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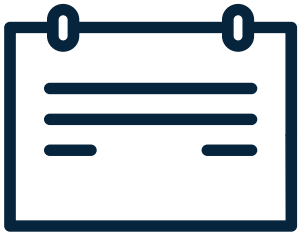
Study Manual for Exam 6 US

5th Edition

Victoria Grossack, FCAS



A CAS Exam

ACTEX Learning

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5th Edition

Victoria Grossack, FCAS

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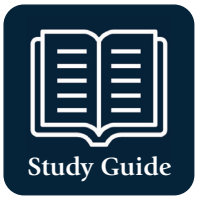

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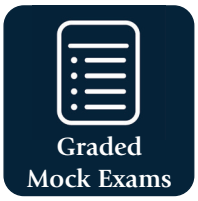

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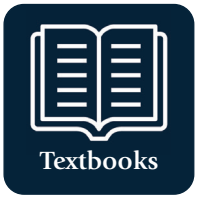

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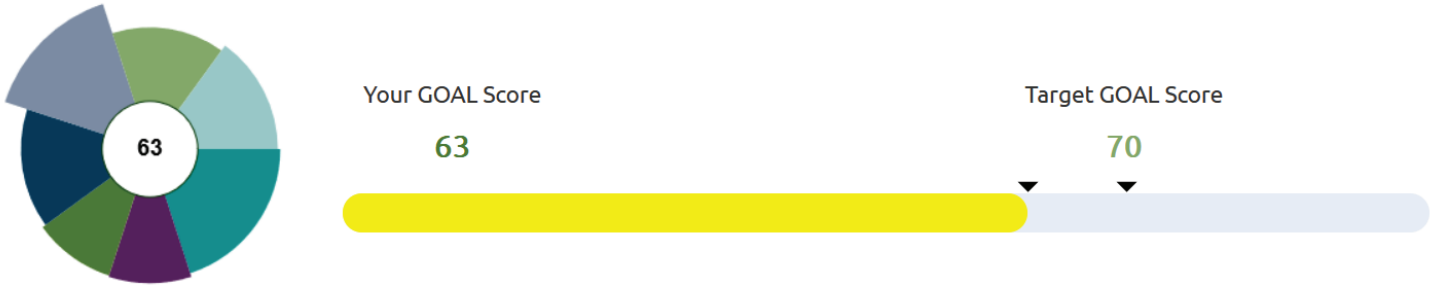

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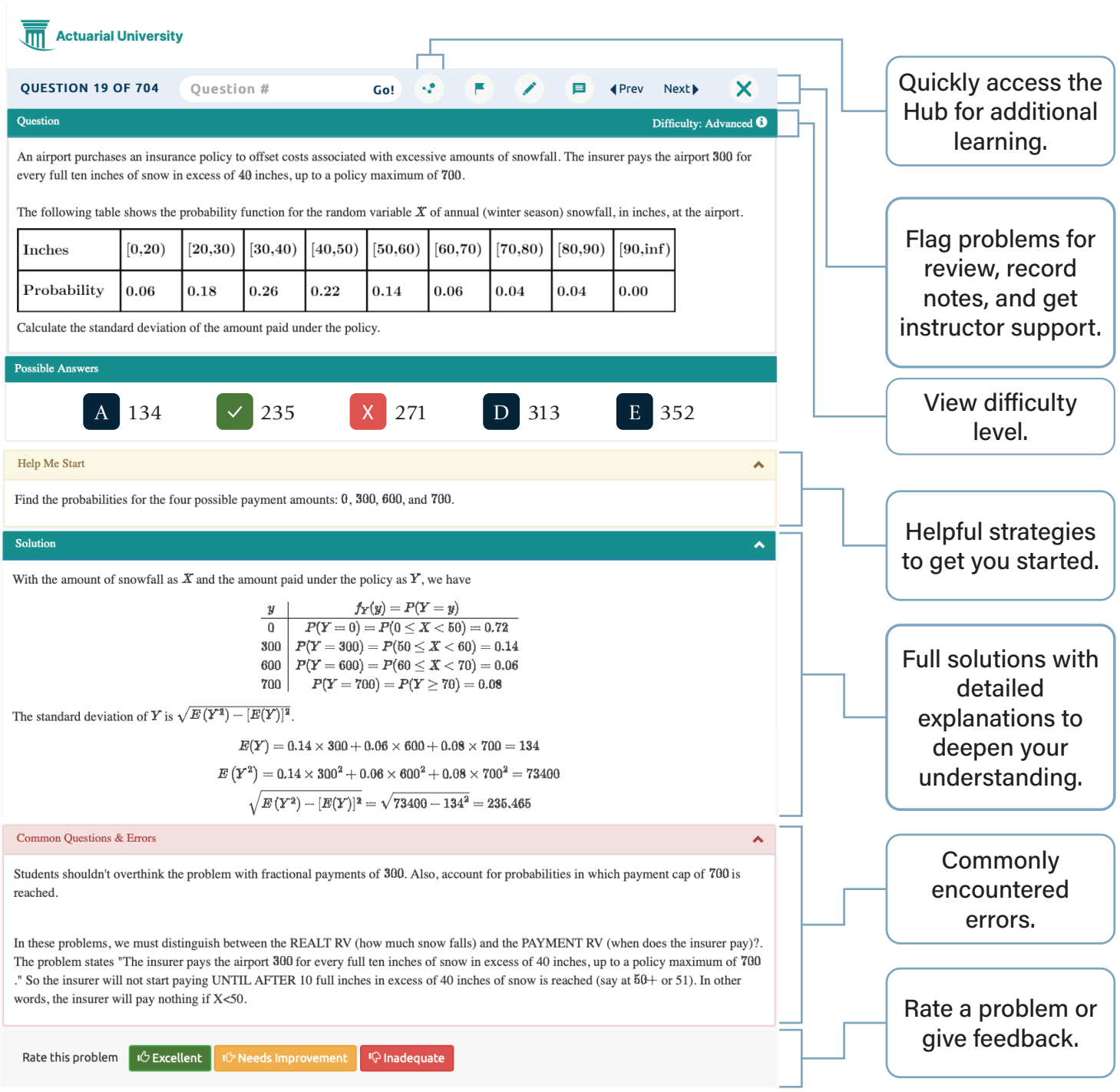

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QUESTION 19 OF 704 | Question # | Go! | Prev | Next

Question — Difficulty: Advanced

An airport purchases an insurance policy to offset costs associated with excessive amounts of snowfall. The insurer pays the airport 300 for every full ten inches of snow in excess of 40 inches, up to a policy maximum of 700.

The following table shows the probability function for the random variable X of annual (winter season) snowfall, in inches, at the airport.

Inches	[0,20)	[20,30)	[30,40)	[40,50)	[50,60)	[60,70)	[70,80)	[80,90)	[90,inf)
Probability	0.06	0.18	0.26	0.22	0.14	0.06	0.04	0.04	0.00

Calculate the standard deviation of the amount paid under the policy.

Possible Answers

A 134 ✓ 235 X 271 D 313 E 352

Help Me Start

Find the probabilities for the four possible payment amounts: 0, 300, 600, and 700.

Solution

With the amount of snowfall as X and the amount paid under the policy as Y, we have

y	$f_Y(y) = P(Y = y)$
0	$P(Y = 0) = P(0 \le X < 50) = 0.72$
300	$P(Y = 300) = P(50 \le X < 60) = 0.14$
600	$P(Y = 600) = P(60 \le X < 70) = 0.06$
700	$P(Y = 700) = P(Y \ge 70) = 0.08$

The standard deviation of Y is $\sqrt{E(Y^2) - [E(Y)]^2}$.

$$E(Y) = 0.14 \times 300 + 0.06 \times 600 + 0.08 \times 700 = 134$$

$$E(Y^2) = 0.14 \times 300^2 + 0.06 \times 600^2 + 0.08 \times 700^2 = 73400$$

$$\sqrt{E(Y^2) - [E(Y)]^2} = \sqrt{73400 - 134^2} = 235.465$$

Common Questions & Errors

Students shouldn't overthink the problem with fractional payments of 300. Also, account for probabilities in which payment cap of 700 is reached.

In these problems, we must distinguish between the REALT RV (how much snow falls) and the PAYMENT RV (when does the insurer pay)?. The problem states "The insurer pays the airport 300 for every full ten inches of snow in excess of 40 inches, up to a policy maximum of 700 ." So the insurer will not start paying UNTIL AFTER 10 full inches in excess of 40 inches of snow is reached (say at 50+ or 51). In other words, the insurer will pay nothing if X<50.

Rate this problem | Excellent | Needs Improvement | Inadequate

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Contents

Introduction to the Guide for CAS 6US

The content outline for the CAS 6US exam contains many readings, adding up to more than a thousand pages. You'll encounter some formulas but also many, many words. We won't kid you; passing this exam takes real work.

We're here to make it easier. We'll guide you to the readings. Because the readings usually have long, unwieldy titles, we always refer to them by their CAS Abbreviation, which is given in the actual content outline, and which is replicated within this guide.

There are different ways to study for this exam. You may want to go through the entire guide once, to become familiar with the broad outline, and then focus deeper on the topics most likely to be on the exam. You may choose to focus heavily on one section, using the readings and this guide together. You may choose a different approach.

The large number of readings

The CAS 6US content outline has so much material that the CAS has never given an exam with a question covering every topic. We'll let you know what has never been tested as well as what shows up most frequently on the exams. For the newer readings, we'll use our experience to point out what would make a good exam question.

However, each reading in the content outline has a reason for being there. Even if you don't memorize the contents, being familiar with them will make you a better actuary. Furthermore, understanding why you need this information as a professional should help you master the information.

So, why are there so many different readings? It's because the industry is full of people and players with different perspectives. Regulation occurs at the state level, but it also happens at the federal level – and more and more frequently, at the international level.

Regulators aren't the only players in the industry. There are the insurance companies themselves, including all the different functions within a company. The consumers. The accountants. The rating agencies. The investors. The politicians. The lawyers. The courts. The claimants. They don't all share the same perspective. As an actuary rising in the ranks, you'll want to understand how each group thinks – what their objectives are – so you can do your work better.

There are also different lines of business. Private auto is different from workers compensation and both are different from terrorism.

New topics also have to be addressed. Sometimes there are new phenomena due to changes in technology, such as usage-based automobile insurance. Others involve addressing current challenges, such as flood and terrorism and changes to accounting at the international level.

Accounting is big in Part 6US. You'll get overviews on various accounting practices, but on some topics, such as Schedule P, you'll have to go into more detail.

Some readings have been around a long time, or are updated infrequently, because they're covering history that doesn't change. Other items, such as what is happening with flood insurance or international financial reporting standards (IFRS), are updated frequently.

Tasks taken directly from the content outline are meant as a guide. However, multiple tasks may cover the same material (Antitrust provisions = Sherman Act), while other material doesn't fit well into any category. So we sometimes appear to skip a category, as it has been covered elsewhere, and sometimes we add an "Other" to make sure this guide takes you through all that you need to know.

We also have Knowledge checks – questions and answers – to help you do spot reviews of key matters of what you have just read. However, these Knowledge checks are only a start. At some point, you're going to need to turn to the GOAL questions and the eFlashcards.

Your first priority may be passing the exam, but we'll help with that too, by guiding you to the areas that are asked about most and areas that are mostly ignored. However, in the last few years, the CAS has stopped making exam questions and answers public, so we also focus on items that would make good questions.

It's important to consider the areas this exam covers, and how much weight is to be given to each.

A. **United States Laws and Regulations:** 10-20 percent

B. **Government Programs:** 5-15 percent

C. **Financial Reporting and Professional Responsibilities of the Actuary:** 60-75 percent

D. **Reinsurance Accounting Principles:** 5-10 percent

Obviously, the most important material is in section C. You will not qualify as an actuary until you are competent with this material.

Let's consider the many ways the CAS may ask questions. The content outline contains the following about potential exam-type questions:

Multiple Choice – Multiple answer choices are presented after a problem with only one correct answer.

Multiple Selection – Multiple answer choices are presented after a problem with more than one correct answer.

Point and Click – An image is presented after a problem where the candidate must identify the correct area of the image by clicking on the correct location in the image.

Fill in the Blank – One or more blank sections are presented after the problem or within a statement where the candidate must input the correct response(s).

Matching – Content columns are presented after a problem where the candidate must correctly match content from one column to another.

Constructed Response – A blank response area is presented after a problem where candidates must construct and develop their own answer.

Spreadsheet – Spreadsheet-type items are displayed to the candidate in a spreadsheet format, and candidates can make use of most spreadsheet functions. Please review the testing guide prior to sitting for your exam to note any differences between the Pearson Vue testing environment and common spreadsheet software (e.g., Excel, Google Sheets).

Understanding the different ways questions can be asked should help prepare you.

Finally, this guide was written for **Spring 2025**. If you're using it for an exam with a different date, it may be obsolete.

Let's get started!

Section B

Government Programs

We have already seen that government is heavily involved with the insurance industry as a regulator. Sometimes, however, the government becomes much more involved, especially with problematic lines of business.

Different countries approach these problems and situations differently. There's no single answer, and the approach often changes as the situation changes.

Let's take a look at how the content outline starts this section:

Candidates will be able to identify the major United States insurance programs administered by government agencies and insurance industry organizations. Candidates will be expected to show an understanding of the objectives, operations, and effectiveness of the following insurance programs:

- **Automobile Plans, e.g., MD Fund**
- **Crop Insurance**
- **Flood insurance**
- **Government Backstops, e.g., TRIA and Florida Hurricane Catastrophe Fund**
- **Guaranty funds**
- **Residual markets, e.g., auto, workers' compensation, property**
- **Workers' compensation, including its interaction with Medicare**

Range of weight for Section B: 5 to 15 percent

Here are the readings for this section, with the CAS abbreviations in **bold.**

Cook. Cook, Mary Ann, ed., *Personal Insurance,* (Second Edition), The Institutes, 2013, pp. 2.13-2.15 and 7.32-7.36.

FHCF Annual Report. Florida Hurricane Catastrophe Fund, State Board of Administration of Florida, "FHCF 2022 Annual Report," 2022, pp. 4-5, 7, 10-11.

Government Insurers Study Note. Germani, W., et al., "Government Insurers Study Note," CAS Study Note, April 2017, pp. 1-16.

Horn & Webel. Horn, D. and Webel, B., "Private Flood Insurance and the National Flood Insurance Program," updated January 9, 2023, Congressional Research Service R45242, Summary and pp. 1-21.

Porter 2. Porter, K., *Insurance Regulation*, Insurance Institute of America, 2008, Chapter 12 (pp. 12.12-12.17).

Webel. Webel, B., "Terrorism Risk Insurance: Overview and Issue Analysis for the 116th Congress," Congressional Research Service R45707, Updated December 27, 2019, Summary page and pp. 1-10, stop at The Terrorism Insurance Market.

Here are the tasks in the content outline;

1. Describe the purpose of government and industry insurance programs.
2. Describe the operations and risk transfer process for government/industry programs and their interaction with the voluntary private insurance sector.
3. Evaluate the effectiveness of a government/industry program.

Instead of going separately through each task and showing what each reading has to contribute, in this section we'll (mostly) review the readings one at a time and consider how each task is addressed.

Government Insurers Study Note

Let's begin with **Government Insurers Study Note**, as that gives the best foundation for this material. It starts by reviewing the reasons for government participation in insurance (given by Greene and Weining). These reasons are:

- Filling needs unmet by private insurance
- Compulsory purchase of insurance
- Convenience
- Greater Efficiency
- Social Purposes

Past exams: The list above is important for candidates, because exams often ask students to list two or more reasons for government participation in insurance. Frequently a question asks for elaboration on an answer, or asks why a reason applies to a particular line of business. So let's go deeper into these reasons.

Filling needs unmet by private insurance: Sometimes this is viewed as the "residual market philosophy," an approach when insurance is unavailable, unaffordable, or both, at least for a part of the population. Sometimes society decides that it's in its best interest for everyone who needs a particular type of insurance to have the insurance. This may be in order to protect the individuals who purchase the insurance (such as health insurance or property insurance) or to protect others in society (such as auto insurance and workers' compensation). That's when government, which has different requirements than private insurance companies, can step in. Government can charge less than actuarial rates and can raise taxes in order to subsidize. Let's consider some examples:

- Federal Crime Insurance Program, which was in place from 1968 to 1995. At the time, coverage for homeowners and small businesses in high crime rate neighborhoods was either too expensive or simply not available. Times changed; loss prevention methods made private market rates less than the government rates, and the program expired in 1995.
- Crop insurance is available due to government subsidies (we'll cover this more later).
- Flood insurance is available because of subsidies (we'll cover this in depth later).

Compulsory purchase of insurance: When the government requires that citizens to purchase a particular type of insurance, there's a good argument for the government making it available to anyone who wants it. Furthermore, compulsory insurance should not lead to excess profits in the private market, so the government often provides a less expensive alternative (not-for-profit). Here are some examples:

- Workers' compensation state funds are one answer; even with private WC companies active in a state, there's usually some form of residual market.
- High risk/subsidized auto insurance, which can include assigned risk plans, reinsurance facilities, and joint underwriting associations. Maryland has only a state-owned auto insurance company.

Convenience: Sometimes the government can set up an insurance program far more quickly than the private market, and sometimes the government already has a channel for reaching the market for another purpose, such as loss mitigation development and funding. However, it may not be justified if the private market is available and willing.

Greater efficiency: One argument for having the government run an insurance program is that it is more efficient; that is, its costs are lower. However, many costs are identical for both government and private insurance: administration, consumer education, etc.; cost savings may be overstated.

Social purposes: This is often the main reason for government insurance programs, as some goals may be achievable only through government, such as the rehabilitation and vocational

training of injured workers, or protecting the truly needy, the elderly, and the disabled. Also, the government is in a position to require some behaviors, such as building codes and zoning requirements to avoid floodplains.

Knowledge check – question

Briefly describe four reasons for government participation in insurance.

Knowledge check – answer

Four of the following:

- Compulsory purchase of insurance
- Filling insurance needs unmet by private insurance
- Convenience
- Greater efficiency
- Social purposes

Now that we've discussed the reasons *why* government sometimes acts as an insurer, let's review how they do it. Government can act at the federal or at the state level. They can act as the exclusive insurer or they can enter into a partnership with private insurers, by offering reinsurance on specific exposures. Sometimes they even compete with private insurers.

Federal examples – Terrorism, Flood, Crop

State examples – WC, Residual Auto, FAIR, Windstorm

Competitor to private insurers – WC in some states

Government Insurers Study Note also gives a few questions that should be asked about these programs in order to evaluate them:

- Is the provision of the insurance by the government necessary or does it achieve a social purpose that cannot be provided by private insurance?
- Is it insurance or a social welfare program?
- Is the program efficient?
- Is the program accepted by the public?

These questions are also worth remembering, because you'll be asked occasionally to evaluate the effectiveness of a specific program.

Now let's turn to the various types of insurance that are supported by the government in one way or another.

Crop Insurance

Crop Insurance is discussed in the **Government Insurers Study Note.** A nation needs to keep its people fed, which means it needs farmers to keep farming, and that can mean supporting them when times are tough. Over the years, the government has addressed the matter several times:

1938 – The Federal Crop Insurance Corporation (FCIC) was established in order to help farmers during the Great Depression. The initial program was to protect against low yields and only included wheat and corn. It was not successful, due to high costs and low farmer participation.

1980 – The Federal Crop Insurance Act expanded crop and geographic coverage and authorized the subsidy of the crop insurance program. In 2014, farmers paid about 38 percent of the policy premium.

Late 1980s and early 1990s – Congress passed disaster bills were passed to recover from severe weather; these bills were costly and competed with the insurance program.

1994 – Congress made participation in the crop insurance program mandatory for farmers to be eligible for payments under price support programs, certain loans, and other benefits. In addition, catastrophic coverage became available and this coverage was completely subsidized. Participation in the crop insurance program increased significantly.

Let's review **Multiple Peril Crop Insurance** policies, which the government operates as a public-private partnership. Private insurers market and write crop insurance policies, to indemnify farmers if yields are low due to natural causes (drought, heat, cold, fire, wind, or flood); some policies provide protection if prices fall below a given level. The USDA RMA (risk management agency) sets rates, determines which crops can be insured, acts as a reinsurer, and reimburses private insurance companies for their operating and administrative costs, while private insurers service the policies, including adjusting and settling any claims resulting from the policies.

Multi-Peril Crop Insurance Characteristics

- Premiums paid by farmers are subsidized by the federal government in order to reduce the cost to farmers and to encourage farmers to participate in the program.
- Farmers must elect to purchase multi-peril coverage prior to planting.
- Higher participation in the program than in previous programs, which provides better protection to farmers, may reduce requests for disaster assistance, but increases costs to taxpayers.
- The federal crop insurance program differs from most private insurance programs in that the insurer must sell at a rate set by the Federal government and follow the government's rules.
- As insurers cannot impose their own practices regardless of risk, the risk-sharing agreement allows insurers to transfer some liability associated with riskier policies to the government

and retain profits or losses on less risky policies.

- Crop insurance is not mandatory; farmers may choose whether to buy it, and for which crops. However, the RMA requires that if a farmer chooses to insure a particular field, he or she must insure all of his or her fields growing the same crop in the same county, reducing the problem of adverse selection.
- Farmers who forego crop insurance are not eligible for payments for crop loss from federal disaster relief programs.
- Some private insurers offer crop-hail insurance, not part of the federal program, which may be purchased at any time during the growing season.

Supporters of federally backed crop insurance point out that it gives stability to a volatile but important sector of the American economy, and without subsidies, it might be unavailable.

Opponents say subsidies encourage agricultural over-production and encourage farming in marginal and disaster-prone areas. Furthermore, it harms the environment and increases general disaster relief costs.

Past exams: Nearly everything above has appeared on one prior exam or another.

Knowledge check – question

1. Briefly describe a reason for the inception of Crop Insurance.
2. Briefly describe the extent of subsidization in the pricing of Crop Insurance.

Knowledge check – answer

1. To protect farmers against adverse weather events destroying crops, where a need wasn't being met by private insurance.
2. Crop Insurance is heavily subsidized by the federal government; farmers do not pay actuarial rates.

Let's move to another line of business covered in the **Government Insurers Study Note** reading. This time we'll consider Workers' Compensation.

Workers' Compensation

Thanks to the Industrial Revolution that led to more accidents at work, **Workers' Compensation (WC)** was started. WC, a no-fault insurance, keeps out most lawyers and gives certainty to both employers and injured employees. WC exists in all 50 states, DC, and five territories. Some states only have private insurance; some states have only a state fund. In some states,

state funds compete with private insurance, and some groups are covered by federal programs. Benefits are always defined by law.

Here are the main federal WC programs described in the **Government Insurers Study Note** reading:

Federal Employees' Compensation Act (FECA) – This supplies benefits to nonmilitary federal employees for employment-related injuries and disease. It's an exclusive remedy; if there are benefits from other programs, the FECA benefits are reduced. The non-adversarial system limits administrative and litigation costs. There is no judicial review and only a limited employer ability to contest, leading to lower costs than state WC systems.

Longshore and Harbor Workers' Compensation Act of 1927 – This assures benefits to longshore, harbor, and other maritime workers for employment-related injuries and disease incurred while on or near navigable waters. Employers may purchase insurance or self-insure; a special fund provides for second injuries or payment default. If benefits also received under state law, offset occurs to LHWCA benefits.

Black Lung Benefit Act – This provides wage loss and medical benefits to miners totally disabled from pneumoconiosis and eligible survivors. If there are state benefits, federal benefits are reduced by their amount. This is financed by federal general revenue and a Black Lung Trust Fund financed by an excise tax on mine operators (but such a large deficit in 2008, Congress made a one-time appropriation to reduce the deficit out of general funds).

Past exams: Questions have been asked about the inception of workers' compensation and specifically about the Longshore and Harbor Workers' Compensation Act. Asking about the Black Lung Benefit Act and the Federal Employees Compensation Act would be just as easy for an examiner.

Knowledge check – question

Briefly describe a reason for the inception of Workers' Compensation insurance.

Knowledge check – answer

The Industrial Revolution led to a great increase in the number of injuries at work. Workers' Compensation, essentially a type of no-fault insurance, let injured employees get compensation sooner and gave employers certainty.

We've considered federal involvement in Workers' Compensation, but most Workers' Compensation programs are under the jurisdiction of the states. Workers' Compensation in the states takes on several different forms:

Partnership with Private Insurers – In this case, the state laws prescribe benefits for which employers are responsible. Employer financing options depend on what is allowed in the state, and could be private insurance, insurance from a state fund, and self-insurance if the insured can demonstrate financial capacity.

State Funds – Sometimes businesses have fears regarding WC. They could be concerned about the refusal of coverage by private insurers; they may say that high rates will have a negative effect on a state's economy; they may argue that high rates will allow insurers to gain unfair profits (after all, WC is mandatory). State funds are seen as a response to these fears; 23 exist, 4 of which are exclusive and 19 of which compete with private insurers. States' WC funds are established by an act of the legislature; their boards are appointed (at least in part) by the governor; they are usually exempt from federal taxes; they are often the insurer of last resort. (South Carolina insures state employees and is available to cities and counties but not to private employers.)

Residual Markets – Unless the state fund is an "insurer of last resort," some applicants may be unable to find coverage. Insurers may decline because they believe the maximum rate they can charge is inadequate for the risk. As WC is mandatory, these applicants would go out of business, which is generally not good for the state. Residual market mechanisms vary by state; generally an applicant needs two declinations in order to be placed in the residual market. Here are the mechanisms, similar to those for auto liability:

- Some states assign applicants to carriers based on their WC market share. Insurers collect premiums/settle losses as if they wrote the applicant voluntarily.
- In other states, carriers reinsure undesirable applicants placed in a reinsurance pool, with profits or losses shared among carriers in proportion to market share.
- Other states authorize a Joint Underwriting Association, and carriers pro-rate the profit or loss.

The Workers' Compensation residual market is usually written at a loss, which means it is subsidized by the voluntary market.

We've gone through why Workers' Compensation was started, and how it functions in the various states. So, how is it doing? Is it effective? **Government Insurers Study Note** opines that both employers and employees benefit from certain guaranteed benefit systems, and the programs cover most workers in all states, territories, and DC. Who is doing the insuring? In 2013, private insurers paid 56% of WC benefit; state funds paid 15%; federal programs paid 6%; self-insurance paid 23%, and competitive state funds differ by state. Some private insurers offer the same level of rehabilitation and other services as offered by public insurers. Both public and private insurers can return dividends or safety refunds to policyholders; both private insurers and state funds provide coverage efficiently.

Government Insurers Study Note then turns to the topic of the interaction of Workers' Compensation with **Medicare**. Medicare was created in 1965 to provide health insurance for elderly. The 1980 Medicare Secondary Payer Act, stipulated Medicare to be secondary to liability

and includes "conditional payments" to medical providers, subject to later reimbursement by an insurer subsequently determined to be primary. Furthermore, some WC claims closed via a settlement with compensation to injured worker for anticipated *future* medical payments, as these can also overlap with Medicare.

In 1989, Federal regulators created the Medicare Set-Aside Allocation (MSA), in which all parties to a settlement agree to "set aside" a portion to be primary over Medicare for future treatment after the injured party became Medicare eligible. However, through the 20th century, Medicare was not always treated as the secondary insurer.

Medicare costs have risen due to medical cost inflation and longer life expectancy. In 2001, the Center for Medicare and Medicaid Services (CMS), established its first guidelines for the review and approval of MSAs. Since 2001, the process for MSAs has changed, making approval more difficult. As of 2012, CMS will review all workers' compensation MSAs where:

- Claimant is a Medicare beneficiary & settlement greater than $25,000.
- Claimant expected to be Medicare eligible within 30 months of settlement and the settlement or expected future medical costs and lost wages of the injury exceeds $250,000.
- CMS thresholds do not create a safe harbor, so even smaller medical settlements should consider Medicare's interests.

In 2016, CMS announced it will also review liability and no-fault insurance MSAs. After an MSA is approved, the injured worker must agree to pay WC-related medical bills, using an interest-bearing account, and to complete reporting of their payments before Medicare will make any payments for claim-related conditions. CMS can reject/ revise MSA proposals, increasing the estimated lifetime medical need.

Issues due to Medicare Part D (drugs)

In 2009, CMS issued pharmacy guidelines for MSAs, which essentially priced drugs at the retail cost level without regard to negotiated price arrangements that the insurer may have.

Due to industry concerns, in May 2010 Medicare issued clarifying language that drugs not included in Medicare Part D did not need to be considered in an MSA, reducing prescription costs in MSAs and was hailed as a significant victory in the insurance industry.

Rated Age Issues

Another issue which can the raise costs of an MSA is the use of "rated age" or impaired life expectancy versus claimant's actual age. If CMS protocols for rated ages are not followed, the CMS recalculates the MSA using claimant's actual age rather than impaired life expectancy.

What Happens when CMS doesn't know? New Reporting Requirements since 2007

George W. Bush signed the "Medicare, Medicaid and SCHIP Extension Act of 2007" (MMSEA), which sought to address the problem of CMS unawareness of primary payer responsibilities. The law requires claim payers (Responsible Reporting Entities (RREs)), to report claim data to CMS, including Medicare-enrollment status.

The reading then discusses possible impacts on actuarial work due to distortions in the data, but this seems an unlikely topic as this data will already be almost a decade old (or more) by the time you study this. Nevertheless it is important to realize that changes in a government policy can impact an insurance company's reserves, as settlement procedures are changed as a result, and could still cause changes.

The General Accounting Office estimates saving due to Medicare claim denials and recovery of payments of $737 million in 2008, rising to $861 million in 2011, all paid instead by insurers instead of Medicare.

In 2012, new legislation, part of the Strengthening Medicare and Repaying Taxpayers Act (SMART Act), implemented a 3-year statute of limitations on Medicare conditional payment recovery. The action by the federal government for recovery to be filed no later than 3 years after notice of settlement, judgment, award, or other payment. However, the statute does not define how notice of the settlement, judgment, award, or other payment is to be made to Medicare or if statute of limitations will be effective in curtailing increased workers' compensation claims should Medicare not cover certain claims. Many, including the American Bar Association, want more clarity in the handling of Medicare's interests in insurance claims; this area can be expected to expand and evolve.

Past exams: Questions about the relationship between Medicare and Workers' Compensation have occasionally appeared on prior exams.

Knowledge check – question

1. Describe the interaction between workers' compensation insurance and Medicare for a 70-year-old worker who is injured in the course of employment.
2. Describe the rationale for the creation of the Medicare-Set-Aside Allocations (MSAs).
3. Describe one potential impact to estimates of unpaid losses for workers' compensations resulting from changes by the federal government to MSAs.

Knowledge check – answer

1. Workers' compensation insurance is primary and Medicare is secondary. If Medicare pays the medical expenses first, Medicare will seek reimbursement from the WC insurer.
2. All parties in a WC settlement are required to set aside money for medical expenses related to the injury. The MSA will ensure that the amount paid by the WC insurer will still be sufficient to offer primary coverage when the insured is Medicare eligible.
3. Losses may now take longer to settle since the MSA will require approval. Estimates of unpaid losses could be understated if the slowdown in the closure pattern is not recognized.

Let's move next to **Automobile Insurance Plans**. To do that we turn to the reading from *Personal Insurance*, with the CAS abbreviation, **Cook**.

Automobile Insurance Plans (Cook)

In the United States, most auto insurance is underwritten by private companies, but high-risk drivers present a problem. High-risk drivers are people who violate traffic laws habitually, who are responsible for an excessive number of traffic accidents, and who may be convicted of certain driving offenses, such as driving without a license, DUI, reckless, and so on. As long as they are still permitted to drive – obviously, they need a driver's license! – they will need auto insurance. Private insurers welcome average and above average drivers, but high-risk drivers are more challenging. Some insurers will accept them, but other mechanisms exist for those who are not accepted. These mechanisms include voluntary market programs, residual market plans, JUAs, reinsurance facilities, and the Maryland state fund.

Voluntary Market Programs are also known as nonstandard insurance programs, in which case the customers are serviced entirely by private insurers. With these high-risk driver programs, coverage is often (but not always) limited to the state's minimum financial responsibility/compulsory insurance levels; medical payments coverage (for the driver) may be limited; and collision insurance may only be available with a high deductible. Premiums are higher than for average drivers. Often, voluntary insurers encourage high-risk drivers to drive better through safe driver insurance plans (SDIPs). Premium credits are given to insureds with no accidents/traffic convictions, but those with accidents/traffic convictions pay more.

Residual Market Plans for auto insurance: all auto insurers doing business in a state receive their proportionate share of high-risk drivers. The plans vary, but there are certain common characteristics. Applicants must show they have not been able to get auto insurance within a certain number of days of application. Now, some applicants are ineligible, such as those with no driver's license, felons convicted within the last 36 months, or habitual violators of state/local laws. However, if they are accepted, the minimum limits must at least be equal to the financial responsibility/compulsory insurance requirement in the state. The premiums are generally higher than voluntary market. States may call these insureds "assigned risk" but most insurers avoid this phrase because it's considered negative and they may want to keep these customers.

Joint Underwriting (JUAs) exist in some states. The JUA sets rates and approves policy forms to be used for high-risk drivers. Agents and brokers submit applications of high-risk drivers to the JUA or a designated servicing insurer. In a JUA state, auto insurers pay their proportionate share of total underwriting losses and expenses based on their share of voluntary auto insurance written in the state, but they only service the high-risk drivers if they are a designated servicing insurer.

Reinsurance facility for high-risk drivers. In some states, insurers accept all drivers with valid drivers' licenses. They can assign high-risk drivers – both the premiums and the losses – to the state's reinsurance facility, but the insurers continue to service the policies of these drivers.

The Maryland State Fund provides insurance to high-risk drivers in Maryland. It requires insurers to subsidize losses but insurers can pass on surcharges to their insureds.

Recent exams: The mechanisms for insuring high-risk drivers are asked about frequently in exams, as is whether the driver is aware or not of being assigned to a risk pool. It's important to understand the main learning objectives, too: why these plans exist; how they transfer risk and profit (note the various mechanisms are different here); and whether they are successful (**Cook** doesn't really evaluate this, but complaints about auto insurance aren't excessive, so we'll assume these mechanisms work).

Knowledge check – question

Why do states have mechanisms for insuring high-risk drivers?

Knowledge check – answer

Private insurers want to make a profit, but high-risk drivers are more likely to harm the bottom line. States, however, want to make sure that even high-risk drivers, or especially high-risk drivers, as long as they are permitted to drive, have insurance, so they create mechanisms to make sure that the high-risk drivers have access to auto insurance.

Cook also covers FAIR and Beachfront and Windstorm plans. We'll start with FAIR, which is the acronym for Fair Access to Insurance Requirements, which assists with getting property insurance to those who need it. Property insurance became unaffordable for some in the 1960s, due to riots (urban settings) and windstorms (usually coastal settings) and hazardous brush fires. Insurers were reluctant to insure property with high exposure to loss, so government programs were developed to fill the gap at the state level.

FAIR

FAIR Plans make standard lines of property insurance available in areas underserved by the voluntary market. Each state's FAIR plan is designed for local needs, so they vary a lot. The insurance is considered necessary because lenders usually will not lend unless owners have property insurance.

How FAIR plans work: a property owner who is denied by the voluntary insurance market can apply for FAIR through an agent or broker. Some state FAIR plans operate as policy-issuing syndicates; other state FAIR plans may contract with insurers to service policies for a percentage of the premium. Most FAIR plans require all property insurers to share losses according to their proportion of property insurance within the state.

For a property to be eligible for FAIR, it must be ineligible in the voluntary market; it must be inspected by a FAIR inspector; and it must meet basic safety levels. Five types of exposures are usually considered uninsurable. They are properties that are vacant or open to trespass, that are poorly maintained or have unrepaired fire damage, that contain unacceptable physical hazards (e.g., storing flammable materials), that violate laws or public policy (e.g., condemned), and, in some states, properties that are not built according to code.

FAIR plans vary. Some only provide limited HO; most provide coverage only for fire and a limited number of perils. The limits and deductibles vary widely. A **Difference-in-Conditions** policy can be written by a specialty insurer for a policyholder who wants more coverage. Fire is the primary loss exposure.

Beachfront & Windstorm Plans

Beachfront & Windstorm Plans are a consequence of the Atlantic & Gulf Coast hurricanes. Insurers started withdrawing from the voluntary market in the late 1960s, so coastal states responded by creating Beachfront & Windstorm plans.

Beachfront & Windstorm plans are similar to FAIR plans in that they make insurance coverage available to properties with higher-than-average exposure. The operation is similar to FAIR: either a servicing organization or policyholder syndicate, but all property insurers must share in costs.

For a property to be eligible, it must be ineligible in the voluntary market, it must be located in designated coastal area, and newer property must meet newer building codes. Beachfront & Windstorm plans will not insure properties that are poorly maintained or that have unrepaired damage, that have poor housekeeping, or that violate a law or public policy.

The coverages for Beachfront & Windstorm vary by state. Many provide coverage for windstorm and hail, but usually not tidal flood. Limits and deductibles vary by state. Other coverages to be purchased through other policies.

FAIR and Beachfront & Windstorm plans have merged in certain states (e.g., Florida, Louisiana).

Past exams: Most of what is covered above has been asked about on prior exams. It's good to know why and how FAIR and Beachfront & Windstorm plans came into existence, who pays for them, and what is considered uninsurable.

Knowledge check – question

1. Describe the purpose of Fair Access to Insurance Requirements (FAIR) plans.
2. Briefly describe two types of exposures that are considered uninsurable under most FAIR plans.

Knowledge check – answer

1. The purpose of FAIR is to provide affordable coverages to insureds located in high-risk zones that the private market was not willing to write. Since most federally backed mortgages required homeowners insurance, the government stepped in to fill the void.
2. Two of the following:
    - Properties that are vacant/open to trespass

- Properties that are subject to poor housekeeping
- Properties that are not in compliance with applicable laws of the state
- Homes that are already damaged
- Unsafe/hazardous conditions of the home which are not due to the environment.

We'll turn now to the subject of **Flood Insurance**, covered in the reading with the CAS abbreviation, **Horn & Webel.** This reading, a report done for Congress, reviews the current status of the National Flood Insurance Program (NFIP). The reading is from 2023, but updates are published fairly often. If your company writes flood insurance, or is considering writing flood insurance, it is important to monitor what the government is doing.

National Flood Insurance Program (NFIP)

Floods are the most common natural disaster in the US, having hit all 50 states, DC, and many territories, since 2018. The NFIP is the main provider of primary flood insurance coverage for residential properties in the United States. The role of the federal government in flood insurance is different compared to its role in the majority of other property and casualty risks. One reason for its heavy involvement was the withdrawal of private insurance companies from the market decades ago. Private insurers, which have better analytics than they did in the past, are more interested in the market these days. Expanding the role of private insurers is seen as a way to transfer the risk to the private sector, instead of using the private sector to transfer the risk to the taxpayers. Over recent years, the participation of private insurers has increased, with 140 private insurers underwriting the risk in 2019, up from only 50 private insurers in 2016.

The NFIP has two primary goals and one longer-term goal. First, it aims to provide access to primary flood insurance, thereby allowing for the transfer of some of the financial risk of property owners to the federal government. Second, it aims to reduce the nation's comprehensive flood risk through floodplain management standards. A longer-term objective of the NFIP is to reduce federal expenditure on disaster assistance after floods.

Knowledge check – question

What are the three goals of the NFIP?

Knowledge check – answer

(1) Provide access to primary flood insurance (especially to homeowners in flood plains).

(2) Implement floodplain management standards and thus reduce nation's flood risk.

(3) Reduce the federal expenditure on disaster assistance after floods.

From the NFIP's beginning, it has been expected to achieve multiple objectives, which unfortunately conflict with each other. It is expected to ensure reasonable insurance premiums for all while also having risk-based premiums that would make people aware of and bear the cost of their floodplain location choices. Another goal is to secure widespread community participation in the NFIP and substantial numbers of insurance policy purchases by property owners (but few people want to buy insurance unless they have to). Finally, it is also expected to earn premium and fee income that, over time, covers claims paid and program expenses, at odds with the first goal of having reasonable insurance premiums.

As government insurance, the NFIP operates differently than private insurance. The NFIP, in addition to having social goals, also engages in "non-insurance" activities in the public interest, such as the following:

- It publishes flood risk information through flood maps.
- It requires communities to adopt land use and building code standards in order to participate in the program.
- It may reduce the need for other post-flood disaster aid.
- It helps communities by providing a mechanism to fund rebuilding after a flood.
- It may protect lending institutions against mortgage defaults due to uninsured losses.

The benefits of such tasks are not directly measured in the NFIP's financial results from selling flood insurance. The program has been expected to achieve multiple objectives, some of which are in conflict with each other: reasonable insurance premiums; risk-based premiums; widespread community participation; premium and fee income that, over time, covers claims paid and program expenses.

Primary Flood Insurance through the NFIP

The NFIP offers flood insurance to anyone in a community that chooses to participate in the program. Flood insurance purchase is voluntary, except for property owners in a Special Flood Hazard Area (SFHA) *and* whose mortgage is backed by the federal government.

Flood insurance policies through the NFIP are sold only in participating communities and are offered to both property owners and renters and to residential and non-residential properties. NFIP policies have relatively low coverage limits, particularly for non-residential properties or properties in high-cost areas.

Mandatory purchase requirement

In addition tolending institutions requiringborrowers in an SFHA to purchase flood insurance, they may also require borrowers outside of an SFHA to maintain flood insurance to financially secure the property. Property owners may purchase flood insurance through the NFIP or through a private company, so long as the private flood insurance is "at least as broad as the coverage" of the NFIP. This requirement is enforced by the lender and not by FEMA, but lenders can be fined if they don't enforce this requirement.

Premium Subsidies and Cross-Subsidies

Flood insurance rates in the NFIP generally are directed by statute to be "based on consideration of the risk involved and accepted actuarial principles," but Congress has created exceptions (which may be why the program is always broke). There are three main categories of properties that pay less than full risk-based rates:

- *Pre-FIRM*: properties built before 1974, or before FEMA published the first Flood Insurance Rate Map (FIRM) for their community, whichever was later.
- *Newly mapped*: properties newly mapped into a SFHA on or after April 1, 2015, if the applicant gets coverage within 12 months of the map revision date.
- *Grandfathered*: properties built in compliance with the FIRM in effect at the time of construction may maintain their old flood insurance rate class if their property is remapped into a new flood rate class.

NFIP Reauthorization and Legislation

Horn & Webel then reviews the reauthorizations. Since the end of FY2017, 25 short-term NFIP reauthorizations were enacted (note: more may have been enacted since the reading was published). The reading reviews past bills that did not pass, where changes to the role of private flood insurance were considered. The different versions of bills that did not pass seem an unlikely topic for the exam, so they're not included in this guide, but it's important to understand that NFIP can be changed (or not reauthorized) by Congress. If you work with flood insurance as an actuary, you'll need to monitor Congressional (in)activity.

The reading also discusses three ways private insurers are involved in the flood insurance.

Private Insurers: Servicing of Policies and Claims Management

FEMA provides overarching management and oversight of NFIP, but most operations, e.g. marketing, writing policies, and claims management, are done by private insurers. This functions in one of two ways:

Direct Servicing Agent (DSA) (13%), which operates as a private contractor, selling NFIP policies on behalf of FEMA for people seeking to purchase flood insurance policies directly from the NFIP. The DSA also handles policies of severe repetitive loss properties.

Write-Your-Own (WYO) program (87%), where private insurance companies are paid to issue and service NFIP policies.

With either program, the NFIP retains the actual financial risk of paying claims, and the policy terms and premiums are the same. Companies in the WYO program are compensated through a variety of methods, not based directly on the costs incurred. In the Biggert-Waters Flood Insurance Reform Act (BW-12), Congress required FEMA to develop and issue a rulemaking on compensation. It has made some progress on this, but as of the publication of this reading, FEMA's analysis was not complete.

Reinsurance

Congress revised the authority of FEMA to secure reinsurance for the NFIP from the private reinsurance and capital markets, in order to reduce the likelihood of FEMA needing to borrow from the Treasury to pay claims. This should help reduce the volatility of its losses over time. Reinsurance has been purchased by FEMA through two different mechanisms, "traditional" reinsurance and reinsurance backed by catastrophe bonds.

However, the transfer of risk through reinsurance is unlikely to lower the overall cost of NFIP, because reinsurers charge premiums to compensate for the risk they assume. The benefit of reinsurance is to manage risk, rather than to reduce, NFIP's long-term fiscal exposure. Purchase of reinsurance also reduces NFIP's funds for other expenditures, such as paying primary claims and flood mitigation.

Nevertheless, to date, reinsurance purchases have been made by FEMA through two different mechanisms: traditional reinsurance and reinsurance backed by catastrophe bonds. Traditional reinsurance has been purchased through a group of reinsurers while the catastrophe bond reinsurance is facilitated through a single company but then passed on to capital market investors who purchase the bonds. So far, NFIP has claimed once on reinsurance for flood, after the high losses of Hurricane Harvey in 2017. The catastrophe bonds have not been touched.

Private Flood Insurance Outside the NFIP: Issues and Barriers

Congress created the NFIP in 1968 because of the unavailability of flood insurance from private insurers. Private insurance companies concluded that flood peril was uninsurable because of its catastrophic nature, the difficulty of determining accurate rates, the risk of adverse selection, and the concern that they could not profitably provide risk-based flood coverage at a price that consumers felt they could afford.

What the private flood insurance market now mostly provides:

- Commercial coverage
- Secondary coverage above the NFIP maximums
- Coverage in the lender-placed market

Private insurers tend to focus on high-value properties, which command higher premiums and, therefore, the extra expense of flood underwriting can be more readily justified.

Knowledge check – question

What are three ways that private insurance companies participate in flood insurance in the United States?

Knowledge check – answer

(1) Private companies take care of NFIP insureds, either as Direct Servicing Agents or as Write Your Own insurers. This includes marketing, underwriting, and claims management.

(2) Reinsurance. Private insurance companies reinsure the risks underwritten by the NFIP.

(3) They write on their own. This flood insurance tends to be commercial, or additional exposure, or for high-value properties, or for the lender-placed market.

Few private insurers compete with the NFIP in the primary residential flood insurance market; the NAIC only began systematically collecting separate data on private flood insurance in 2016. Private insurers have identified a number of potential barriers to more widespread private sector involvement in providing flood insurance:

Flood Insurance Coverage "at Least as Broad as" the NFIP. BW-12 stated private flood insurance could fulfill the mandatory purchase mortgage requirement as long as the private flood insurance "provides flood insurance coverage which is at least as broad as the coverage" of the NFIP. However, what this means is not clear. The responsible federal agencies issued several separate Notices of Proposed Rulemaking (NPRM) on the question, the first which rules the policy must meet BW-12 criteria (but lending institutions may rely on an insurer's representation as to the insurance meeting the requirements), and the second, which rules, under certain conditions, it doesn't have to (this took effect July 2019). According to press reports, the banking industry welcomed this, but it's not clear what will happen. Bills that did not pass included provisions to delete the "at least as broad as the coverage" provided by the NFIP, and instead would have relied on the laws and regulations of the state where the property was located.

Continuous Coverage. Property owners need continuous coverage to retain subsidies in their NFIP premium rates. Unless legislation specifically allows private flood insurance to count for continuous coverage, a borrower may be reluctant to purchase private insurance. This has been in proposed legislation but has not yet passed.

The "Non-Compete" Clause. Before FY2019, the WYO private insurers could not sell flood insurance policies on their own behalf due to a "non-compete" clause contained in the standard NFIP contracts. This was eliminated, although FEMA retains the authority to reinstate the non-compete clause in the future. (See section on *Adverse Selection.*)

NFIP Subsidized Rates. FEMA's subsidized rates are one of the primary barriers to private sector involvement in flood insurance. Even without subsidies, the NFIP's full-risk rates must incorporate expected losses and operating costs, while a private insurer's full-risk rates must also incorporate a profitable return on capital. Genuine risk-based rates would encourage private insurers to enter the market but would lead to higher premium rates.

Legislation actually phases out the pre-FIRM subsidy, and FEMA is in the process of developing a redesigned risk rating system for the NFIP, known as Risk Rating 2.0, to go into effect on October 1, 2021, for new policyholders and April 1, 2022, for current policyholders. Risk Rating 2.0 is supposed to introduce new sources of flooding, such as heavy rainfall, to consider actual

replacement value, and to include the distance between the property and a source of water.

Regulatory Uncertainty. Not only are private insurers concerned about issues such as continuous coverage, but they are also concerned about regulation at the state level. State oversight would increase with the increase of private insurance involvement. However, this could also lead to the development of state-specific insurance solutions, which might better suit local conditions.

Ability to Assess Flood Risk Accurately. Many insurers view the lack of access to NFIP data on flood losses and claims as a barrier to more private companies offering flood insurance, while FEMA believes the agency would need to address privacy concerns (the Privacy Act prohibits the release of personally identifiable information). Legislation was proposed that would make the data available but in a way that protects the privacy of the policyholders.

Adequate Consumer Participation. Private insurers need more participation in order to avoid adverse selection. Despite the mandatory purchase requirement, not all covered mortgages carry the insurance as dictated, and no up-to-date data on national compliance rates with the mandatory purchase requirement are available. A 2006 study showed anywhere from 43% to 88% compliance. The escrowing of insurance premiums, which began in January 2016, may increase compliance with the mandatory purchase requirement more widely, but no data are yet available.

Possible options: require all mortgage loans made by federally regulated lending institutions for properties in communities participating in the NFIP to get flood insurance. Another: all properties within the SFHA to have flood insurance, not just those with federally backed mortgages. The federal government could also mandate that homeowners' insurance policies include flood coverage or require all homeowners to purchase flood insurance. Congressional legislation that did not pass had a requirement for a better study of compliance, as well as an increase of civil penalties on lenders that fail to enforce the mandatory purchase requirement.

Knowledge check – question

What are three reasons that private insurers are hesitant to underwrite flood insurance for the primary residential market?

Knowledge check – answer

Three of the following:

- Flood Insurance Coverage "at Least as Broad as" the NFIP
- Continuous coverage issue
- Non-compete clause
- NFIP subsidized rates
- Regulatory uncertainty
- Adverse selection

We've covered reasons why private insurance companies are often reluctant to write flood insurance. What might happen to the market if they did?

Potential Effects of Increased Private Sector Involvement in the Flood Market

Increased Consumer Choice. NFIP policies are limited, whereas private companies can offer additional coverages, such as living expenses, other structures, business interruption insurance, and so on. Private companies could also offer flood coverage as an add-on to a standard homeowners' policy, which could eliminate the current problem of distinguishing between flood damage (which is covered by the NFIP) and wind damage (which is often covered by standard homeowners' insurance). Private flood insurance companies can offer a policy without requiring an elevation certificate if they have new technology.

Cheaper Flood Insurance (for some policyholders). Since some properties receive lower NFIP rates due to cross subsidies from other NFIP policyholders, it seems likely that some of the non-subsidized NFIP policyholders would be able to obtain less expensive flood insurance from private insurers. Private insurers may also be able to offer premiums more closely tied to individual risks than the NFIP currently does, which would provide lower premiums for some policyholders. Modeling by independent consultants (Milliman and KatRisk) have suggested that many consumers would pay less with a private policy, but what the private policy would offer is not clear.

Variable Consumer Protections. The consumer protections associated with private policies are likely to be enforced at a state level and will therefore be variable. A private flood insurance policy might be less expensive than an NFIP policy, but it might also offer less extensive coverage, which a policyholder may not realize until they make a claim following a flood. Unlike the NFIP, the language in private flood insurance policies is not standardized and has not yet been tested in court, so claim settlements may be variable too.

Adverse Selection.. Private sector competition might increase the financial exposure and volatility of the NFIP, as private markets will likely seek out policies that offer the greatest likelihood of profit. Because the NFIP cannot refuse to write a policy, those properties that are considered "undesirable" by private insurers are likely to remain in the NFIP portfolio— private insurers will not compete against the NFIP for policies that are inadequately priced. (UK experience shows this is difficult to avoid.) This will decrease NFIP's overall revenue, make it difficult to repay past borrowing, and reduce available monies for subsidizing high-risk properties.

Issues for NFIP Flood Mapping and Floodplain Management. If the number of NFIP policyholders decreases, it may be difficult to support the NFIP's functions of reducing flood risk through flood mapping and floodplain management. NFIP flood mapping is currently funded through (1) annual discretionary appropriations; and (2) discretionary spending authority from offsetting money collected from the Federal Policy Fee (FPF) paid to FEMA. Enforcement of floodplain management standards also could be more challenging within a private flood insurance system, as the current system only makes the NFIP insurance available if floodplain management standards

are implemented.

Concluding Comments: BW-12 directed FEMA to recommend the best method to privatize NFIP, but the matter is complex with many stakeholders. Now the discussion is more about sharing risk, as neither NFIP nor the private sector can write all the flood insurance, and hurricanes are identifying gaps. Currently NFIP has the moonshot of doubling flood insurance (both private and NFIP) by 2023. However, private insurance participation is unlikely to occur without Congressional action, and some Members of Congress continue to be concerned about adverse selection.

Knowledge check – question

Identify two benefits and two costs to having more of the insurance for flood being underwritten by the private insurance market.

Knowledge check – answer

Benefits to society (sample answer, others possible): Private insurance companies can offer a wider variety of policies, unlike the NFIP; and some customers will benefit from paying rates that reflect their own low risk.

Costs to society (sample answer, others possible): Some clients who need flood insurance may not be able to afford it; the NFIP may not be in a position to perform other functions that service society, such as flood mitigation and mapping.

Past exams: Many of the points above have appeared on past exams.

Terrorism

Terrorism is a risk where the government serves as a backstop. This means the government protects insurance companies rather than customers, but with the general idea that the protection extends down to them, with the idea that without the government backstop, the terrorism insurance would either be unavailable or unaffordable to customers.

Terrorism is reviewed in the reading **Webel**. The government's involvement was caused by the September 11, 2001 terrorist attacks. Before this event, terrorism losses were normally included in commercial insurance policies, but afterwards, insurers and reinsurers (which were hit especially hard) pulled back from offering terrorism coverage. There was fear that the lack of this coverage would have a wide economic impact, as insurance coverage is a significant factor in lending decisions.

These losses were concentrated in business interruption insurance (34% of the losses), property insurance (30%), and liability insurance (23%). Although primary insurance companies— those that actually sell and service the insurance policies bought by consumers— suffered losses from the terrorist attacks, the heaviest insured losses were absorbed by foreign and domestic reinsurers.

Congress responded with the Terrorism Risk Insurance Act of 2002, abbreviated TRIA. TRIA

was supposed to be temporary, expiring at the end of 2005, to calm the insurance markets and to give the industry time to gather data and to create the structures and capacity necessary for private insurance. TRIA did not require premiums to be paid for government coverage. Instead, it required insurers to offer commercial insurance for terrorism risk, and the government to recoup some/all federal payments in following years. In other words, TRIA serves as a backstop.

Knowledge check – question

What was the origin and funding mechanism of TRIA?

Knowledge check – answer

9-11 cost the insurance industry, especially reinsurers, a tremendous amount of money, so the federal government stepped in and created TRIA in case of additional terrorist attacks. The government charged no premiums up front and has a plan for recouping from the industry if there is a terrorist attack.

The original TRIA legislation's stated goals were to (1) create a temporary federal program of shared public and private compensation for insured terrorism losses to allow the private market to stabilize; (2) protect consumers by ensuring the availability and affordability of insurance for terrorism risks; and (3) preserve state regulation of insurance. Although Congress has amended specific aspects of the original act, the operation of the program generally follows the original statute.

TRIA has been reauthorized several times, during which the prospective government share of losses has been reduced and the recoupment amount increased. The 2007 reauthorization also covers losses from acts of domestic terrorism. In 2019, TRIA was extended again, this time through December 31, 2027.

The criteria under the TRIA program as extended in 2019 are as follows:

- An Act of terrorism must be certified by the Secretary of the Treasury, in consultation with the Secretary of Homeland Security and the Attorney General.
- Losses must exceed $5 million in the United States or to US air carriers or sea vessels, and the Treasury only pays if "the aggregate industry insured losses resulting from such certified act of terrorism" exceed $180 million, increasing to $200 million in 2020.
- TRIA covers only commercial property and casualty insurance, and by statute excludes several specific lines of insurance.
- An insurer's deductible is proportionate to its size, equaling 20% of an insurer's annual direct earned premiums for the commercial property and casualty lines of insurance specified in TRIA, before federal coverage begins.
- Once the $180 million aggregate loss threshold and 20% deductible are met, the federal government would cover 81% of each insurer's losses above its deductible until the amount of losses totals $100 billion.

- After $100 billion in aggregate losses, there is no federal government coverage and no requirement that insurers provide coverage.
- In the years following the federal sharing of insurer losses, the Secretary of the Treasury is required to establish surcharges on TRIA-eligible property and casualty insurance policies to recoup 140% of some or all of the outlays to insurers under the program, at least for losses totaling less than 37.5 billion.

During the House committee markup, two reporting requirements were added to the bill: (1) the Treasury would be directed to add to the annual ongoing report on market conditions an evaluation of the availability and affordability of terrorism risk insurance for places of worship; and 2) the Comptroller General would be directed to report on cyberterrorism and TRIA. S. 2877, as introduced, also included these reporting requirements.

Funding and payment

Small loss: The insurance industry covers the entire amount (and under $5 million, not even certified).

Medium-sized loss: The federal government assists insurers initially but is required to recoup the payments through a broad levy on insurance policies afterwards, spread over time.

Larger losses: The federal government covers more of the losses without mandatory recoupment.

Largest losses: The federal government is not required to recoup the payments it has made, although it may. The precise dollar values where losses cross these small, medium, and large thresholds depend on how losses are distributed among insurers.

If an event meets the criteria except that the losses are less than the 20% deductible on an aggregate basis, the government will probably still have to pay some funds because 20% on an aggregate basis will not mean 20% for each (re)insurer. For some (re)insurers, it is likely the threshold will be met.

TRIA was originally administered by the Secretary of the Treasury, but since Dodd-Frank, it was moved to over to the Federal Insurance Office (FIO).

Consumer Protections (goal #2 of TRIA):

TRIA protects consumers (always commercial) by requiring insurers that offer TRIA-covered lines of insurance to make terrorism insurance available prospectively to their commercial policyholders and reveal both the premium charged for terrorism insurance and the possible federal share of compensation. Policyholders are not required to purchase terrorism insurance; however, if they decline, the insurer may exclude terrorism losses. The rates charged are subject to the usual guidelines of not being inadequate, excessive, or unfairly discriminatory.

Preservation of State Insurance Regulation (goal #3 of TRIA):

If you studied section A of the syllabus, you know how anxious state insurance regulators are to continue regulating insurance! There are two exceptions, one permanent and one expired: (1)

TRIA preempts any state definition of an "act of terrorism" with the federal definition and (2) TRIA briefly preempted state rate/form approval laws for terrorism insurance (ended in 2003). Also, Section 105 preempts state laws with respect to insurance policy exclusions for acts of terrorism.

Coverage for Nonconventional Terrorism:

NCBR (Nuclear, Chemical, Biological, Radiological)

- Some experts consider a terrorist attack with an NBCR weapon to be the most likely type of attack causing large-scale losses. As TRIA does not specifically include or exclude NBCR events; in general, it would cover insured losses from terrorist actions due to NCBR as it would for an attack by conventional means.
- The term **insured losses**, however, matters. Most insurance policies under the TRIA umbrella include exclusions that would likely limit insurer coverage of an NCBR event, whether due to terrorism or to some sort of accident, (although these exclusions have never been legally tested in the US) after a terrorist event.
- If these exclusions limit insurer losses, they also limit TRIA coverage of such losses. Legislation addressing this has been considered but not enacted.

Cyber Liability, according to guidance released by the Department of the Treasury, are also included in the definition of property and casualty insurance under TRIA.

Knowledge check – question

TRIA has one exception where it states the federal government can overrule the state government. What is this exception?

Knowledge check – answer

The federal definition of an "act of terrorism" preempts any state definition.

Insurability of Terrorism Risk

Webel explains how insurance functions: An insurer agrees to assume an indefinite future risk in exchange for a definite current premium. For the insurer to avoid failure, it needs to accurately estimate the probability of losses so that it can charge a sufficient premium. Insurers use huge databases of past loss information to set rates, whether they are insuring car accidents (lots of data) or hurricanes (requires good models).

Terrorism is different; catastrophic terrorism risk lacks much public data about both the probability and severity of terrorist acts. The lack of historical data is generally a good thing, as it means few terrorist attacks have been attempted and even fewer have succeeded. Still, it makes it difficult for insurers to determine which terrorism risks they can assume. Insurers turn to terrorism models to assess future losses, but terrorism models are relatively new, unlike hurricane models.

An insurable risk has four ideal elements:

- A sufficiently large number of insureds to make losses reasonably predictable. (But terrorism losses are not predictable.)
- Losses must be definite and measurable. (Terrorism losses are generally definite and measurable.)
- Losses must be fortuitous or accidental. (Terrorism losses caused by malevolent actors, so probably fails this.)
- Losses must not be catastrophic. (This can be controlled by underwriting limitations, so that an insurer is not over-exposed.)

Past exams: This list, what makes a peril insurable or not, has appeared on previous exams. Occasionally candidates are asked to apply the list to other perils, such as Flood.

The insurance industry largely continues to support TRIA, as do commercial insurance consumers in the real estate and other industries that have formed a "Coalition to Insure Against Terrorism" (CIAT). However, not all insurance consumers have consistently supported the renewal of TRIA. For example, the Consumer Federation of America has questioned the need for the program in the past.

Since TRIA's passage, the willingness and ability of private insurance to cover terrorism risk have increased, and the prices for terrorism coverage have generally trended downward. Approximately 78% of commercial policyholders purchased coverage over the past few years. Although this seems like a good sign for discontinuing TRIA, it's important to recognize these price drops and coverage increases have occurred with TRIA in place, and it is not clear what would have happened without TRIA acting like a backstop. The TRIA was extended to December 31, 2027.

Knowledge check – question

What four ideal qualities do insurable risks have?

Knowledge check – answer

- A sufficiently large number of insureds to make losses reasonably predictable.
- Losses must be definite and measurable.
- Losses must be fortuitous or accidental.
- Losses must not be catastrophic.

We're almost done with section B. You may have noticed that we did not discuss **Guaranty Funds,** despite their being mentioned in this section of the syllabus. That is because they are so intertwined with insolvencies that we already covered the subject in section A.

Florida Hurricane Catastrophe Fund (FHCF)

The **Florida Hurricane Catastrophe Fund** is another government backstop program - like the protection for terrorism risk, it is aimed at protecting insurers and reinsurers rather than consumers, with the idea that by providing relief to insurers and reinsurers, consumers will also experience savings. Its reading is the **FHCF Annual Report**.

The Florida Hurricane Catastrophe Fund (FHCF) is a state trust fund that provides reimbursement to residential property insurers for a portion of their Florida catastrophic hurricane losses. After Hurricane Andrew, which struck Florida in August 1992 causing at least 11 insurer insolvencies, the Florida Legislature recognized that an unstable market for property insurance threatened the state's economy. The Legislature created the FHCF to operate "exclusively for the purpose of protecting and advancing the state's interest in maintaining insurance capacity" in Florida.

The FHCF is similar to private reinsurance, but the FHCF usually operates at a lower cost than the market reinsurance, as it does not include a profit factor or risk load in its rates and since it is exempt from federal taxes.

Participation in the FHCF is mandatory for Florida residential property insurers. The FHCF is designed to be self-supporting except in extraordinary circumstances. It charges each insurer an actuarially-determined premium for the coverage provided. When the cash balance of the fund is not sufficient to meet its obligations, the FHCF can rely on the proceeds of revenue bonds backed by assessments on most types of Florida property and casualty insurance premiums. The FHCF also engages in financing and risk-transfer activities intended to improve liquidity and potentially minimize the need for assessments.

In general, the FHCF covers a percentage of the insurer's hurricane losses in excess of the insurer's "retention," similar to a deductible, up to a maximum payout. An insurer's coverage percentage is 90, 75, or 45 percent, as selected by the insurer. The insurer's retention is based on its share of the FHCF's total retention and the maximum payout is the insurer's share of the statutory coverage limit (when post-event revenue bonds are outstanding, an insurer may not reduce its premiums, retentions, and coverage limits are based on each insurer's annual reporting of insured values by line of business, construction type, and zip code and on hurricane loss projection models). The FHCF is exempt from federal taxes and is authorized to issue post-event revenue bonds on a tax-exempt basis.

Under the reimbursement contract, which runs from June 1 of a given year through May 31 of the following year, the FHCF promises to reimburse the insurer: For a percentage of the insurer's total residential losses from each hurricane, in excess of the insurer's retention, which is similar to a deductible, plus, a 10 percent allowance for loss adjustment expense. This is up to a limit that reflects the insurer's share of the FHCF's actual claims-paying capacity, not to exceed the insurer's share of the statutory maximum obligation (currently $17 billion).

Claims paying capacity

The FHCF does not constitute a full-faith-and-credit obligation of the State of Florida. Instead, the FHCF's potential obligation for a particular contract year is limited to its cash balance, risk transfer recoveries, and the amounts it is able to borrow. The amount of FHCF post-event debt that the markets are willing to accept is therefore a critical factor in determining the FHCF's actual claims-paying capacity.

Debt paying and risk transfer

After a hurricane, the FHCF will issue bonds when its projected reimbursement payments exceed its cash resources. These bonds can be either taxable or tax-exempt. The primary source of revenue to pay off the bonds is emergency assessments on most property and casualty insurance premiums. Workers' compensation, medical malpractice, accident and health, and federal flood insurance premiums are currently exempt from assessment. The maximum assessment percentage is six percent with respect to losses attributable to any one year and ten percent with respect to losses from multiple years. One way the FHCF meets this liquidity need is by issuing "pre-event" debt. Although pre-event debt does not add to the FHCF's actual claims-paying capacity, the added liquidity provided through pre-event financing helps assure prompt payment and minimize market disruption.

Annually, the FHCF evaluates opportunities available in the global risk transfer and capital markets to maximize its claims-paying capacity for initial and subsequent seasons. In prior years, the FHCF chose to participate in a private risk transfer placement; however, considering hardening conditions in the market in 2022, the FHCF chose not to purchase reinsurance.

Knowledge check – question

How does the FHCF manage to operate at a lower cost than other reinsurers?

Knowledge check – answer

There is no risk load and no profit load and it is exempt from federal taxes.

