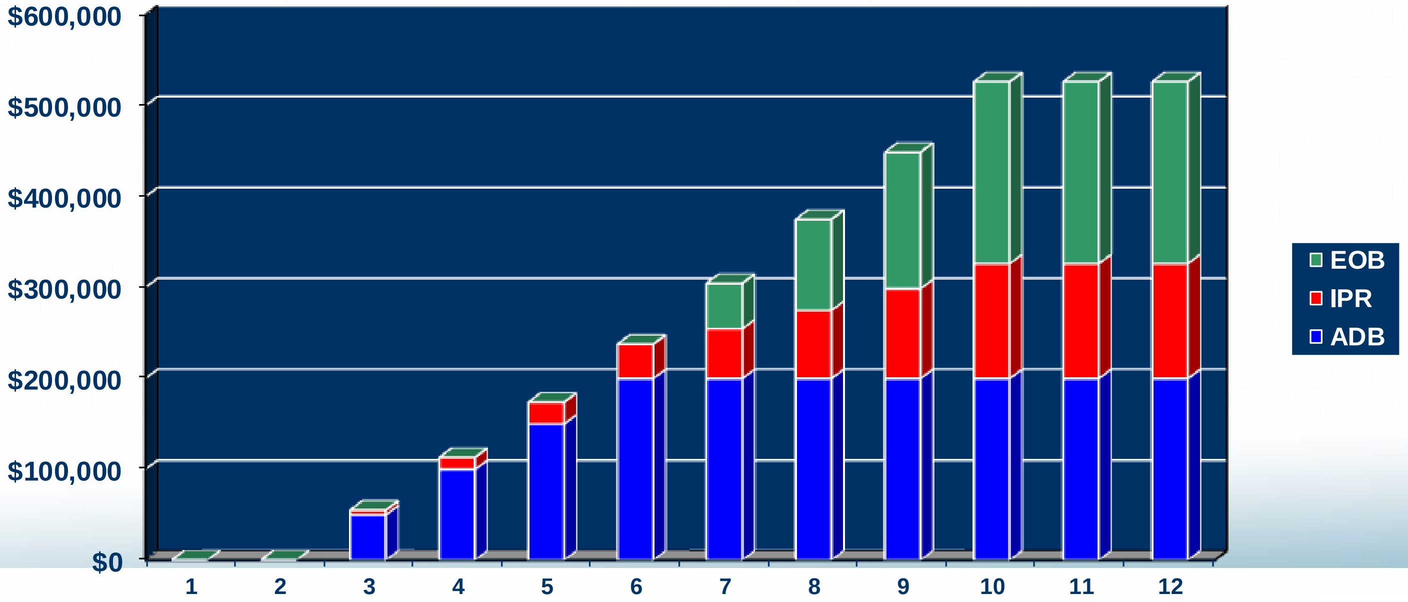
**_Cumulative LTC Benefits (4 Year ADB + 4 Yr EOB)_**



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# Annuity/LTC Product Basics

- Recent Development
  - Pension Protection Act allows for tax favored status beginning 1/1/2010
  - New sales beginning to build, but modest to date
- Typical Design
  - Most common structures are tail design and coinsurance
  - Both pay out a specified percentage of CV at the time of initial claim, monthly
  - Under the tail design, CV's are reduced by the full amount of LTC payments until the full CV is exhausted, then coverage continues for a specified period funded by the company
  - Under coinsurance, CV's are reduced by less than the full amount of LTC payments, e.g. by 80%, with extended benefits once the CV is exhausted



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# Annuity/LTC Product Basics (Cont'd)

- Typical Design (cont'd)
  - Inflation option rounds out the coverage and addresses the comprehensive LTC need
    - Since LTC benefits are tied to the CV at the time of claim, there is already a form of inflation benefit built into the basic coverage
  - Charges for the LTC rider are typically equal to then current AV times a level issue-age-based charges per thousand of AV

# 2011 Developments

- Fifteen of twenty nine 2011 Milliman UL survey respondents have now or expect to develop LTC riders to life in the next 12 to 24 months, and five of those expect to enhance their plans
- Lincoln Moneyguard sold well over $1 billion in single premium in 2011, and OneAmerica has broad combo portfolio with strong sales, and Genworth continues to grow
- Sun, Pac Life, and Forethought have launched or announced new hybrid products (Sun subsequently exited US life/annuity market generally)
- Only six to eight annuity combos being marketed currently, but several are in the product pipeline
- Many of the sales successes are emerging in banks and wirehouses, vs. traditional life distribution systems

# Risk Elements by Product – Stand-alone LTCI

- Persistency
- Investment Income
- Morbidity Risks
  - Claim frequency
  - Claim severity

# Risk Elements by Product – Life/LTC combination product

- Mortality
- Lapse
- Investment Income
- Morbidity Risks
  - Claim frequency
  - Claim severity

# Risk Elements by Product – Fixed Deferred Annuity/LTC combination product

- Mortality
- Lapse/Surrender
- Investment Income
- Morbidity Risks
  - Claim frequency
  - Claim severity

# Prototype Product Design and Assumptions (two goals)

- Maintain unique characteristics for each product
- Ensure consistency in order for the comparison to be meaningful

# Study set up – Prototype Product Design

| | LTCI | Life/LTC | Annuity/LTC |
|---|---|---|---|
| Base Policy | Level premium LTCI | Single Premium Whole Life | Single Premium Deferred Annuity |
| Combo Structure | N/A | Tail Design | Tail Design |
| Waiting Period | N/A | N/A | None |
| Benefit Period | 6 year | 2 yr ABR/4 yr EOB, or 3 yr ABR/3 yr EOB | 2 yr ABR/4 yr EOB, or 3 yr ABR/3 yr EOB |



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## Study set up – Prototype Product Design (Cont'd)

| | LTCI | Life/LTC | Annuity/LTC |
|---|---|---|---|
| Daily Benefit/Face amount/Premium | $150/day | $110,000 – 2 yr ABR<br>$165,000 – 3 yr ABR | $90,000 – 2 yr ABR<br>$135,000 – 3 yr ABR |
| Inflation Option | 5% Compound | 5% Compound with a single premium structure | 5% Compound with an annual pour in structure |



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## Study set up – Key Pricing Assumptions

| | LTCI | Life/LTC | Annuity/LTC |
|---|---|---|---|
| Morbidity | Best estimate assumptions based on the 2009 Milliman LTC Guidelines | 1) Best estimate assumptions based on the 2009 Milliman LTC Guidelines<br><br>2) adjustments to:<br>a) reduce frequency<br>b) increase severity | Best estimate assumptions based on the 2009 Milliman LTC Guidelines |



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# Study set up – Key Pricing Assumptions (Cont'd)

| | LTCI | Life/LTC | Annuity/LTC |
|---|---|---|---|
| Investment Income | 5.25% | 5.25% | 5.25% |
| Lapse Rates | low ultimate lapses | similar to the stand-alone LTC lapses with slightly higher ultimate lapses | 1) Low lapse rates at the early duration<br>2) Grade up to 1/2 of the annuity lapse rates of 20% at duration 8<br>3) A 10% shock lapse rate at duration 8 |



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# Study set up – Key Pricing Assumptions (Cont'd)

| | LTCI | Life/LTC | Annuity/LTC |
|---|---|---|---|
| Commission | 90.0% first year; 15.0% yrs 2-10; 6.0% yrs 11+ | 8.0% of single premium | 7.0% of premium with a trail of 0.5% in years 7+ |



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# Comparison of Premium and Compensation

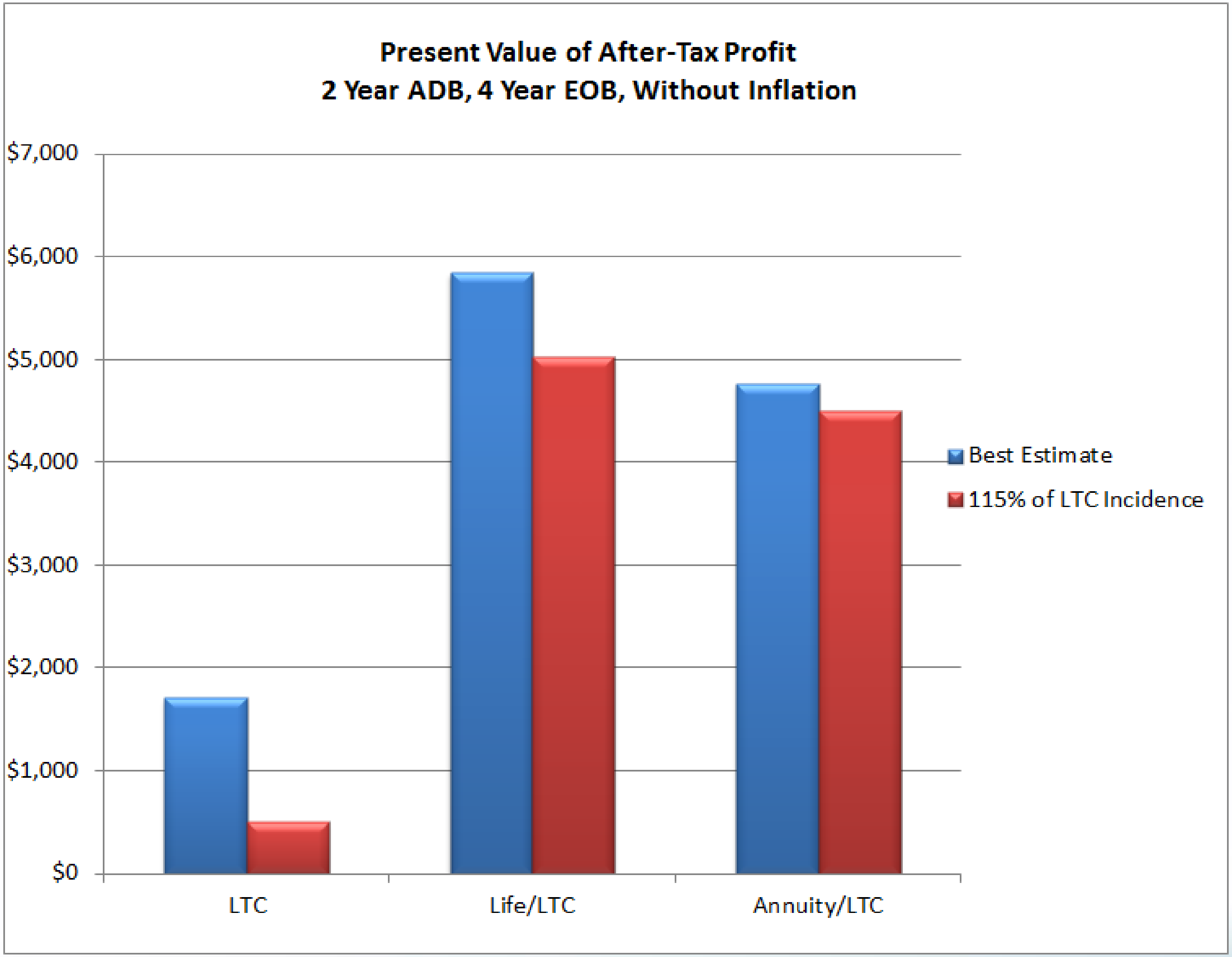
| | Issue Age 65, 6-Year Benefit, $150 Daily Benefit | |
|---|---|---|
| | PV of Premium | PV of Commission |
| **Stand-alone LTCI** | $21,629 | $4,483 |
| **Life combo** | $70,598 | $5,475 |
| **Annuity combo** | $90,000 | $7,692 |

# Positive Characteristics for Consumers and Insurers

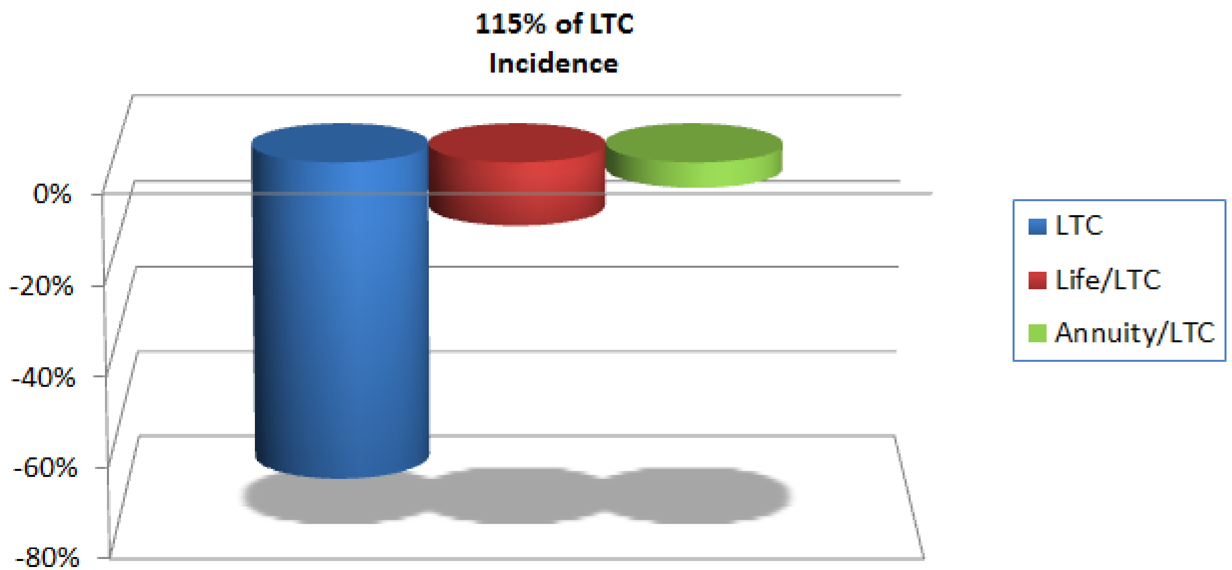
- Consumer
  - Need for rate increases less likely for LTCI coverage embedded in combo plans than for stand-alone LTCI
  - Combo plans provide for another way to utilize the policy’s death benefit or account value
  - Can provide more affordable long-term care coverage than from stand-alone LTCI plans
- Insurer
  - Natural hedge characteristics of combo plans reduce risk to the insurer when compared to the same LTCI benefit dollars provided by stand-alone LTCI

# LTC Incidence Rates

- Frequency (incidence of claims)
  - Accelerated benefit is a form of cross-funding by the consumer because the first layer of LTCI benefits are paid out of base plan values (annuity cash value or acceleration of life insurance death benefit)
  - This makes combo plans less sensitive to an increase in claim incidence rates compared to stand-alone LTCI
  - Lesser impact on annuity combo; cost to insurer is foregone spreads
  - More impact on life combo; cost to insurer is early payout of death benefit


Present Value of After-Tax Profit
2 Year ADB, 4 Year EOB, Without Inflation
$7,000
$6,000
$5,000
$4,000
$3,000
$2,000
$1,000
$0
LTC
Life/LTC
Annuity/LTC
Best Estimate
115% of LTC Incidence

## Percentage Change in Present Value of After-Tax Profit from Base Case, by Scenario
## 2 Year ADB, 4 Year EOB, Without Inflation




| | 115% of LTC Incidence |
|---|---|
| LTC | -71% |
| Life/LTC | -14% |
| Annuity/LTC | -6% |



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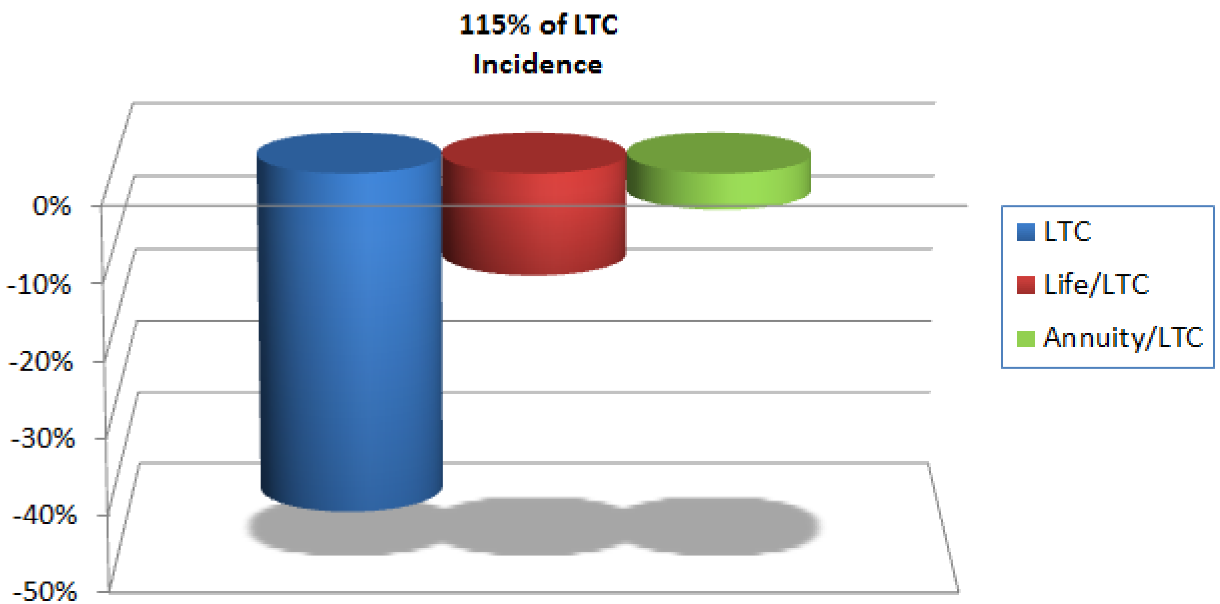
## Percentage Change in Internal Rate of Return (IRR) from Base by Scenario
## 2 Year ADB, 4 Year EOB, Without Inflation




| | 115% of LTC Incidence |
|---|---|
| LTC | -45% |
| Life/LTC | -13% |
| Annuity/LTC | -5% |



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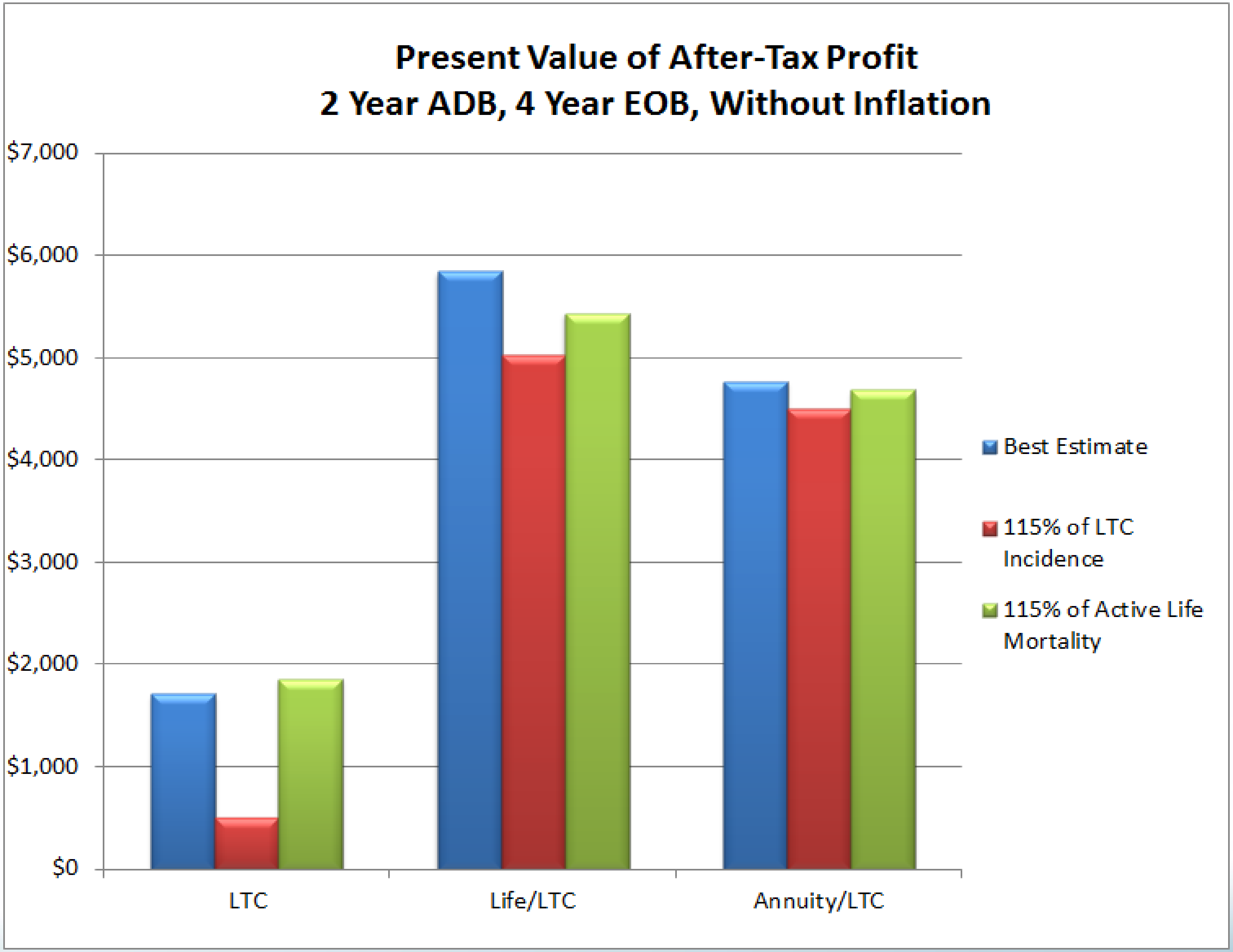
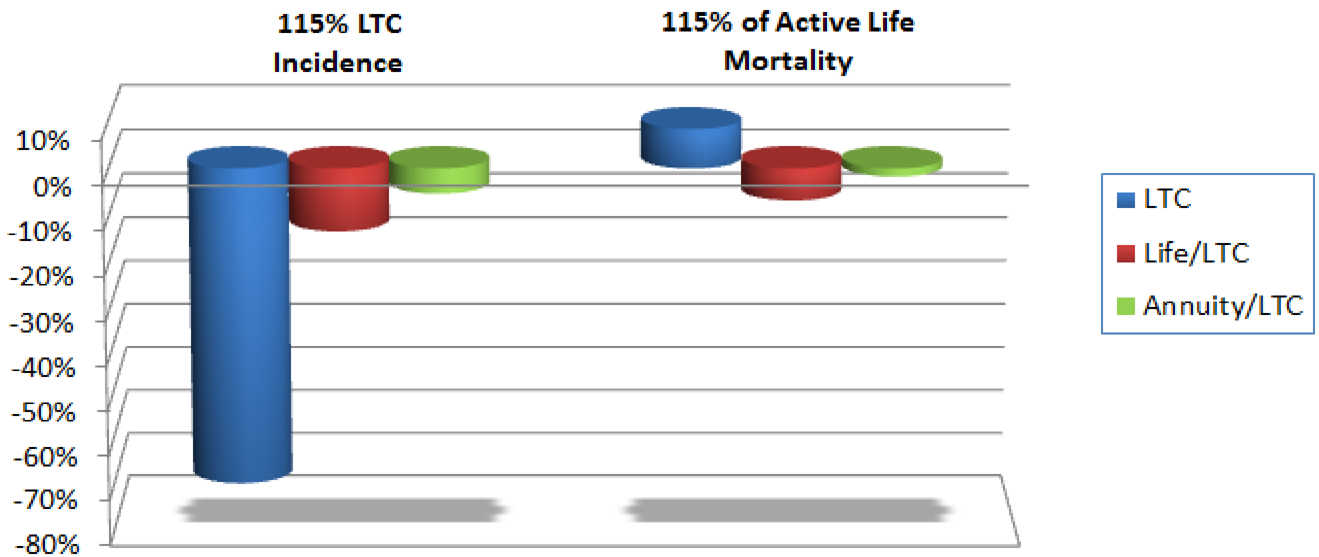
# Mortality

- Higher-than-anticipated mortality
  - Hurts life insurance profitability because payment of death benefit occurs earlier
  - Hurts annuity profitability (although to a lesser degree than life insurance)
  - Helps LTCI profitability because it acts as an additional decrement that reduces LTCI costs in the long term
- Inclusion of the LTCI coverage helps to dampen the impact of increased mortality on the base plan


Present Value of After-Tax Profit
2 Year ADB, 4 Year EOB, Without Inflation
$7,000
$6,000
$5,000
$4,000
$3,000
$2,000
$1,000
$0
LTC
Life/LTC
Annuity/LTC
Best Estimate
115% of LTC Incidence
115% of Active Life Mortality

## Percentage Change in Present Value of After-Tax Profit from Base Case, by Scenario
## 2 Year ADB, 4 Year EOB, Without Inflation




| | 115% of LTC Incidence | 115% of Active Life Mortality |
|---|---|---|
| LTC | -71% | 9% |
| Life/LTC | -14% | -7% |
| Annuity/LTC | -6% | -2% |



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# Interest Rates

- Both stand-alone LTCI and combo plans are sensitive to investment returns
- Typical level premium structure of stand-alone LTCI; very sensitive to changes in interest rates; profits drop if interest rates drop
- Combo plans, which tend to be single premium plans, have lower degree of sensitivity to future changes in investment returns since majority of cash inflows occur at policy issue (approximated here by use of a 15bp reduction in interest earnings supporting combo plans)


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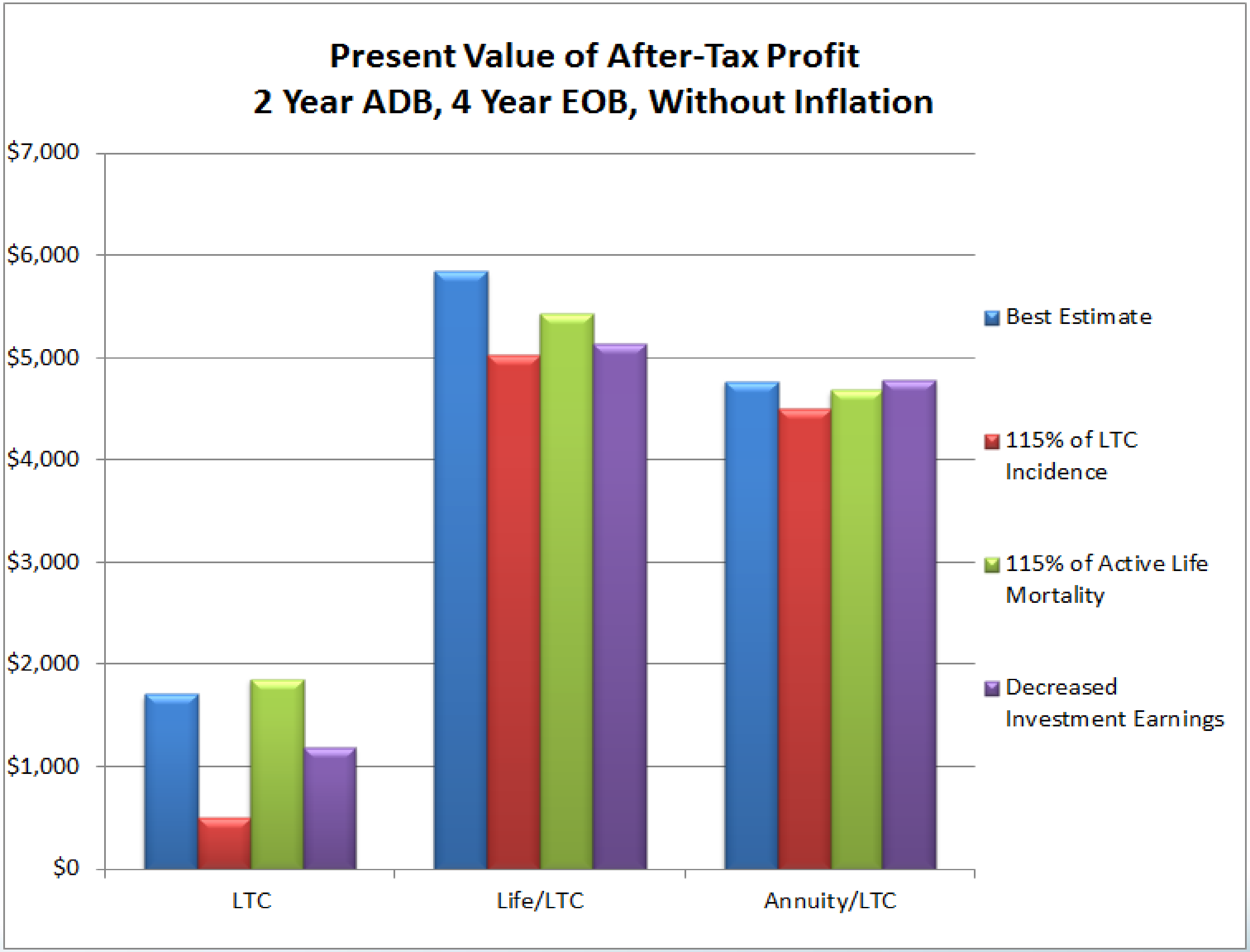
Present Value of After-Tax Profit
2 Year ADB, 4 Year EOB, Without Inflation
$7,000
$6,000
$5,000
$4,000
$3,000
$2,000
$1,000
$0
LTC
Life/LTC
Annuity/LTC
Best Estimate
115% of LTC Incidence
115% of Active Life Mortality
Decreased Investment Earnings



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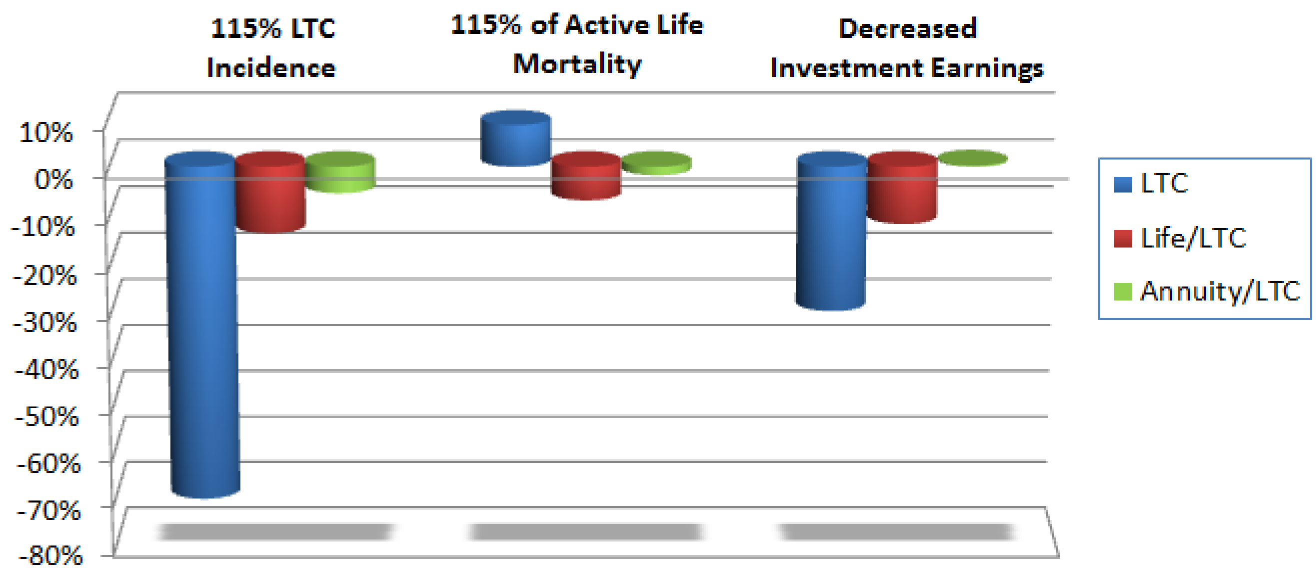
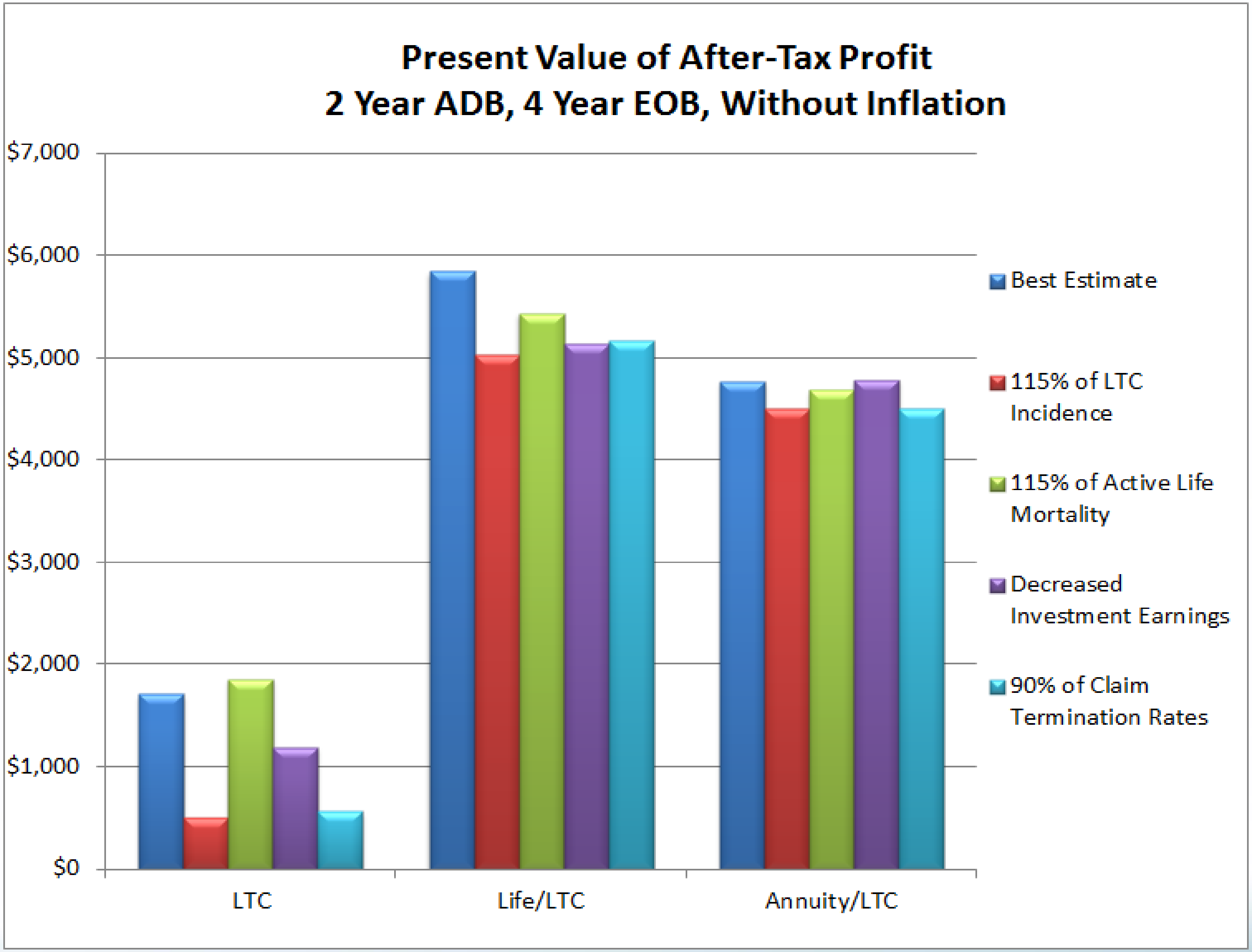
## Percentage Change in Present Value of After-Tax Profit from Base Case, by Scenario
## 2 Year ADB, 4 Year EOB, Without Inflation



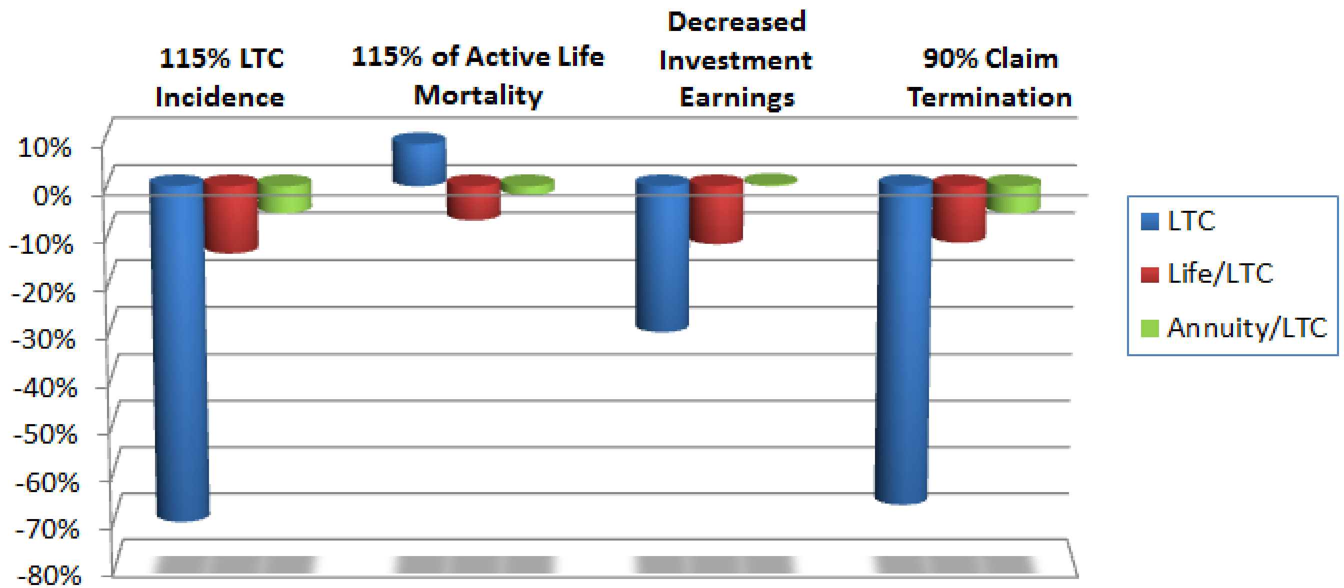

| | 115% of LTC Incidence | 115% of Active Life Mortality | Decreased Investment Earnings |
|---|---|---|---|
| LTC | -71% | 9% | -30% |
| Life/LTC | -14% | -7% | -12% |
| Annuity/LTC | -6% | -2% | 0% |

# LTC Claim Continuance

- Severity (claim continuance)
  - As with LTCI incidence rates, there is natural hedging of this fundamental LTCI risk in the combination products, particularly for the annuity combinations


Present Value of After-Tax Profit
2 Year ADB, 4 Year EOB, Without Inflation
$7,000
$6,000
$5,000
$4,000
$3,000
$2,000
$1,000
$0
LTC
Life/LTC
Annuity/LTC
Best Estimate
115% of LTC Incidence
115% of Active Life Mortality
Decreased Investment Earnings
90% of Claim Termination Rates

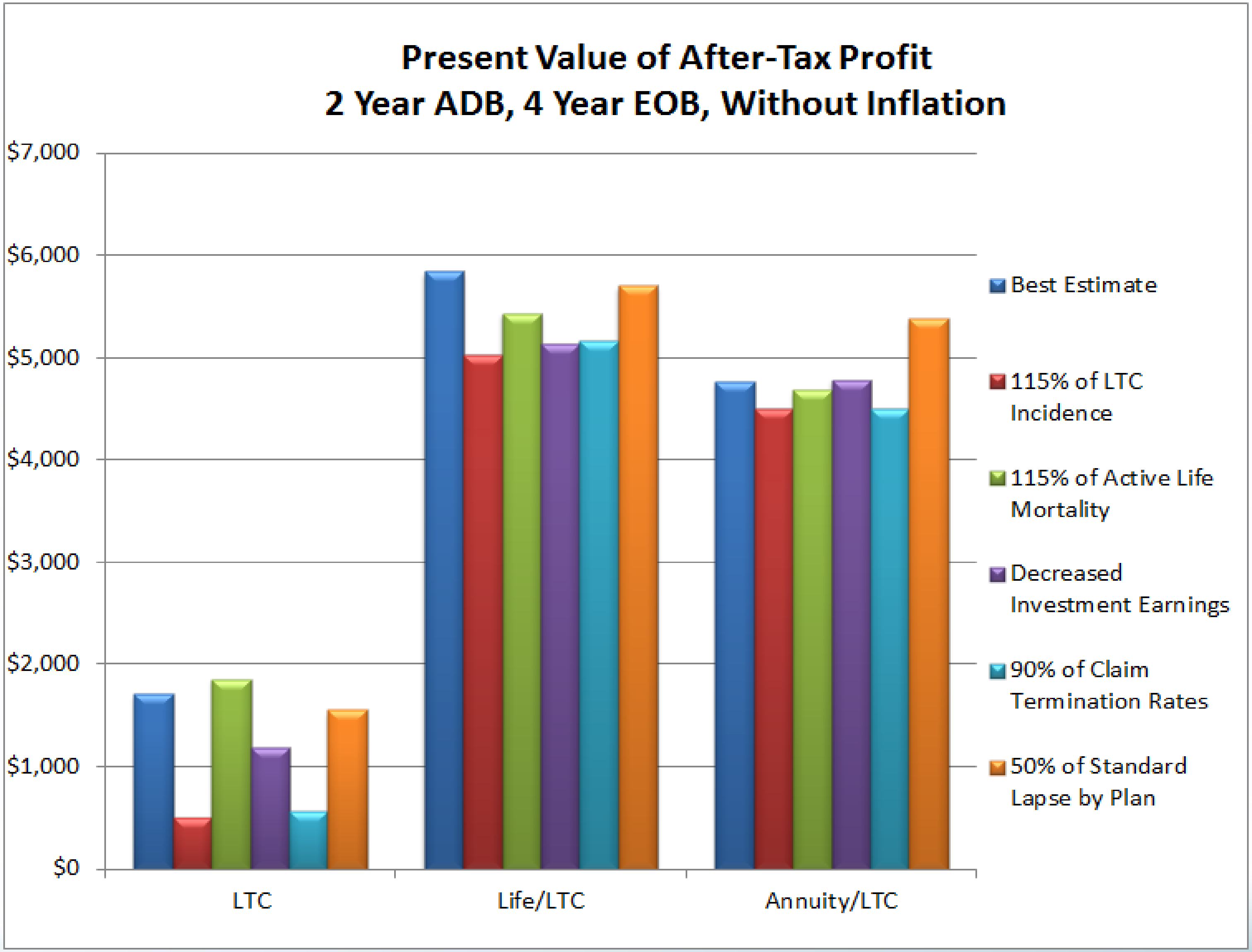
## Percentage Change in Present Value of After-Tax Profit from Base Case, by Scenario
## 2 Year ADB, 4 Year EOB, Without Inflation




| | 115% of LTC Incidence | 115% of Active Life Mortality | Decreased Investment Earnings | 90% of Claim Termination Rates |
|---|---|---|---|---|
| LTC | -71% | 9% | -30% | -67% |
| Life/LTC | -14% | -7% | -12% | -12% |
| Annuity/LTC | -6% | -2% | 0% | -6% |

# Policy Persistency

- Stand-alone LTCI is highly lapse supported (profits decrease with lower lapses)
- Life combination results tend to be much less lapse supported, and some are persistency supported
- Annuities are persistency supported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2 Year ADB, 4 Year EOB, Without Inflation
$7,000
$6,000
$5,000
$4,000
$3,000
$2,000
$1,000
$0
LTC
Life/LTC
Annuity/LTC
Best Estimate
115% of LTC Incidence
115% of Active Life Mortality
Decreased Investment Earnings
90% of Claim Termination Rates
50% of Standard Lapse by Plan



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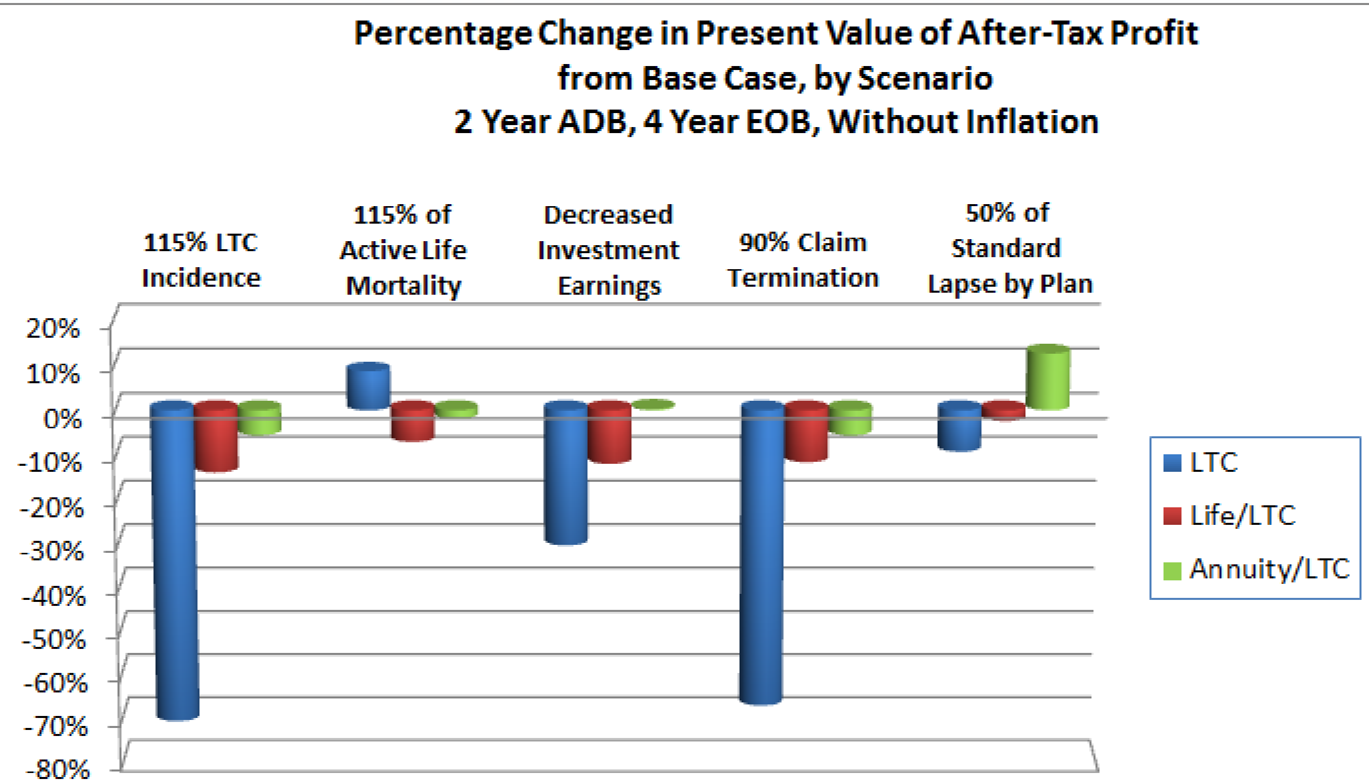


| | 115% of LTC Incidence | 115% of Active Life Mortality | Decreased Investment Earnings | 90% of Claim Termination Rates | 50% of Standard Lapse by Plan |
|---|---|---|---|---|---|
| LTC | -71% | 9% | -30% | -67% | -9% |
| Life/LTC | -14% | -7% | -12% | -12% | -2% |
| Annuity/LTC | -6% | -2% | 0% | -6% | 13% |



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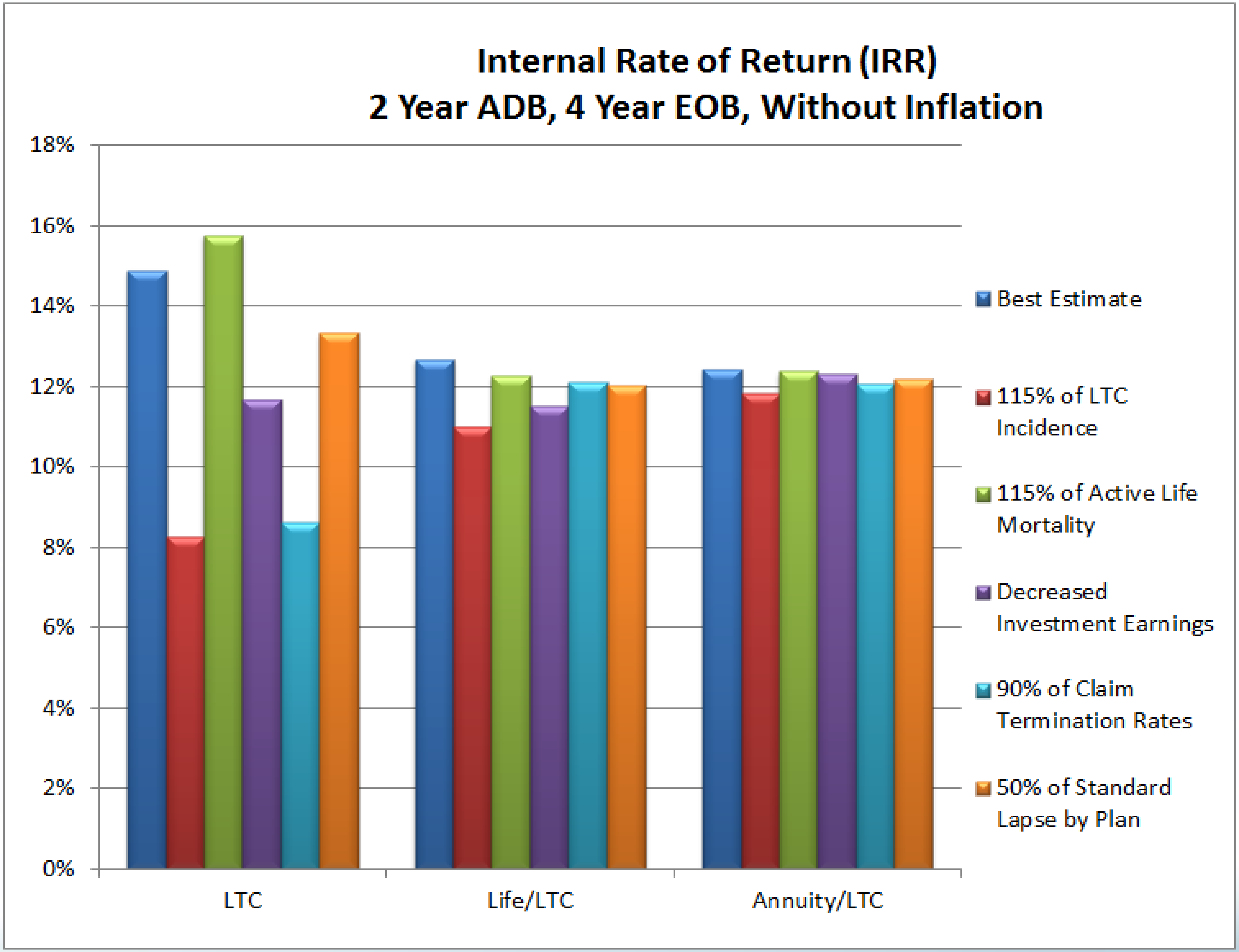
Internal Rate of Return (IRR)
2 Year ADB, 4 Year EOB, Without Inflation
18%
16%
14%
12%
10%
8%
6%
4%
2%
0%
LTC
Life/LTC
Annuity/LTC
Best Estimate
115% of LTC Incidence
115% of Active Life Mortality
Decreased Investment Earnings
90% of Claim Termination Rates
50% of Standard Lapse by Plan


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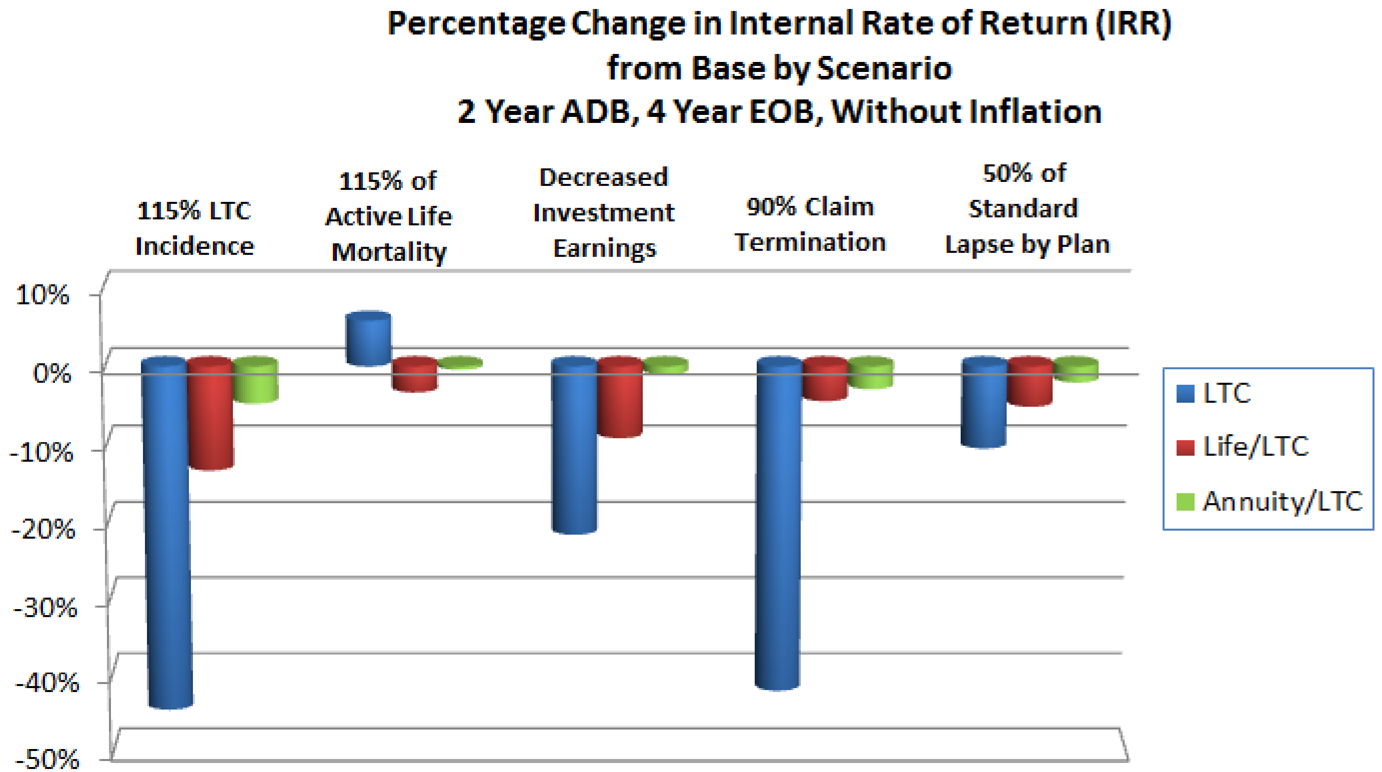


| | 115% of LTC Incidence | 115% of Active Life Mortality | Decreased Investment Earnings | 90% of Claim Termination Rates | 50% of Standard Lapse by Plan |
|---|---|---|---|---|---|
| LTC | -45% | 6% | -22% | -42% | -11% |
| Life/LTC | -13% | -3% | -9% | -4% | -5% |
| Annuity/LTC | -5% | 0% | -1% | -3% | -2% |



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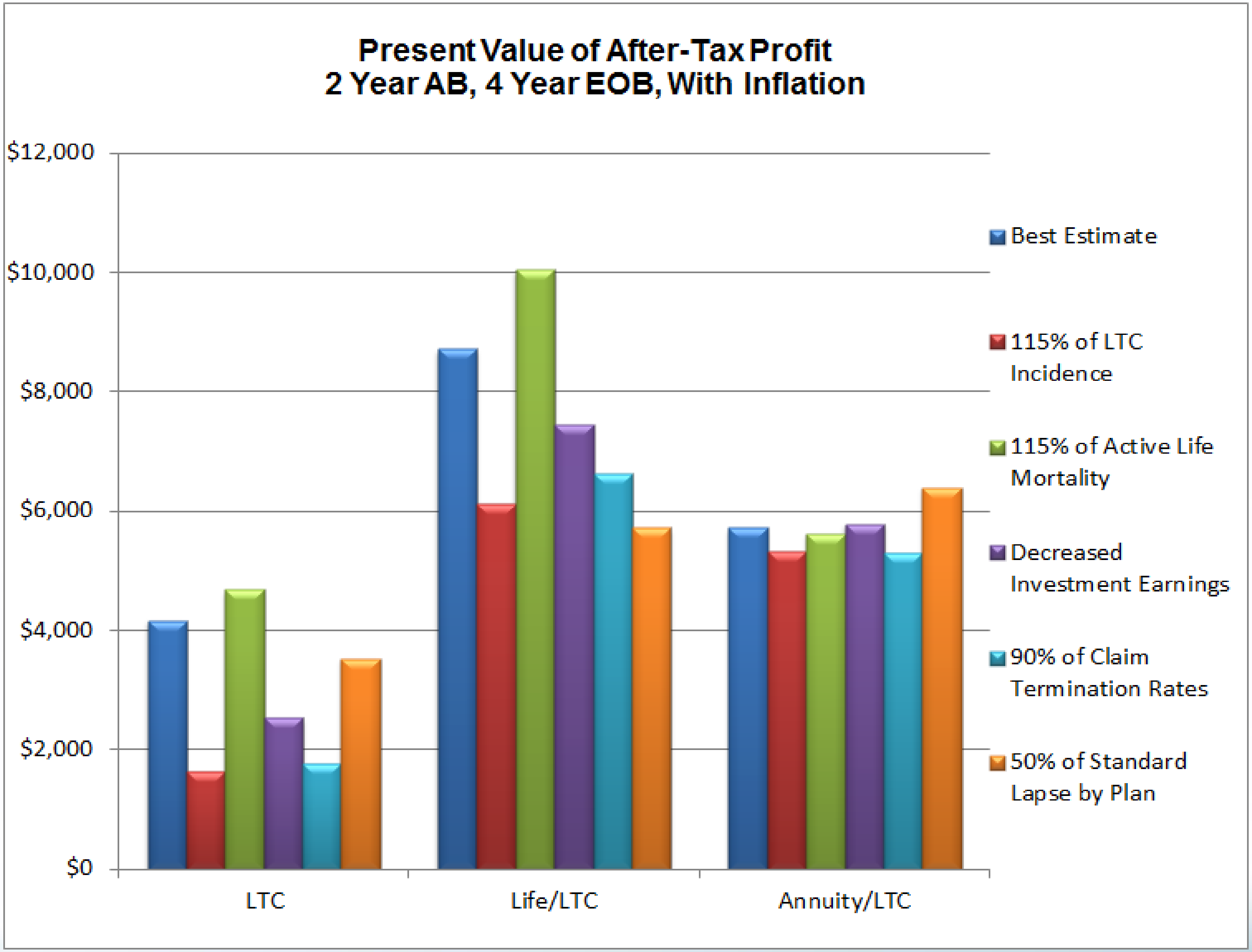
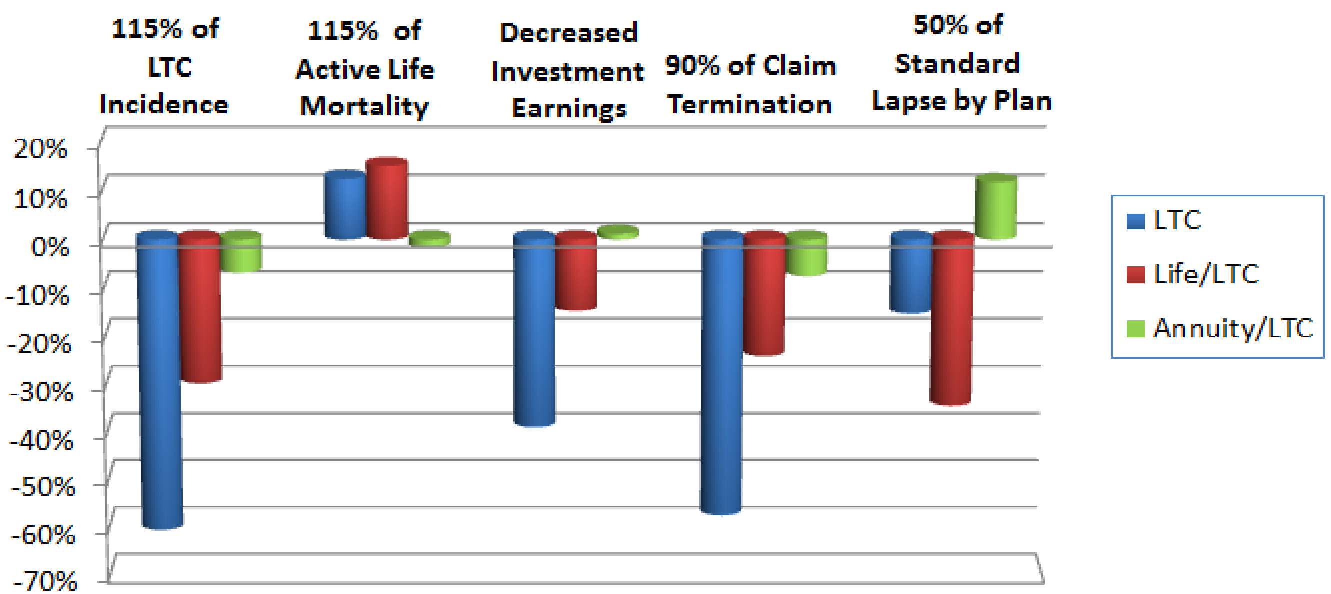
# Profit Sensitivities for Coverage with Inflation

- Inclusion of inflation benefit for LTCI weights combo coverages more toward LTCI, less toward base plan exposures
- Most annuity combos base LTCI benefits on account value at the time of claim, so some inherent inflation coverage already built into basic annuity combo plan without the inflation rider
  - Cost and risk of adding the 5% inflation rider to annuity combos is lower than for life combos or stand-alone LTCI
- Some surprises, e.g. profits for life combos with inflation go up with increased mortality


Present Value of After-Tax Profit
2 Year AB, 4 Year EOB, With Inflation
$12,000
$10,000
$8,000
$6,000
$4,000
$2,000
$0
LTC
Life/LTC
Annuity/LTC
Best Estimate
115% of LTC Incidence
115% of Active Life Mortality
Decreased Investment Earnings
90% of Claim Termination Rates
50% of Standard Lapse by Plan

## Percentage Change in Present Value of After-Tax Profit from Best Estimate Case, by Scenario 2 Year AB, 4 Year EOB, With Inflation




| | 115% of LTC Incidence | 115% of Active Life Mortality | Decreased Investment Earnings | 90% of Claim Termination Rates | 50% of Standard Lapse by Plan |
|---|---|---|---|---|---|
| LTC | -61% | 13% | -39% | -58% | -15% |
| Life/LTC | -30% | 15% | -15% | -24% | -34% |
| Annuity/LTC | -7% | -2% | 1% | -7% | 12% |



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# Conclusions

- Consumer need for LTCI is high
- Combination products appeal to many consumers
- Growth in sales of combination products has been dramatic
- Across the five major components of risk within LTCI:
  - Life combo volatility is typically reduced by 60% to 80% versus that seen on stand-alone LTCI
  - Annuity combo volatility is typically reduced by over 80% versus that seen on stand-alone LTCI
- Combination products provide an opportunity for the insurance industry to address a major consumer need, and the opportunity to generate attractive returns with significantly reduced risk compared to traditional LTCI

# Questions?



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