# Home Equity Conversion Mortgage

## Overview of HECM Insurance Model and Risk Management in the Recession

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The presenter's views do not necessarily reflect those of HUD or PD&R.

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# Topics for Discussion

- Program History and Design Overview
- Risk Management – Loan Level
- Portfolio Risk Analysis
- Federal Budget Considerations
- Looking to the Future

# Program History and Design Overview

# HECM Program History

- Housing and Community Development Act of 1987 authorized HUD to conduct a demonstration of home equity conversion mortgage for older homeowners (HECM)
- Business model: provide private lenders with HUD mortgage insurance paid by premiums assessed to all borrowers and accrued into loan balance.
- Statutory consumer protections: mandatory pre-application counseling, guaranteed loan proceeds (if lender insolvency), no excessive referral fees
- Details of HECM design left to HUD (law was not overly prescriptive)
- First HECM loan was made in October 1989
- Became a permanent HUD Program in 1998
- Rapid growth in take-up after 2003

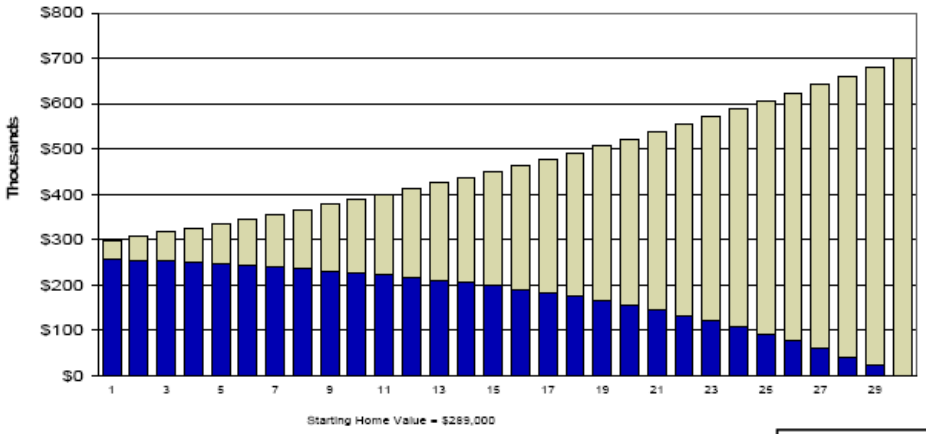
# Reverse Mortgage Overview

- HECM provides seniors (minimum age of 62) cash payments and/or a credit line secured by home equity.
- No repayment as long as the borrower continues to live in the home.
- Flexibility of cash draws: Borrower can match draws with needs.
  - Tenure: receives a fixed monthly cash payment as long as he/she stays in the home.
  - Term: receives a larger fixed monthly cash payment for a borrower-selected term (e.g., 10 years). Continue to defer repayment after term expiration while borrower remains living in home.
  - Line of Credit: borrower decides how much to draw and when, up to a credit limit.
  - Combining smaller Line of Credit with smaller Tenure or Term payments.
  - Ability to switch plan types if needed: all loans can be treated like lines of credit.
- Borrower typically uses reverse mortgages to
  - Access cash for home improvements, medical bills, or for everyday living.
  - Pay off balances on existing traditional mortgages.
- Some targeting based on FHA “loan limit” to calculate Maximum Claim Amount
  - Before 2008, 95% of area median price, up to nationwide ceiling of $362K
  - After 2008, nationwide limit of $417K (100% conforming), temporarily raised to $625K (150% conforming) by ARRA
- Small conventional “jumbo” market (10 to 15% market share) existed prior to housing crisis to meet the demand from seniors with high valued homes.

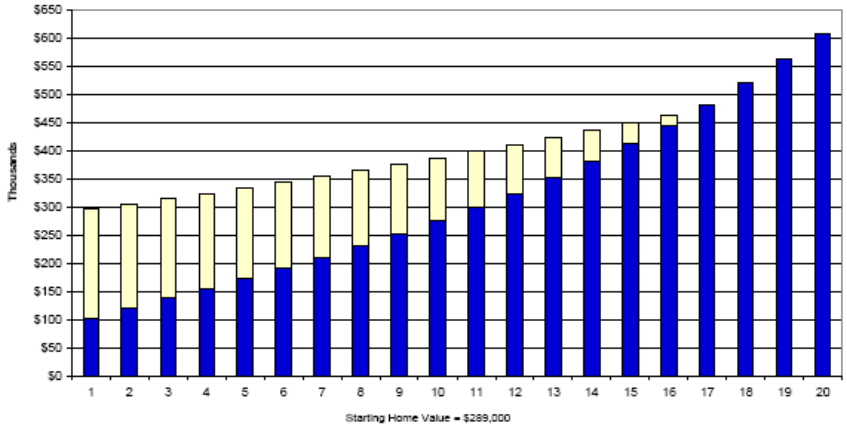
# Reverse Mortgage differs from Traditional Mortgage:

- In terms of debt and equity patterns:

**Traditional 30-Year Forward Mortgage**
by age of loan in years




**Reverse Mortgage**
by age of loan in years





$$UPB_t = UPB_{t-1} \text{ x } (1 + \text{interest}) - \text{payment}_t$$

$$UPB_t = \text{UPB}_{t-1} \text{ x } (1 + \text{interest}_t) + cash_t$$

where $UPB_t$ = Unpaid Principal Balance of Loan at time $t$

# Reverse Mortgage differs from Traditional Mortgage:

## Traditional Mortgage

- Key loan termination drivers
  - Scheduled amortization, prepayments, defaults.
- Risks assumed by lenders (primarily economic risks):
  - Loan defaults when property values decline.
  - Prepayments when interest rates fall.
- Debt amount (UPB) tends to follow an amortization schedule

## Reverse Mortgage

- Key loan termination drivers
  - Borrowers' death or move-out.
- Risks assumed by lenders (actuarial and economic risks):
  - Actuarial rates of mortality and mobility.
  - Shortfall from property sales.
  - Some prepayments when interest rates fall and property values rise.
- Debt amount (UPB) depends on interest rates and cash draw patterns

# Risk Management – Loan Level

# Managing HECM Risk at Loan Level: *Concept of Principal Limit*

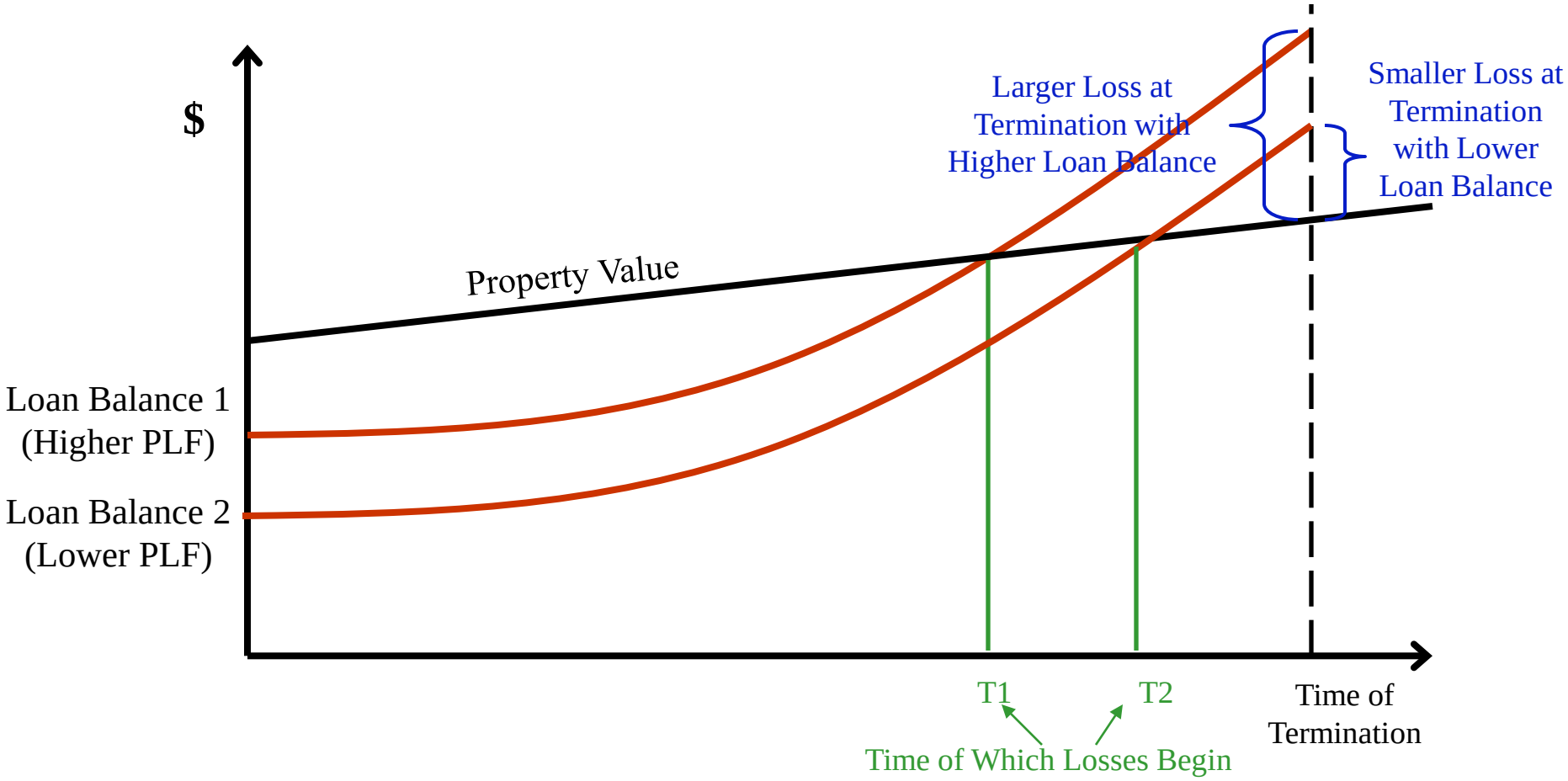
- HUD manages risk by limiting cash advances based on each loan's Principal Limit.
  - Net Present Value of All Cash Advances Must Not Exceed the Principal Limit
  - To maintain Net Present Value the Principal Limit grows (note rate plus annual mortgage insurance premium rate).
  - Unused credit line also grows at this rate.
  - Once Borrower Reaches Principal Limit, No More Cash Advances.

$$\text{Initial Principal Limit} = \text{Principal Limit Factor} \times \text{Adjusted Property Value}$$

**Adjusted Value is Maximum Claim = Min(Appraised value, FHA loan limit)**

- Principal Limit Factor (PLF)
  - Conceptually similar to a limit on loan-to-value ratio.
  - Contains imbedded assumptions on loan termination rates, cash drawdown patterns, interest rates, and house price appreciation.
  - PLF Varies by expected interest rate (10-year rate + lender's margin if loan rate is adjustable) and borrower's age.
    - Actual interest on mortgage will accrue at short rate plus margin (unless loan has fixed rate).
    - Expected rate uses longer rate to anticipate future rate adjustments.

# Lower PLFs Make Expected Losses Smaller & Occur Later



# HECM Insurance Model: Principal Limit Factor Calculations

## Set Actuarial Assumptions

- House Price Growth
- Mortality/Moveout
- Interest Rates / Discount Rates
- Cash Drawdown Patterns

## Set Premium Structure

- 2% Adj Property Value Upfront
- 0.5% on Balance Annually

New HECM Products Modify Premiums to 2% or 0.01% Upfront, and 1.25% Annually

## Solve For Factors

Such That

Expected Revenues = Expected Losses

# HECM Principal Limit Factors (From Inception to 2009)
## for Selected Age and Interest Rate

| Interest Rate * | Age of Borrower at Loan Origination 65 | 75 | 85 |
|---|---|---|---|
| 7.0% | 0.489 | 0.609 | 0.738 |
| 8.5% | 0.369 | 0.503 | 0.660 |
| 10.0% | 0.280 | 0.416 | 0.589 |

Factor increases as interest rate decreases

* Expected Rate ( 10-Year Rate + Lender's Margin if ARM Loan, Note rate if FRM Loan)

Factor increases with age

**NOTE: HUD reduced HECM principal limit factors across the board by 10% on October 1, 2009 in response to pessimistic assumptions of future house price growth. The model that produced the factors is being re-estimated with all new assumptions that take into account the latest program data and long run economic forecasts. For example, the factor for 75-yr old borrower and 7.0% has been reduced from 0.609 to 0.548 until new factors have been re-estimated.**

# How Principal Limit Factors Determine Payment Limits

75 Year Old Borrower and 7 Percent Expected Interest Rate

| | | |
|---|---|---|
| Appraised Value & Maximum Claim | $ | 200,000.00 |
| Times Principal Limit Factor * | | 0.548 |
| Initial Principal Limit | | 109,600.00 |
| Less: | | |
| Upfront Premium | | (4,000.00) |
| Loan Closing Costs | | (3,000.00) |
| Servicing Fee Set Aside | | (4,084.96) |
| Initial Cash to Borrower | | (23,515.04) |
| Net Principal Limit | | 75,000.00 |
| Maximum Monthly Tenure Payment (Without a line of credit) | | 550.80 |
| Maximum Line of Credit (Without monthly payments) | | 75,000.00 |

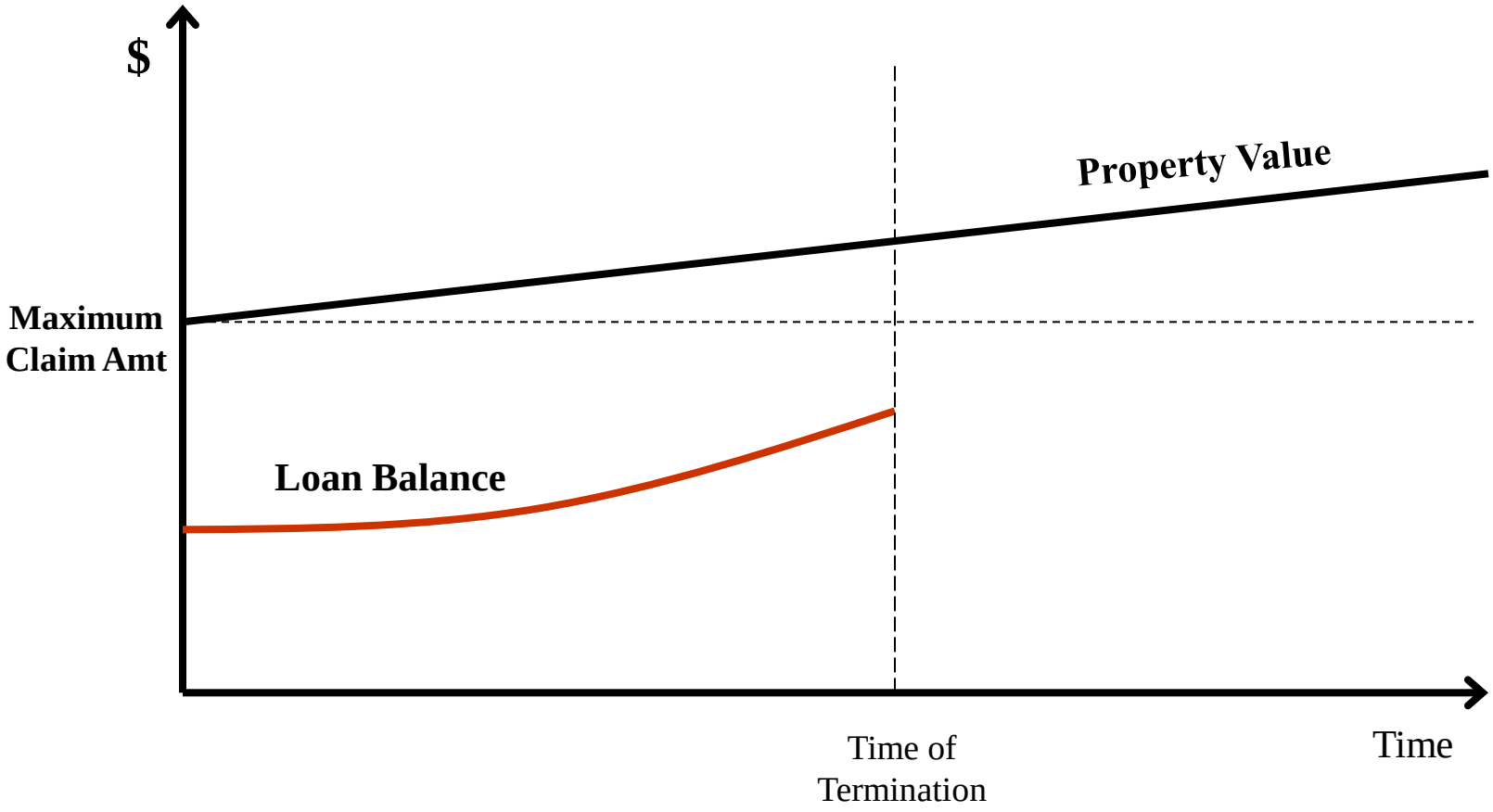
*** FY 2010 Factor with 10% Reduction.**

# Portfolio Risk Analysis

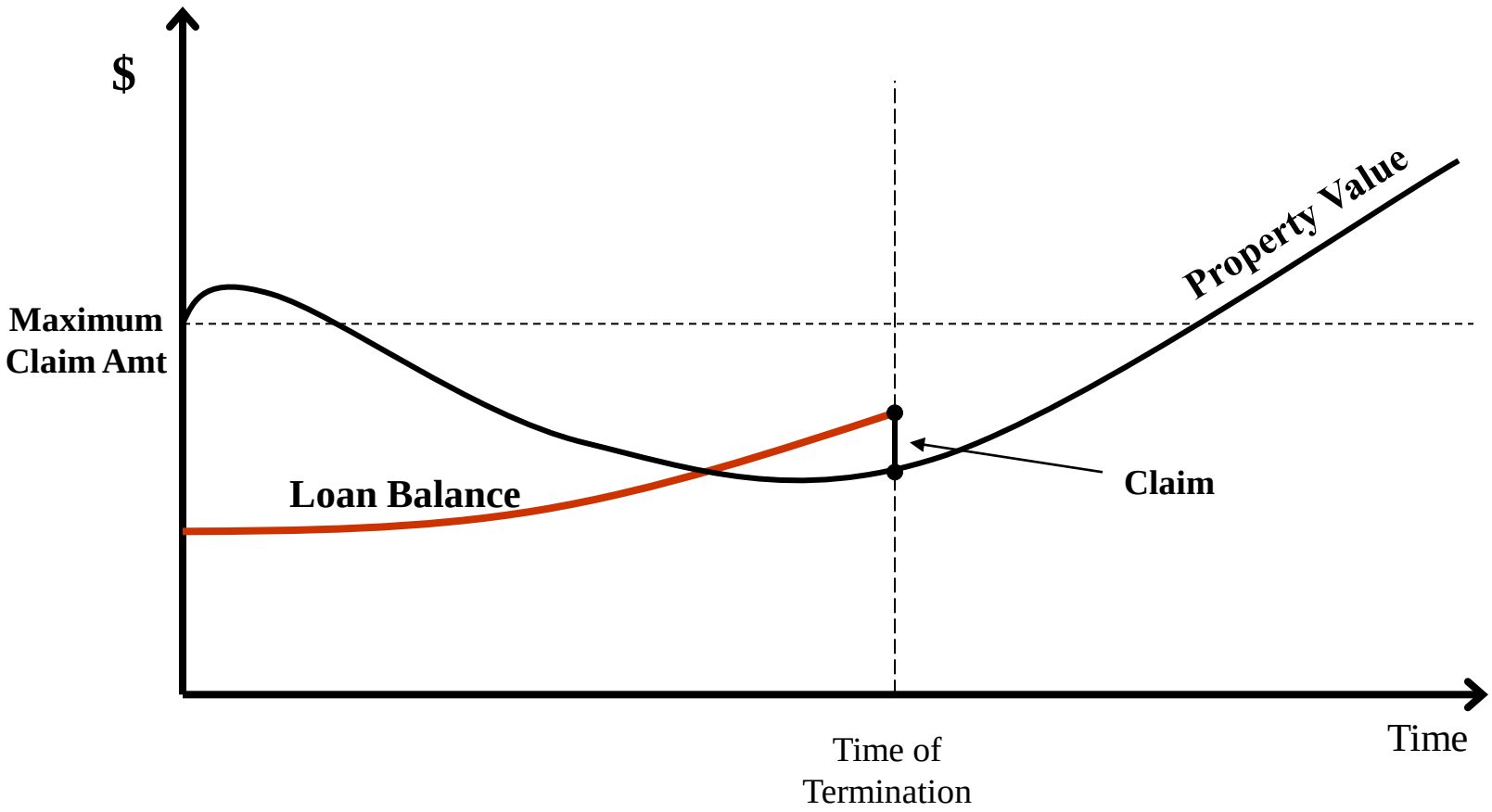
# Portfolio Risk Analysis

- HECM Demonstration Period (1989 - 1998)
  - Originally limited to a small pilot or demonstration program.
  - Mandated reports to US Congress included actuarial reviews of portfolio.
- Permanent HUD Program (1998 – present)
  - Subject to same portfolio risk management requirements as HUD's other credit guaranty programs pursuant to
    - Credit Reform Act,
    - Other laws and government accounting guidance.
  - Annual estimates of remaining liability for existing portfolio reported in HUD's audited financial statements.
  - Annual estimates of credit subsidy rate for future cohorts reported in federal budget.

# Most HECMs Terminate Without a Claim

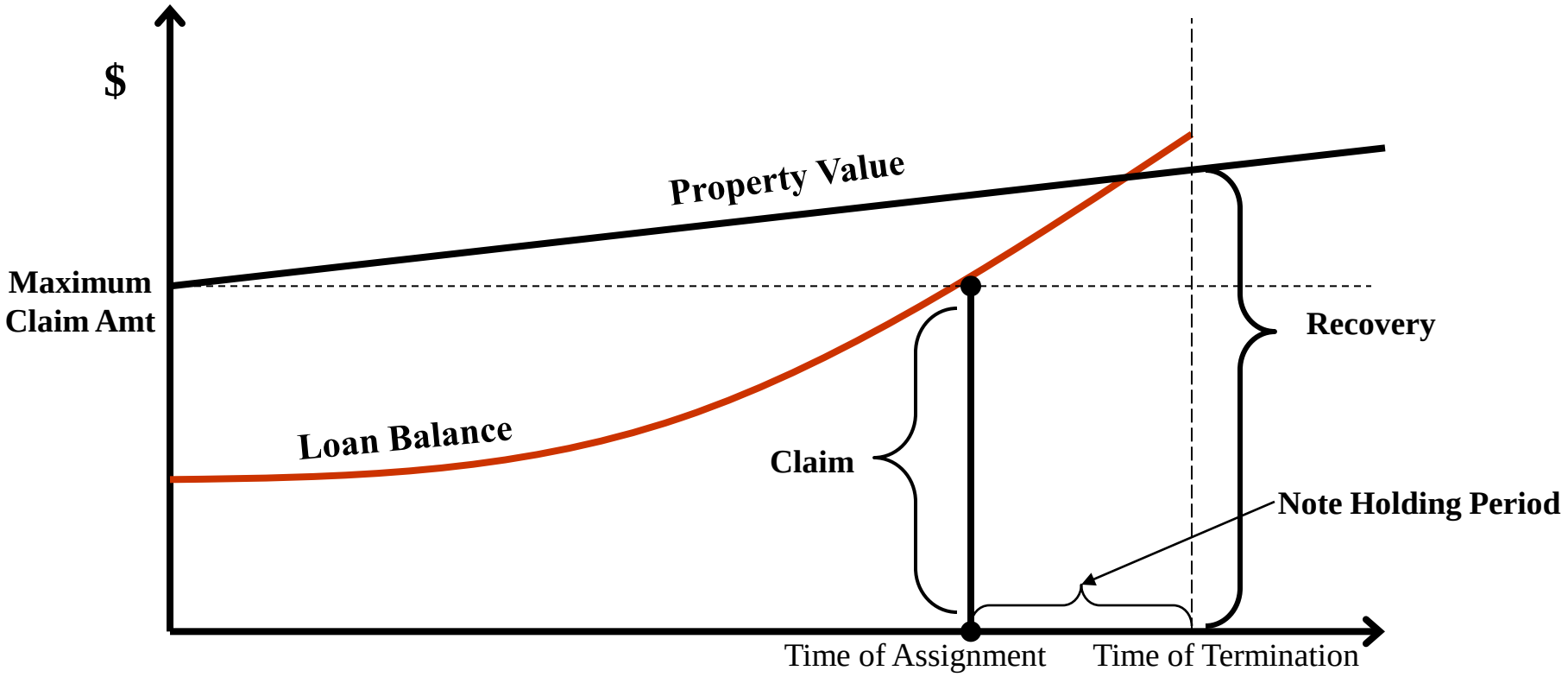


# Some HECMs Will Terminate With A Claim (Shortfall From Sale of Property) Before Assignment



# Assignment to HUD if Loan Balance Reaches Maximum Claim Amount

- HUD pays claim for full loan balance at time of assignment.
- HUD also recovers future loan balance or net proceeds from property sale, if less, at time of termination.
- After Assignment Interest May Accrue at Higher Rate Than Govt Discount Rate.



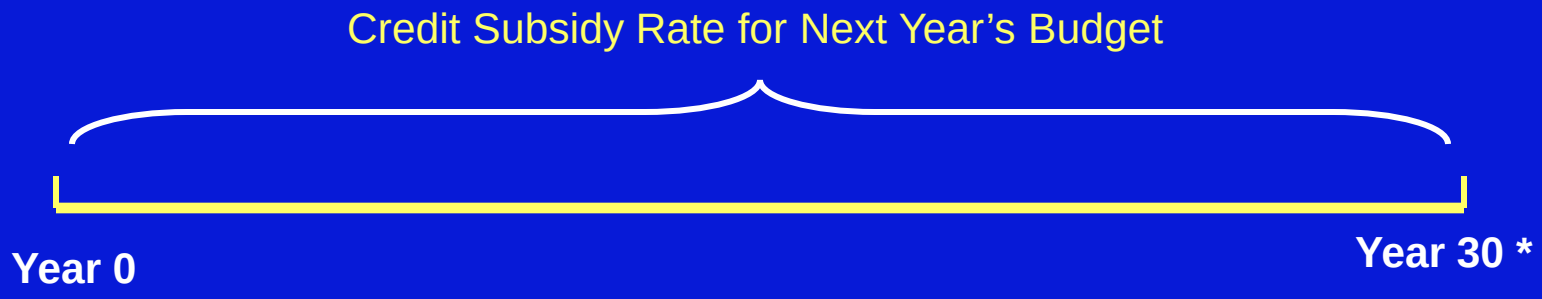
# Federal Budget Considerations

# Financial Management and Budget Reporting

## Remaining Liability (Existing Loans Only)


(Re-estimate of total net liability is actual activity plus estimated remaining liability)

## Credit Subsidy Rate (Future Loans Only)




* HECM Requires Analysis Beyond Year 30

# Credit Reform Act of 1990

- Subsidy cost for federal loan programs (direct loans and guarantees) must be fully budgeted in the year in which the loan is made
- Eliminates prior practice of yearly cash budgeting which often deferred long term loan costs to future budget years
- Subsidy cost is net present value (NPV) of cash flows to and from the government (except administrative expenses) associated with the loan or guarantee over the full term of the loan
- Positive subsidy requires Congressional appropriation prior to loan commitment
- Negative subsidy represents receipts to government
- Administrative costs are budgeted separately on a cash basis

# Housing Crisis Affected HECM Budget Last Year

- Until FY 2010, HECM consistently maintained a negative credit subsidy rate (self supporting).
- For FY 2010, long-run economic forecast led to the first-ever positive subsidy rate.
- Under Credit Reform Act, the positive subsidy was based only on forward looking analysis and was driven primarily by a forecast of lower house price growth in the future.
  - Actual house price declines in 2008 and 2009 had no bearing on FY 2010 credit subsidy rate.
  - Actual price declines did result in an upward re-estimate of the remaining liability of existing HECM business – but upward re-estimates of liability are considered "Mandatory" expenses in budget parlance, and are not subject to "Discretionary" appropriations.*

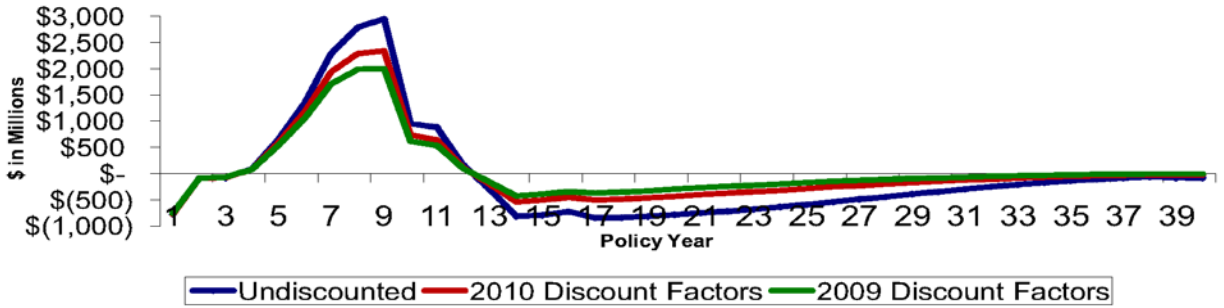
* *Note that prior to FY 2010, HECM "re-estimates" were included with those for the entire General Insurance Fund, and could not be disaggregated due to a permissable accounting treatment that comingled all the assets of the GI Fund programs. Starting with the 2009 HECM book, re-estimates specific to HECM can be identified and tracked.*

# FY 2011 Budget Issues Motivated Development of the New HECM Products

- Absent Congressional discretionary appropriation last year, HUD reduced PL Factors by 10% to get subsidy rate for new business written in FY 2010 to slightly negative to continue operating program.

- For FY 2011, continued stressful economic forecasts produced another positive subsidy rate despite the 10% reduction in PLFs for FY 2010.
  - Lower house price growth than for FY2010 (including large downward "maintenance" adjustment)
  - Rising discount rates over time that reduce cash inflows from recoveries -- see diagram:

***Present Value of HUD's Net Cash Outflows Estimated for FY 2011 Cohort By Year and Discount Rate Assumption (Negative Amounts Represent Net Inflows)***



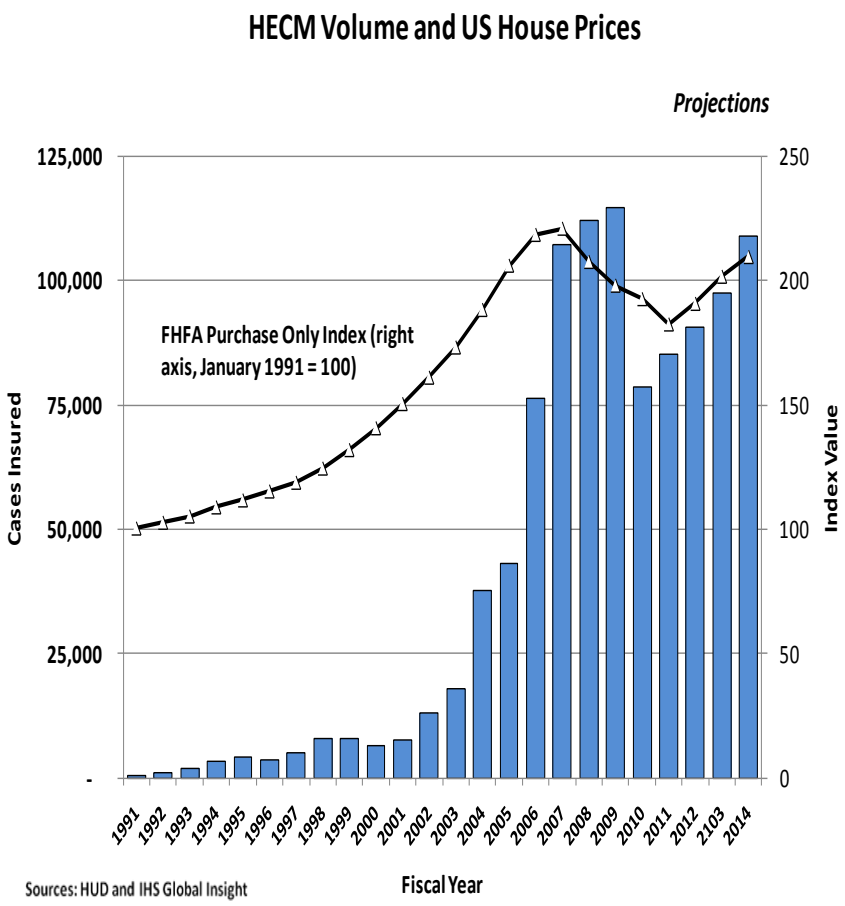
# FY 2011: Introducing HECM Standard and Saver

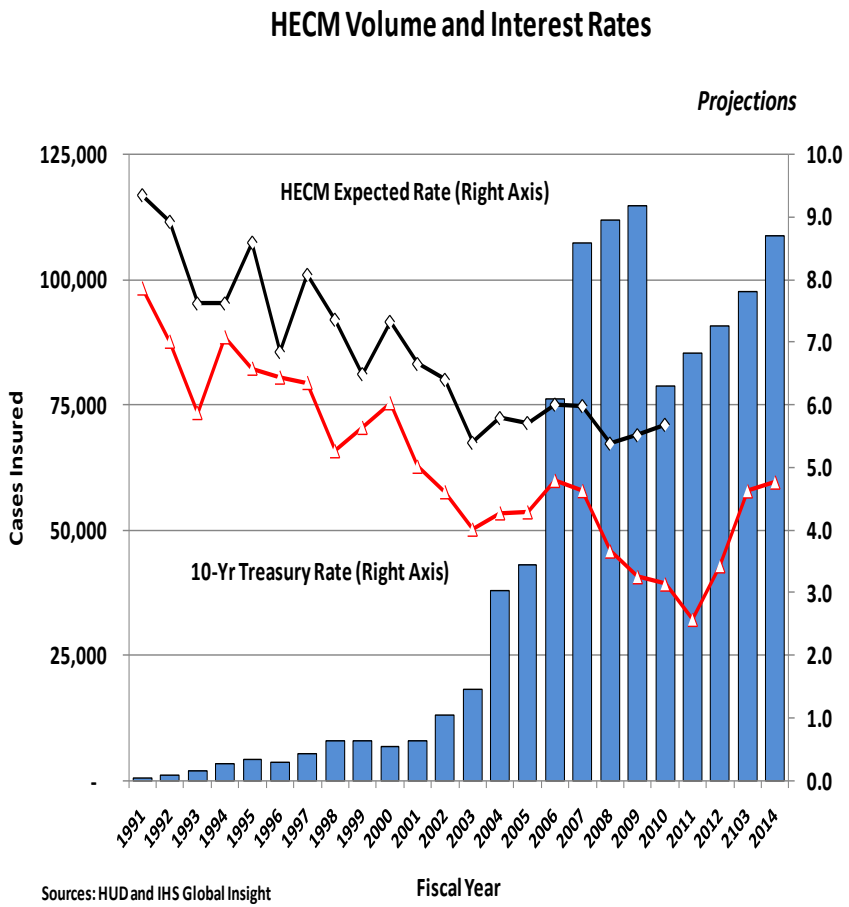
- Options HUD considered to get subsidy rate back to zero or slightly negative
  - Raise HECM premiums but consider restructuring them to reduce upfront burden.
  - Replace 10% factor reduction with complete factor update using enhanced model and assumptions that reflect new premium structure.
  - Requested appropriation – but if not forthcoming, rely on above steps to achieve zero subsidy.

- The two new HECM products, Standard and Saver, utilized first two options
  - Standard raised annual premium to 1.25%, kept upfront premium at 2%, and applied enhanced model/assumptions to produce new factor table that approximates FY 2010 factors.
  - Standard is designed to appeal to older seniors who need the most cash from HECM and who are less concerned about upfront costs.
  - Saver raised annual premium to 1.25%, but reduced upfront premium to 0.01%, and applied enhanced model/assumptions to produce new factor table that is lower than FY2010 factors.
  - Saver is designed to minimize upfront costs to appeal to younger seniors who need less cash, and who may want a shorter term “bridge” loan to meet current needs.

# Looking to the Future

# Through 2009, Growth in HECM Was Fueled by House Price Rise (More Equity) and Interest Rate Decline (Higher Starting Prin Limit)




"Expected" rate is the sum of 10-yr Treasury rate (or LIBOR 10-yr swap rate) plus lender's margin if the HECM is an ARM.

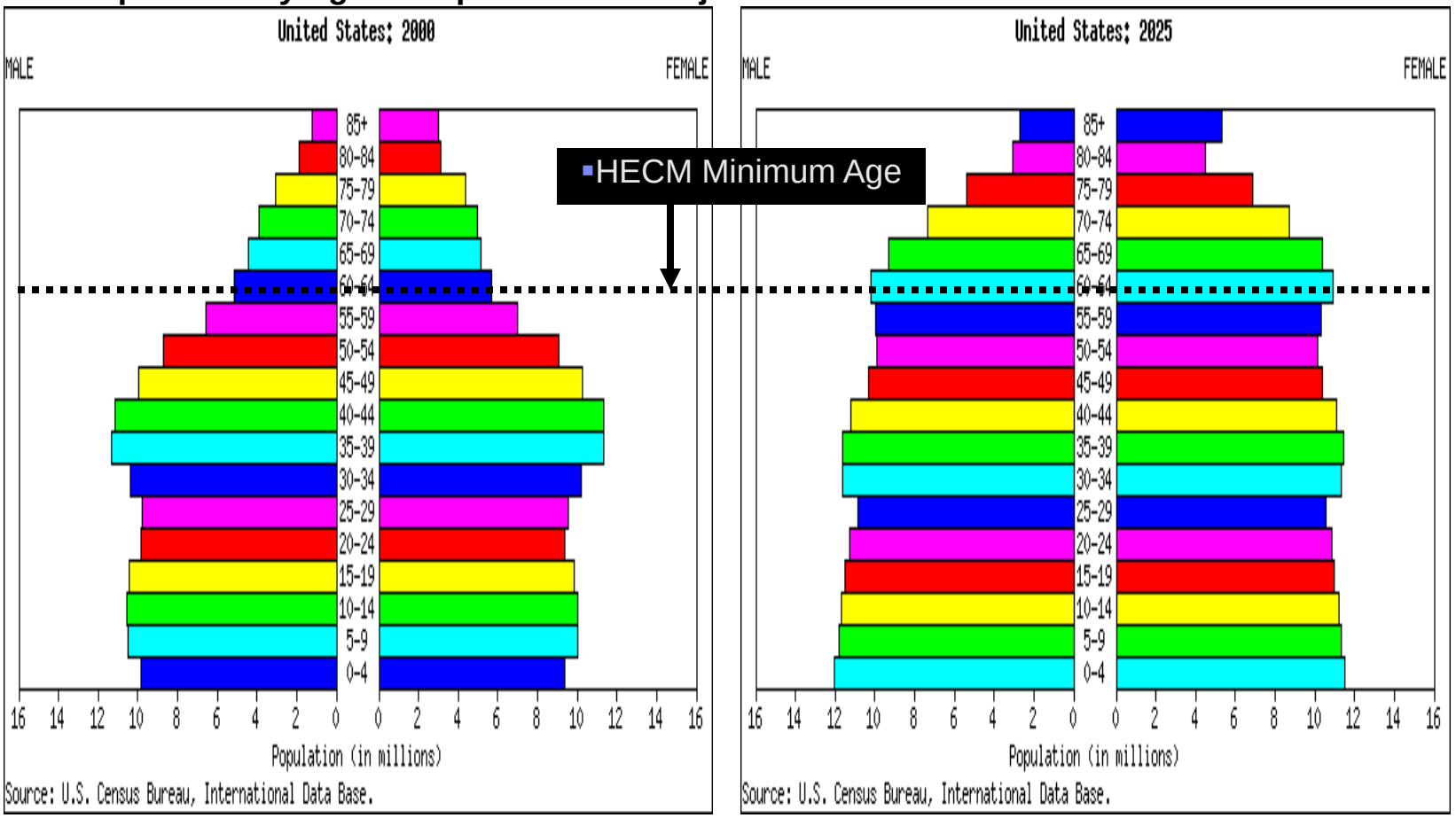
# Despite Less Favorable Economic Trends, Demographics Support Reverse Mortgage Growth

- According to the 2007 American Housing Survey
  - 18.2 million US homeowners headed by person age 65+
  - 16.5 million are potential HECM borrowers
    - 14.1 million had no mortgage debt
    - 2.4 million had mortgage less than 40% of home value

- Between 2005 and 2015 Joint Center for Housing Studies of Harvard University projects
  - Owner households ages 62 to 69 will increase by 53%
  - These are the first of the large post-WWII “baby boom” generation

# Demographics Support Reverse Mortgage Growth – Contd.

## US Population By Age Group 2000 and Projected for 2025



# Setting a HECM Research Agenda

- Some of the existing academic literature on reverse mortgages (RMs) focuses on demand potential, including the extent to which these loans could alleviate poverty, and the willingness of elder homeowners to spend down their home equity (Venti and Wise; Merrill, Finkel, and Kutty; Rasmussen, Megbolugbe, and Morgan; Mayer and Simon; and Speare – just to name a few).

- Other existing literature focuses on feasibility of RMs as financial instruments, including valuation of contingent liability, the potential for moral hazard or adverse selection, and analysis of loan terminations (Szymanoski; Rodda, Herbert, and Lau; McConaghy; Szymanoski, Enriquez, and DiVenti; Chinloy and Megbolugbe; Ma, Kim, and Lew; Shiller and Weiss; and Davidoff and Welke – again to name a few).

- Finally, other literature deals with the use of loan proceeds, including borrower satisfaction with the product, and the potential to use loan proceeds to pay for specific services such as health care (Redfoot, Scholen, and Brown; and Stucki – for example).

# Setting a HECM Research Agenda – contd.

- Housing crisis has altered the research needs with regard to HECM and RMs in general.

- The long period of rapidly rising house prices coupled with falling interest rates seems to be over – what does that mean for continued govt involvement in RMs?
  - Who are the users, why are they participating, and do RMs make them better off over time?
  - What will be the impact on later years if home equity is consumed at a relatively younger age (using HECM Saver, for example)?
  - Does society at large benefit from having a govt guaranteed RM? If so, in what ways?
  - Do social benefits exceed potential subsidy costs during down cycles?