Social Security
What Went Wrong?

By
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3-5-2006

FDR's Social Security

January 17, 1935

Three principles should be observed in legislation on this subject.

First, the system adopted, except for the money necessary to initiate it, **should be self-sustaining** in the sense that funds for the payment of insurance benefits should not come from the proceeds of general taxation.

In 1935 FDR testified to the following:

January 17,1935

Second, excepting in old-age insurance, actual management should be left to the States subject to standards established by the Federal Government.

Third, sound financial management of the funds and the reserves, and protection of the credit structure of the Nation should be assured by retaining Federal control over all funds through trustees in the Treasury of the United States.

http://www.ssa.gov/history/reports/ces/ces3.html

The 1936 Government Pamphlet on Social Security

- 2% payroll tax in 1937 increasing to 6% in 1949.
- $25 weekly payroll would pay 50 cents a week for a benefit at age 65 of $53 a month.
- $50 weekly payroll would pay $1.00 a week for a benefit at age 65 of $74.50 a month.
- Death Benefit prior to age 65 was 3.5% of OASI wages.

http://www.ssa.gov/history/ssb36.html

Required Tax Rate

1937

- A 25 year old making $25 per week was to be paid a benefit of $53 a month at age 65. This required a payroll tax of 8.44% starting at age 21 and continueing till age 65.
- A 25 year old making $50 per week was to be paid a benefit of $74.50 a month at age 65. This required a payroll tax of 5.93% starting at age 21 and continueing till age 65.
- A 55 year old making $15 per week was to be paid a benefit of $19 a month at age 65. This required a payroll tax of 28.8%.

Covered Workers

1937

When social security began, not all were covered by social security. Farmers were not covered because they had less than average wages as well as inconsistent wages. Low and inconsistent wages would be a drain on social security. This was due to benefits being higher in proportion to wages for low income workers than high income workers.

This is why those who worked for tips, military and other low pay jobs were not covered.

Those of higher paid jobs or who had pensions were deemed to not need social security.

Social Security in 1937

Non Covered Workers

Those not covered by Social Security were:

- Agriculture
- Farmers
- Military
- Domestic service
- Federal government
- State and Local government
- Ministers
- Railroads
- Tips
- Professional groups & self employed
    - Doctors
    - Dentists
    - Lawyers

A. J. Altmeyer, Chairman

Social Security Board Before the House Ways and Means Committee November 27, 1944

"There is no question that the benefits promised under the present Federal old-age and survivors insurance system ***will cost far more*** *than the 2 percent of payrolls now being collected. As I pointed out in my testimony of last year, none of the actuarial estimates which have been made on the basis of present economic conditions and other factors now clearly discernible result in a level annual cost of this insurance system of less than 4 percent of payroll."*

A. J. Altmeyer, Chairman

"Indeed, under certain assumptions the level annual cost has been estimated to be as much as 7 percent of payrolls. On the basis of a 4-percent-level annual cost it may be said that the reserve fund of this system already has a deficit of $6,600 million. On the basis of 7-percent-level annual cost it may be said that the reserve fund ***already has a deficit of about $16,500 million."***

http://www.ssa.gov/history/aja1144a.html

Robert Ball

Commissioner of Social Security

1962 and 1973,Wrote June 2005

"When Social Security began, benefits for those nearing retirement age were much higher than could have been paid for by the contributions of those workers and their employers. This was done so that the program could begin paying meaningful benefits even though workers nearing retirement would have only a short time to contribute."

"Instead, the impression is left that the program was sound only when 16 paid in for every one taking out. Thus, of course, when the ratio changed to 3.3 to 1, the program became "unsustainable."

Robert Ball summed it up this way

June 2005

"They ignore the fact that in 1950 only about 15 percent of the elderly were eligible for benefits and that it was expected by all who were acquainted with the program that the ratio would, of course, change dramatically as a greater proportion of the elderly became beneficiaries."

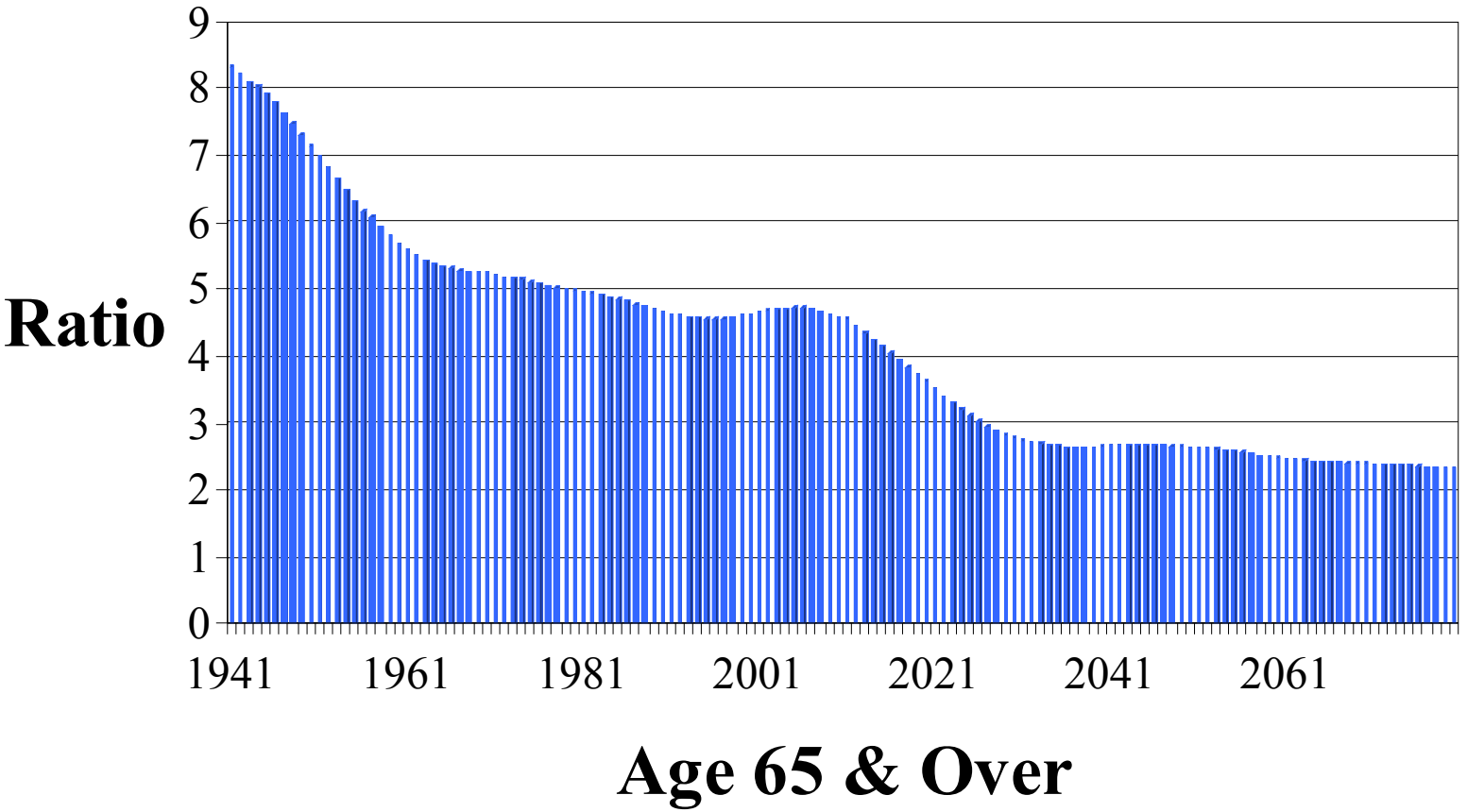
Robert Ball summed it up this way

June 2005

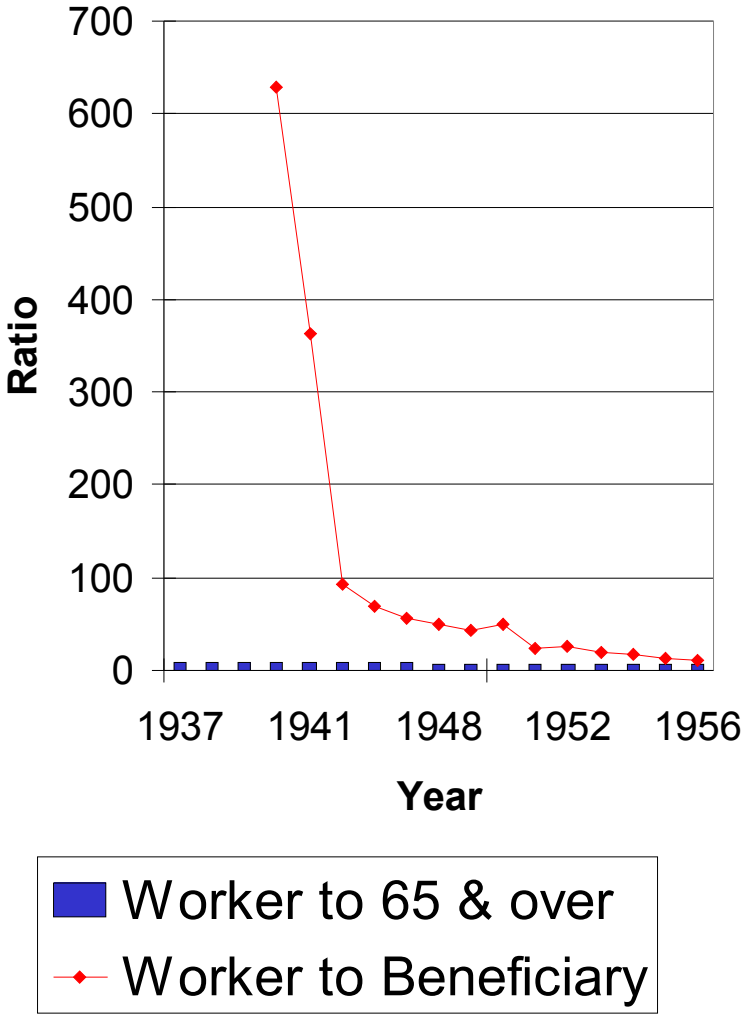
"What in fact happened is that when just about all the elderly first became eligible for Social Security benefits, about 1975, the ratio was 3.3 contributors to each beneficiary and the ratio has stayed that way for the past 30 years. As the baby boom reaches retirement age, as the administration says, the ratio is expected to drop for the long run to 2.0 or 1.9 workers to each retiree. But that is the size of the problem - a drop from 3.3 to 2 workers per retiree."

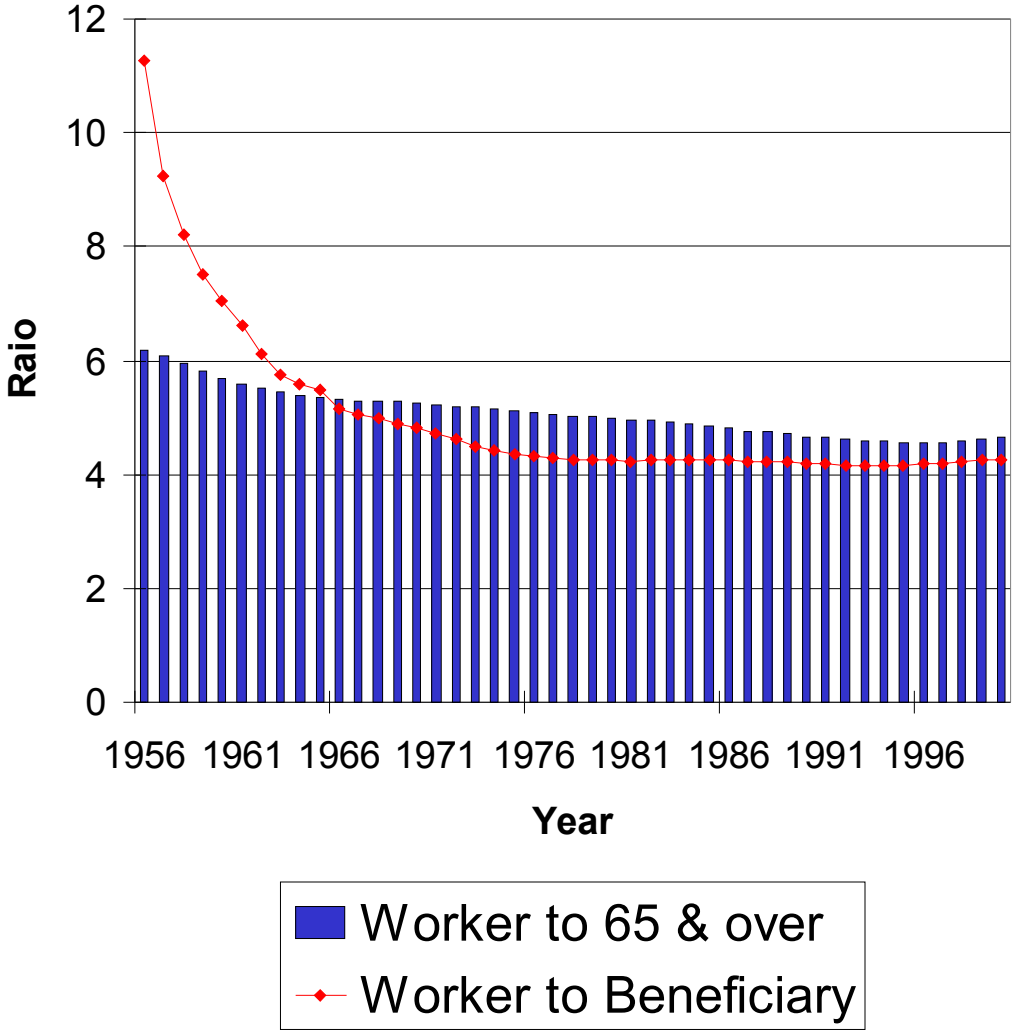
http://www.tcf.org/Publications/RetirementSecurity/ballplan.pdf

Potential Workers to Age 65 & Over



Worker to Beneficiary and Age 65 & Over Ratios





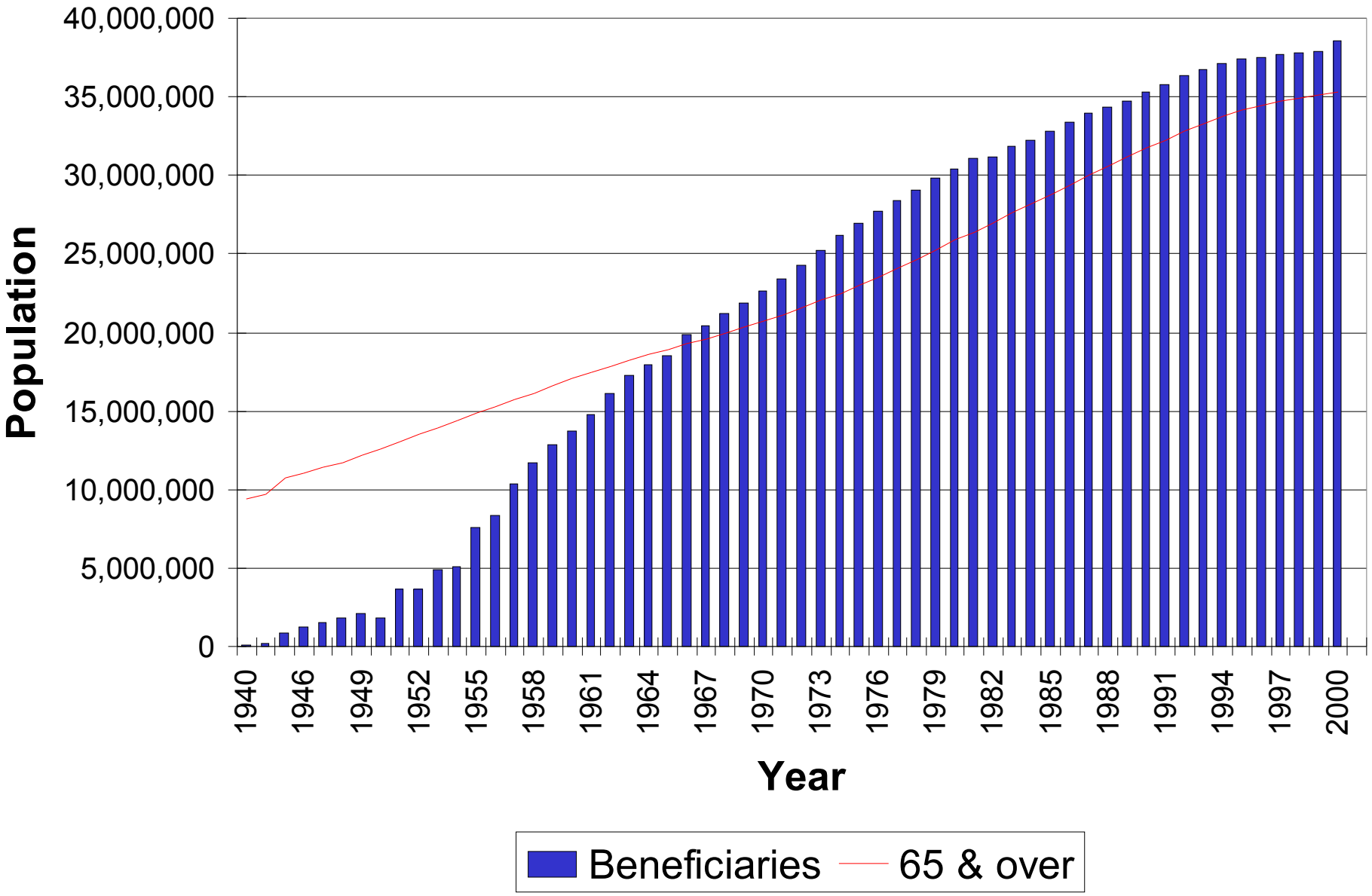
Early Retirement

The next chart shows the number of beneficiaries and the number of those age 65 and over.

Clearly in 1940 very few of those age 65 and over were eligible for social security benefits. This supports Ball's position Social Security was an immature program.

Congress legislated workers could retire at age 62 with reduced benefits. This shows up as the number of beneficiaries exceed those age 65 and over. It indicates how many take early retirement.

Beneficary and 65 & Over Population By Year



Birth Rate

In general a boom begets a boom while a bust begets a bust. Those that are born this year will begin producing offspring in 20 to 30 years, who in turn will begin producing offspring in 20 to 30 years.

Through history there have been booms and busts. They go in cycles. The peaks to valleys though have been decreasing over time.

The next chart shows the surviving live births one year later by year. This was done to filter out the high infant mortality rates in the first part of the 1900's.

Early Indication

The birth rate per woman provides a heads up for what is to come. A baby born this year will become a worker in 18 to 20 years. This means we know pretty accurately how many workers we will have over the next 18 to 20 years by just looking at births.

The same can be said of beneficiaries. There will be no new potential beneficiaries born in the year 2005 or before because these years have come and gone. All the potential beneficiaries for the next 100 years are also accurately predicted.

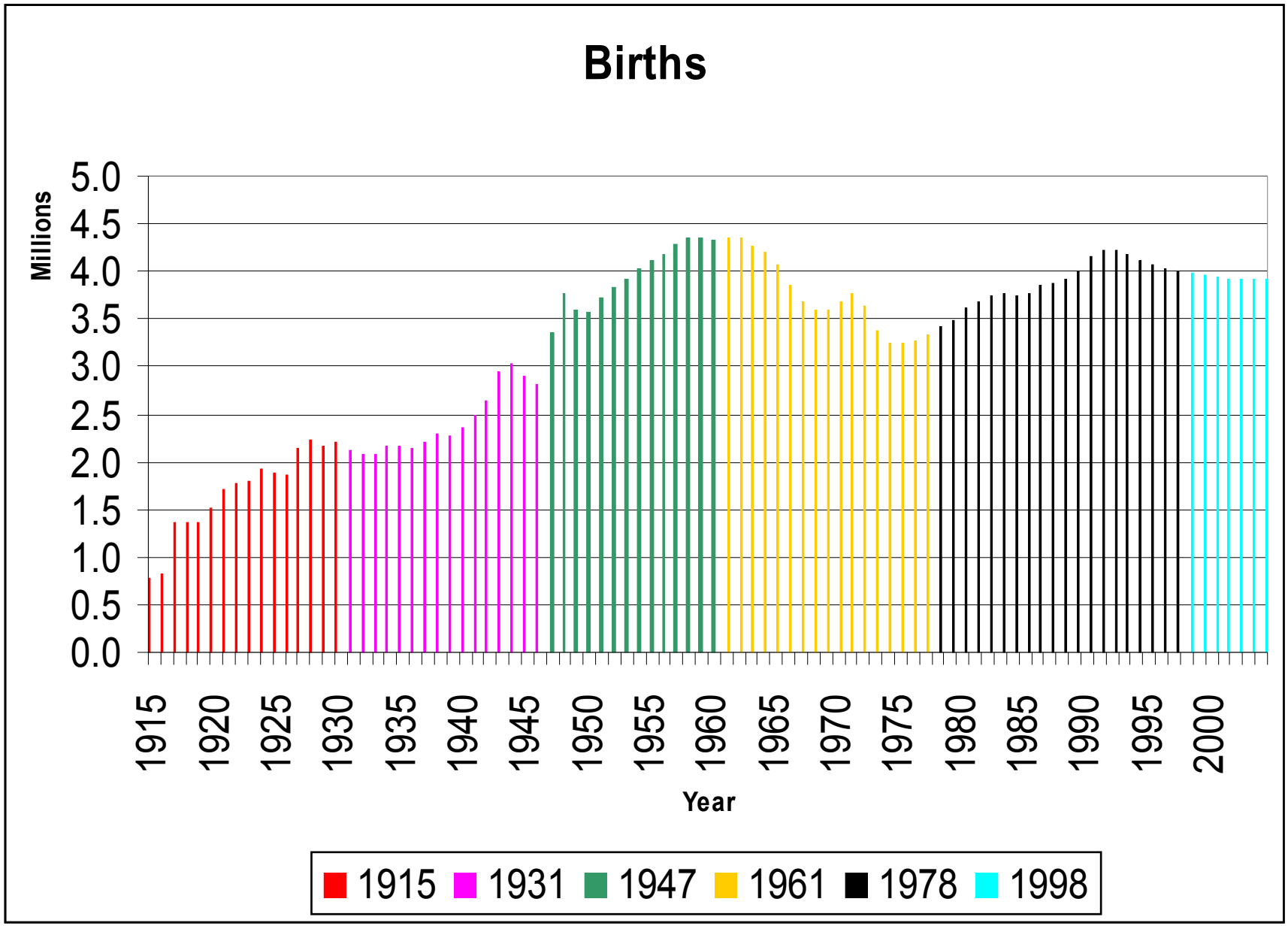
It is this slow change that makes modeling social security so easy.

Changes in Birth Rate

Couples are waiting longer to begin families as well as having fewer children. Spreading out births and waiting longer all affect population growth.

It could be said the bust of 1931 produced the bust of 1961 which produced the bust of 1998. Like wise the boom of 1915 produced the boom of 1946 which produced a mini boom in 1978.

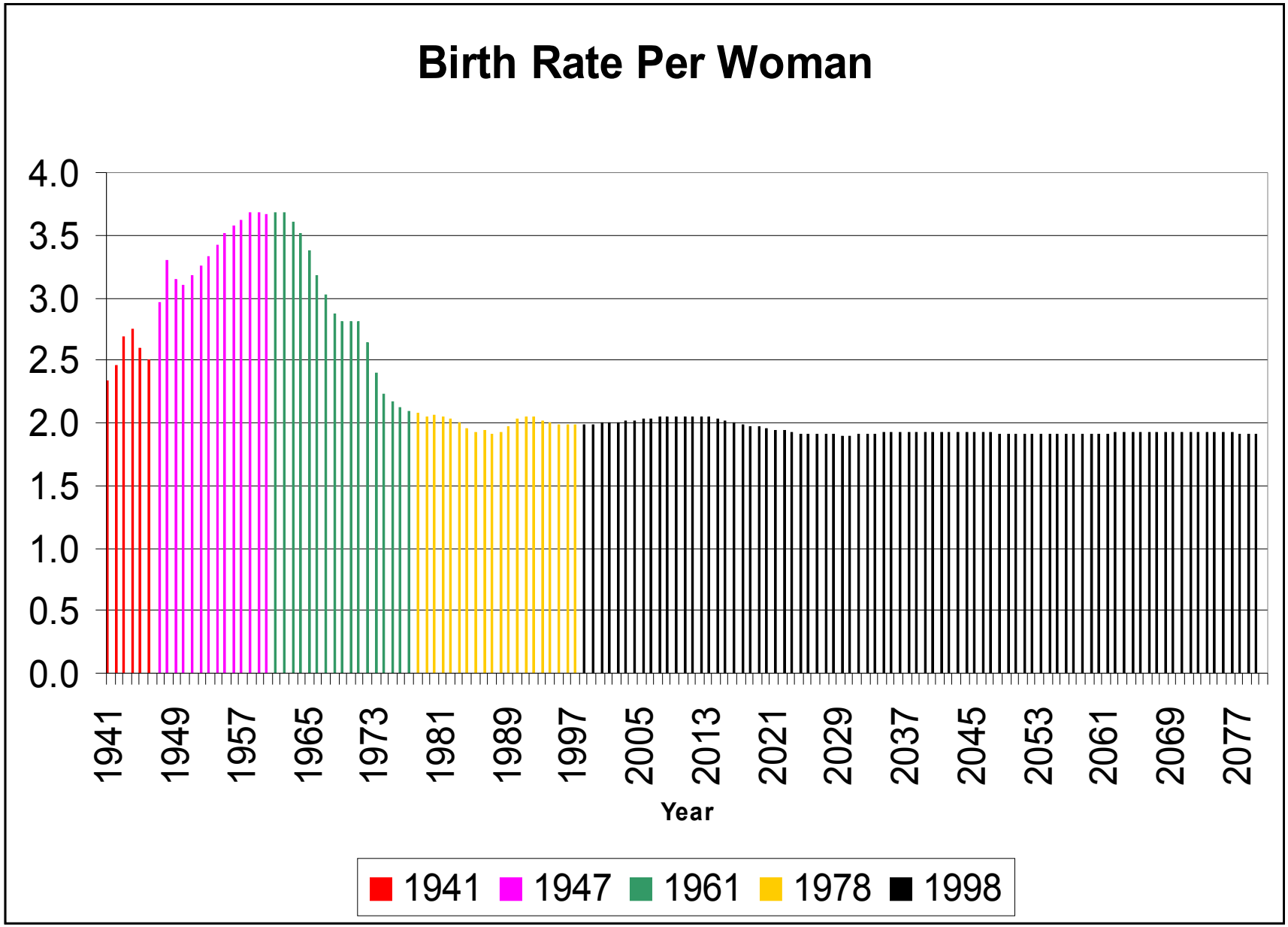
Immigration affects birth rates by introducing women of child bearing age immediately into the population.


Births
Millions
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
1915
1920
1925
1930
1935
1940
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
Year
1915
1931
1947
1961
1978
1998

Birth Rate

The next chart shows the birth rate per woman of child bearing age. I did not have accurate population data prior to 1941. The Social Security Administration provided me with a population file covering 1941 to 2080. However, the trend is what is important here. It is doubtful that large families will return.

A birth rate of 2.1 births per woman will produce a population growth of zero. This will affect the worker to beneficiary ratio in the future starting in about 20 years with its full affect being felt within 100 years.


Birth Rate Per Woman
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
1941
1949
1957
1965
1973
1981
1989
1997
2005
2013
2021
2029
2037
2045
2053
2061
2069
2077
Year
1941
1947
1961
1978
1998

Affect of Low Birth Rates

Just as compound interest helps you over time, a higher birth rate does the same thing. Instead of the term being a day, month or year, the term is now 20 to 30 years. A woman bears a child at age 20. Twenty years later the child bears a grand child at age 20. The mom is age 40, the child is age 20 and the baby is age 0. Twenty years later the baby gives birth to a great granddaughter. We now have the mom at age 60, the daughter at age 40, the granddaughter at age 20 and a new born. We now have three workers, but in seven years one will retire leaving just two with a third to begin in 13 years.

Birth Rates & Worker to Beneficiary Ratio

Not all those between age 20 and 65 work. About 80% of those age 20 to 65 work. Mom's take time off to deliver babies, layoffs, college, switching jobs, illness, early retirement, part time work and more affect how many work. This is higher than in the 30's and 40's, but still less than 100%.

The question is can we maintain the critical worker to beneficiary ratio of 3.3 to 1 with low birth rates? This ratio requires a birth rate of 3.57 births per woman. With a birth rate of 2.1, the worker to beneficiary ratio must fall well below 3.3 to 1 to about 2 to 1.

Life Expectancy

Life expectancy at full retirement age determines how much is needed to pay scheduled benefits. The longer a person collects benefits, the more costly it is and the higher the tax rate needed to pay these benefits.

A person who dies prior to age 16 will not pay social security taxes and will not collect social security benefits.

A person who dies prior to full retirement will not collect social security old age benefits.

This is why using life expectancy at birth is not valid. It is why using life expectancy at age 65 is important.

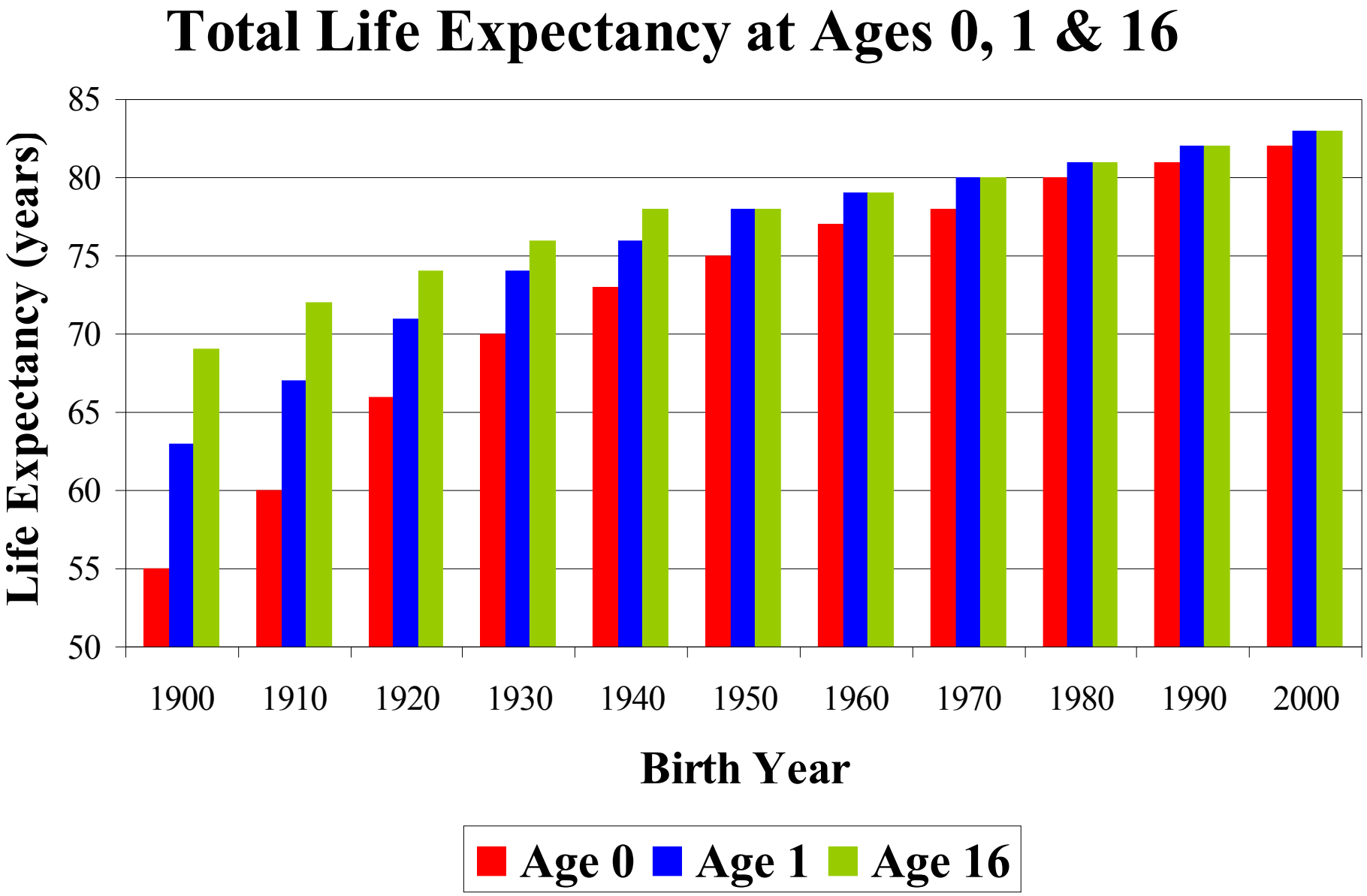
Life Expectancy

Infant mortality rates were high in 1900. This lead to low life expectancy at birth. However, at age one, the life expectancy jumps from 55 to 63. If the child lived to age 16, they could expect to live to 69.

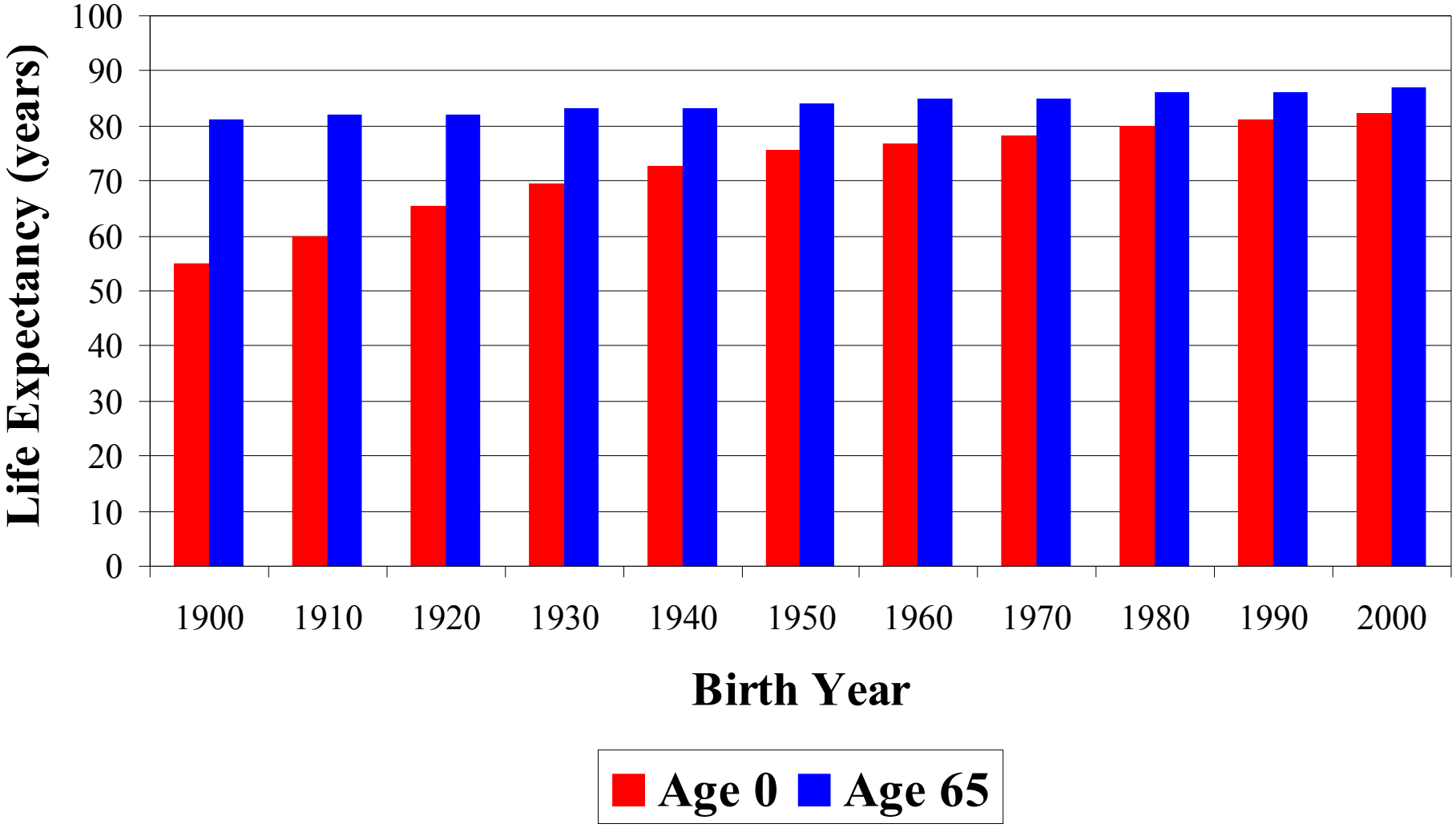
It is very misleading and irrelevant to use life expectancy at birth or under age 16.

The following tables show the life expectancy at specific ages by birth year.

Clearly life expectancy at birth is what has changed the most, but it also has negligible affect on Social Security.


Total Life Expectancy at Ages 0, 1 & 16
Life Expectancy (years)
85
80
75
70
65
60
55
50
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
Birth Year
Age 0
Age 1
Age 16

Total Life Expectancy at Ages 0 & 65



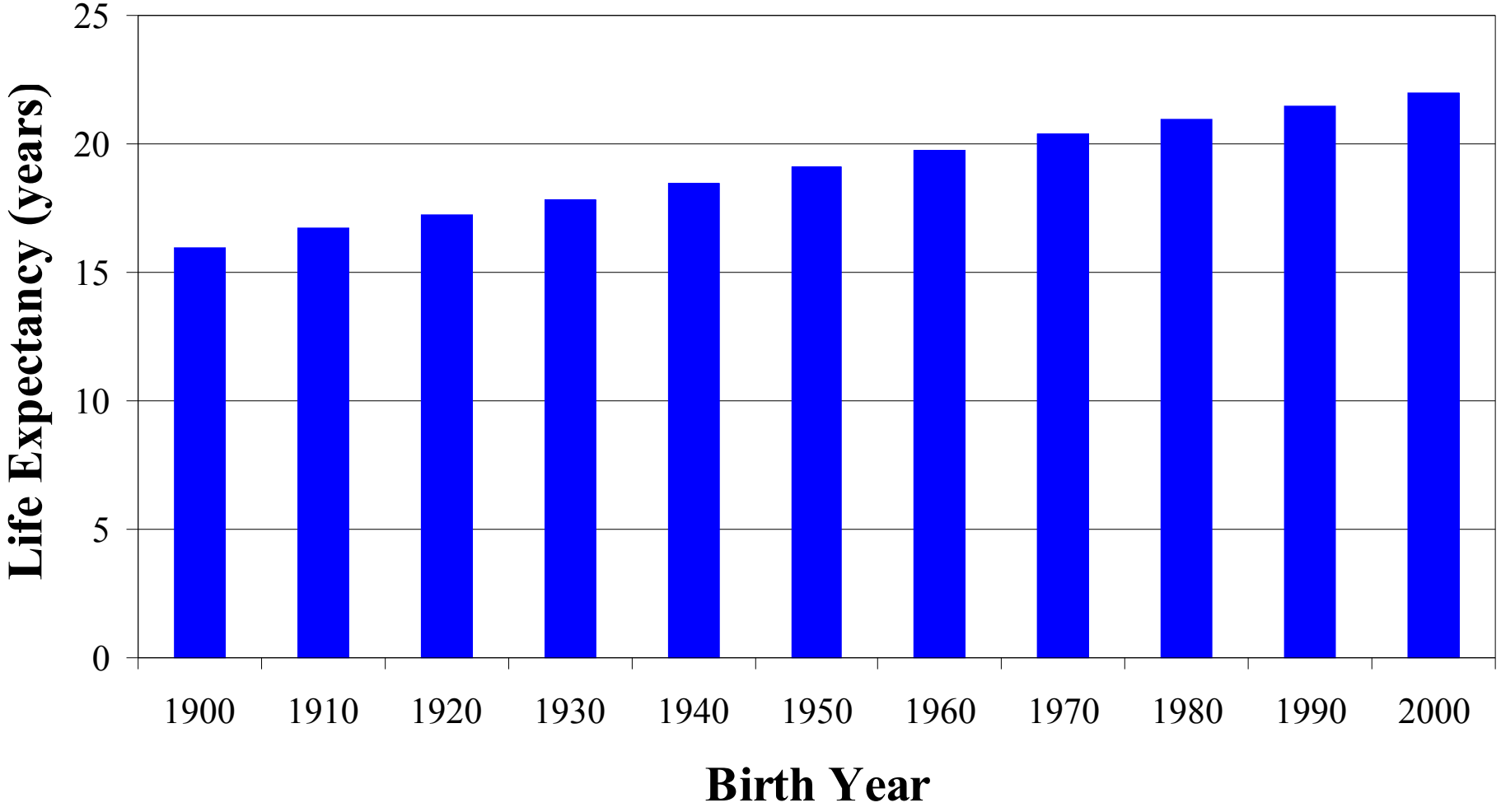
Life Expectancy at age 65

Between 1900 and 2000 the life expectancy at age 65 increased from 16 to 22 years. This increase took place over 100 years.

A six year increase over 100 years breaks down to three years per 50 years or 1.5 years per 25 years and so on.

This chart gives a broad overview of what has happened, but sensitivity is lacking.

Life Expectancy at Age 65



Rate of Change

Rate of change is a good measure of direction and or trend. If something is slowing down, then we can more accurately predict where it will be some time in the future. If something is irradict, predictability becomes more difficult.

How predictable is life expectancy?

A person born in 1910 could expect to live 180 days longer than a baby born in 1909. Those born in 1910 could expect to live 1,800 days longer than those born in 1900 at birth. But these rates are measured at birth.

Rate of Change in Life Expectancy

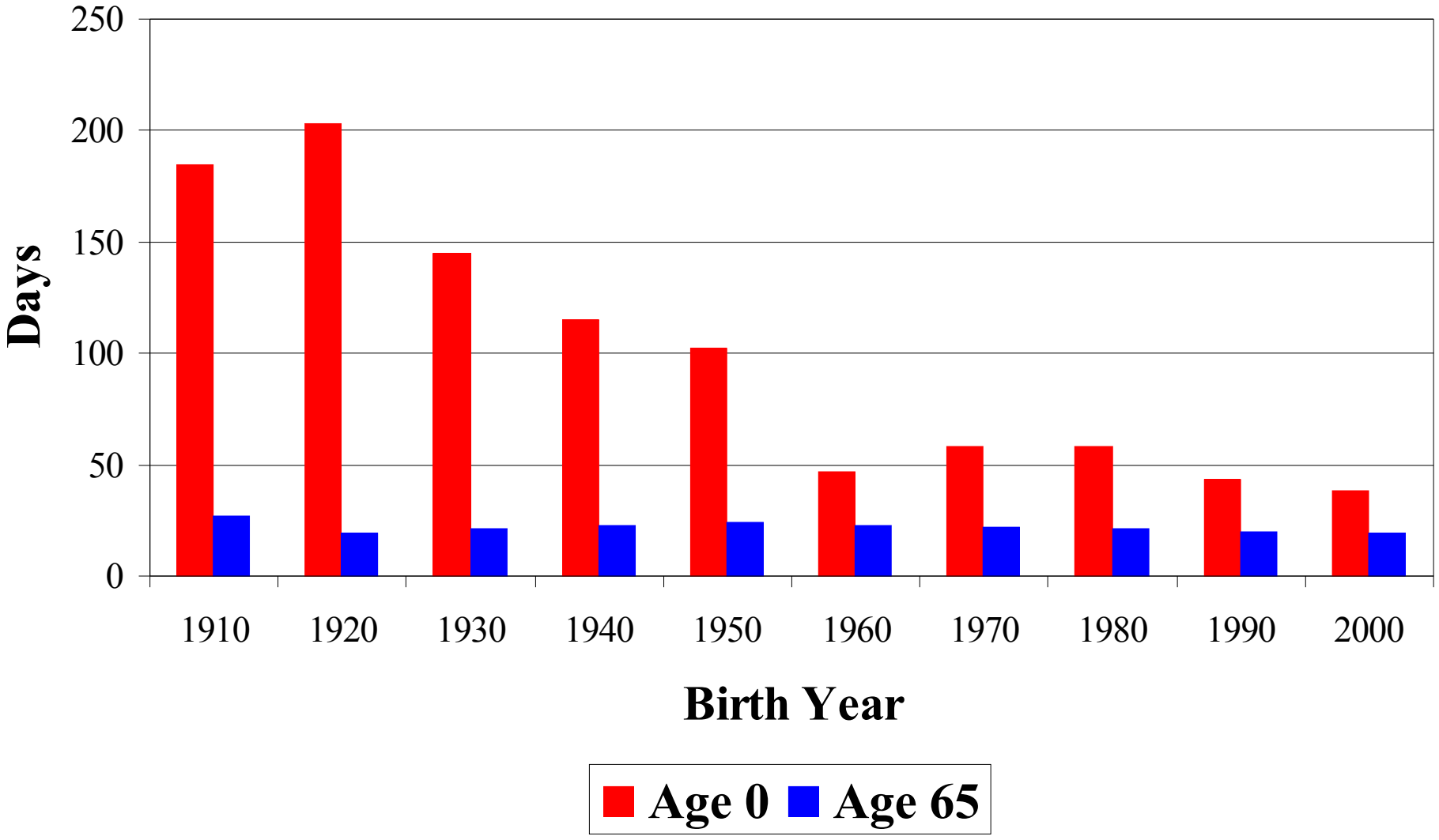
When measured at age 65, a baby born in 1910 could expect to live about 250 days longer than a baby born in 1900, a considerably smaller change.

Those born in 2000 can expect to live just 18 days longer than a baby born in 1999 at age 67.

The largest rate of change took place between 1900 and 1940.

The rate of change is slowing and has been steadily and predictably declining for 100 years.

Rate of Change in Life Expectancy



- A baby born in 2000 can expect to live about 18 days longer than a baby born in 1999 at age 67.
- A baby born in 2000 can expect to live 20.47 years past age 67.
- Inflation is ten times larger in a single year! Its impact is more than 200 times that of increased life expectancy for each birth year.

$$\frac{19 \text{ days}}{(20.47 \text{ years} \times 365 \text{ days/year})} = \mathbf{0.25\%}$$

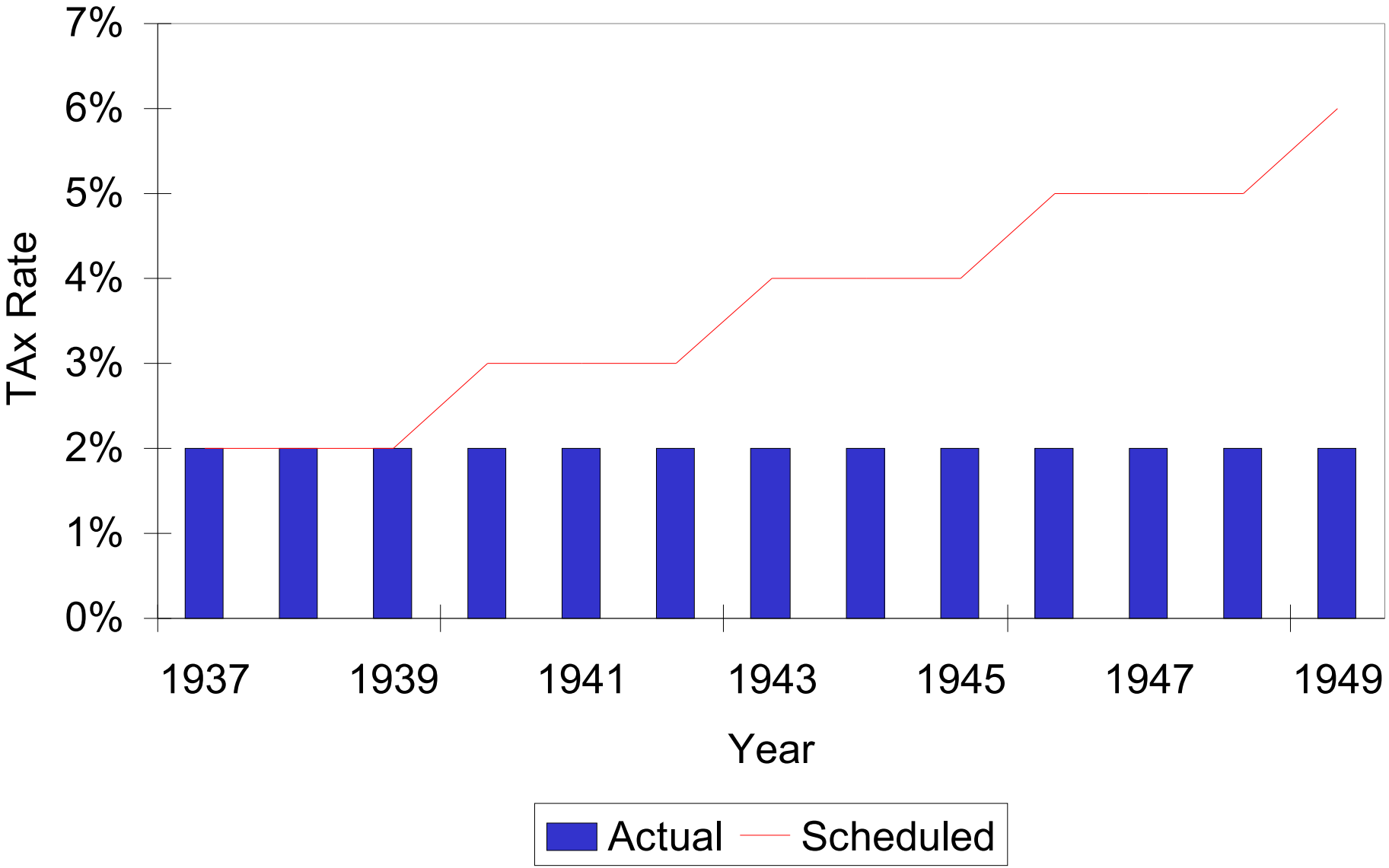
$$\frac{2.5\% \text{ inflation/year}}{0.25\% \text{ increased life expectancy}} = \mathbf{10}$$

Initial Tax Rate

The initial SS-OASI tax was legislated to increase by 1% every three years until it reached 6% in 1949. Congress in each year passed legislation to keep the payroll tax from increasing.

This led to further underfunding of the Social Security Program

Scheduled Vs Actual OASI Tax



Required Actuarial Tax

The actuarial tax rate is the tax rate needed based on how many years you will work, the benefit to be paid, the wages earned and the rate of return the taxes would earn in order to pay the legislated benefit.

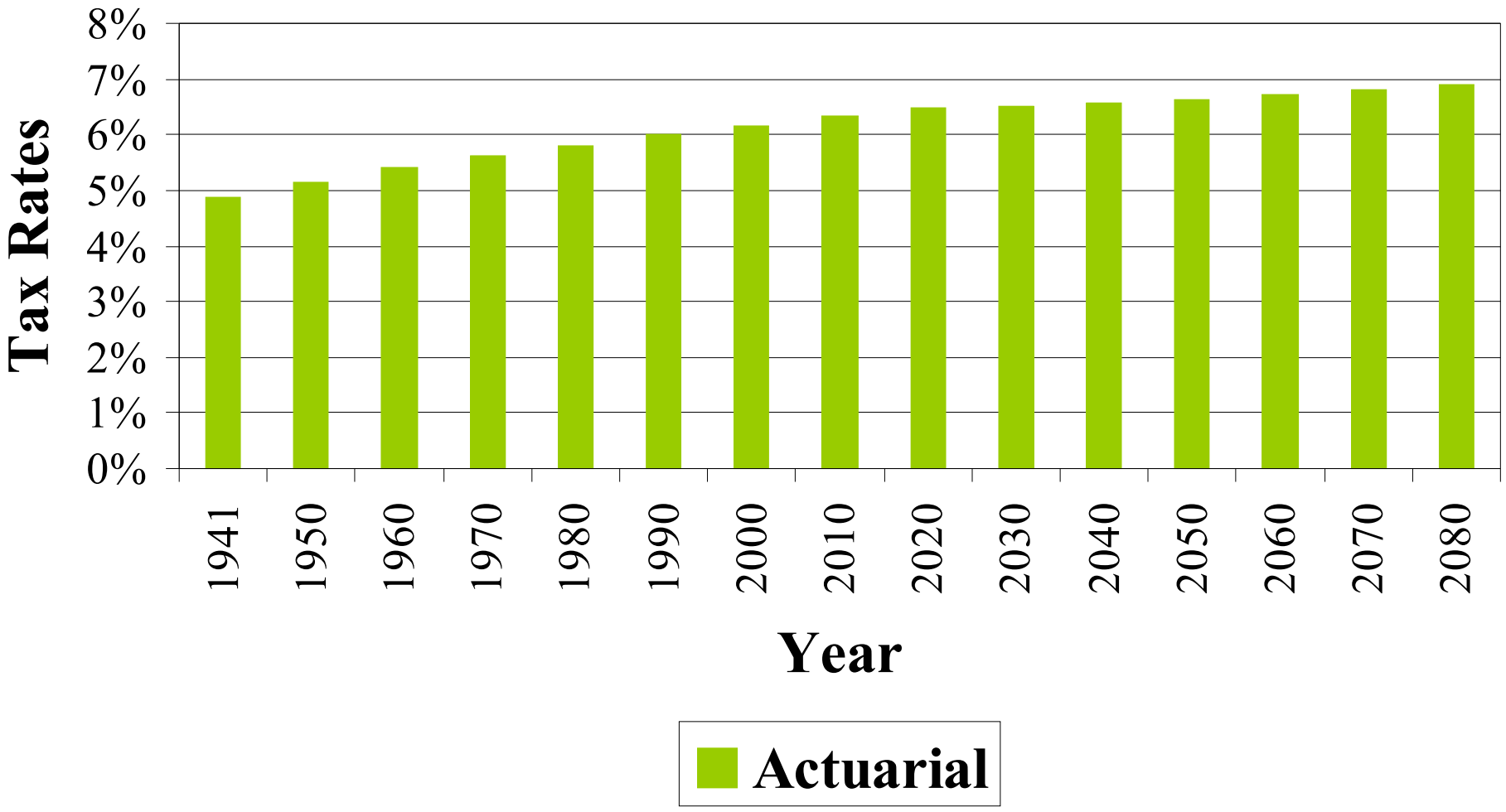
The next chart shows the actuarial tax rate needed based on a 21 year old and the year they would start work. They would retire at age 65.

Required Actuarial Tax

The actuarial tax rate increases very slowly every year. This is due to a slight increase in life expectancy at full retirement age each year as well as economic conditions such as inflation, US Treasury rates, and wage growth. This makes life simple and predictable.

Actuarial Tax Rates vs Time

at age 21 by birth year



Required Pay-go Tax

The Pay-go tax rate is that needed to fund current Social Security benefits using current social security taxes exclusively. It is not necessarily the legislated social security tax. This tax is dependent soley on the number for workers to beneficiaries and the benefit to be paid. With this method of payment there is no relationship between taxes paid and benefits paid.

$$\text{Pay-go tax rate} = \frac{\text{Targeted Benefit}}{\text{Number of Workers}}$$

Critical Worker to Beneficiary Ratio

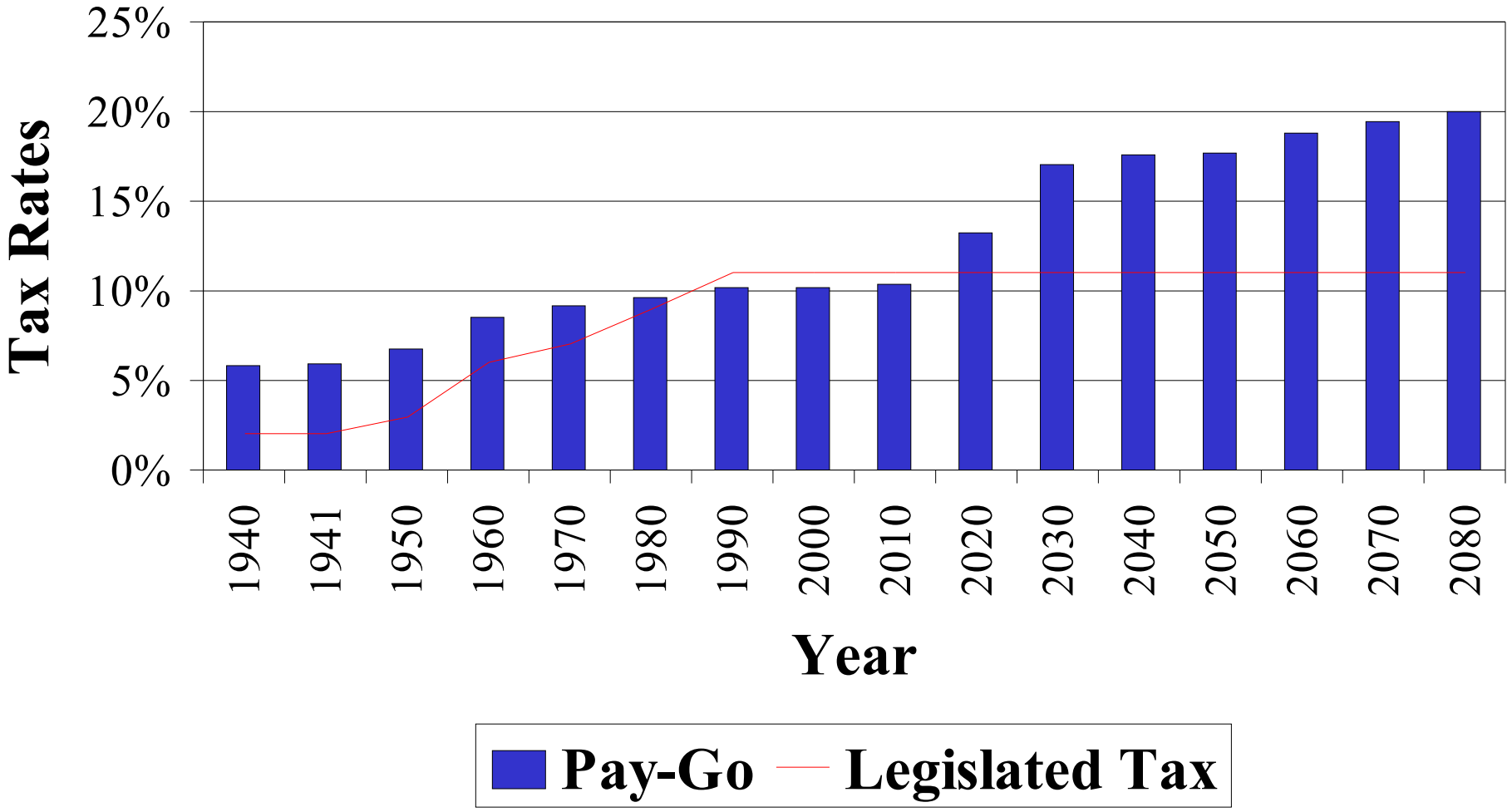
There is a critical worker to beneficiary ratio. Any value less than this ratio requires the tax rate to increase or the benefit to be cut. If you know the target benefit as a percent of wages and the tax rate, you can calculate the number of workers it will take contributing this tax to pay the target benefit

The legislated tax rate collected since 1937 is clearly too low up till 1983. It becomes too low again 2018.

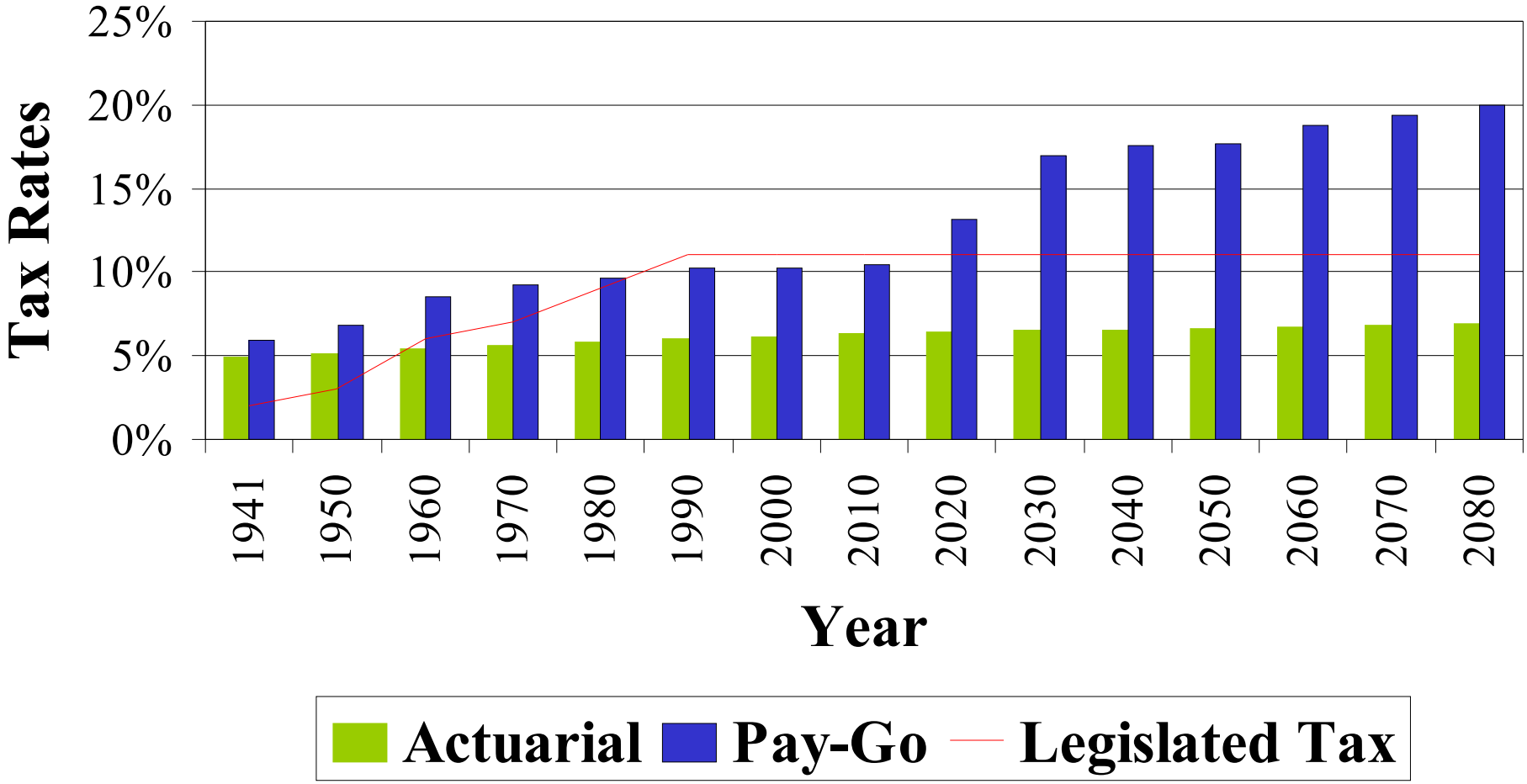
$$\text{Critical Number of Workers} = \frac{\text{Target Benefit}}{\text{Pay-go tax rate}}$$

Pay-Go Tax Rates vs Time

Based on Worker to Age 65 and Over Ratio



Actuarial & Pay-Go Tax Rates vs Time



Required Actuarial Tax for Older Workers at Inception

The actuarial tax rate required when a program first starts up increases as the length of time to contribute decreases.

It is no different than a person waiting to start saving at age 45. The later you wait, the higher your rate of savings must be to reach your original goal.

The actuarial tax rate for those who begin working at age 45 should have been 16%, but in fact was 2%. This tax rate was 8 times too little resulting in massive unfunded liabilities.

Required Tax Rate By Age

1937

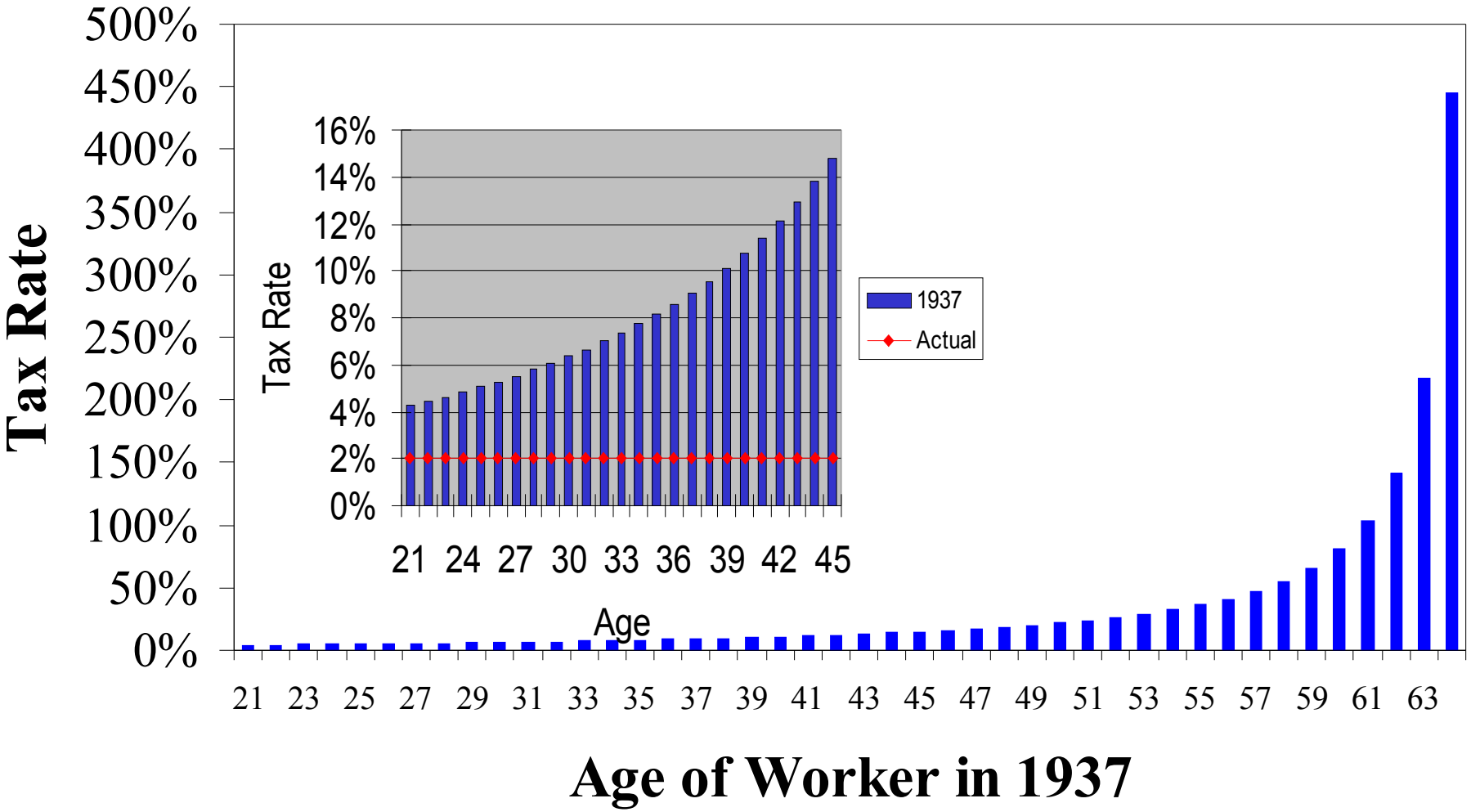
Social Security began with many different birth years paying social security taxes for the very first time. Some workers had many years yet to pay while others had just a few years.

Based on the benefit that was to be paid, each birth year theoretically would have had their own unique tax rate. Had this been done, the unfunded liability we have today would not exist.

The tax rate based on the age a worker would first begin paying social security taxes is found on the next page.

Actuarial Tax Rate

1937



Early Solutions

1950

It became evident that social security was not going to be able to pay scheduled benefits. To solve this problem starting in 1950 they raised taxes, increased the base rate substantially and enrolled previously non covered groups of workers under Social Security.

Many of these newly covered workers were past age 40. With a tax rate well below that actuarially required to be sound, it created very large unfunded liabilities for this group as well as all young workers. **In essence they duplicated and magnified the original problem of 1937. They solved nothing!**

Compound the Problem

1957

In 1957 Social Security added a new benefit that covered the death of a worker or who became disabled.

In the event of death, a benefit would be paid to the spouse if there were children under age 21 living at home. This was changed to age 18 in 1983.

This program pays a benefit if there is a loss, unlike the old age program that pays a benefit based on age alone.

Separate Programs

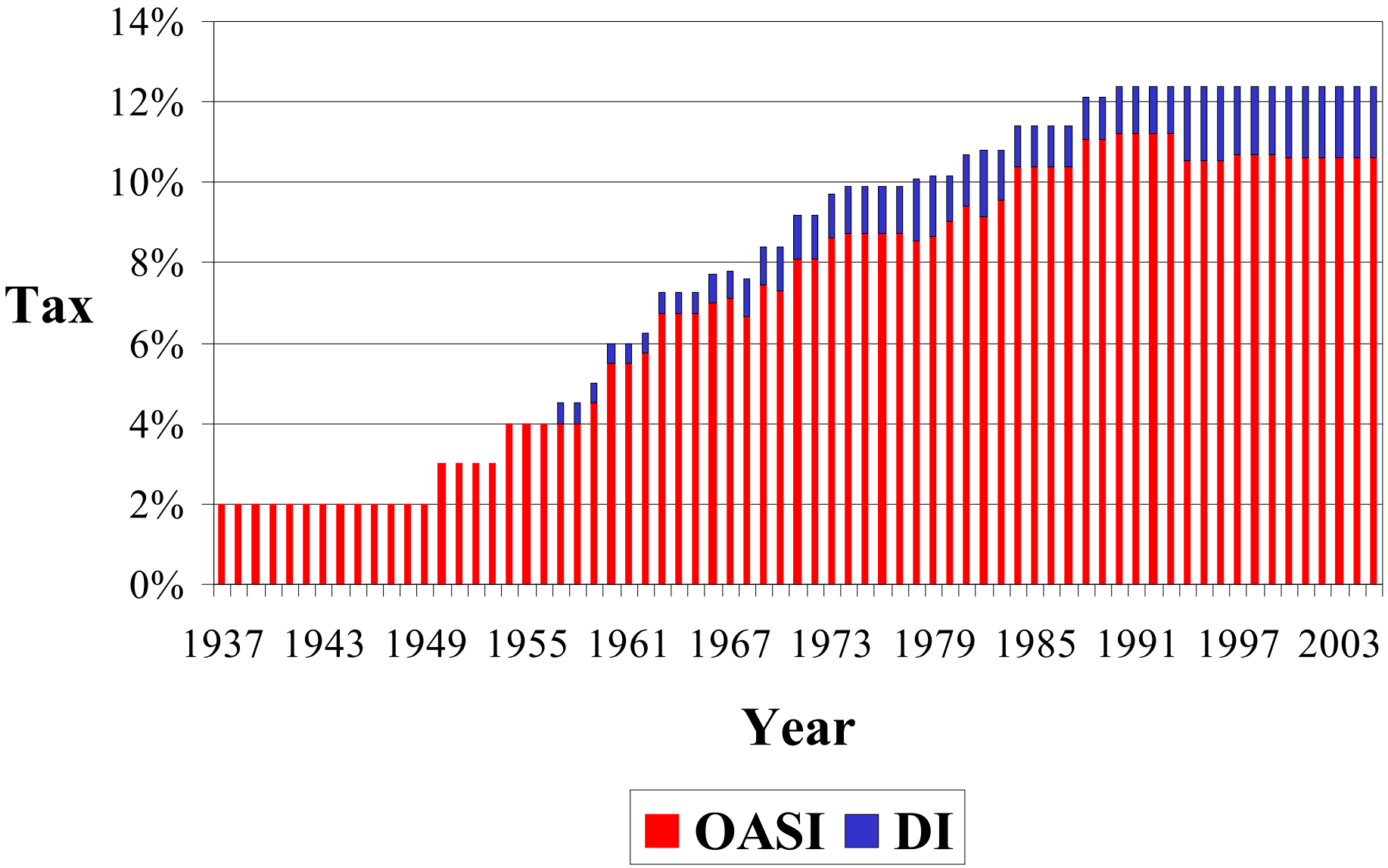
Social Security has two programs. Each has a dedicated tax, trust fund and different criteria for benefits.

OASI – Old Age Survivors Insurance provides benefits to those age 62 and over.

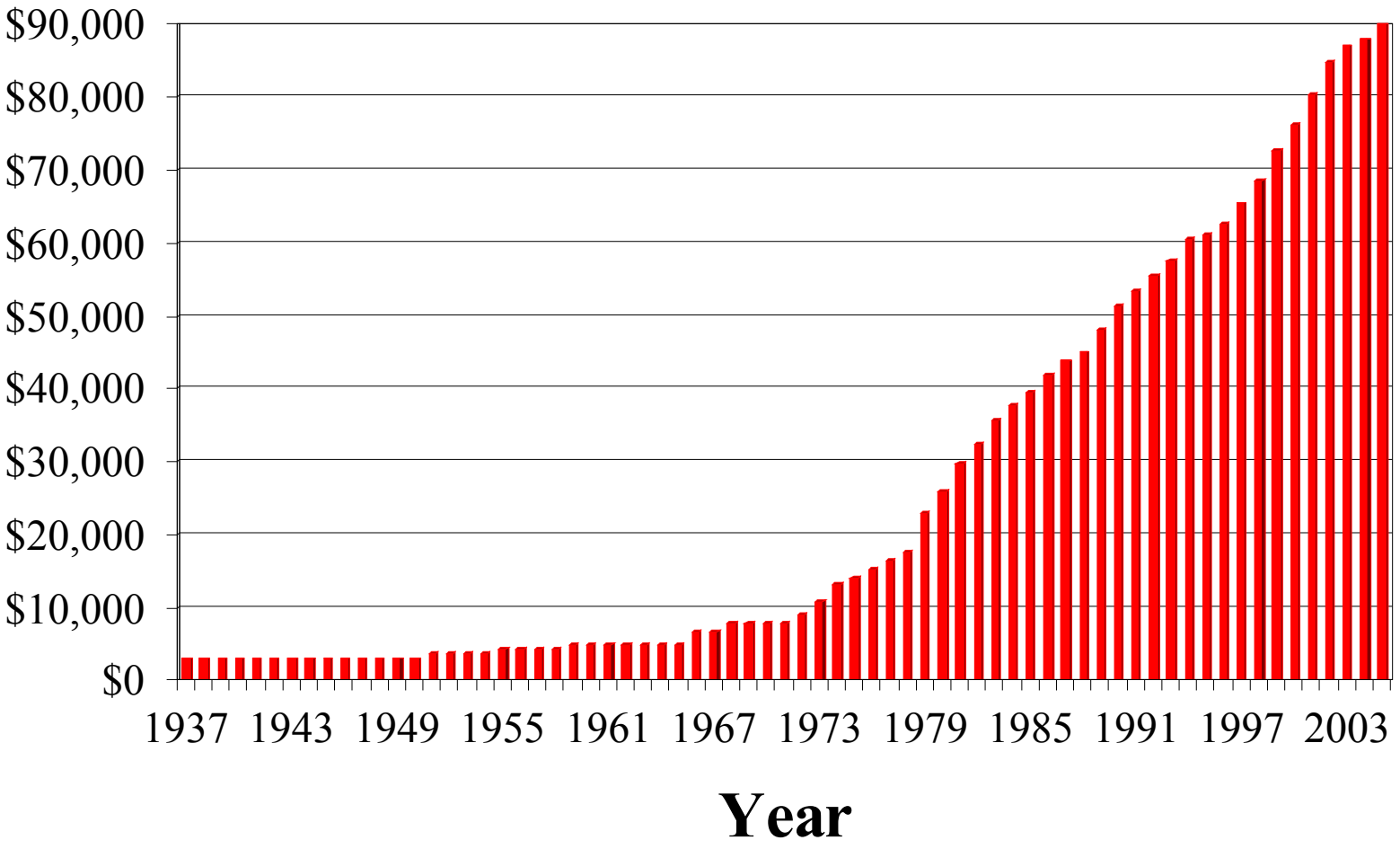
DI- Disability Insurance provides benefits to widows and dependents and disabled and dependents.

The problems facing the DI program are not severe.

Social Security Tax By Year



Historical Social Security Wage Base



Types of Accounting

There are two types of surpluses: Cash flow and accrual.

Under cash flow accounting, Social Security does not add in the present value cost of future promised benefits earned in that year. This would be similar to an individual buying items on a credit card, but not counting them as an expense until you make a payment to the credit card issuer.

Under accrual accounting, the present value of earned benefits every year are listed as a cost. The funds need to be set aside to grow so that at retirement the funds are there to pay the promised benefits.

The Consequences

On a cash flow basis, Social Security ran a surplus of $51 Billion in 2004. However, based on accrual accounting it has never once run a surplus. In 2004 workers earned about $300 Billion in new benefits, resulting in a accrual deficit of $249 Billion.

After 69 years of never once running an acrual surplus, Social Security now has promised $16 Trillion in present value benefits, but has just $1.65 Trillion in assets.

Private pension plans are not allowed to use cash flow basis accounting, but by law must use accrual accounting.

Social Security Cash Flow

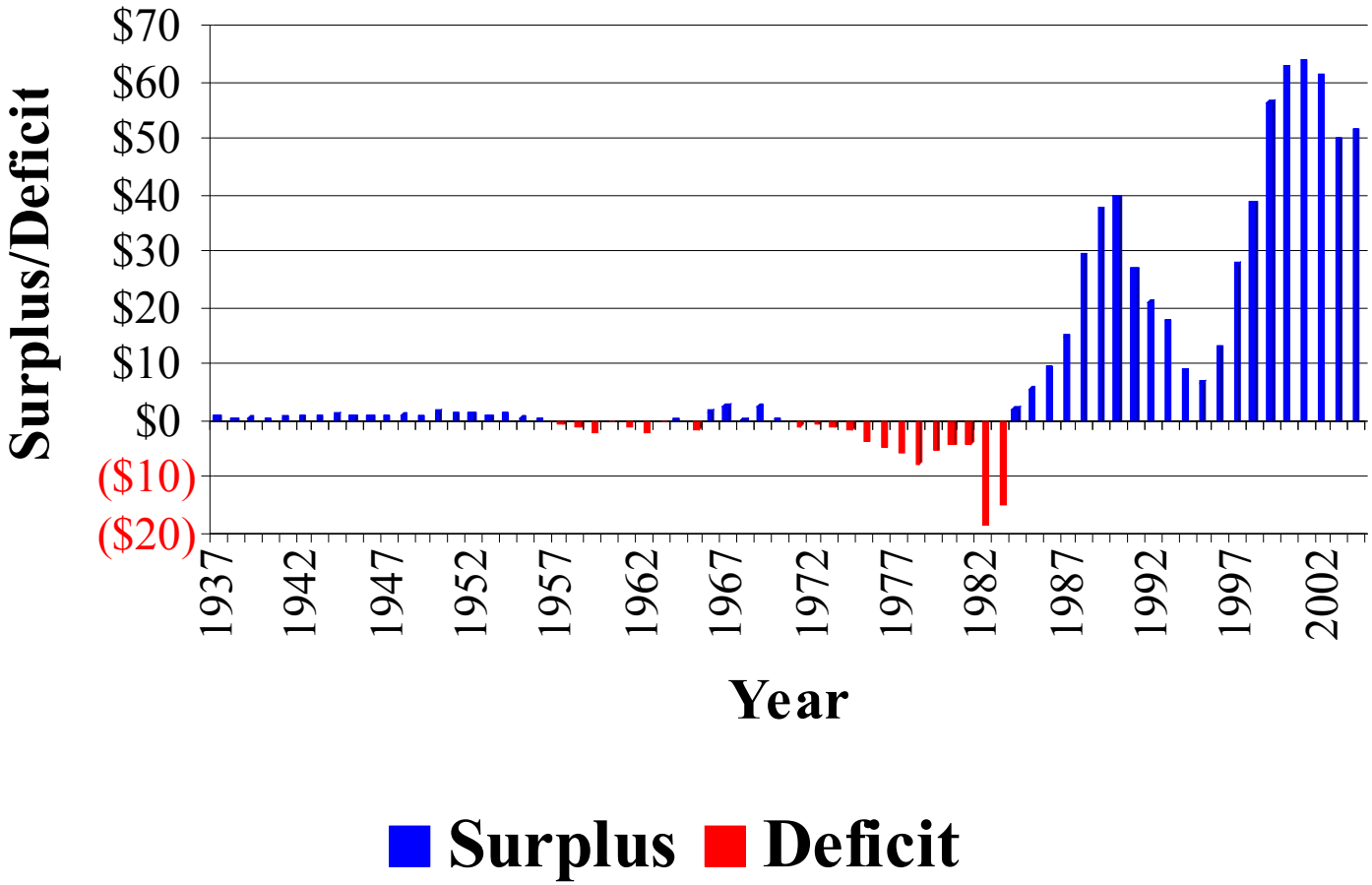
Between 1957 and 1965 SS-OASI expenses exceeded its tax revenues.

Between 1971 and 1983 SS-OASI expenses once again exceeded its tax revenues In 1983 SS-OASI had to borrow $11 Billion from the Medicare and SS-DI trust funds to pay benefits.

When ever the actual tax rate is less than the actuarial tax rate required, a short fall will always result at some later date.

Yearly SS-OASI Surplus/Deficit

Cash Flow Accounting



Benefit Determination

Initially the SS-OASI benefit was determined by congress. This became a political nightmare. It became emotional with periodic increases in benefits. These benefit increases outstripped inflation by over 50% by 1970.

Congress passed legislation creating a wage indexed benefit. This made the benefit calculation fair. However, there is no relationship between taxes paid and the worker's benefit. This is and always has been the root cause of Social Security's problem

Wage Indexing

Wage indexing adjusts previous years wages by the change in the US Wage index in the year they were earned and the year you turn 60.

Let us say you earned $2,000 in 1951. The US wage index in 1951 was $2,973. Assuming you turn 60 in 1991, the US wage index in 1991 was $21,812.

Clearly $21,812 is a lot more than the $2,000 earned in 1951. What is done is to index your $2,000 by the change. The change is $21,812 divided by $2,973 or 7.79. The resulting 1951 index wage is $15,584.

Example

Let us say you earned $2,000 in 1951. The US wage index in 1951 was $2,973. Assuming you turn 60 in 1991, the US wage index in 1991 was $21,812.

Clearly $21,812 is a lot more than the $2,000 earned in 1951. What is done is to index your $2,000 by the change.

$$\text{1951 Replacement Factor} = \frac{\$21{,}812}{\$2{,}973} = 7.79$$

1951 indexed wage = 7.79 x $2,000

1951 indexed wage = $15,584

Calculation

The calculation uses the highest 35 years of indexed wages. These 35 highest wages are then averaged to to determine the average monthly indexed wage.

Two bend points, similar to the tax tables determine your benefit. Your wages up to the first bend point amount is replaced at 90 cents on the dollar. Those wages between the first and second bend point are replaced at 32 cents on the dollar. Any wages that are greater than the second bend point are replaced at 15 cents on the dollar. Add up all three portions to obtain the initial SS-OASI benefit.

Bend Points

The bend points for those who turn 62 in 2005 were $627 and $3,779. Let us say the worker had a monthly indexed wage of $4,000 ($48,000 per year).

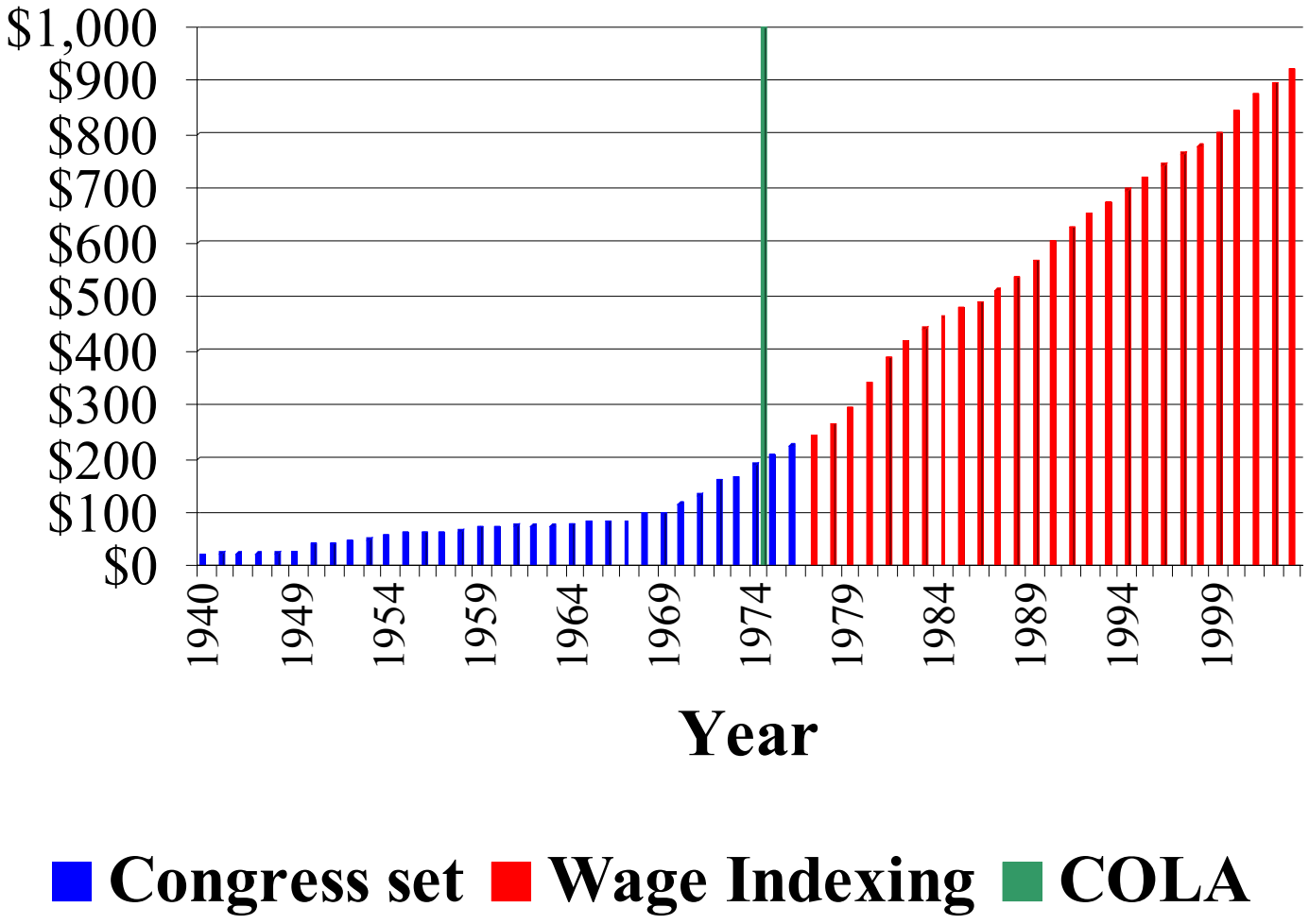
The first $627 is replaced at 90%. This is $563.30

The amount between the first and second bend points is $3,152. This is replaced at 32%. This is $1,008.64

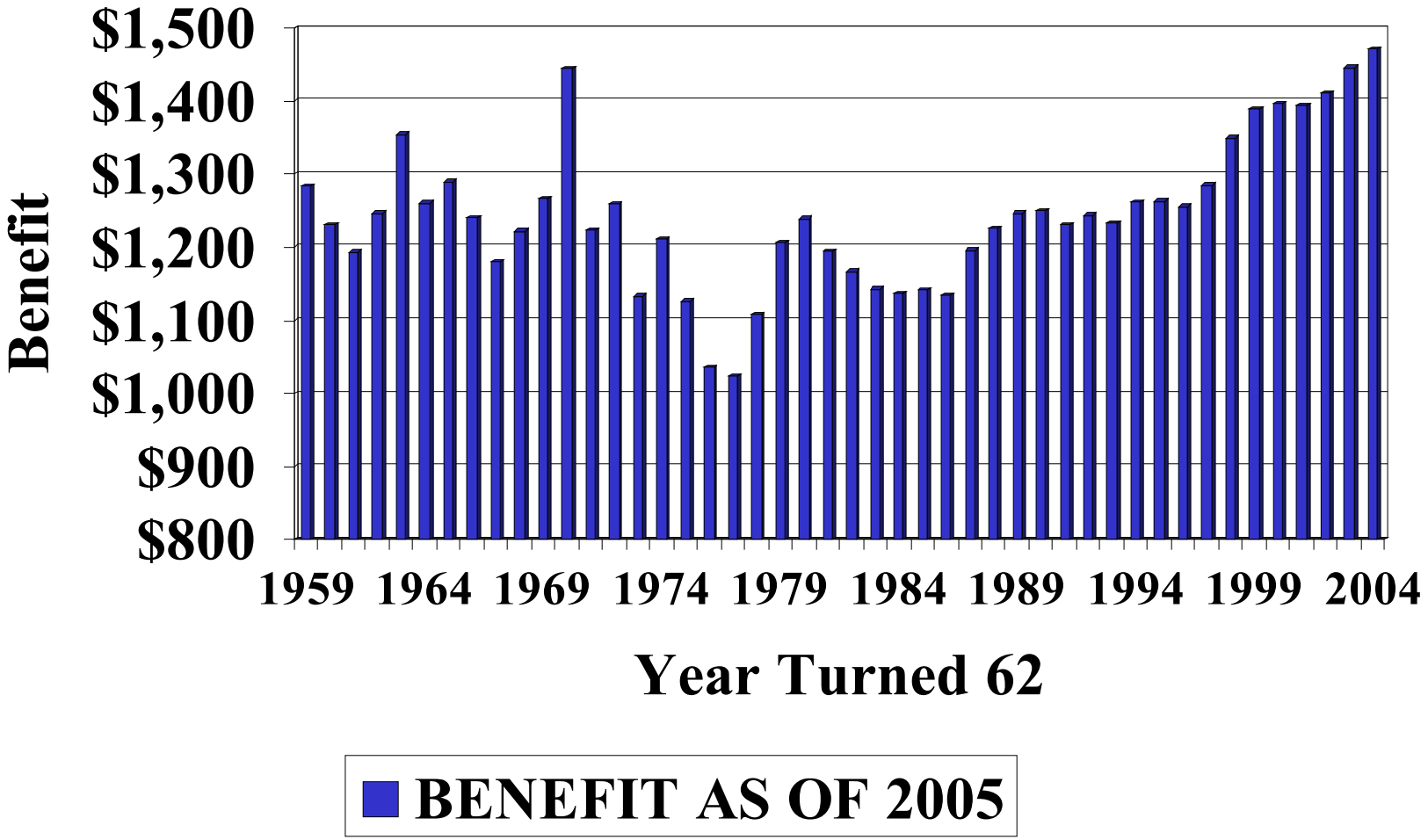
The amount of wages exceeding the second bend point is $221 and is replaced at 15%. This is $33.15

You add all three together for a total benefit of $1,606.09

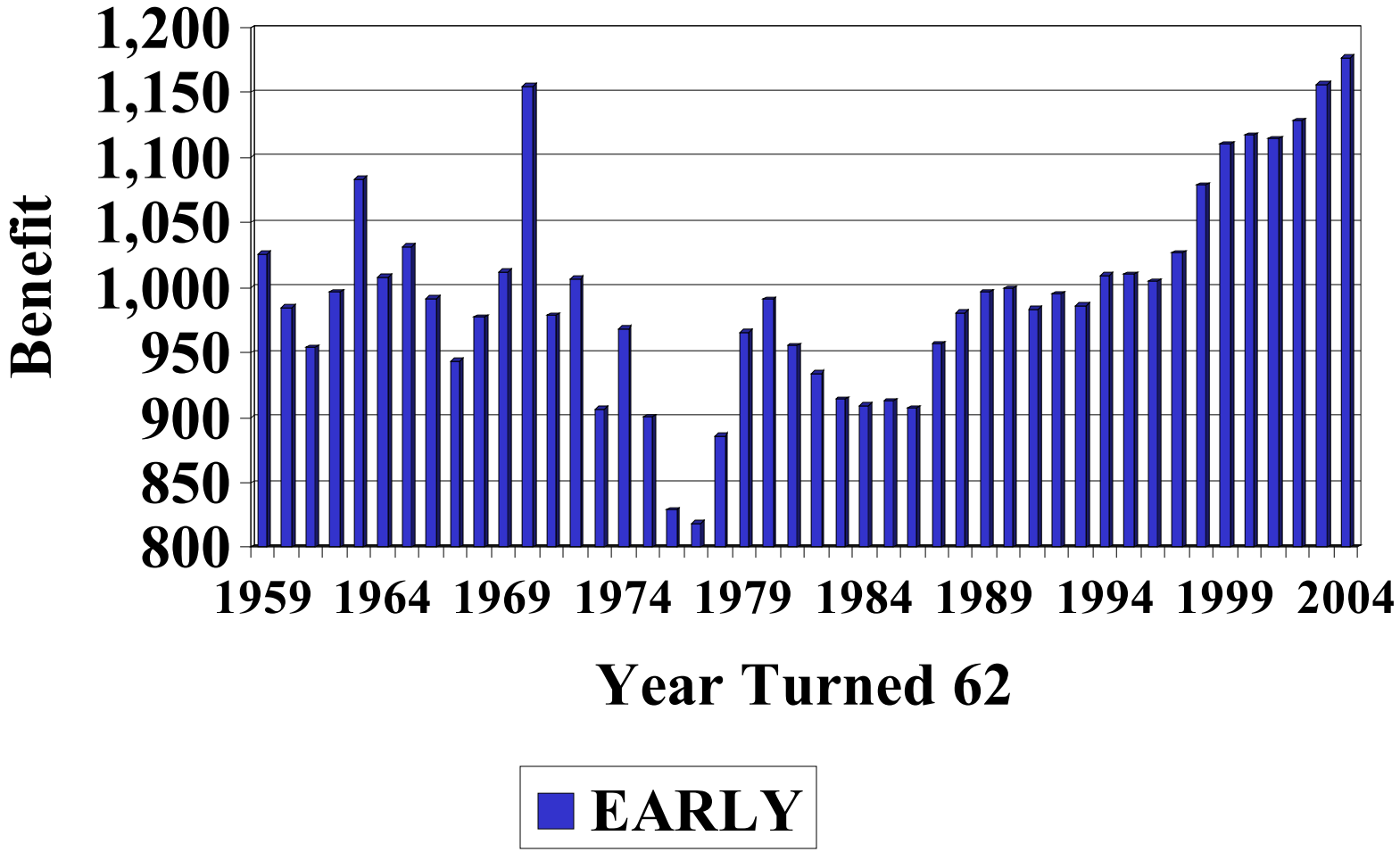
Average Monthly Old Age Benefit



Benefit at Full Age Retirement 2005



Benefit For Early Retirement - 2005



Fairness

Each cohort should pay their fair share in support of Social Security. Fairness would require that for each $1 in benefits paid, the cohort paid an equivalent combined $1 in tax and credited interest.

As Altmeyer and Ball both stated, the initial benefits paid far exceeded payments. Just how much did they exceed benefits can be seen on the following charts.

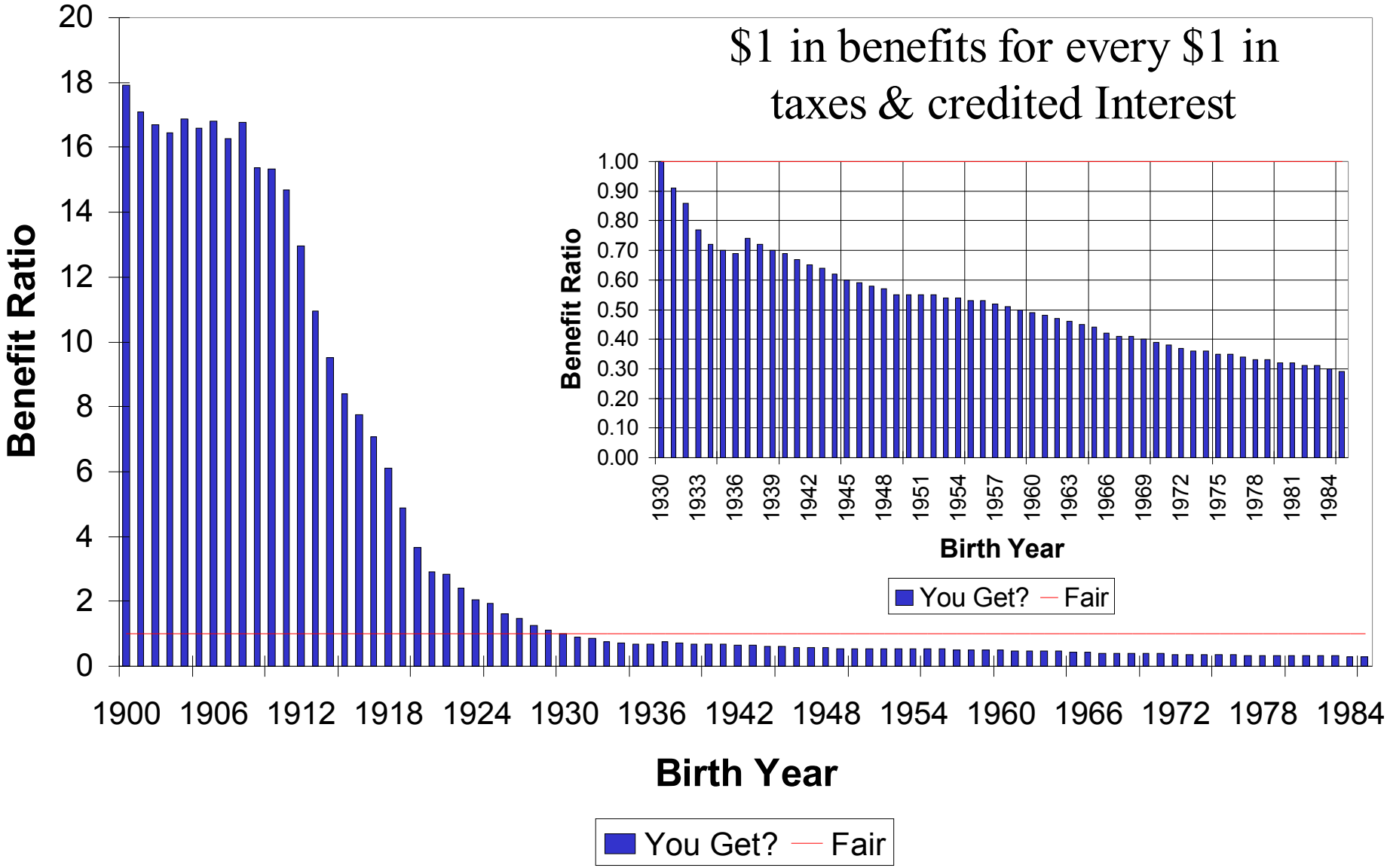
Clearly those born prior to 1930 received great deals, but at the expense of later cohorts.

Fairness

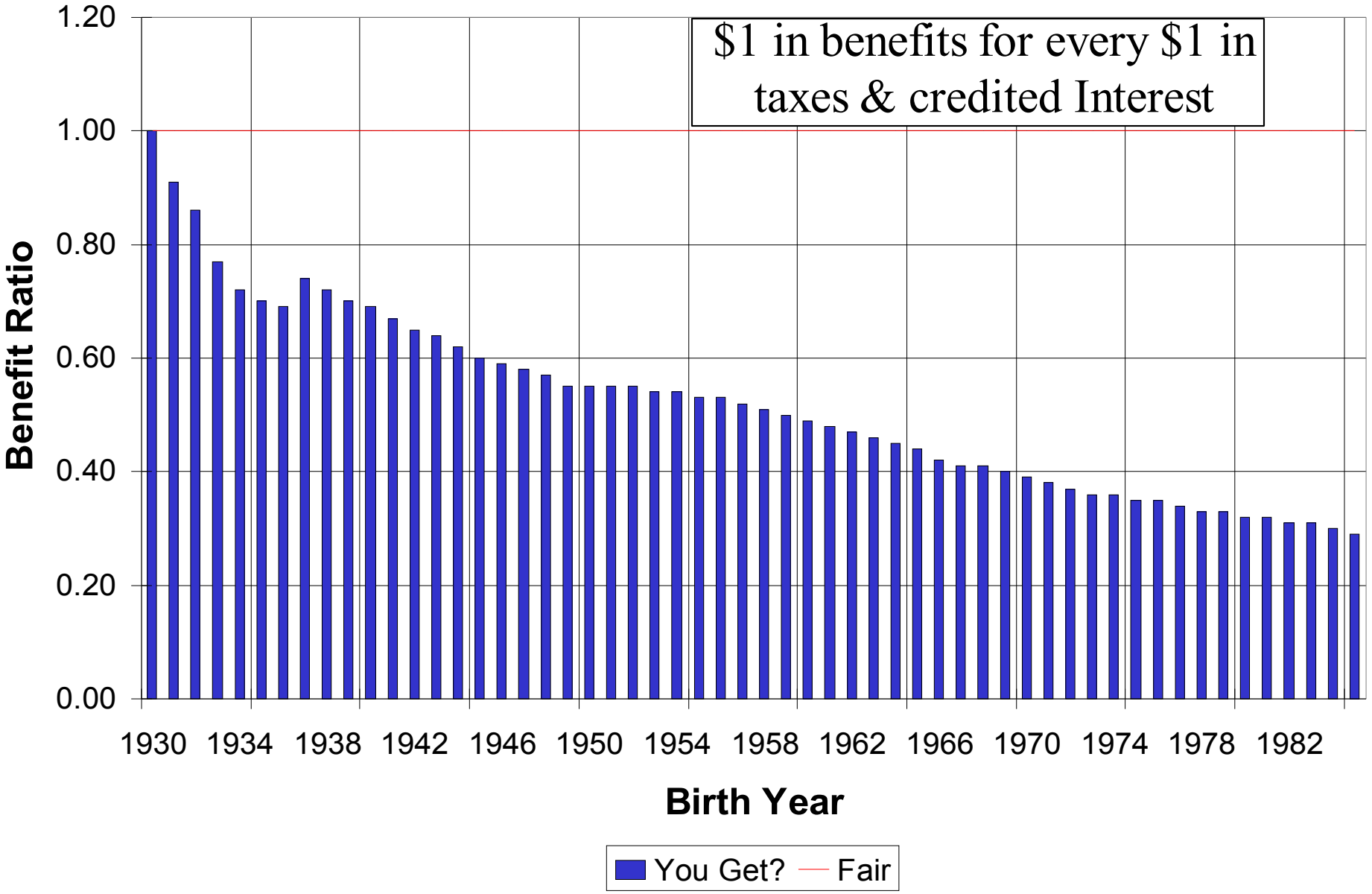
A program that pays those born after 1985 just 29 cents back for each dollar of taxes and credited interest is not fair.

Americans want value for their dollar. You can buy a value meal at about any fast food chain consisting of a sandwich, fries and drink for about $4.00. If Social Security were a value meal, it would cost $13.79.

Social Security's Fairness



Social Security's Fairness



Unfunded Liability

The unfunded liability is a term to identify the present value shortfall in assets needed to pay 100% of scheduled or promised SS-OASI benefits.

Currently a worker who retirees at age 65 making the average wage will receive a monthly benefit adjusted by inflation for about 20 years. The equivalent up front balance needed to pay this benefit is about $180,000 earning the US Treasury Rate.

By adding up all workers accrualed benefits to date, we can calculate the total value of assets needed.

Unfunded Liability

There are about 155 million workers who have ten years worth of credited work history. Based on this, the present value of promised benefits is about $16.5 Trillion. Currently SS-OASI has $1.65 Trillion in assets. This leaves a present value unfunded liability of $15 Trillion.

As workers pay into SS-OASI each year, they accrual additional benefits, thereby increasing Social Security's liability.

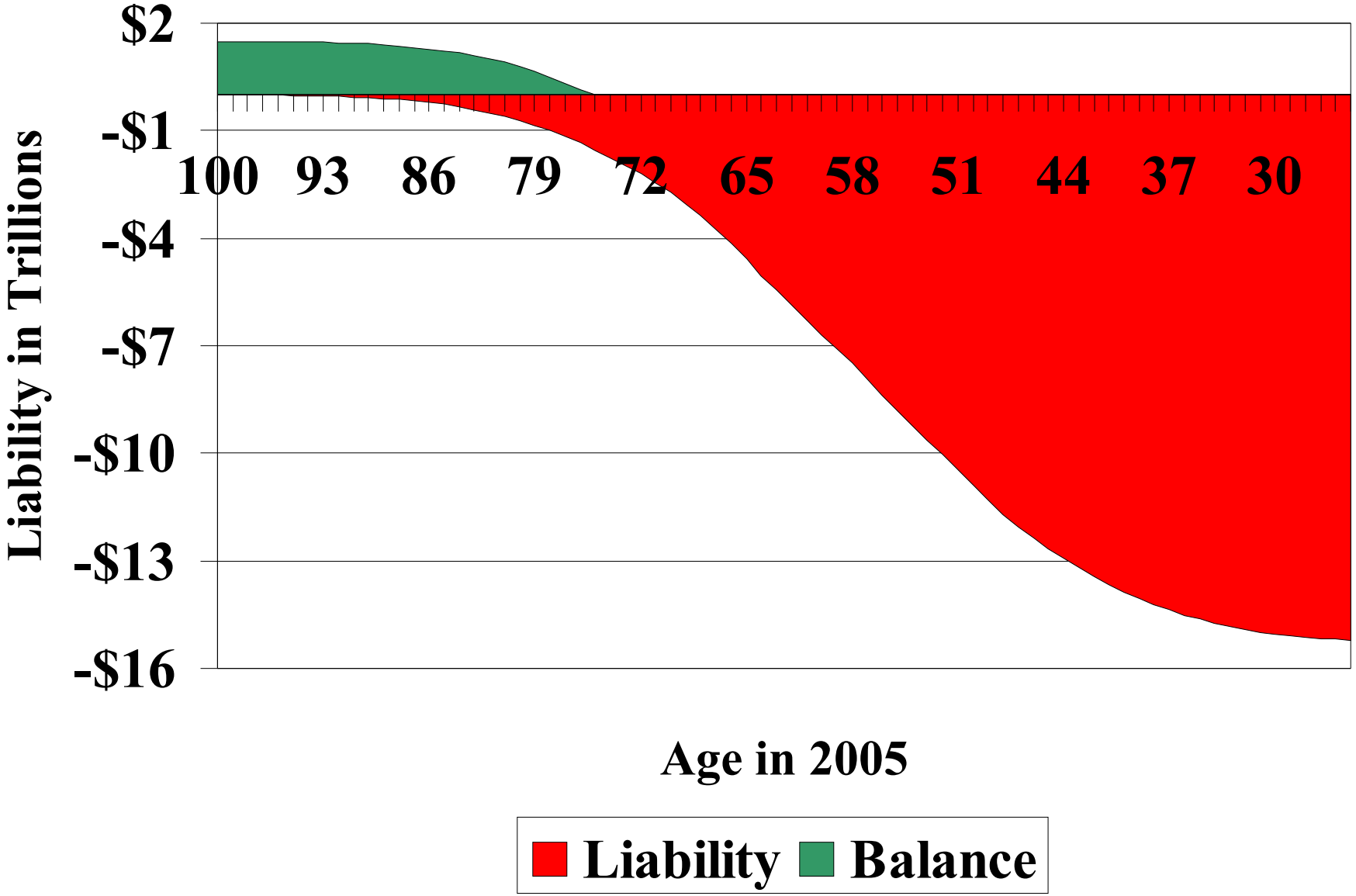
Unfunded Liability

The following chart shows a birth cohort's share of the unfunded liability by age as if the fund were to pay benefits only to those that age and older.

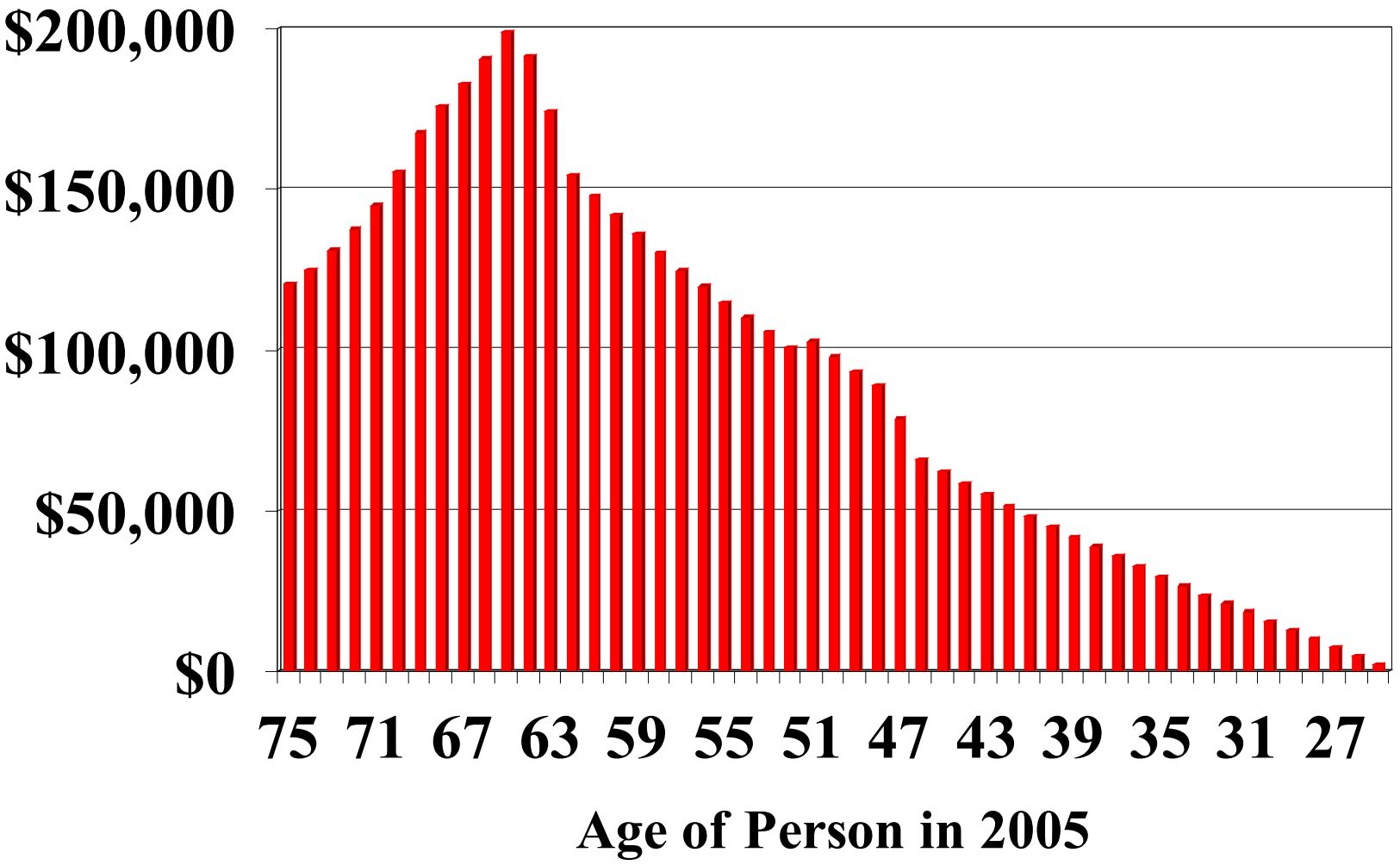
For example, the fund has enough assets to pay scheduled benefits to all over age 88 with no additional taxes. However, to pay those who are age 65 and over the shortfall is close to $5 Trillion.

To pay those 45 and over, the present value shortfall is about $13 Trillion. Clearly the younger you are, the less share of the liability is yours. This is because their accrualed benefits are very small.

Unfunded liability by Age



Share of Unfunded Liability by Age



Blue Book Value

There are blue book values for cars based on age and make, so why not a blue book value for Social Security? The following tables show the blue book value of Social Security based on a workers age today.

The value of social security's benefit is based strictly on a workers own wages earned, not taxes paid. Calculating the intitial benefit and the taxes yet to be paid can be done extremely accurately.

Subtracting the taxes remaining to be paid from the value of the social security benefit is the blue book value.

Present Value

The present value of any cash flow can be calculated. For example a person who sets aside $1,200 a year earning 5.5% would have 40 years later $163,920. A lump sum total of $19,255 earning the same rate would grow to $163,920 in 40 years. The present value is equivalent to the lump sum.

An identical calculation can be done for Social Security. The longer a person has to wait for drawing benefits, the lower the present value of this cash flow. The longer the period yet to pay taxes, the larger the present value of taxes yet to be paid.

Young Vs Old

This blue book value analysis does not include any taxes that have been paid. It simply compares the remaining taxes yet to be paid versus the benefit to be received. Is the benefit worth the remaining cost?

An older worker has fewer years left to work and pay taxes. The cost to them in terms of additional taxes is low, while the present value of their Social Security benefit is high.

A young worker has more years to pay taxes while a longer waiting period to receive benefits. Low present value benefit, high present value of taxes.

Scheduled Vs Payable Benefit

Social Security benefits by law are not guaranteed Congress reserved the right to change or repeal any and all portions of the Social Security act without liability.

In 1984 congress passed legislation prohibiting Social Security from borrowing any money and using general revenues to pay social security benefits.

Scheduled benefits are those that are promised under current law, but may not have the revenues to pay them.

Payable benefits are those that can be paid. In 2041 it is projected 73% of scheduled benefits can be paid.

Social Security's Blue Book Value for 21 year old

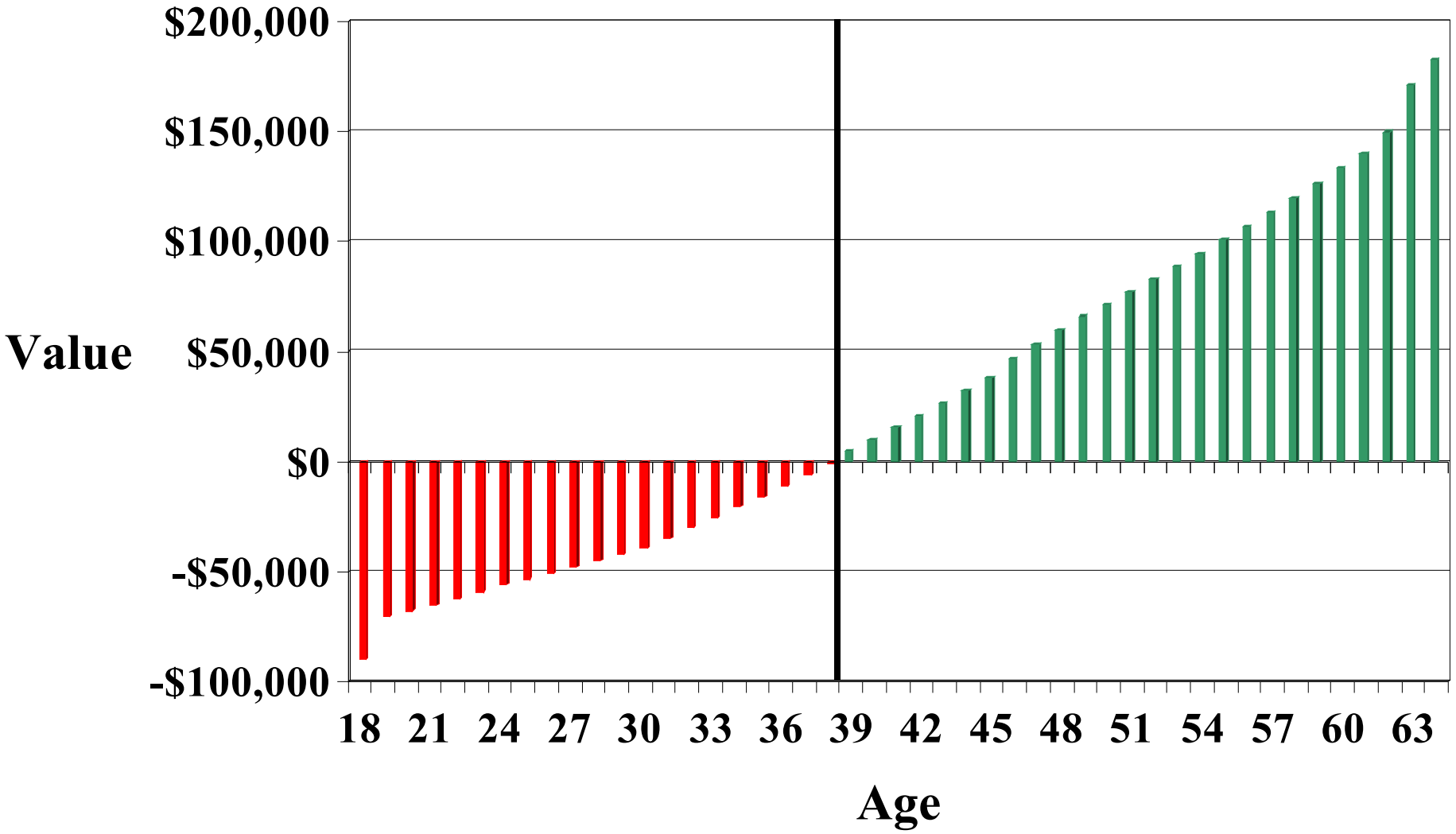
At age 21, a worker making $20,000 ($9.61/hour)

- Will pay $65,064 in present value taxes.
- Their present value of Old Age Social Security benefit is $41,171.
- Blue Book Value = Value of Benefit – Value of Taxes
- Blue book value scheduled benefit = **($23,893)**
- Blue book value payable benefit = **($33,194)**

Social security has stated they can pay 73% of scheduled benefits decreasing to 65% by 2065.

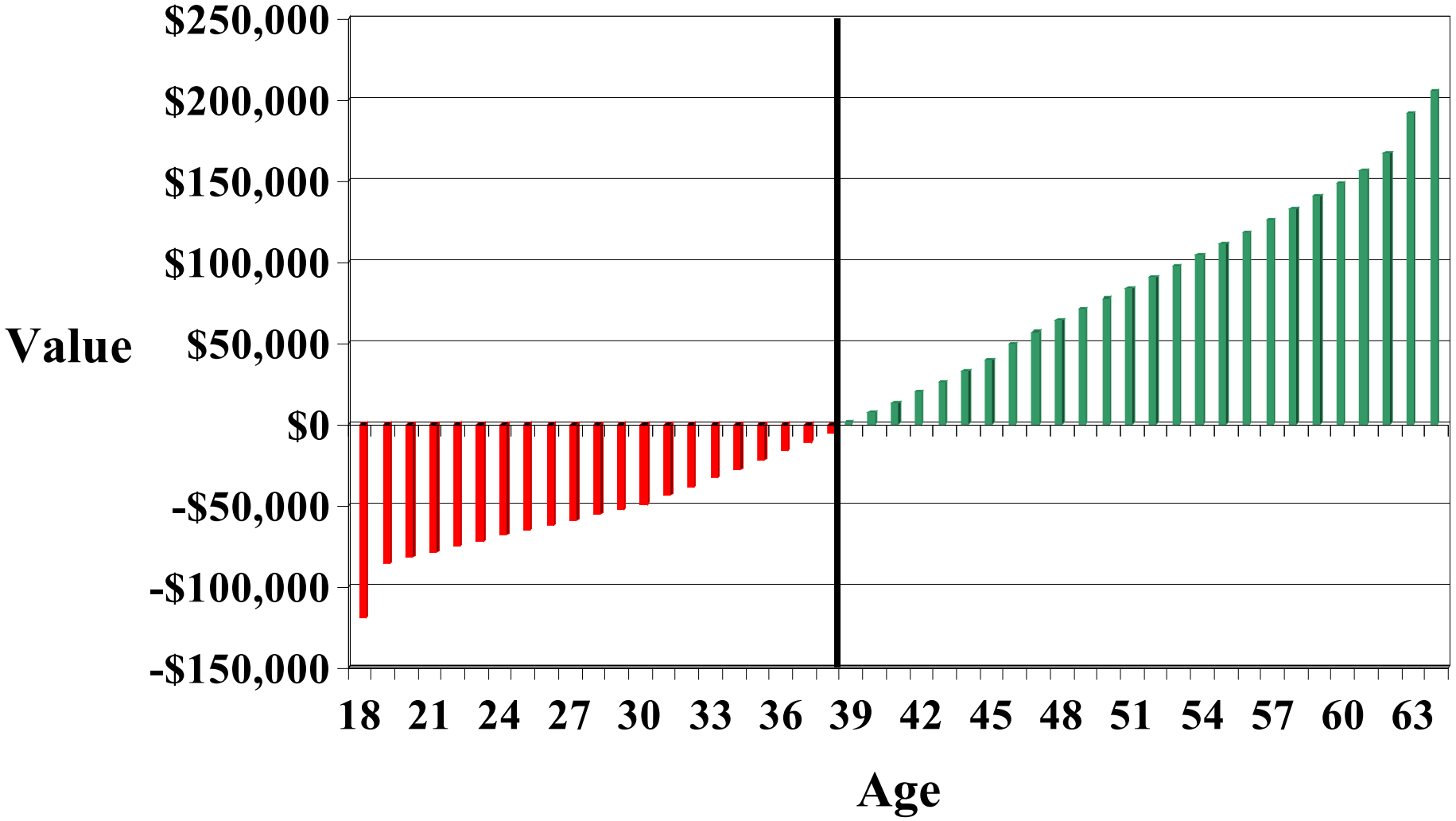
Social Security Blue Book Value

Average Wage Earner $34,065



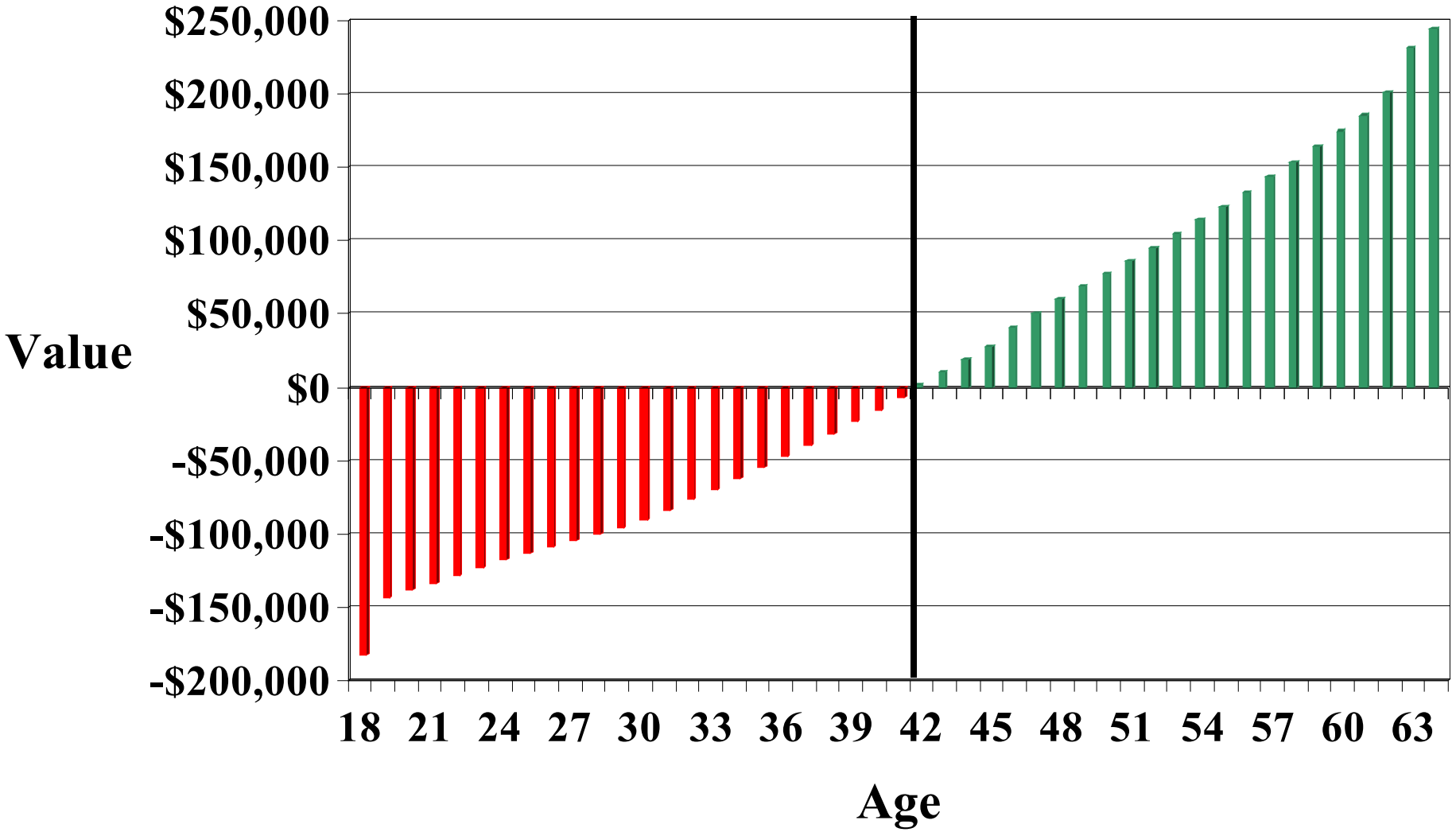
Social Security Blue Book Value

$40,000 Wage Earner



Social Security Blue Book Value

$60,000 Wage Earner



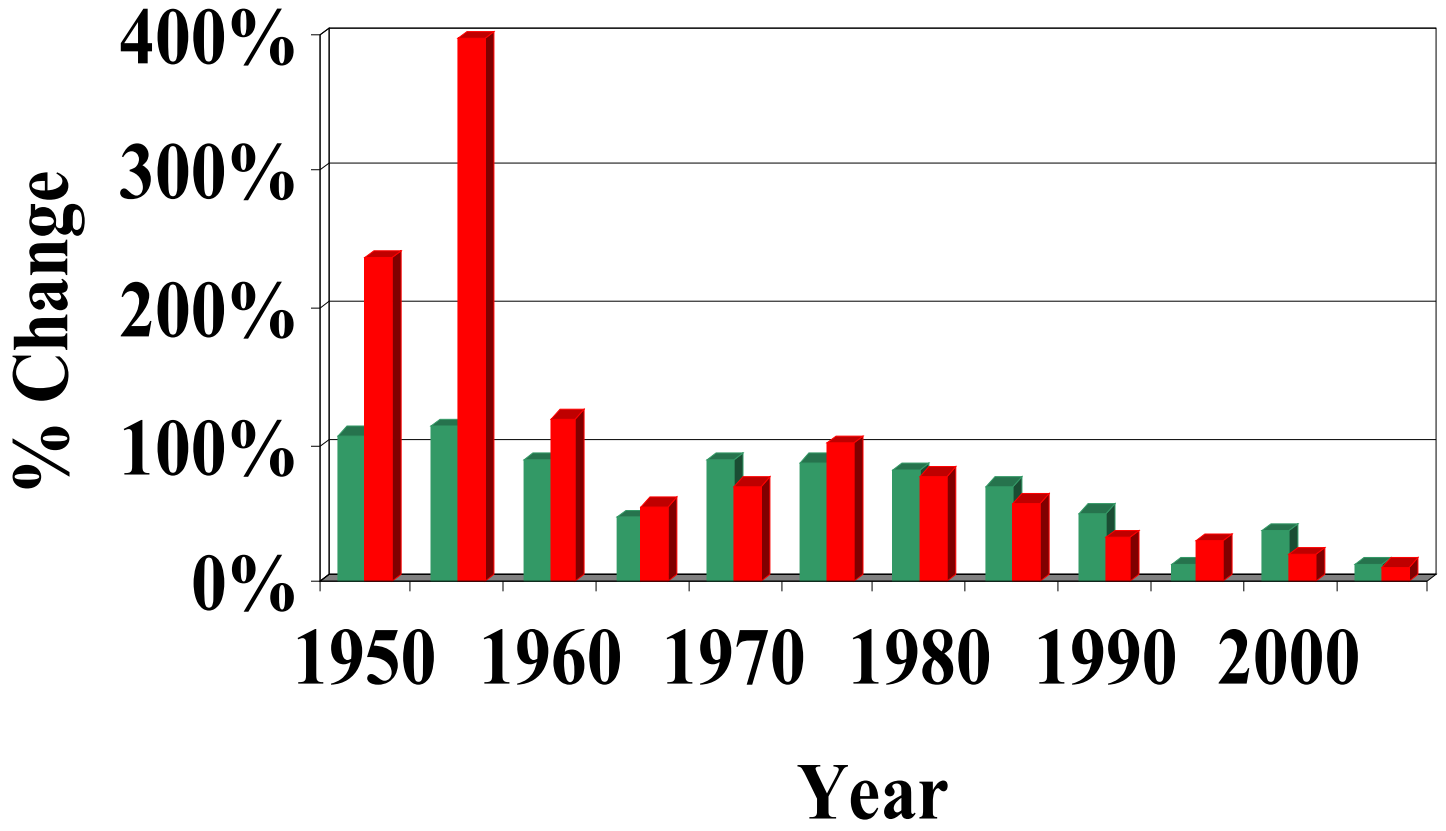
Social Security Trends

A good way to evaluate Social Security is to look at the rate of change or growth in revenues and expenses over time. The following chart identifies the rate of change in percent over the previous five years.

Revenue growth clearly lagged that of costs by a substantial amount. The rate of growth in expenses is greater than the rate of growth in revenues. This will lead to the third period of negative cash flows beginning in 2018.

Rate of Change in Social Security

Revenues & Expenses



(5 year intervals)

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