

# Payout Annuities

2004 Product Development Symposium

Tommie Brooks, FSA, MAAA  
Senior Actuary, AVP  
Annuities Actuarial  
Safeco Life Insurance



## Two Topics

- Introduction to SPIVAs
- Different approaches with mortality

## SPIVA Basics

- Single Premium
- Variable income stream based on net fund performance vs. AIR (Assumed Investment Return)
- Registered product
- Ability to manage investments
- Potential inflation hedge

## Customer Perspective

- Variable income
- Longevity insurance
- Inflation hedge
- Lack of liquidity (maybe)
- Investment risk
- Manage investments

## Insurance Co perspective

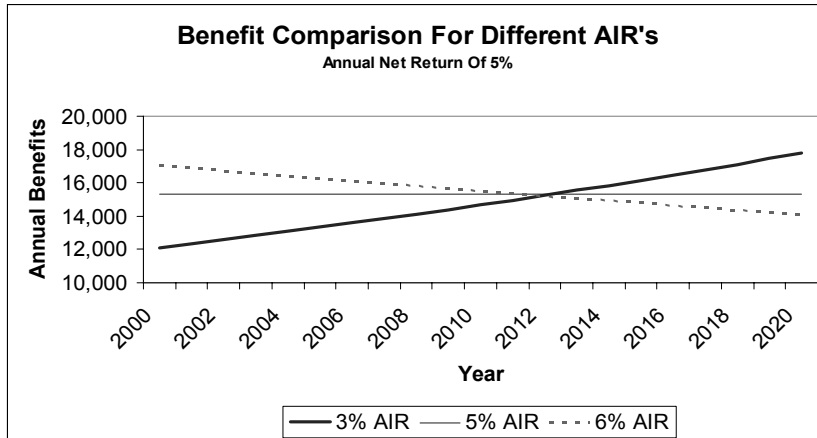
- Customer takes on the investment risk like plain vanilla VAs
- Longevity risk like SPIAs
- Compliance/suitability issues like all products

## Variable Income Stream

- Variable income stream based on net fund performance vs. AIR (Assumed Investment Return)
- Current annual benefit amt =  
prior annual benefit amt \*  
 $(1 + \text{fund return}) / (1 + \text{AIR})$
- $1000 * (1.082)/(1.05)$

## AIR tradeoffs

- How do benefit payments vary?
- Income now or Income later?
- States may limit AIR to 5%



## Benefits vs AIR

- Net Fund Returns 8%

AIR	3%	5%	7%
• Payment	12,000	15,500	17,000
• in 10 yrs	19,277	20,544	18,657
• in 20 yrs	30,968	27,228	20,476
• in 30 yrs	47,748	36,088	22,472
• in 40 yrs	79,918	47,831	24,663

## Benefits vs AIR (inflation adjusted)

- Net Fund Returns 8%
- Inflation at 2%

AIR	3%	5%	7%
-----	----	----	----

## SPIVA vs Systematic Withdrawal

- Timing risk makes a huge difference
- Take the 27 yr period from 1973-1999
- The geometric average return of the S&P 500 was 13.65%
- However, the range over this period was from -26.0% to +36.9%

## Timing Risk & Systematic w/ds

- A 27 year payment schedule at 13.65% would allow annual benefits of \$140,935 on a \$1M deposit
- Had this benefit stream begun in 1973, the account would have been depleted in 1979
- Ouch!

## Timing Risk & Systematic w/ds

- What happens if returns are experienced in the reverse order?
- Start with \$1M investment
- \$140,935 annual w/d leaves a balance of over \$10M after the 27 year period
- Huge difference!

## Timing Risk & Systematic w/ds

- Same time period 1973-1999
- 7% w/ds increasing by 3% per year
- Out of money in 1989
  
- Reverse the order of returns
- Over \$16M left in the account after the 27 year period

## Timing Risk & Systematic w/ds

- SPIVA advantage (1973-1999)
- Guarantees you won't outlive your \$
- 4% AIR, starting benefit of \$62K and ending at \$680K
- 7% AIR, starting benefit of \$84K and ending at \$430K
- Reversing the order of returns leads to same ending benefit amount
- Order is important for total benefits (more total benefits if higher returns are early)

## Other SPIVA features

- GPAFs (Guaranteed Payout Floor)
- Liquidity features
- Annual payment resets
- etc

## Mortality

“Bad mortality can kill you”

Michael J. Kinzer  
Chief Actuary  
Safeco Life

## Mortality Improvement Annual compound rate 1985-1995

<u>Age</u>	<u>Males</u>	<u>Females</u>
30	<1.32>	<0.84>
40	<1.62>	<0.05>
50	1.36	1.38
60	2.10	1.01
70	1.66	0.59
80	1.42	0.58
90+	0.55	0.17

National Center for Health Statistics

U.S. White Population

## Mortality

- Various tables
- Various approaches
- Leave in loads or take them out
- Create own loads
- No projection, flat projection, other

## Which Mortality to use?

- Structured Settlements
- SPIAs & SPIVAs
- Substandard (Guideline IX-A & IX-C)

## Projection Formulas

- No projection (easy)
- $q_x = q_x$
- $q_{70} = .02$
  
- What does this mean from year to year?

## Projection Formulas

- Flat projection
- $q'_x = q_x * (1 - PS_x)^n$
- where  $q_x$  = mortality at age x,  
 $PS_x$  = projection scale at age x,  
"n" is a constant number of years
- Example:  $q'_{70} = .02 * (1 - .01)^8$
- What does this mean from year to year?

## Projection Formulas

- Generational projection
- $q'_x = q_x * (1 - PS_x)^n$
- where  $q'_x$  = mortality at age x,  
 $PS_x$  = projection scale at age x,  
"n" increases each calendar year
- Example 2004:  $q'_{70} = .02 * (1 - .01)^8$   
2005:  $q'_{70} = .02 * (1 - .01)^9$
- What does this mean from year to year?

## Mortality, how important is it?

65 Year old male  
 Price for benefits of \$2,000 per month  
 5% interest assumption

(Price in 000's)

	No <u>Projection</u>	Generational <u>Projection</u>	Equivalent change in <u>interest rate</u>
1980 Pop	225.2	263.3	198 bp
1990 Pop	243.1	269.0	124 bp
1983 A	272.8	304.0	119 bp
2000 IAM	282.1	297.1	57 bp

## Mortality, how important is it?

65 Year old female  
 Price for benefits of \$2,000 per month  
 5% interest assumption

(Price in 000's)

	No <u>Projection</u>	Generational <u>Projection</u>	Equivalent change in <u>interest rate</u>
1980 Pop	271.4	312.6	153 bp
1990 Pop	283.7	312.9	104 bp
1983 A	305.1	337.7	101 bp
2000 IAM	306.8	323.8	55 bp

## Conclusion

- Mortality tables are important
- Projected mortality improvements are important

AVIVA

## Payout Annuities

### 4<sup>th</sup> Annual Product Development Actuaries' Symposium

May 6, 2004

Debra L. Fickett-Wilbar, ASA, MAA, CSSC

For Financial Professional Use Only

04/04

## What is a Structured Settlement?

- Used to settle Personal Physical Injury or Workers' Comp Claims
- Immediate Annuity exempt from 72(t) limitations
  - Payments do not have to be substantially level, start within 13 months, start after age 59.5
    - They can be anything, and frequently are
- Payments must be “fixed and determinable” at issue
- Payments are tax-free, not tax-deferred
- Almost all cases are fixed annuities, not variable

## Benefits of a Structured Settlement

“Win, Win, Win”

### Benefits to the Annuitant

- ✓ Prevents Dissipation of funds
- ✓ Can guarantee an income for life
- ✓ Can be contoured to needs of the annuitant
- ✓ Provides tax-free income

## Benefits to the Defendant

- Can save settlement money
- If case is assigned, can write-off the liability
- Does not have to administer periodic payments

## Benefits to the Life Company

- Long-term known liabilities
- No Disintermediation
- Liabilities offset risk of deferred annuities
  - deferred annuities gain value when interest rates drop
  - immediate annuities gain value when interest rates rise
  - having strong books of both types of annuities helps significantly in scenario testing
- Life Insurance block may help offset unanticipated mortality improvement

## Structures Market

- Many companies writing in house (from their own P&C sister company)
- About 12 companies writing outside in significant volume
- 14 companies accounted for over 80% of market over last 4 years
- Approximately 600 producers nationwide, most of which write with all of the 12 major players
- About \$6B in premium/yr

## Structures Market Issues

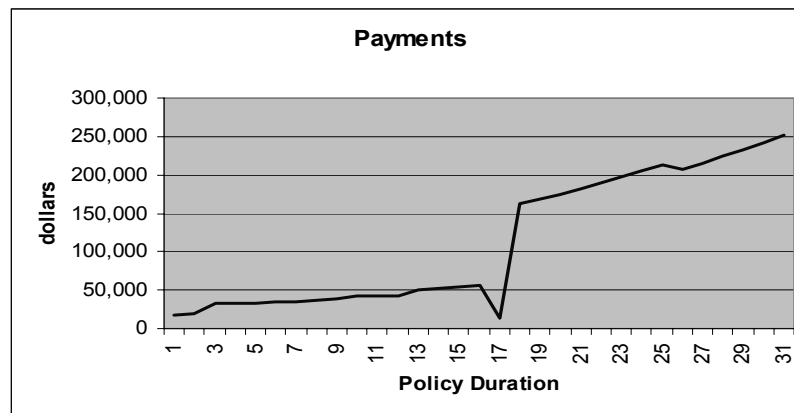
- Virtually all cases are spread sheeted among eligible life markets
- Broker perception of service is a key factor
- Name recognition helps, decision maker often not in a position to research companies
- Commissions not a driving force
- Ratings, Ratings, Ratings

## Structures

### High Entry Barriers

- Sophisticated Admin System required
  - ⇒ More complex than SPIA's
- Underwriting Knowledge
  - ⇒ Industry wide, approximately 25% of assets are supporting substandard cases
- Legal support needed
- Assignment company needed
  - ⇒ IRC 130(c) allows defendant to assign liability. Life companies set up assignment companies to take it
- Many defendants (e.g., P&C companies) have approved lists, which vary in requirements from fairly simple to next to impossible

## An Actual Policy



### Complexities

- Rated age
- Annuitant was under 10 years old at issue. Payments could be made for 100 years
- 77 different payout streams

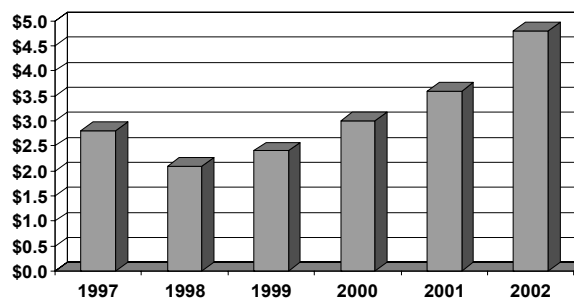
## Structures High Exit Barriers

- Have to administer cases for possibly another 100 years
  - Only alternative is to sell block

## SPIA Market

Size of fixed immediate annuity market is smaller than structures, but many annuity companies sell SPIA's

Sales in Billions



Source: LIMRA International 2003

## SPIA Market Issues

- ↗ Sales opened to all licensed life agents
- ↗ As Baby Boomers mature, market is growing
- ↗ VA possibility for the more risk tolerant

## SPIA's Low Entry Barriers

- Most companies already have an admin system that can handle periodic payments for their annuitizations
- Underwriting possible, but not required

## SPIA's Medium to High Exit Barriers

- Have to administer cases for possibly another 100 years, although most cases sold to annuitants > 65
  - Only alternative is to sell block

## Actuarial Guidelines that Specifically Affect Payout Annuity Reserves

- Guidelines IX-A and IX-C
  - Relates to reserving substandard structures and other immediate annuities
- Guideline IX-B
  - Relates to reserving non-level payouts

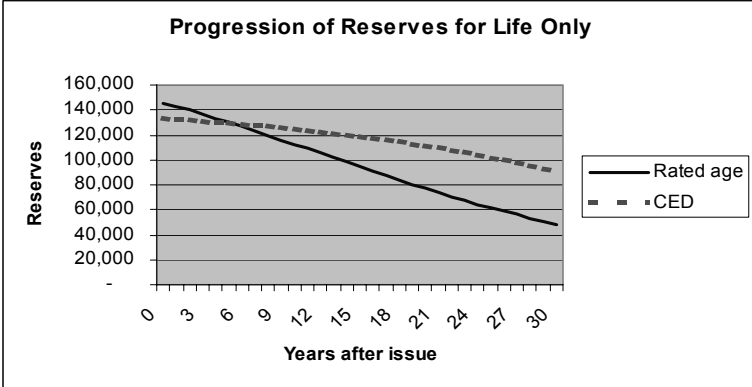
## Guideline IX-A

- Effective starting 1990
- Covers settlements from tort settlements, workers' comp, and LTD claims where rated age is used
  - ⇒ These were the only immediate annuity cases that were allowed to have reserves calculated on a substandard basis until IX-C was adopted
- Reserves must be calculated using Constant Extra Death method
  - ⇒  $K$  is calculated such that  $e_x$  (calculated using  $q_x$ 's with  $K$  added to each  $q$ ) =  $e_{x+r}$  (calculated using standard  $q$ 's)
  - ⇒ Result is that reserves grade to standard by the end of the mortality table

## Guideline IX-A Effect on Pricing

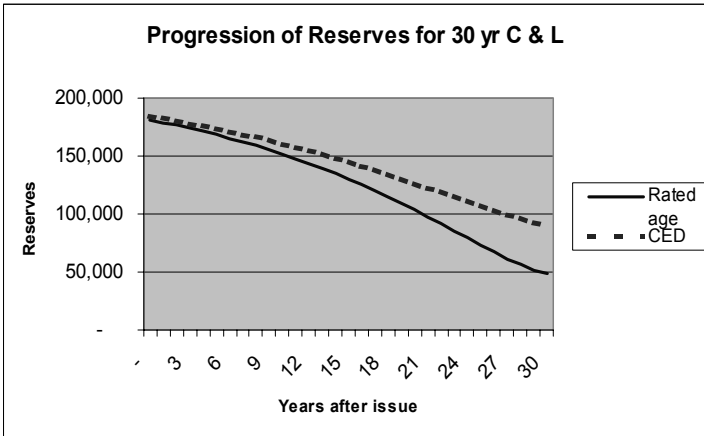
- In most cases, initial reserves are higher under IX-A
- In all cases, statutory profits emerge more slowly
- ROI is reduced
- PV Profit as % of PV of Premium is reduced

# Guideline IX-A



Assumptions: Male issue age 40 rated to 60  
 Payments = \$1000/mo annuity-immediate  
 Interest rate = 5.5%  
 Mortality table = 83 IAM

# Guideline IX-A



Assumptions: Male issue age 40 rated to 60  
 Payments = \$1000/mo annuity-immediate  
 Interest rate = 5.5%  
 Mortality table = 83 IAM

## Guideline IX-C

- Effective 2003
- Expands rules of IX-A to other Immediate Annuities, although some differences
  - The reserves cannot be less than would have been calculated using the rated age as the actual age with no rate up
  - The mortality impairment must be at least a 25% reduction in  $e_x$ 
    - Under 2000 IAM, translates to a 9 year rate up at age 55 and 5 years at age 80

## Guideline IX-B

Requires that certain Immediate Annuity cash flows be reserved more conservatively

1. Policies that do not satisfy definition of an annuity are “carved out” (annuity = payments at least annually for at least 5 years in a row)
2. Cash Flows that do not satisfy either the 110% or 115 % test (company choice) are “carved out”

## Guideline IX-B

- 115% test: Seriatim
  - Each year's annual cash flow is examined and any portion of the policy's cash flow that is greater than 110% of the prior years' is carved out
- 110% test: Aggregate for all policies issued in a calendar year
  - Each year's annual cash flow is examined and any portion of the cash flow that is greater than 110% of the prior years' is carved out
- Company's choice to test with or without mortality

## Guideline IX-B

- Cash flows that are not carved out are reserved using the interest rate corresponding to the length of deferral between issue and time of first payment
- Cash flows that are carved out are reserved at the interest rate corresponding to the length of deferral between issue and time of payment

## Alternative Method Within IX-B

- Calculate aggregate reserves for an issue year without IX-B
- Recalculate aggregate reserves discounting all liabilities more than 20 years out at the Plan Type A rate for policies deferred more than 20 years
- Solve for  $x\%$  such that discounting all payments in the first 20 years at  $x$  results in the same starting reserve
- Keep  $x$  constant through life of block
- Results in lower reserves at first, but they soon surpass results from 115% or 110% test

## Life Annuity Purchased to Pay Life Policy Premium

- Often marketed as creating money for policy holder by taking loan to buy SPIA
- If both sold by same company, little risk to Insurer. Policyholder tax implications? Is there a life policy?
- Mortality assumptions underlying two products are different. One is wrong
- Mortality risk magnified if preferred mortality used for life policy and standard mortality used for annuity
  - Possible arbitrage for policy holder

A MILLIMAN GLOBAL FIRM



**Milliman** USA

*Consultants and Actuaries*

## **Payout Annuities**

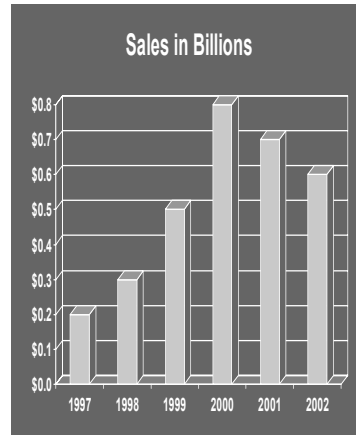
**Novian Junus, Consulting Actuary  
Milliman, USA  
2004 Product Development Symposium**

### **Summary Outline**

- **Industry Overview**
- **SP Immediate Variable Annuity (SPIVA) Product Designs**
- **Fixed SP Immediate Annuity (SPIA) Product Designs**
- **Marketing Considerations and Approaches**

## SPIVA Total Sales

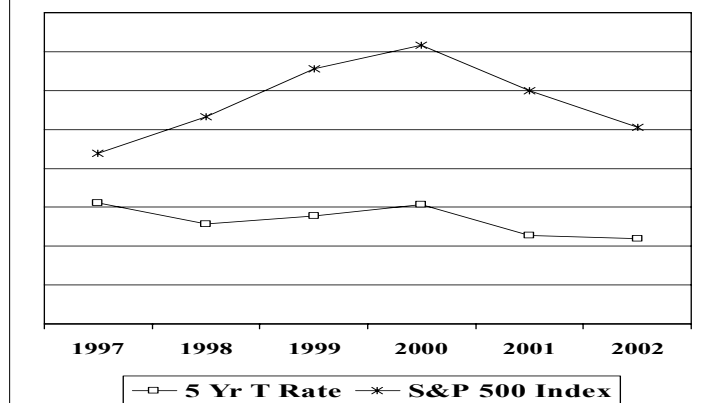
- Rapid Growth Prior to 2001
- Declines in 2001 and 2002
- Correlates Well With Equity Market Movement



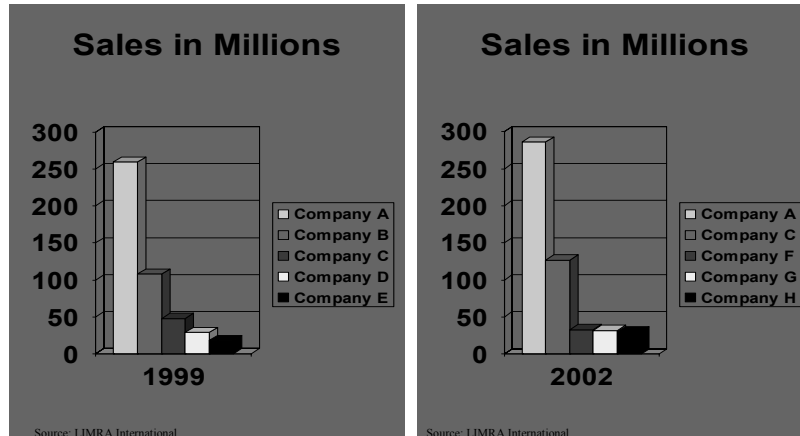
Source: LIMRA International

## SPIVA Total Sales

### Average Interest Rates and Equity Index

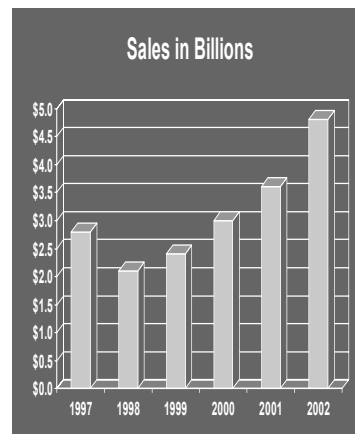


## Top 5 Companies SPIVA Sales

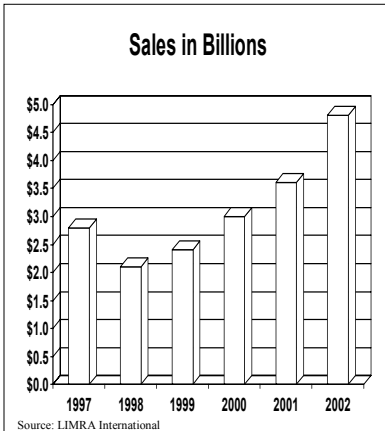
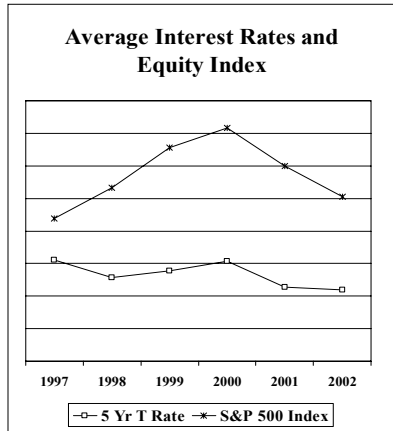


## SPIA Total Sales

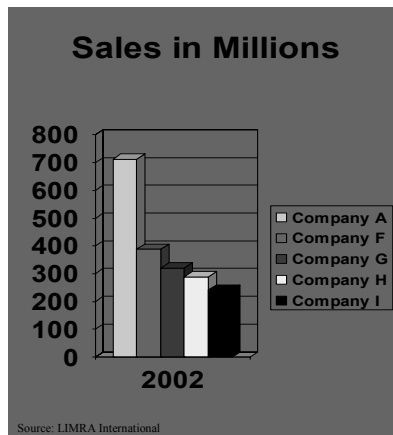
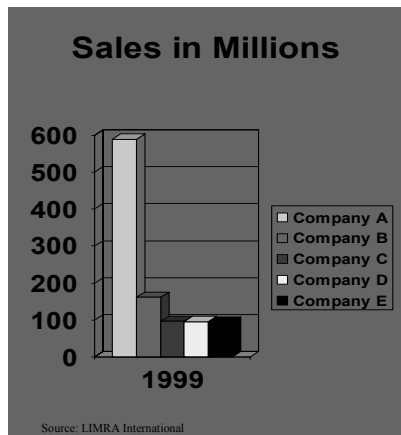
- Decline in 1998
- Steady Increase Thereafter
- Does Not Correlate Well With Interest Rate Environment



# SPIA Total Sales

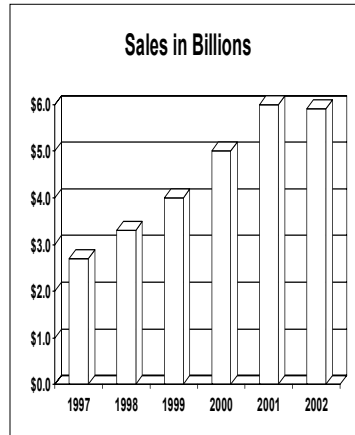


# Top 5 Companies SPIA Sales



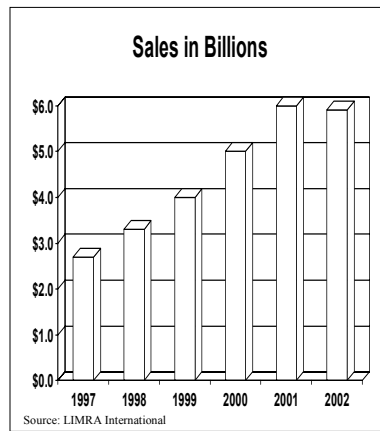
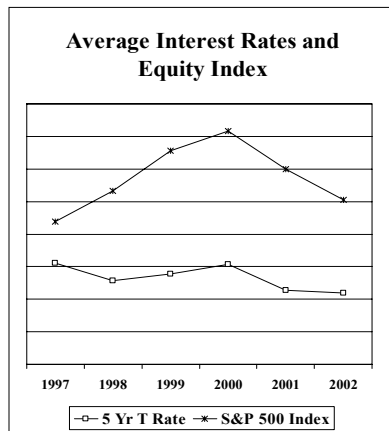
## SS Total Sales

- **Steady Increase 1997 to 2001**
- **Leveling in 2002**
- **Delayed Correlation to Interest Rate Environment**



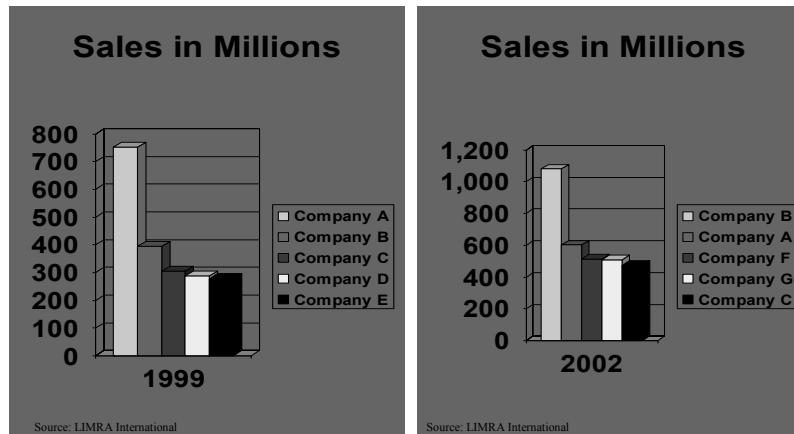
Source: LIMRA International

## SS Total Sales



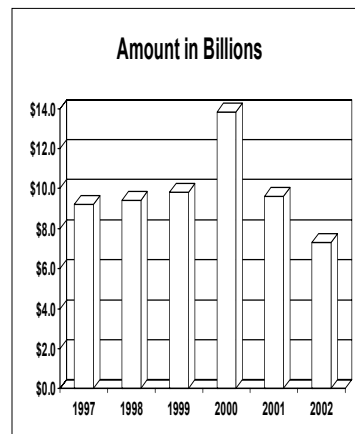
Source: LIMRA International

## Top 5 Companies SS Sales

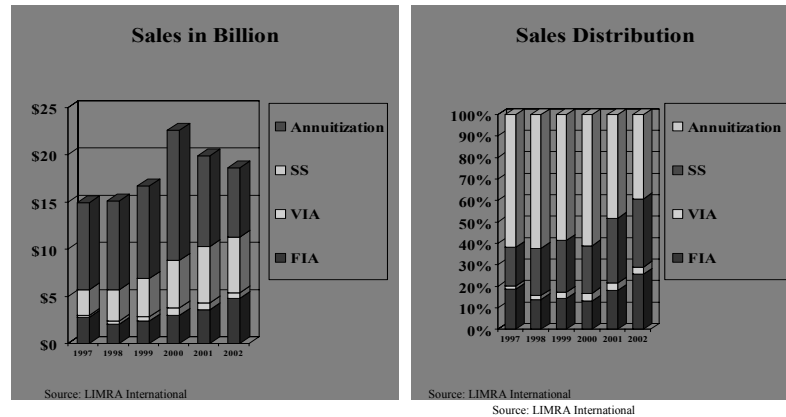


## Annuitizations

- Much Larger Than Immediate Annuity Sales
- Tailing Off in 2001 and 2002
- No Discernible Correlation to Equity or Interest Rates



## Total Payout Sales



## SPIVA Basic Product Designs

- Assumed Interest Rate (AIR)
- Joint and Single Life Options
- Certain Period Options
- Multiple Fund Options, Including Fixed Accounts
- Fund Transfers (Often Restricted to SA)

## **SPIVA Enhanced Product Designs**

- **Death Benefits**
- **Liquidity Provisions**
- **Guaranteed Payout Floors**
- **Multiple Payout Options**
- **Income “Levelization”**
- **Multiple Commission Options**

## **SPIVA Enhanced Product Designs**

- **Market Performance Changes  
Guaranteed Period**
- **Flexibility to Change**
  - AIR
  - Liquidity or Certain Period
  - Payout Frequency
- **Deferred VA with GMIB/GMWB**

## **SPIA Basic Product Designs**

- **Joint and Single Life Options**
- **Certain Period Options**
- **Cash Refund Options**
- **Certain Period Commutation**
- **Fixed “COLA” Payout Option**

## **SPIA Enhanced Product Designs**

- **Death Benefit Provisions**
- **Payments Linked to Equity Index**
- **Multiple Commission Options**
- **Substandard Payout**
- **Liquidity Provisions**

## **Enhanced Product Designs**

- **Tax Considerations**
  - Requirement that payments are fixed and determinable at start date
  - Aggregation rules and partial annuitizations
  - Treatment of partial withdrawals
- **Easier to be Innovative With Qualified Contracts**

## **Enhanced Product Designs**

- **Systems Considerations**
  - Handling enhanced product designs
    - Cash value and liquidity provisions
    - Flexibility to change options
  - Add on or build new
  - Big bet or small bets

## **Enhanced Product Designs**

- **Pricing and Financial Considerations**
  - **Guarantee floors**
  - **Longevity risk**
  - **Liquidity provisions**
  - **Initial payout factor in SPIVA**
  - **Large case size**
  - **Competitive positioning**
  - **Investment strategy**

## **Marketing Considerations**

- **Competition from other products and structures**
  - **Systematic withdrawal programs**
  - **Self insured longevity pools**
  - **DB pension payout**
  - **Social Security benefits**
  - **Reverse mortgages**

## **Marketing Considerations**

- **Main drawbacks to basic SPIA and SPIVA designs**
  - Irrevocable decision
  - Lack of liquidity
  - Lack of flexibility
  - Loss of principal
  - No account value

## **Marketing Approaches**

- **As Pure Payout**
  - Only sell the income guarantee
  - Deferred or immediate
- **As Enhanced Systematic Withdrawal**
  - Flexibility and unbundling
- **As Total Income Management Package**
  - Payout program from accumulation to income

## **Summary**

- **Seems to be on the cusp**
  - Lot of interest and activity
  - Increasing sales and acknowledgement
- **Room to be innovative and stake your claim**
- **Pricing and financial challenges mean having to take calculated risks and ensure sound design**