

# **Texas State Planning Grant Conference**

**January 31 – February 1, 2002**

## **The Economics of Health Insurance**

**Tim D. Lee, FSA, MAAA**

**Milliman USA**

**Houston TX**

**(713) 658-8451**



# The Economics of Health Insurance

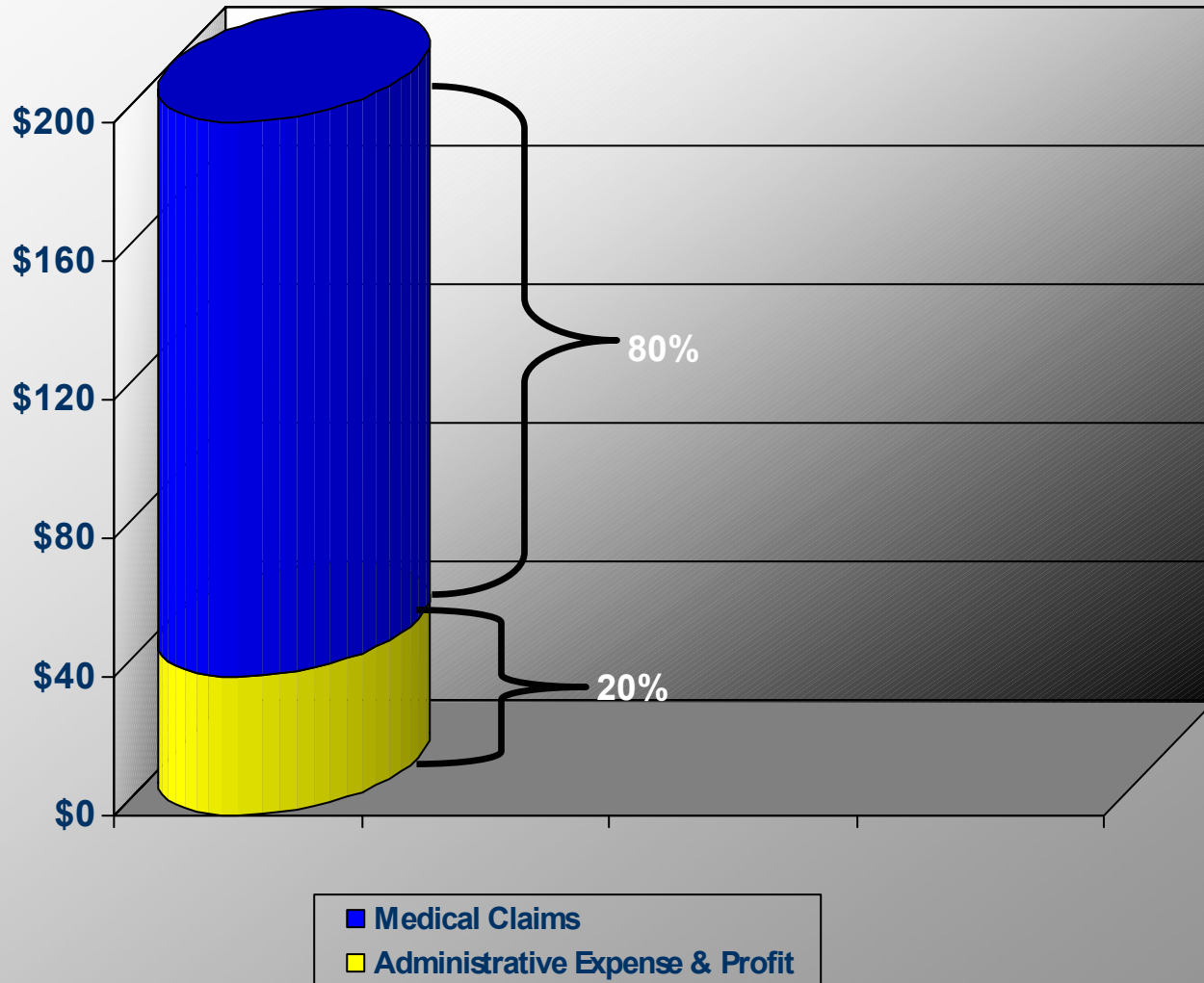
- ✓ Where Does the Premium Go?
- ✓ What Drives the Cost of Medical Care?
- ✓ How Do Insurance Companies Determine Their Premium Rate?



# Where Does the Premium Go?

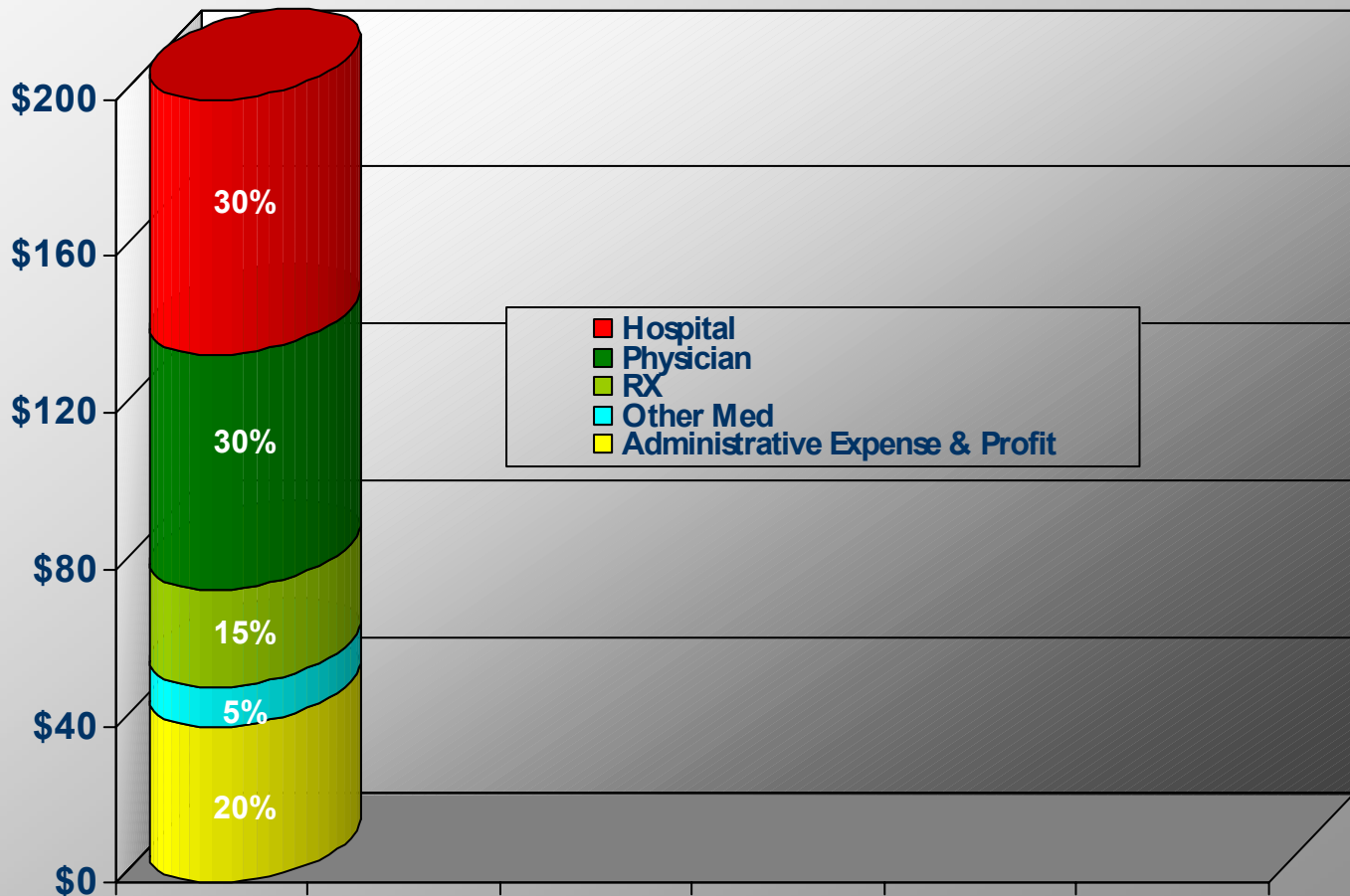
## 100 Employee Group

### Medical Claims, Administrative Expense & Profit



# Where Does the Premium Go?

## 100 Employee Group Break-down of Medical Claims



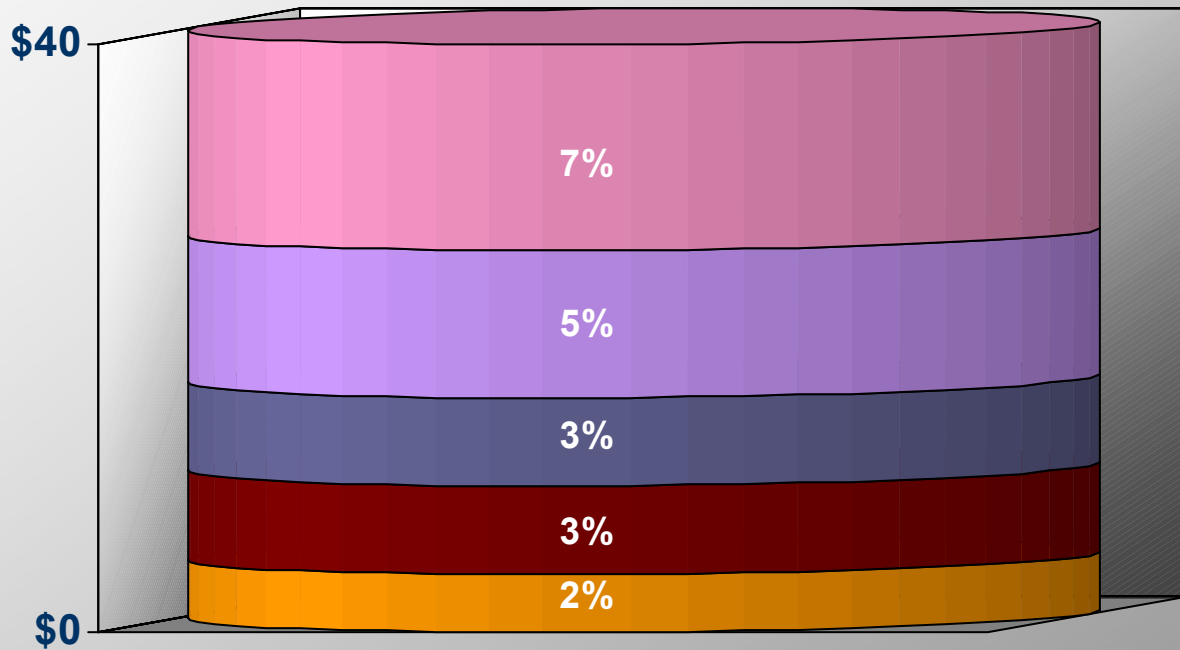
Source: Milliman USA Health Cost Guidelines



# Where Does the Premium Go?

## 100 Employee Group

### Break-down of Administrative Expense & Profit



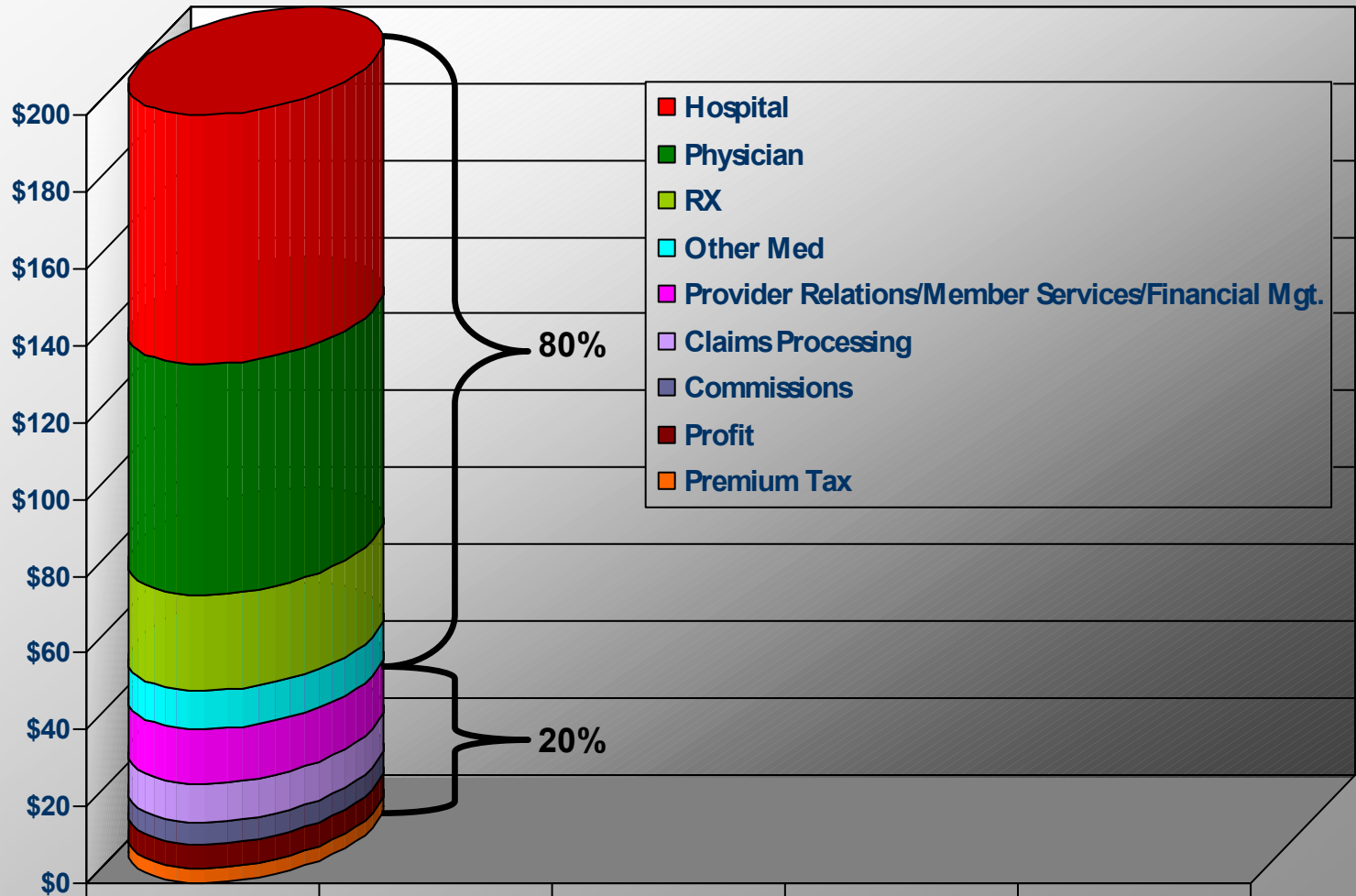
- Provider Relations/Member Services/Financial Mgt.
- Claims Processing
- Commissions
- Profit
- Premium Tax



# Where Does the Premium Go?

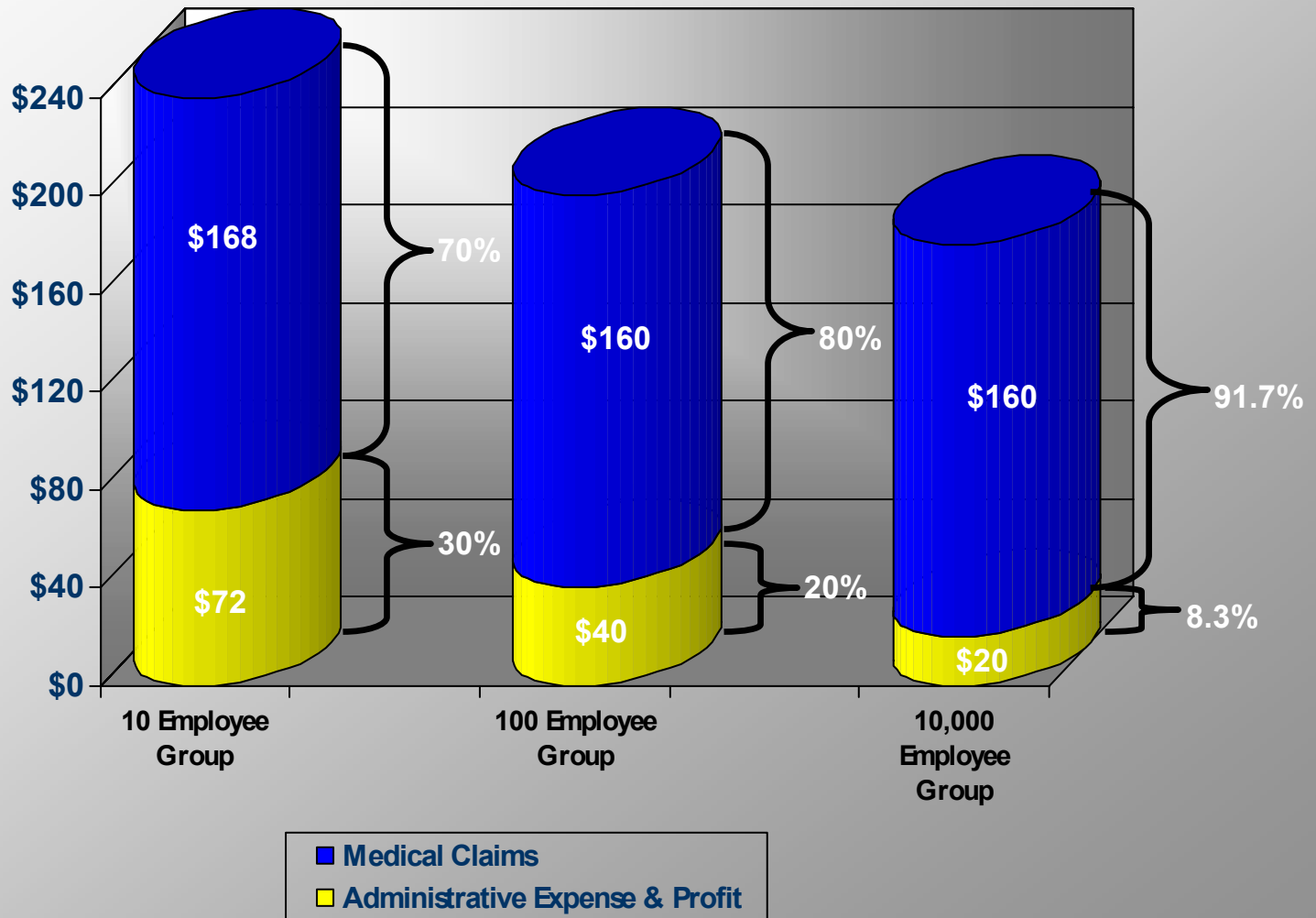
## 100 Employee Group

### Break-down of Medical Claims, Administrative Expense & Profit

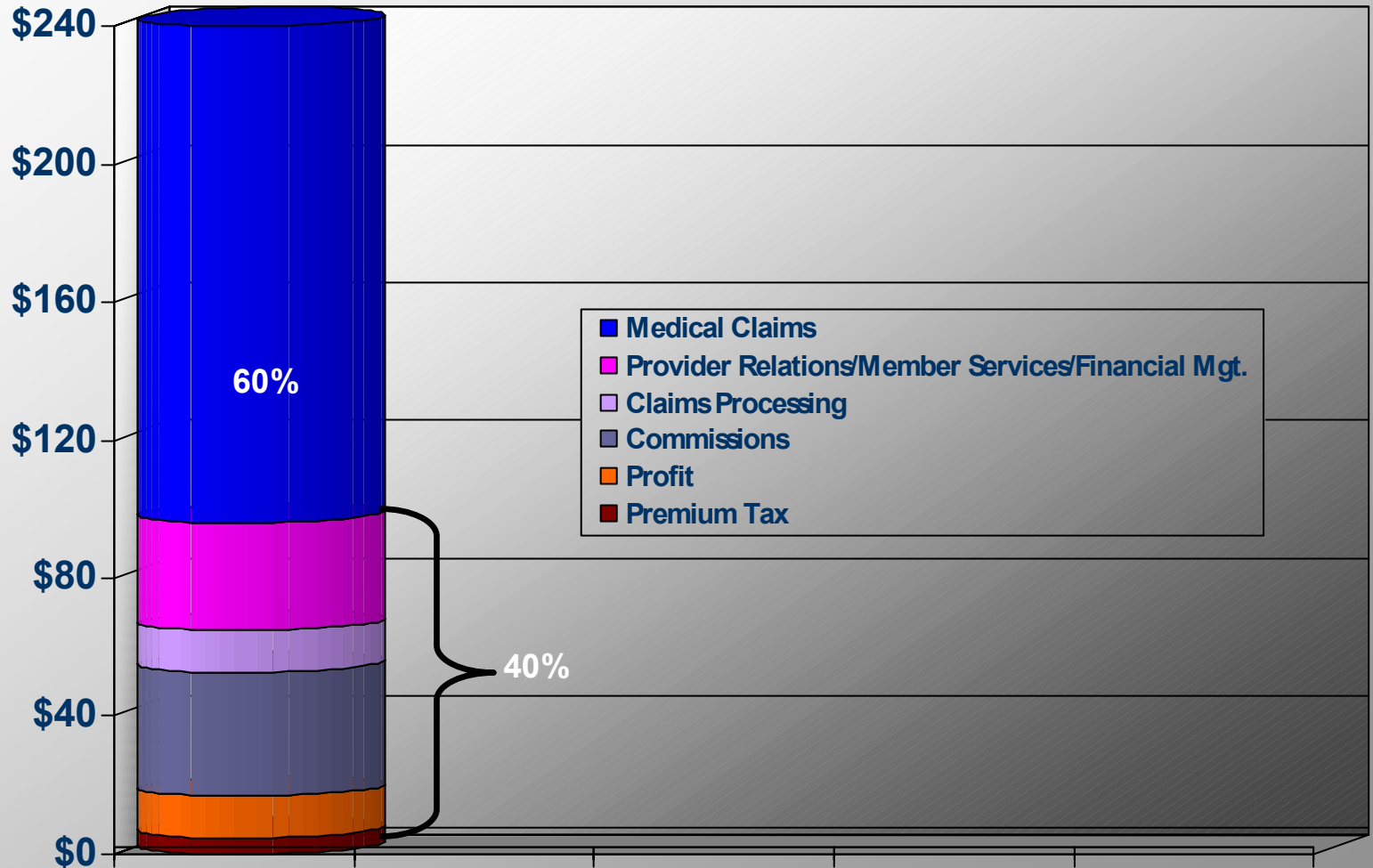


# Where Does the Premium Go?

## Small Group vs. Medium Group vs. Large Group



# Where Does the Premium Go? Individual Insurance

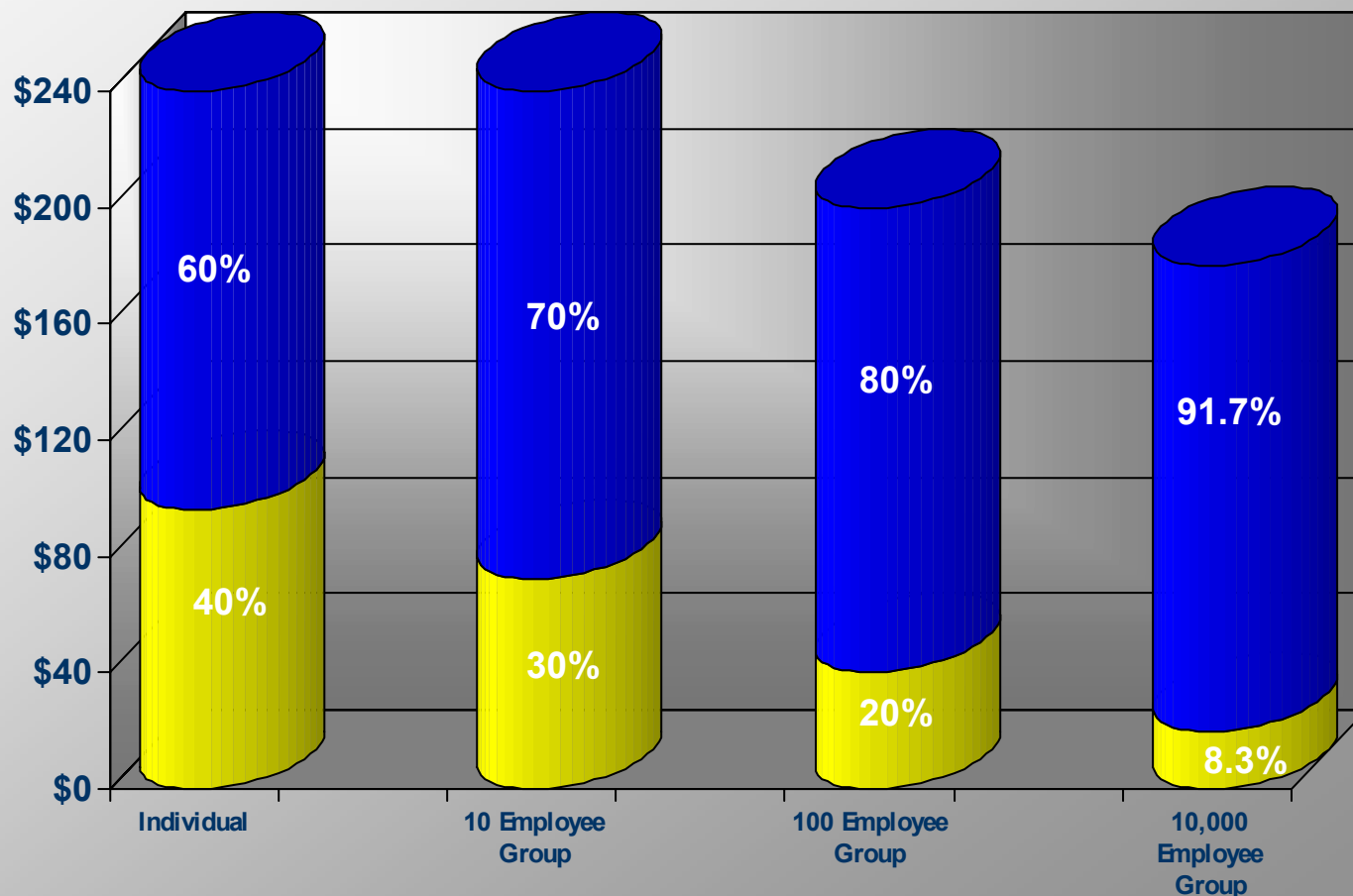




# Where Does the Premium Go?

## Individual vs. Small Group vs. Medium Group vs. Large Group

- Medical Claims
- Administrative Expense & Profit



# Where Does the Premium Go?

## Conclusions:

- ✓ Premium is primarily driven by the cost of medical claims.
- ✓ Administrative costs are relatively minor and inflexible.
- ✓ Portion spent on administration shrinks as groups get larger.
- ✓ Insurer profits are a very small piece of the total premium.



# What Drives the Cost of Medical Care?

- ✓ **Type of Service Used**
- ✓ **Frequency of Use (Utilization)**
- ✓ **Provider's Charge for Service**



# Sample Costs Per Member

<u>Type of Service</u>	<u>Annual Utilization</u>		<u>Charge Per Service</u>		<u>Annual Cost</u>
Inpatient Hospital	.3 days	x	\$2,500	=	\$750
Physician Visits	3.0 visits	x	\$60	=	\$180
Pharmacy	7.0 prescriptions	x	\$50	=	\$350

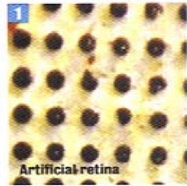


# New Types of Services

Next Frontiers

## The Replacements

In the not-too-distant future, doctors will be able to replace or assist almost every part of the body, helping the blind see and the deaf hear. These are some of the most innovative bionic parts that are currently in development.



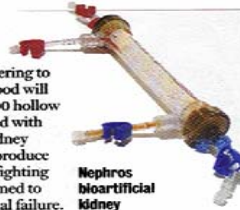
Artificial retina

### Retina

Implanted in the retina, an array of ceramic micro-detectors will mimic the eye's light-sensing rods and cones. Microdetectors will generate enough power to stimulate the optic nerve, letting those with retinal damage see light.

### Kidney

After standard filtering to remove toxins, blood will flow through 8,000 hollow fibers that are lined with 2.5 million live kidney cells. These cells produce crucial infection-fighting substances. Designed to alleviate acute renal failure.



Nephros bioartificial kidney



Genesis II knee

### Knee

New materials have led to longer-lasting knee replacements. The upper surface in this knee is made of oxidized zirconium, which reduces wear by 85 percent and should extend the knee's life by about 10 years. More rugged plastics in the future will increase it still more.



Hattler respiratory catheter

### Lung

When inserted into a major vein, this catheter will oxygenate blood through one interior channel while drawing carbon dioxide out through another. The device will offer temporary support for people with acute lung injury.



### Ear

A processor converts sound waves to digital code and transmits the data to an implant, which stimulates the auditory nerve. Allows the deaf to hear. Next: a million signals per second will improve sound quality.



MiniMed artificial pancreas

### Pancreas

A glucose sensor in a vein near the heart will test blood-glucose levels and relay that information to an insulin pump in the abdomen. The system will mimic a natural pancreas, automatically releasing the correct amount of insulin.



Bryan cervical disc

### Spinal disc

Instead of fusing the vertebrae around an injured disc, surgeons may soon be able to replace the disc itself, with an artificial insert made of soft polyurethane. U.S. clinical trials could begin this summer.

SOURCES: ALLEGRA/ETHICON; NEPHROS/ETHICON/SPINAL; SMITH & NEPHEW; ALLEGRA TECHNOLOGIES; ADVANCED BIONICS CORP.; HANDED; SPINAL DYNAMICS; RESEARCH TECHNOLOGIES; GRAPHIC ARTS/SCIENCE; SCHWABER; PHOTOGRAPHY (THIS PAGE); CREDIT: DAVID H. BERNARD; MICHAEL G. BERNARD; DAVID H. BERNARD; DAVID H. BERNARD



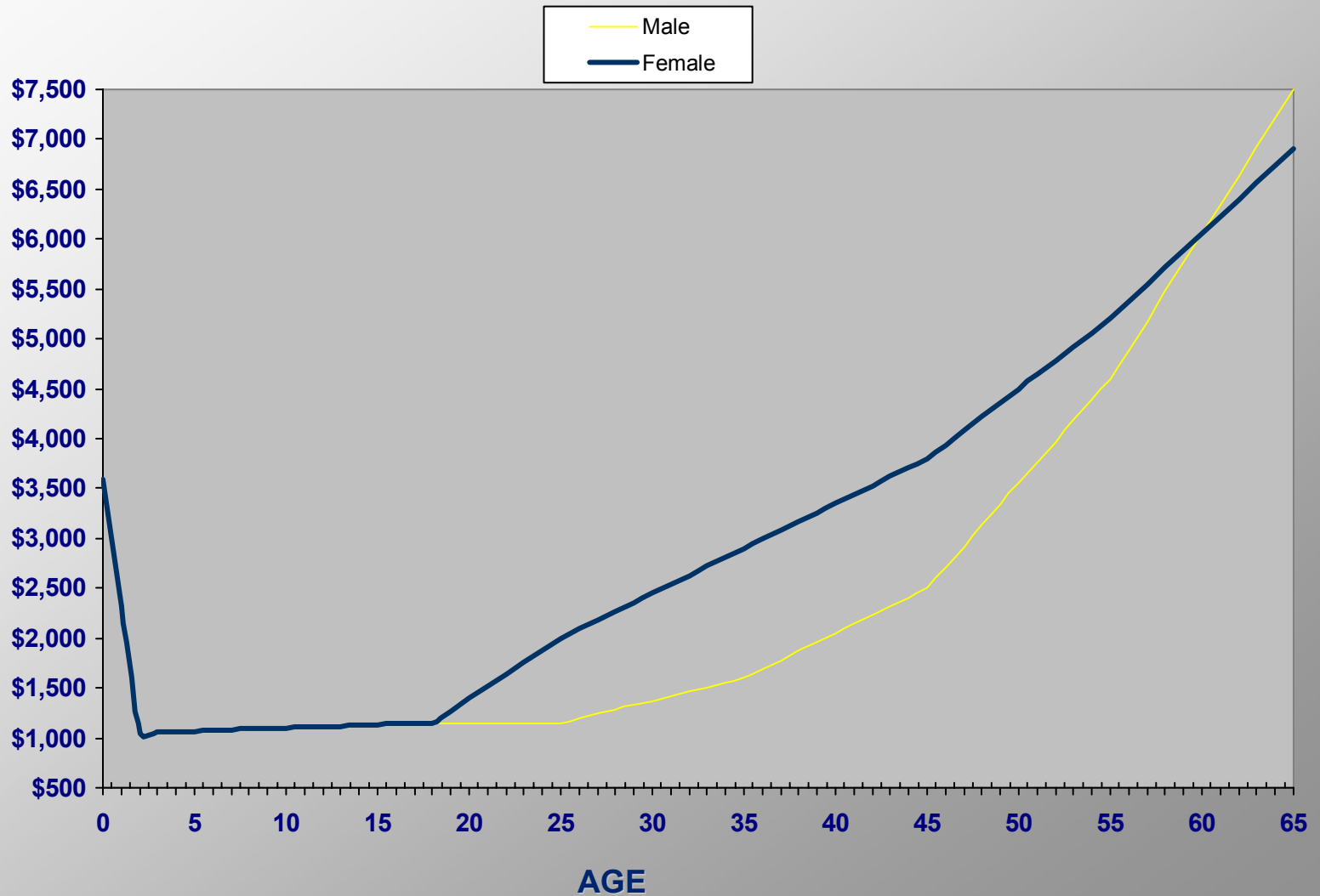
# How Do Medical Costs Vary By Age and Gender?

**Annual Average = \$2,600 Per Member**

<u>Age</u>	<u>Male</u>	<u>Female</u>
0 – 1	\$3,600	\$3,600
2 – 18	\$1,050	\$1,050
19 – 29	\$1,150	\$2,000
30 – 39	\$1,600	\$2,900
40 – 49	\$2,500	\$3,800
50 – 59	\$4,600	\$5,200
60 – 65	\$7,500	\$6,900



# How Do Medical Costs Vary By Age and Gender?



Source: Milliman USA Health Cost Guidelines

Milliman USA



# How Do Medical Costs Vary By Geographic Area?

National Annual Average = \$2,600 Per Member

<u>Area</u>	<u>Amount</u>
Galveston	\$3,040
Tyler	\$2,800
Houston	\$2,630
Dallas	\$2,550
El Paso	\$2,340
Ft. Worth	\$2,240
Wichita Falls	\$2,160





# How Do Medical Costs Vary By Provider?

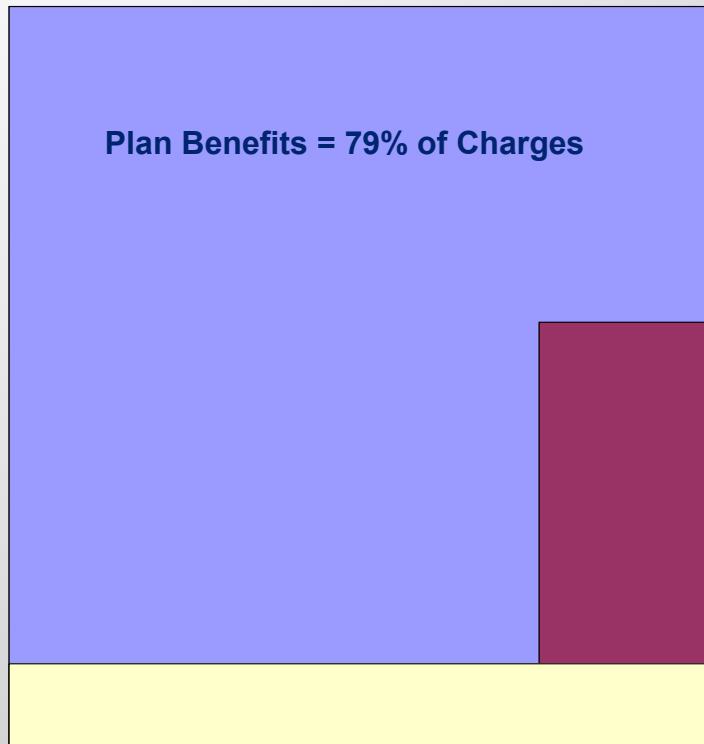
## 2001 Charges in Austin/San Marcos

<u>Service</u>	<u>25<sup>th</sup> Percentile</u>	<u>75<sup>th</sup> Percentile</u>
<b><u>Physician</u></b>		
Office Visit CPT 99212	\$43	\$56
Coronary Artery Bypass CPT 33534	\$6,326	\$7,092
<b><u>Hospital Outpatient</u></b>		
Septoplasty CPT 30520	\$2,117	\$3,629
Cataract Removal CPT 66984	\$2,031	\$3,188



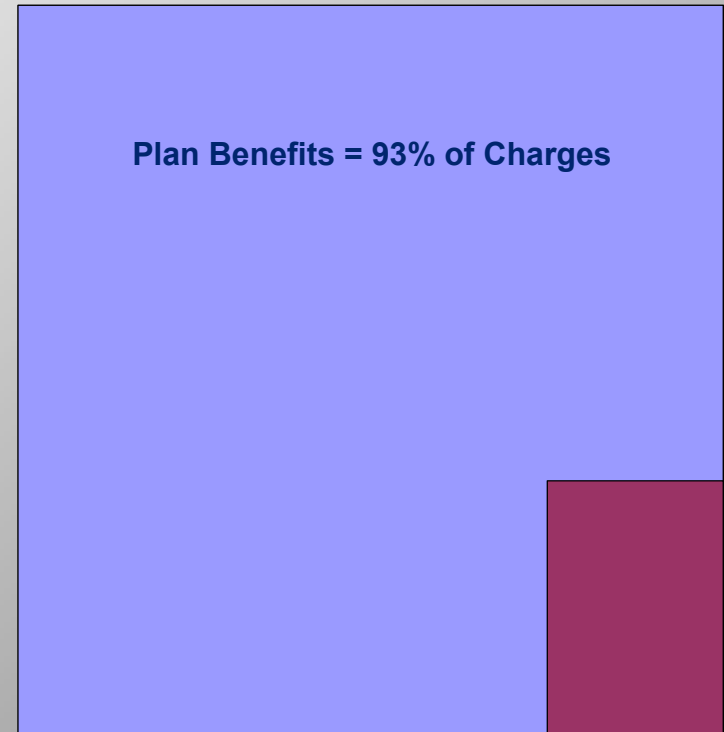
# How Do Medical Costs Vary By Benefit Plan?

## Indemnity Plan



■ Plan Benefits ■ 20% Coinsurance ■ \$500 Deductible

## HMO Plan



■ Plan Benefits ■ Copays



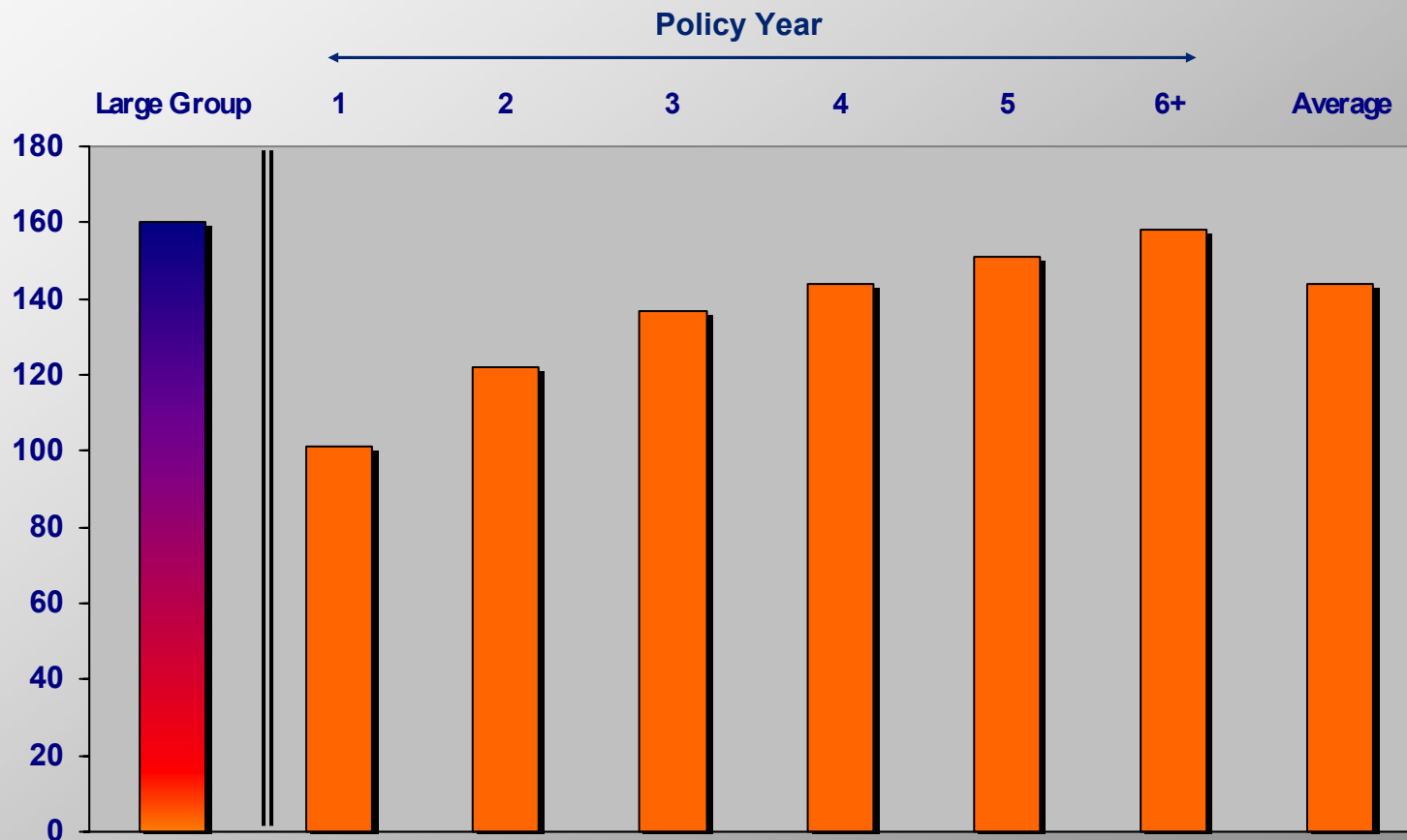
# How Do Medical Costs Vary By Insurance Product?

## Inpatient Hospital Costs Per Member

<u>Type of Delivery System</u>	<u>Annual Utilization</u>		<u>Charge Per Service</u>		<u>Annual Cost</u>	<u>Savings</u>
Unmanaged	.3 days	x	\$2,500	=	\$750	0%
Discounts (PPO)	.3 days	x	\$1,500	=	\$450	40%
Discounts and Utilization Management (HMOs)	.2 days	x	\$1,500	=	\$300	60%



# How Does Underwriting Affect Medical Costs?

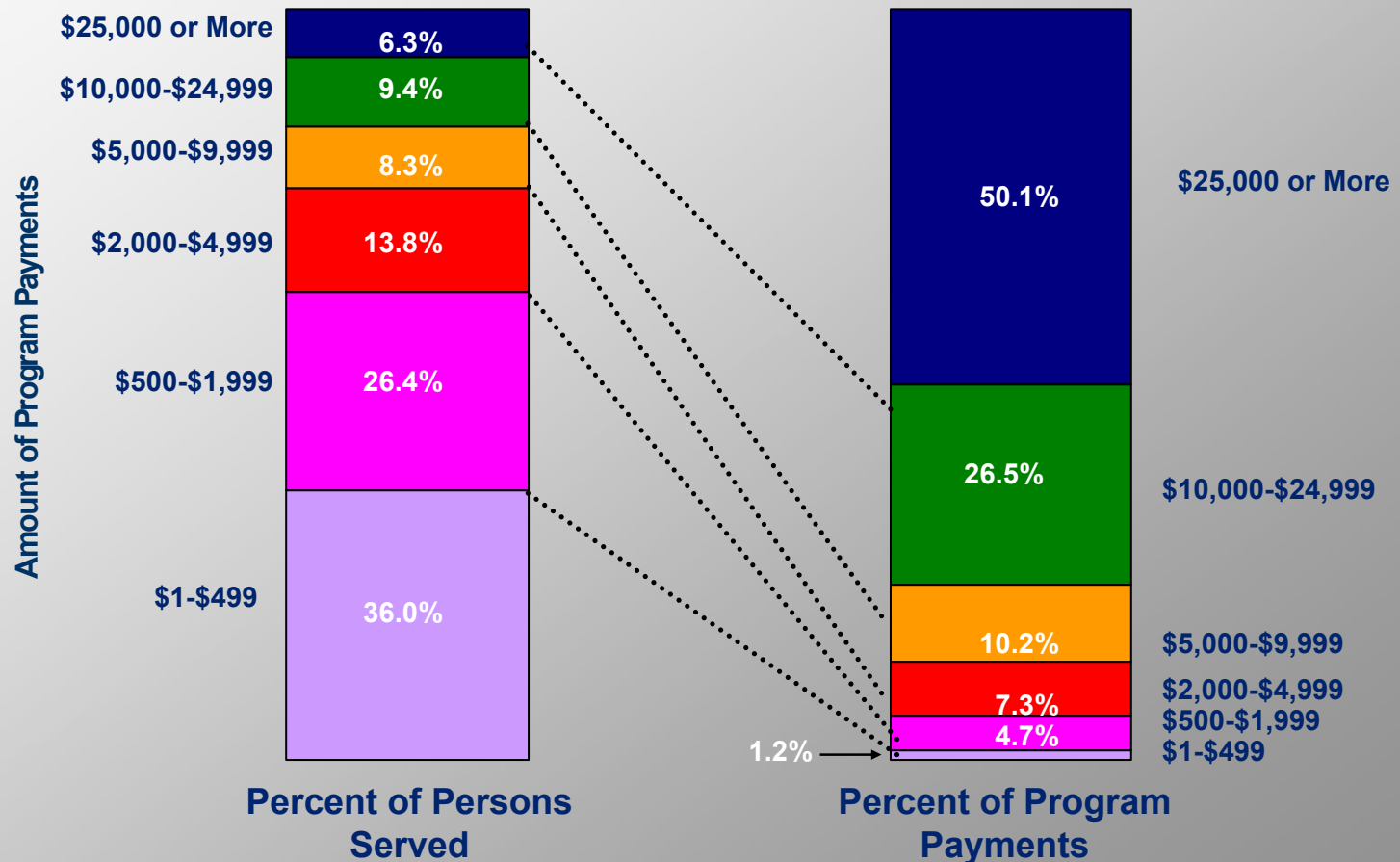


# Why Do Insurers Underwrite?

## Percent Distribution of Medicare Persons Served and Program Payments Under Medicare: CY 1997

\$29.8 Million Persons Served

\$175.4 Billion in Program Payments



Source: Health Care Financing Administration, Office of Information Services: Data from the Medicare Decision Support System; data development by the Office of Strategic Planning.

# How Do Insurance Companies Determine Their Premium Rate?

## ✓ Estimate Medical Costs Using Some Objective Criteria:

- Product (Indemnity, PPO, HMO)
- Plan Benefits
- Age
- Gender
- Geographical Area



# How Do Insurance Companies Determine Their Premium Rate?

## ✓ Estimate Medical Costs Using Some Objective Criteria:

- Product (Indemnity, PPO, HMO)
- Plan Benefits
- Age
- Gender
- Geographical Area

## ✓ Adjust the Estimate for Underwriting Information (Objective and Subjective)



# How Do Insurance Companies Determine Their Premium Rate?

- ✓ **Estimate Medical Costs Using Some Objective Criteria:**
  - **Product (Indemnity, PPO, HMO)**
  - **Plan Benefits**
  - **Age**
  - **Gender**
  - **Geographical Area**
- ✓ **Adjust the Estimate for Underwriting Information (Objective and Subjective)**
- ✓ **Add Expected Administrative Expenses and Profit**
  - **Product**
  - **Group Size**





# **The Economics of Health Insurance Summary**

- ✓ **Premiums Are High Because the Cost of Medical Care is High**
- ✓ **Some Administrative Cost Savings Possible For Small Groups; But Not a Significant Impact On Affordability**
- ✓ **Expected Cost of Medical Care Can Vary Significantly Among Small Groups; That's Why Premiums Will Vary Among Groups**
- ✓ **To Make Premiums Affordable, Focus On The Cost of Medical Care**

