

**MOODY'S**

# The Macroeconomic Consequences of a Category 5 Miami Hurricane

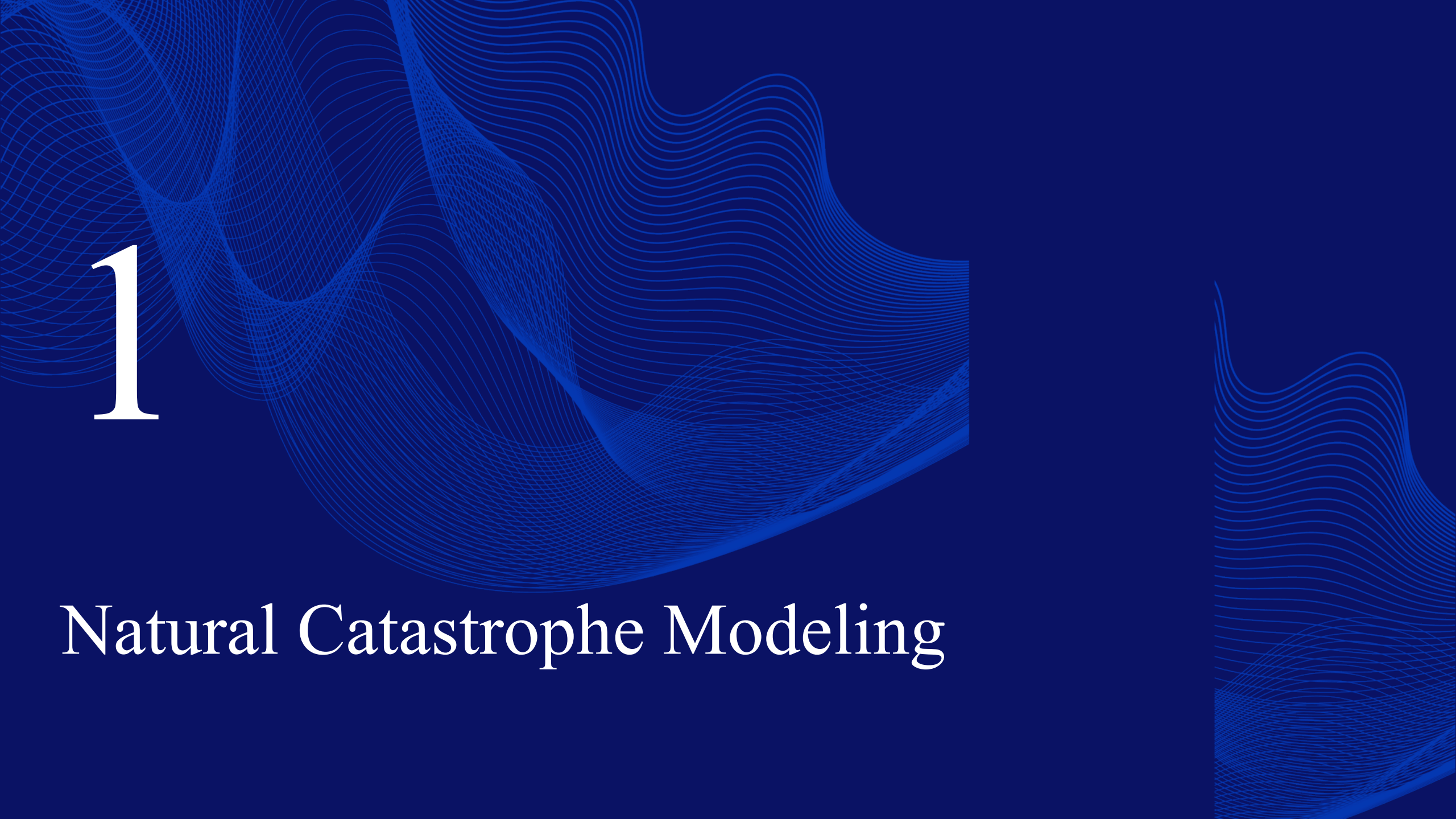
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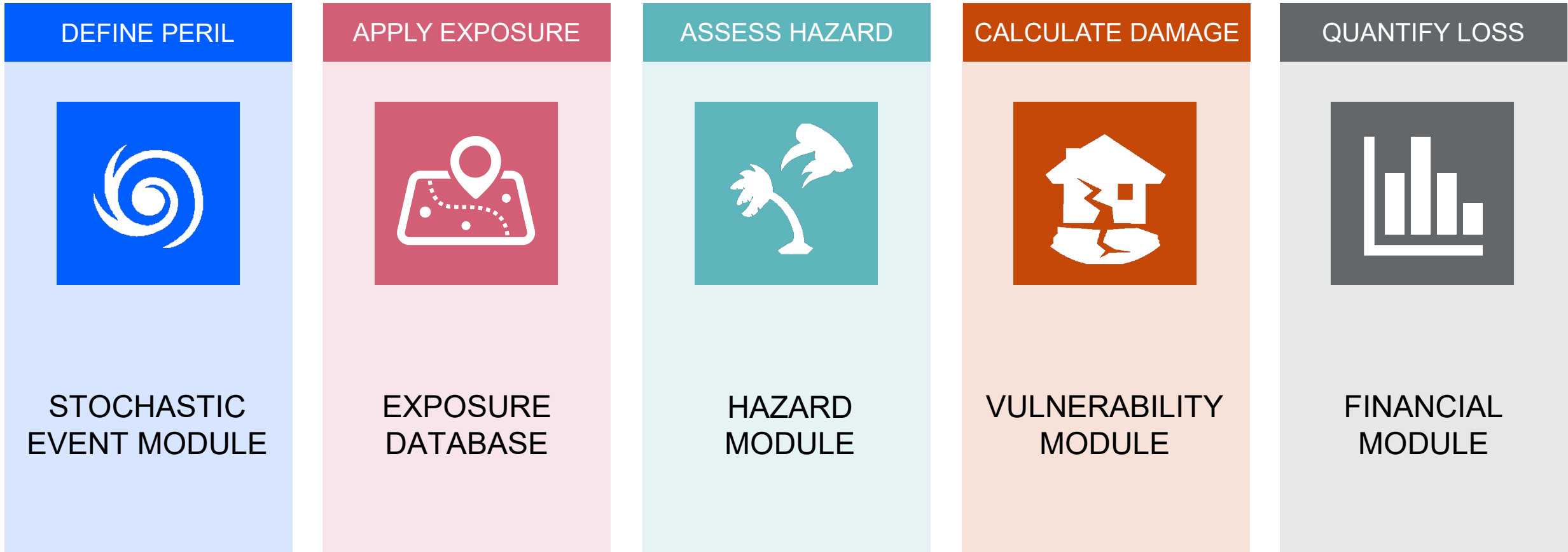
August 2025

The background of the slide is a dark blue color. It features abstract, flowing, wavy lines in a lighter shade of blue. These lines are composed of many thin, overlapping curves that create a sense of movement and depth. The lines are more concentrated on the left side and fade out towards the right.

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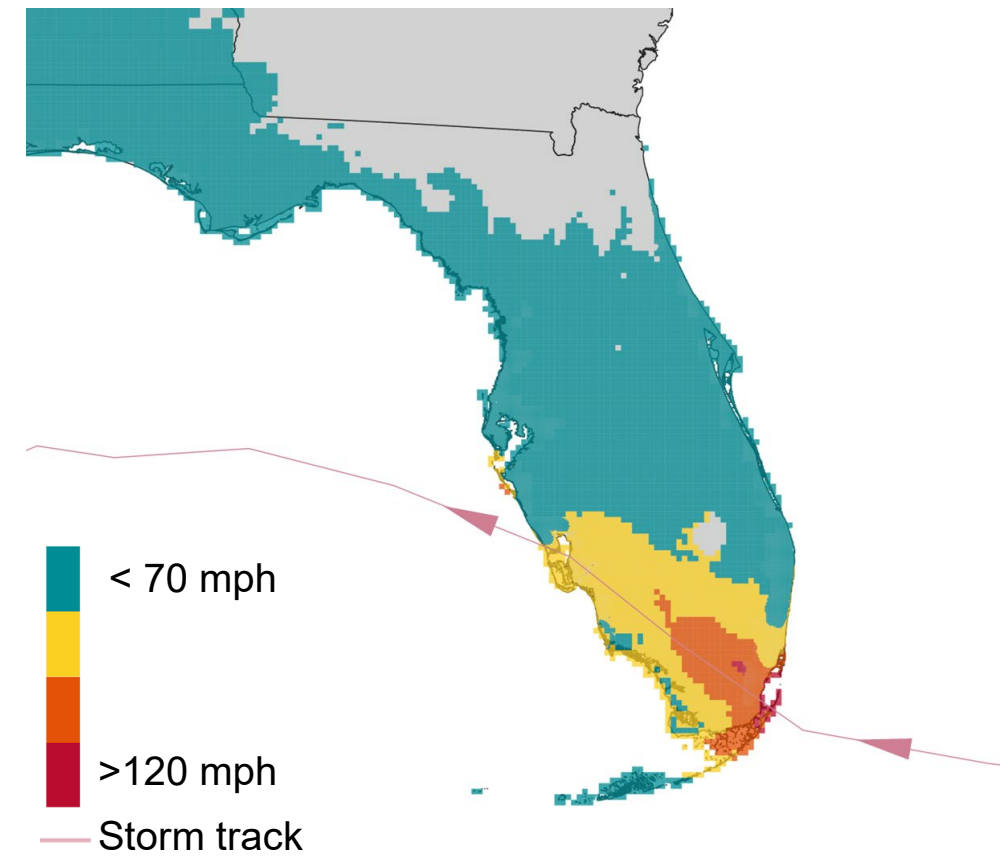
# Natural Catastrophe Modeling

# How Moody's Analytics Models Catastrophe Risk



Source: Moody's Analytics

# A Katrina-Sized Hurricane

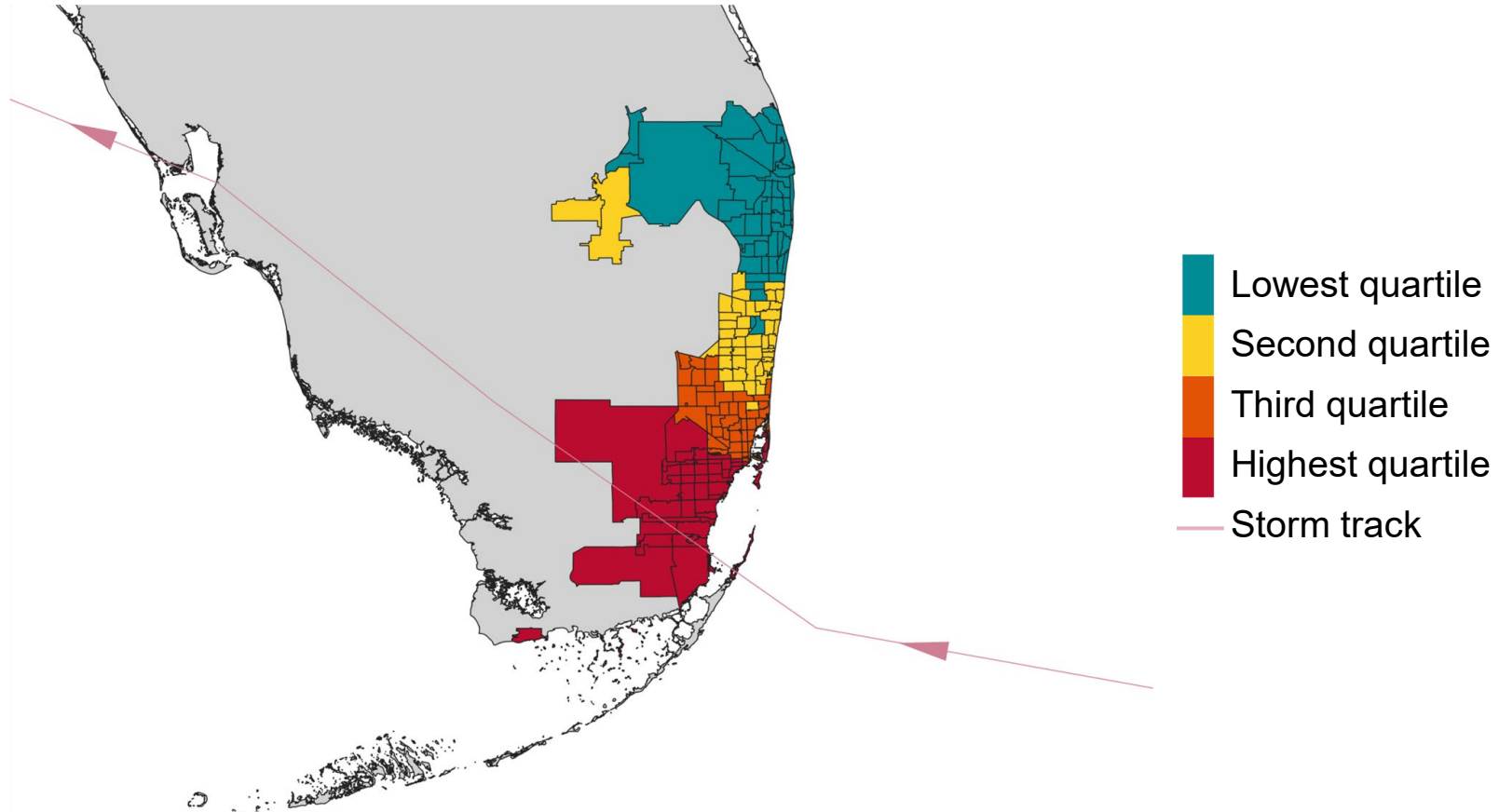


|                                             |              |
|---------------------------------------------|--------------|
| Storm category (Saffir-Simpson scale)       | Category 5   |
| Location of landfall                        | Homestead FL |
| Modeled loss in the tri-county area         | \$212 bil    |
| Modeled loss caused by extreme wind         | \$196 bil    |
| Modeled loss caused by flooding             | \$16 bil     |
| Modeled insured loss in the tri-county area | \$114 bil    |
| Proportion of modeled losses insured        | 54%          |

Source: Moody's Analytics

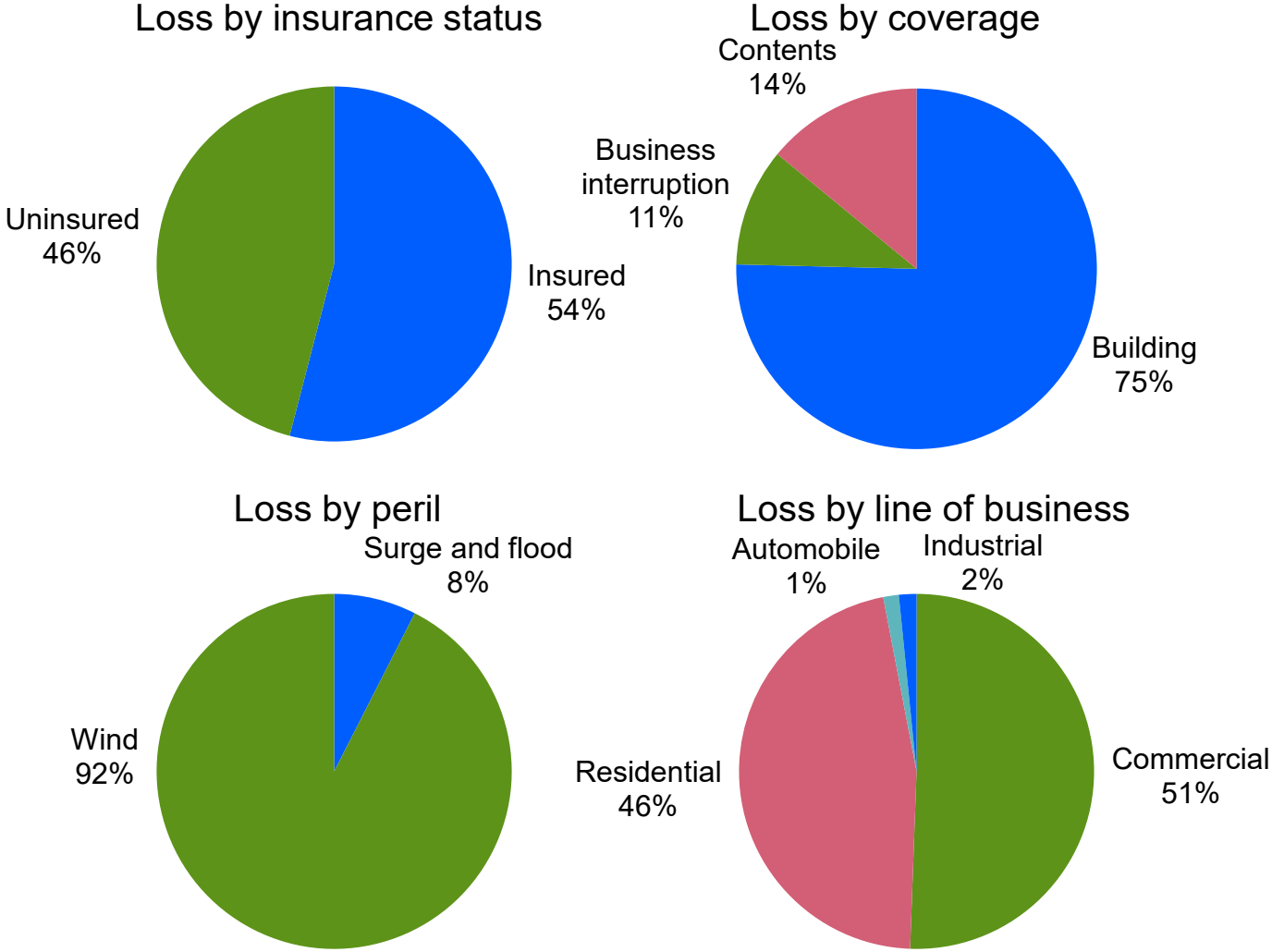
# Miami Is at the Epicenter

Property damage normalized to exposure by ZIP code



Source: Moody's Analytics

# Most of the Damages Are to Buildings Resulting From High Winds



Source: Moody's Analytics

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# 2

## Policy Response and Insurance Market Assumptions

# No Supplemental Appropriations in the Severe Scenario

\$ bil

| Moderate scenario                      |       | Severe scenario                        |     |
|----------------------------------------|-------|----------------------------------------|-----|
| Supplemental legislation               |       | Supplemental legislation               |     |
| FEMA                                   | 60.7  | FEMA                                   | 0   |
| Public Assistance Program (PAP)        | 28.5  | Public Assistance Program (PAP)        | 0   |
| Individual Assistance Program (IAP)    | 15.2  | Individual Assistance Program (IAP)    | 0   |
| Hazard Mitigation Grant Program (HMGP) | 3.6   | Hazard Mitigation Grant Program (HMGP) | 0   |
| Other FEMA                             | 13.4  | Other FEMA                             | 0   |
| Housing and Urban Development (HUD)    | 27.0  | Housing and Urban Development (HUD)    | 0   |
| Army Corps of Engineers (ACE)          | 14.8  | Army Corps of Engineers (ACE)          | 0   |
| Other                                  | 32.4  | Other                                  | 0   |
| Total                                  | 134.9 | Total                                  | 0   |
| Mandatory spending                     |       | Mandatory spending                     |     |
| NFIP                                   | 8.6   | NFIP                                   | 8.6 |
| D-SNAP                                 | 0.4   | D-SNAP                                 | 0.4 |
| UI Claims                              | 0.5   | UI Claims                              | 0.5 |
| Total                                  | 9.4   | Total                                  | 9.4 |
| Total                                  | 144.4 | Total                                  | 9.4 |

Notes:

Estimates for the moderate scenario are on par with the federal government's response to Hurricane Katrina.

Source: Moody's Analytics

# FHCF, Not Citizens, Provides Assessment Risk

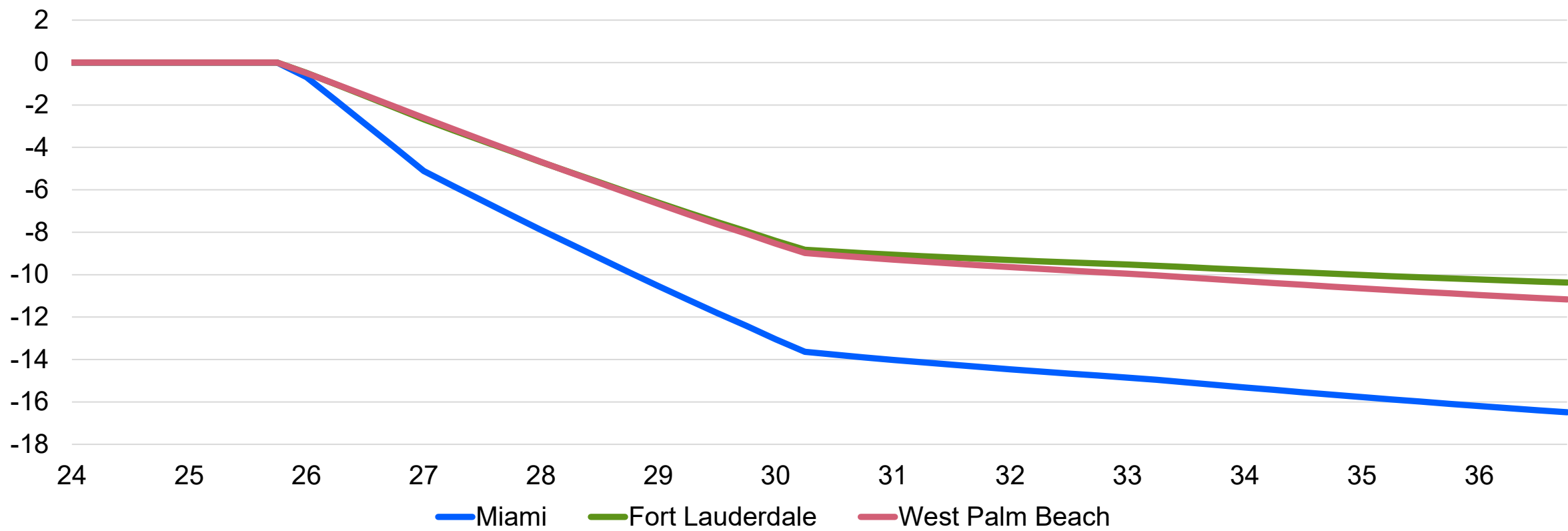
\$ bil

| FHCF obligations and liquidity resources - 2024-2025 contract yr | Amount |
|------------------------------------------------------------------|--------|
| Total potential FHCF obligations - commercial and residential    | 17.0   |
| Projected 2024 year-end fund balance                             | 6.9    |
| Series 2020A pre-event bonds balance                             | 2.3    |
| Series 2024A pre-event bonds balance                             | 1.0    |
| Total liquidity resources                                        | 10.2   |
| Total liquidity resources below potential obligations            | 6.8    |

Sources: FHCF bonding capacity report, Moody's Analytics

# Three Key Channels Drive Housing Values Lower

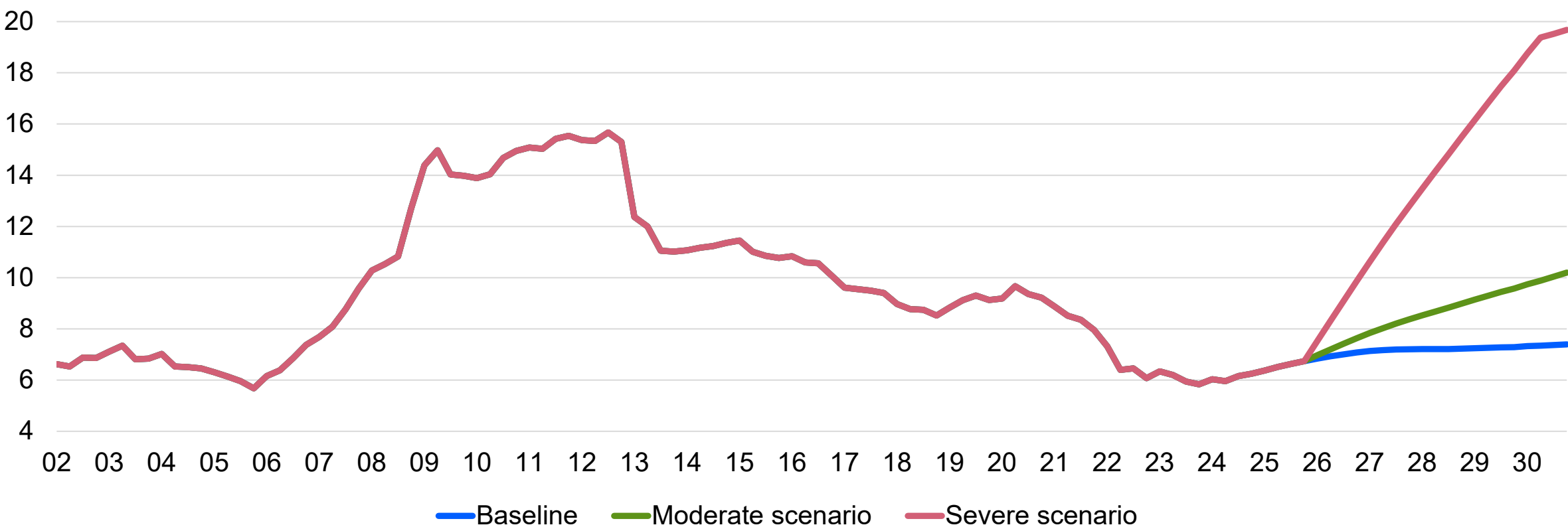
FHFA house price index, Southeast Florida hurricane severe scenario, % decline from baseline



Source: Moody's Analytics

# Higher Housing Costs Mean Lower Housing Prices

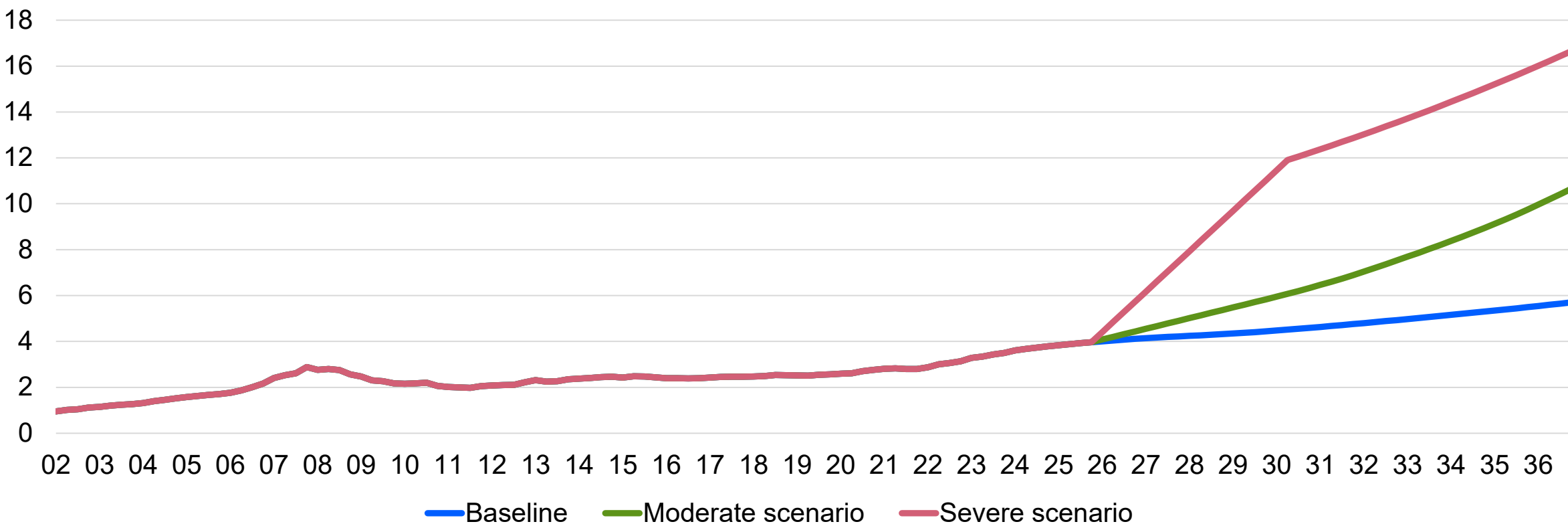
Homeowners insurance percentage of operating and maintaining a home, Miami, %



Sources: ACS, CES, NAR, Moody's Analytics

# The Insurance Market Is Stressed in Both Scenarios

Annual premium for homeowners insurance, Florida, \$ ths



Sources: ACS, Moody's Analytics

The background of the slide is a solid dark blue. Overlaid on this are several sets of thin, light blue wavy lines that create a sense of movement and depth. These lines are most prominent in the upper left and lower right corners, where they form complex, overlapping patterns that resemble stylized waves or a topographical map. The lines are more sparse in the center of the slide.

# 3

## Economic Implications

# How Hurricanes Harm Regional Economies

## Physical damage



- Destroyed or damaged property
- Corresponds with insured losses
- Accounts for most of the cost

## Lost output



- Reduced productive capacity
- Can be temporary or permanent
- Reflects evacuations, out-migration, power outages, etc.

Source: Moody's Analytics

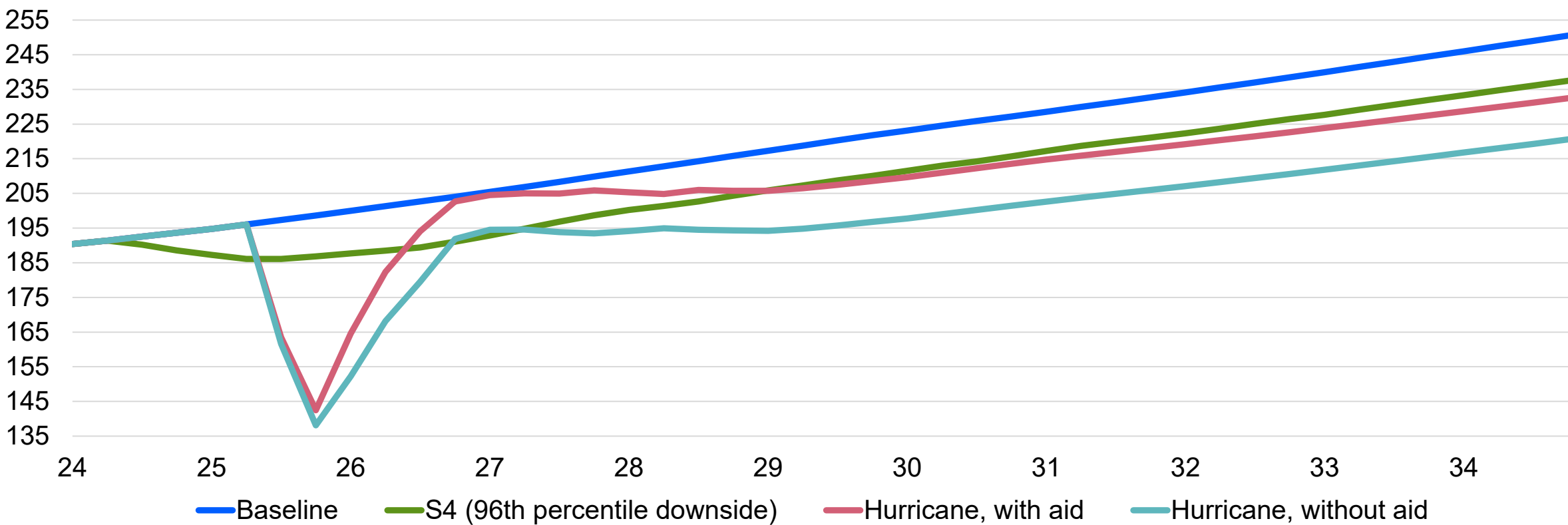
# Translating Assumptions Into Forecasts

- RMS damage estimates were translated into lost output based on historical ratio.
- Time paths were calculated based on the timing of and recovery from Hurricane Katrina in New Orleans. Storm is assumed to hit in the third quarter of 2025, but that is largely irrelevant.
- Typical top-down approach is better-suited to macroeconomic shocks that need to be translated to regions. Forecasts, both with and without government aid, are created based loosely on existing methodology for Moody's climate scenarios.
- Start by translating lost output to GDP forecasts, allocating to Miami-Dade, Broward, and Palm Beach counties based on severity of storm in each.
- Use historical relationship between GDP and employment to generate labor market paths. Where necessary, alter specific industries such as construction.
- Reduce nonwage income to reflect the impact of assessments from the FHCF; adjust homebuilding and prices based on builders' and insurers' responses.
- Solve the model to endogenously determine the remaining forecasts.

Source: Moody's Analytics

# Near-Term Impacts Are Massive

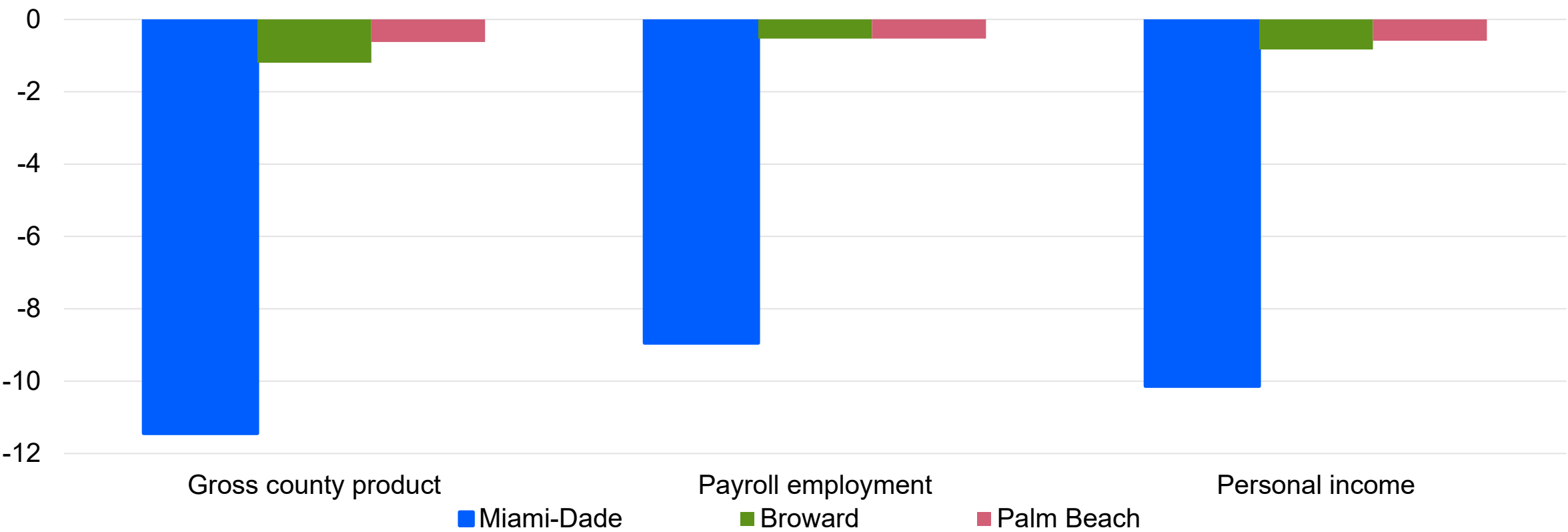
Gross metro product, Miami-Dade County, \$ bil ch. 2017



Sources: BEA, Moody's Analytics

# Miami-Dade Is Hurt Most by a Direct Hit

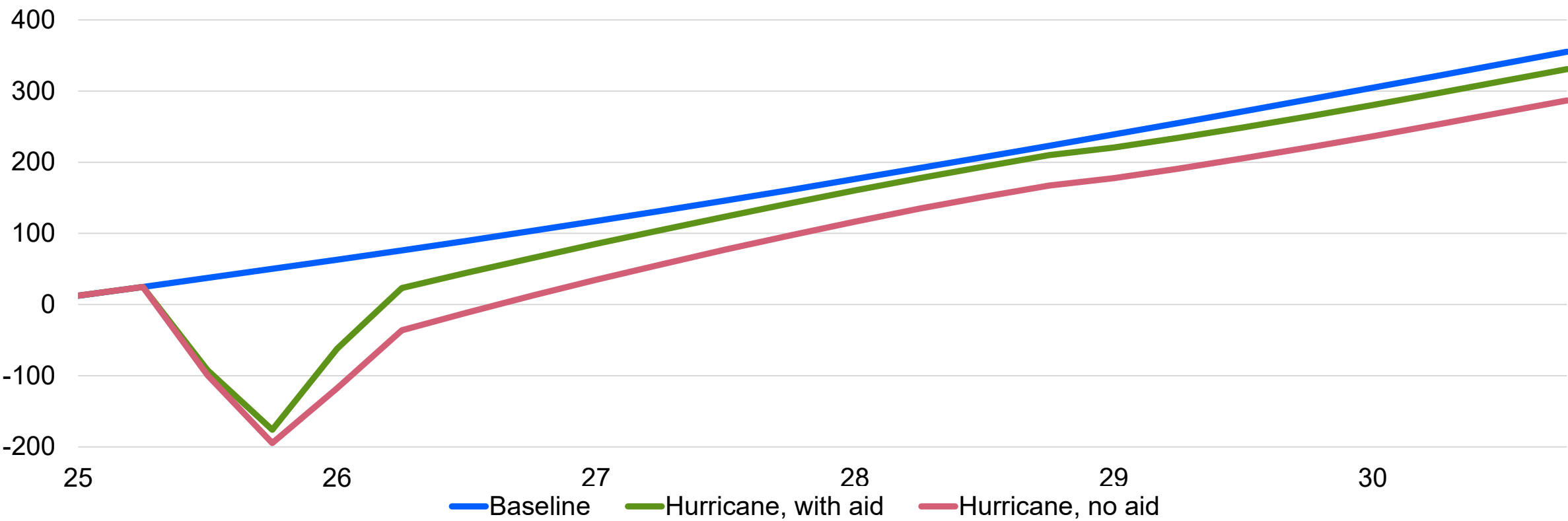
Avg from 2025-2029, % change from 2024, difference between no federal aid scenario and baseline



Sources: BLS, BEA, Moody's Analytics

# Sharp Population Decline Requires Aid to Overcome

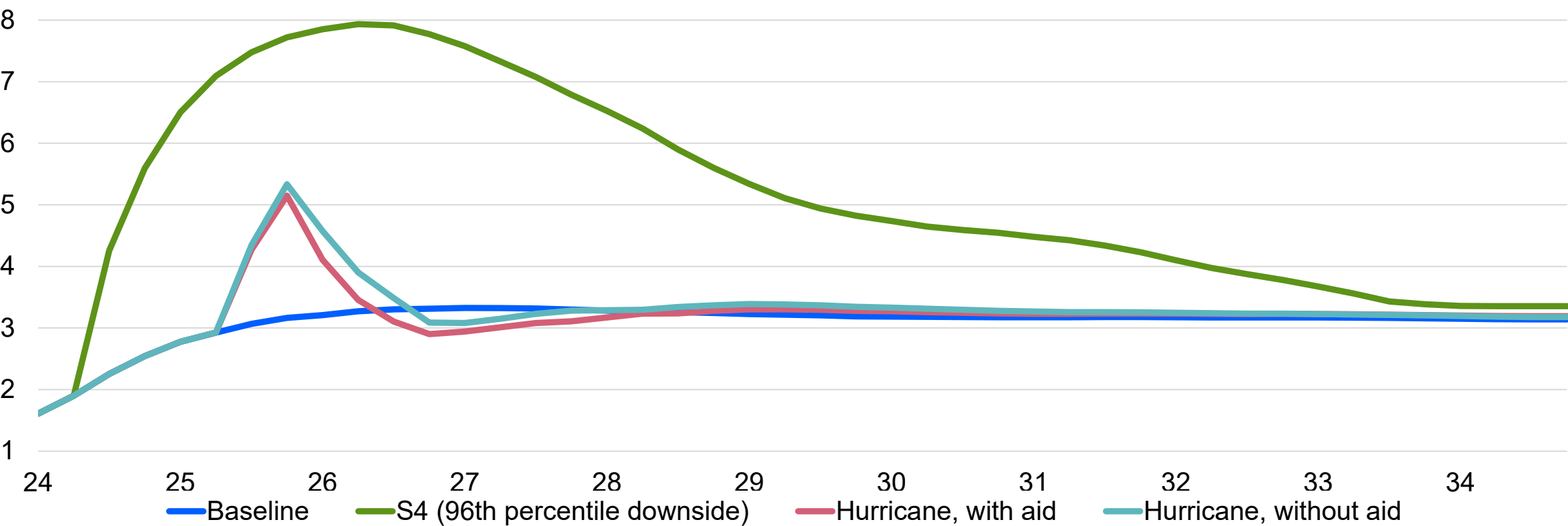
Cumulative net migration, Miami-Dade County, starting in 2025Q1, the



Sources: BEA, Moody's Analytics

# Shrinking Labor Force Mutes Unemployment Rate Shock

Unemployment rate for Miami-Dade County, SA, %



Sources: BLS, Moody's Analytics

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