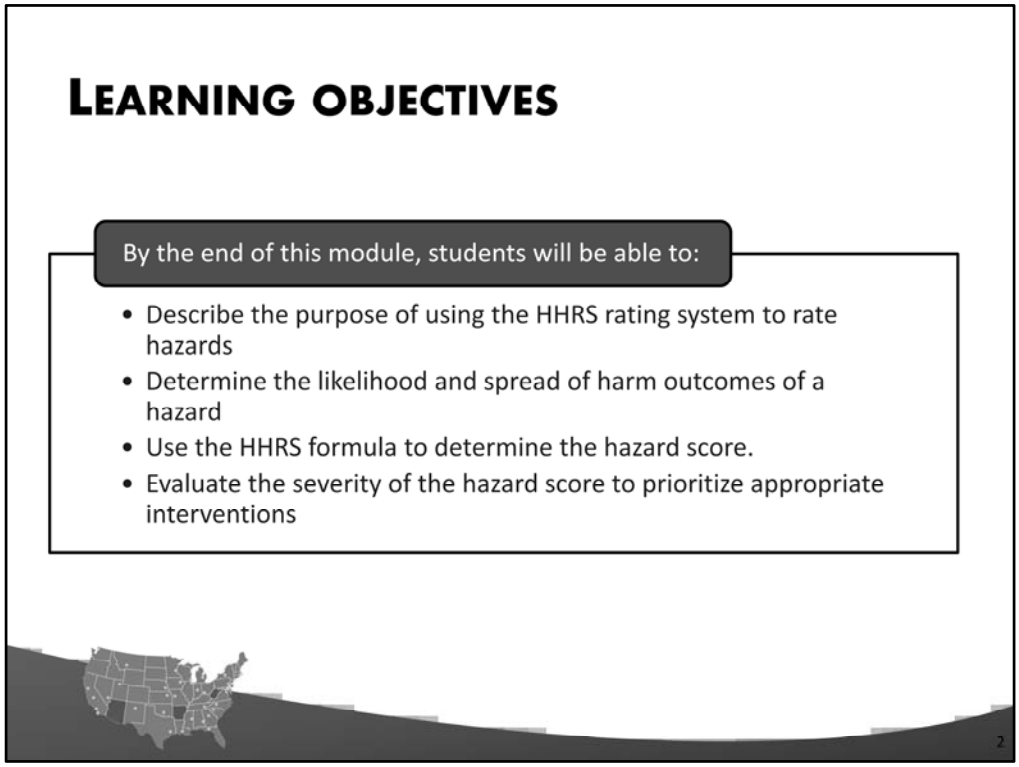
This Module is designed to prepare trainers to teach Assessors/Inspectors the importance of and linkage between a healthy homes assessment and use of the HUD Healthy Home Rating System (HHRS).

The module will run approximately 30 to 45 minutes to include questions and answers.



Tasks for rating hazards:

Determine likelihood
Determine spread of harm outcomes
Determine the hazard rating based on two judgments: likelihood and spread of harm outcomes
Determine the hazard band the hazard score fits into
Determine appropriate interventions

The HHRS Process

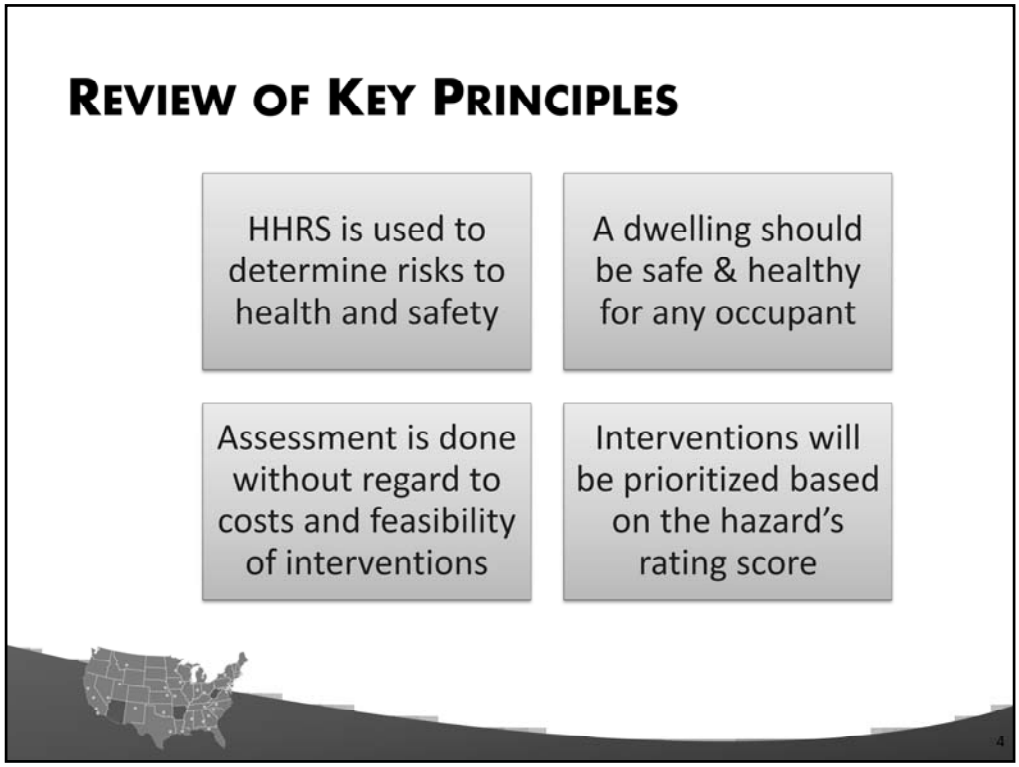
Step 1
- Inspecting the Dwelling

Step 2
- Linking Deficiencies to Hazards

Step 3
- Scoring the Hazard

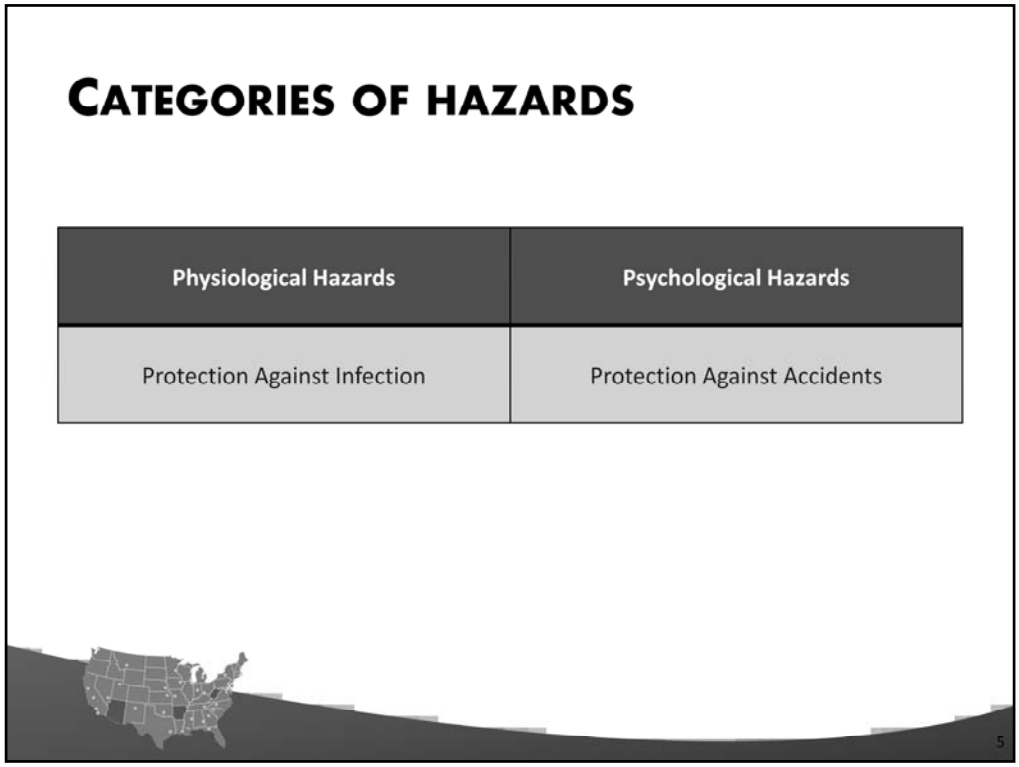
Step 4
- Determining the Appropriate Action

3



Explain to students that the HHRS tool is used to determine the level of risk to occupants' health and safety based on the hazards that are present in the home. The key principle of the HHRS is that a dwelling should be safe and healthy for ANYONE who occupies the dwelling, including visitors.

Remind the students that they are still using their assessment tool to assess the deficiencies in the home and that the HHRS tool will be used after the assessment to determine the health and safety risks to occupants and to assist them in prioritizing interventions. They should not avoid documenting a hazard simply because they may or may not have the resources to fix the problem later.



Look at Appendix C in the Operating Guidance for the full list. The main categories are from the American Public Health Association's (APHA) 1938 publication called "Basic Principles of Healthful Housing". The specific hazards have changed, but not the categories considered essential for human health.

A. Physiological Hazards

- Hygrothermal conditions
- Pollutants (non-microbial)

B. Psychological Hazards

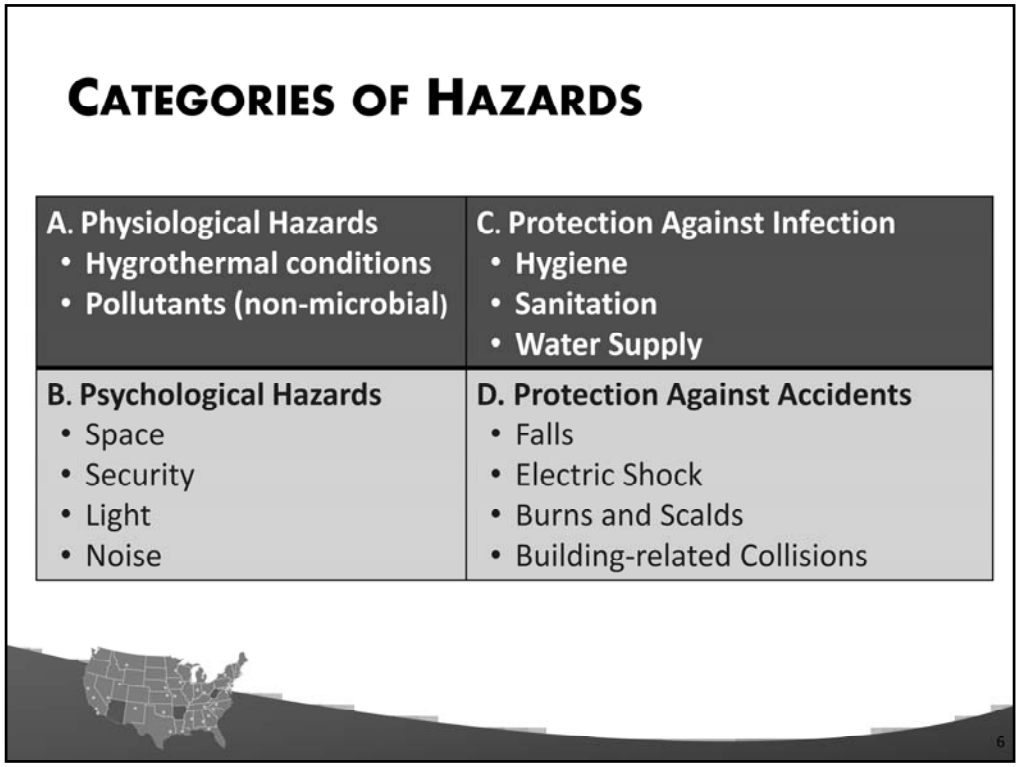
- Space
- Security
- Light
- Noise

C. Protection Against Infection

- Hygiene
- Sanitation
- Water Supply

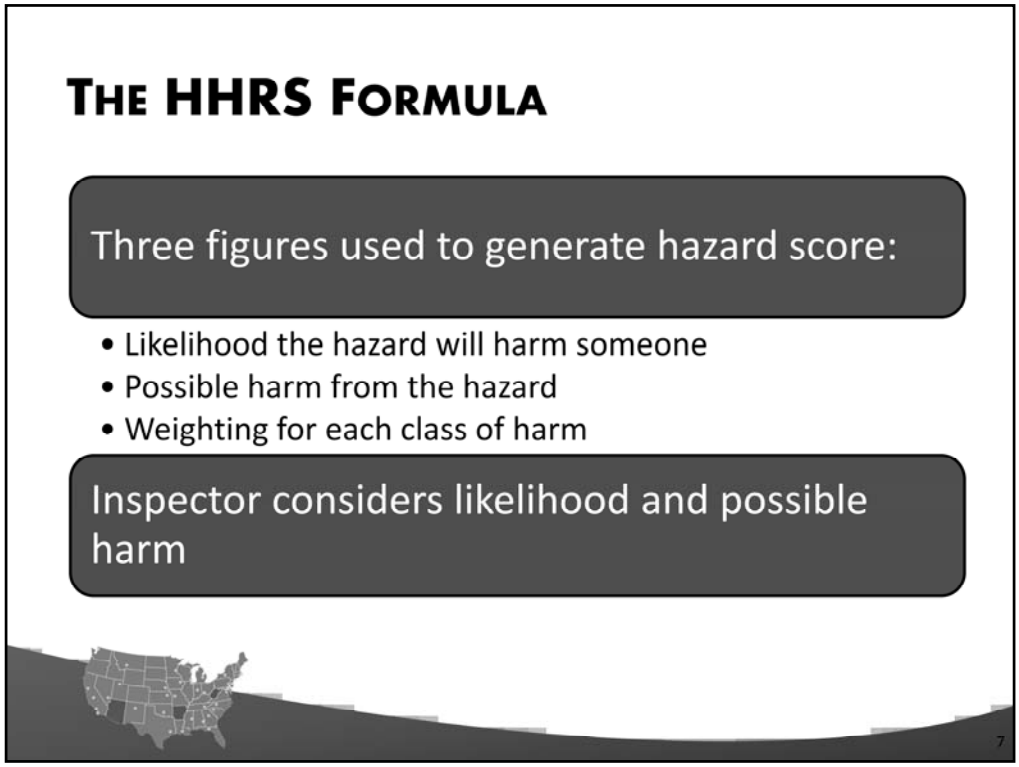
D. Protection Against Accidents

- Falls
- Electric Shock
- Burns and Scalds
- Building-related Collisions



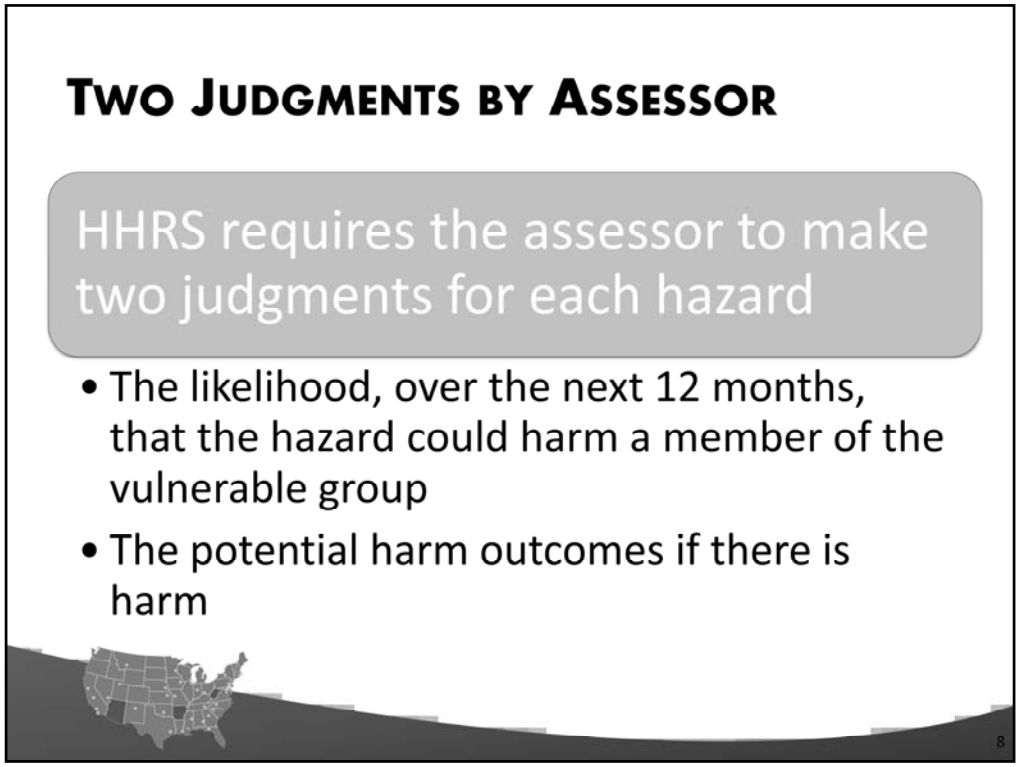
Make sure the students understand the 29 hazards are also placed into four specific categories based on the American Public Health Association's publication called "Basic Principles of Healthful Housing" published in 1938.

You can refer the students to the full list of hazards and the categories in which they have been placed. This slide is just to make them aware that each hazard is placed in a particular category based on the effect it may have on occupants. The specific hazards have changed since 1938, but the categories considered essential for human health remain the same (physiological hazards, psychological hazards, protection against infection and protection against accidents).



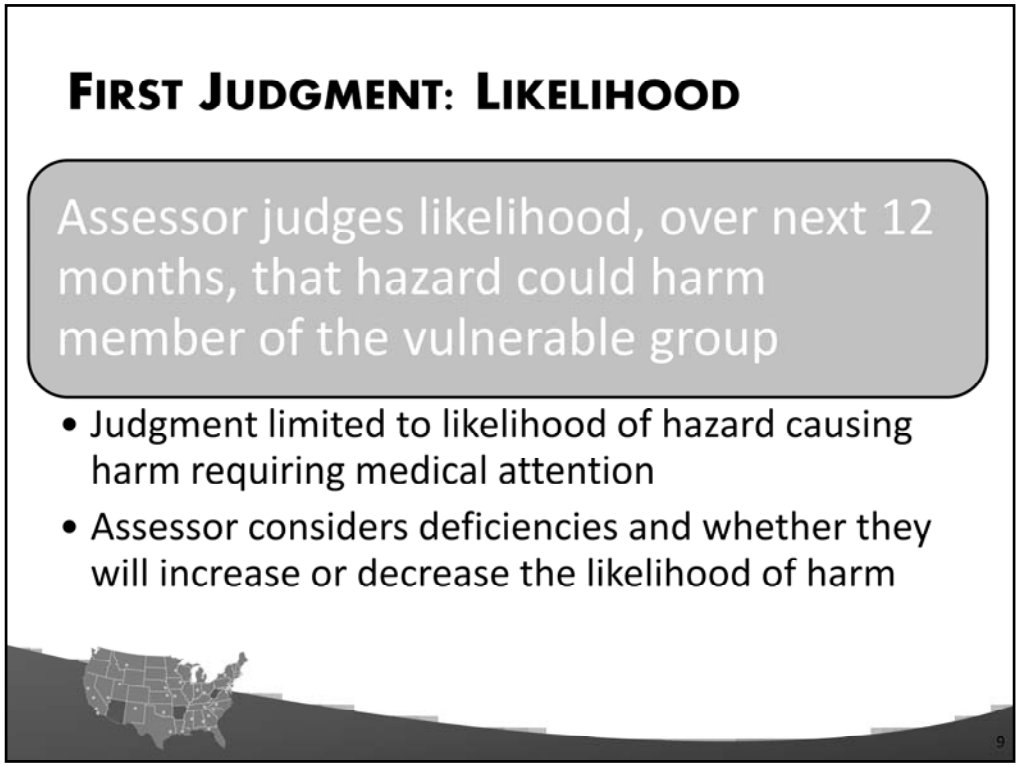
We'll discuss the weighting for Classes of Harm later, since these are fixed and won't require input from the assessor. First, we'll discuss Likelihood, then Outcomes.

(a)a weighting for each Class of Harm reflecting the degree of incapacity to the victim resulting from the occurrence;
(b)the likelihood of an occurrence involving a member of a vulnerable group, expressed as a ratio; and
(c)the spread of possible harms resulting from an occurrence, expressed by percentage for each of the four Classes of Harm.



This is going to be a difficult/confusing section for the students. Likelihood judgments may be the most difficult to comprehend. You as the instructor will provide help, but encourage your students to be patient and work through as many examples as they need to make sense of the process.

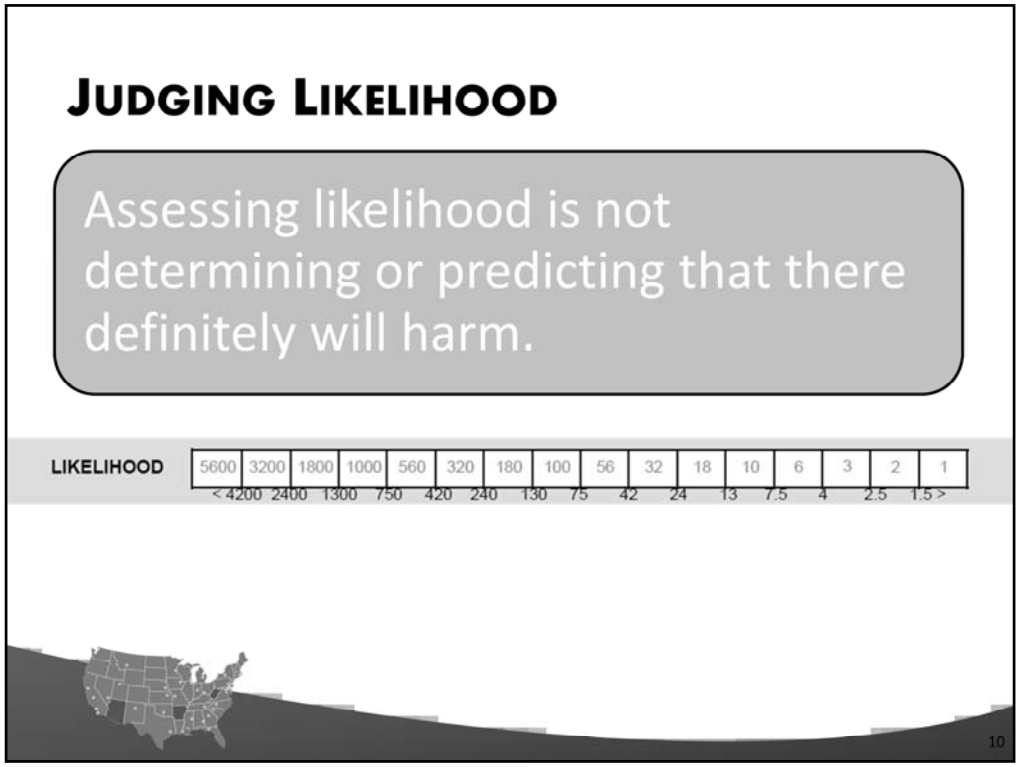
The HHRS requires the assessor to make two judgments for each hazard identified during the assessment. Once the students have assessed the home and determined the hazards caused by the deficiencies, they will determine the likelihood, spread of harms and hazard score for those hazards that may pose the most significant threat to the occupants, considering vulnerable populations.



Now we will discuss the first judgment, determining the likelihood. Once you explain the likelihood to the students, you can refer them to the hazard profiles to show the average likelihoods in the UK. Make sure they understand these are only averages listed in the hazard profile and that the actual likelihood is going to vary based on the assessors judgment of the conditions in that particular dwelling. Remind them the judgment of likelihood is based on the deficiencies found during the assessment

While they are in appendix c, this is a good time to have them complete an exercise to evaluate their level of understanding of where to find likelihoods in a hazard profile. Each student will have a handout with the damp and mold hazard profile. Everything will be blank except the dwelling type and age; the students will then find the dwelling type and age and then fill in the blanks with the correct likelihood averages. Explain to them that we are just looking at likelihood averages right now and will discuss the spread of harm outcomes soon.

Once they have had a chance to work through finding the average likelihoods, you can explain the last point in more detail. Inform students they will understand this more with practice using the worked examples. To summarize, for each hazard, they will be provided average likelihoods from the hazard profile when data is available according to dwelling type and age. Based on the deficiencies in the home (considering extent/severity of hazard and location in dwelling), the assessor determines whether or not the likelihood of an occurrence will be increased or decreased (a greater chance of an occurrence or less of a chance of an occurrence than the national averages).

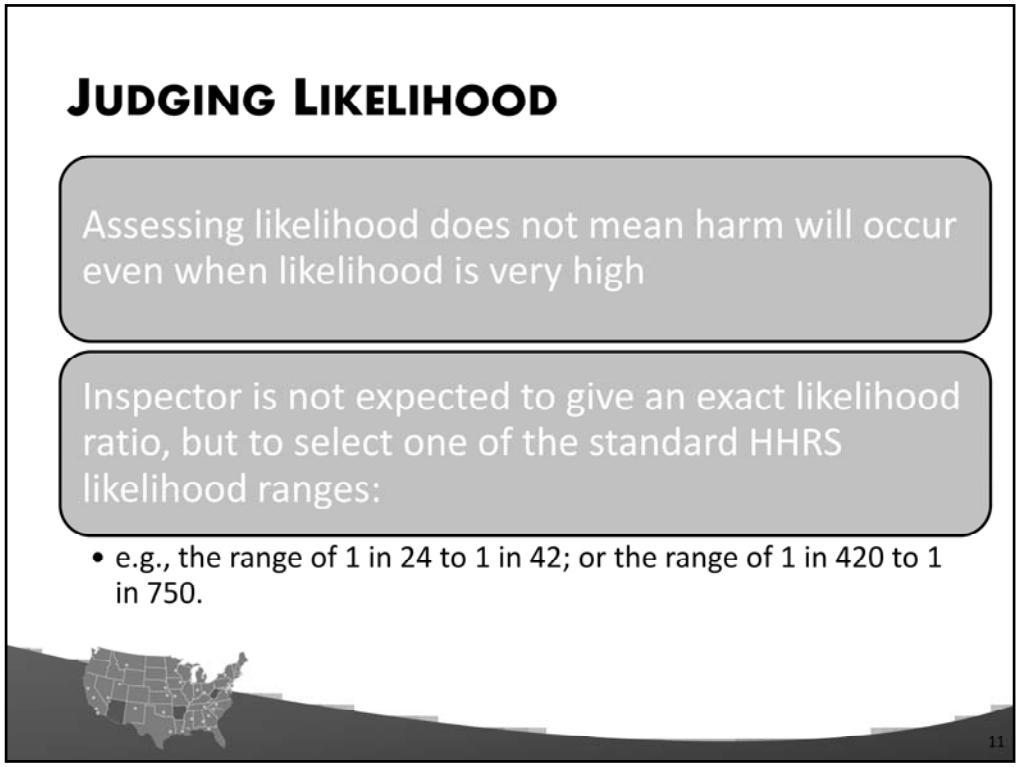


It might be helpful to think in terms of using a scale of 1 to 10. A score of 1 when a risk is extremely likely to occur (1 in 1), and use a score of 10 (1 in 5600) in when the risk is extremely unlikely to occur. In the case of HHRS, you have 16 likelihood choices instead of 10.

Refer to the Paper Scoring Form for a quick example of the Likelihood scale – next slide.

The inspector is not expected to give an exact likelihood ratio, but to select one of the standard HHRS likelihood ranges – e.g., the range of 1 in 24 to 1 in 42; or the range of 1 in 420 to 1 in 750.

Even where it is judged that there is a very high likelihood, such as a 1 in 10 probability, it is accepting that the likelihood of no occurrence is nine times greater than that of an occurrence.



For example, a probability of 1 in 10 is very high (an occurrence will happen 1 out of every 10 times that hazard is found); however, the probability of an occurrence NOT happening is still 9x higher. Again, have the students think back to the purpose of the HHRS and ask them again: What is the purpose of the HHRS?? To determine RISK to health and safety.

Explain an exact ratio, so for 1 in 24 (0.0416) or 1 in 42 (0.0238) is not expected. The assessor is expected to choose from a likelihood range such as 1 in 24 or 1 in 42.

It may be helpful to think of the likelihood ranges in months. So for the range of 1 in 24 or 1 in 42, you may think of it as an occurrence happening once in the next 24 months or once in the next 42 months. Using something students are more familiar with such as months may make this concept more clear.

Refer to the Paper Scoring Form for a quick example of the Likelihood scale and make sure students understand how to read it. It may be a good idea to discuss the representative scale point at this time since you are referring to the likelihood scale to minimize confusion as to what the number is.

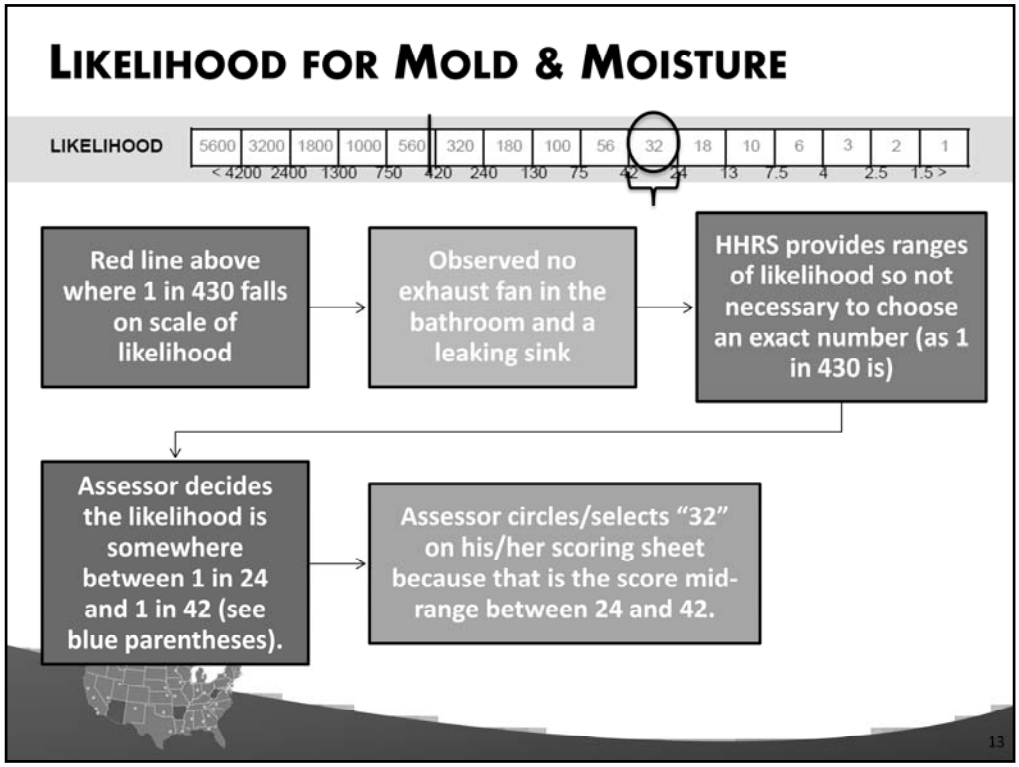
It may be helpful to explain to the students there are 16 boxes on the likelihood scale. So it may be helpful initially to think of a scale from 1 to 16, with 1 being the least likely to occur and 16 being the most likely to occur.

Likelihood Numbers

- Hazard Profiles give national UK average likelihoods for vulnerable age group.
- Only assess hazards that presently cause, or are likely to cause harm, over next 12 months.
- The UK likelihoods are only a reference.

12

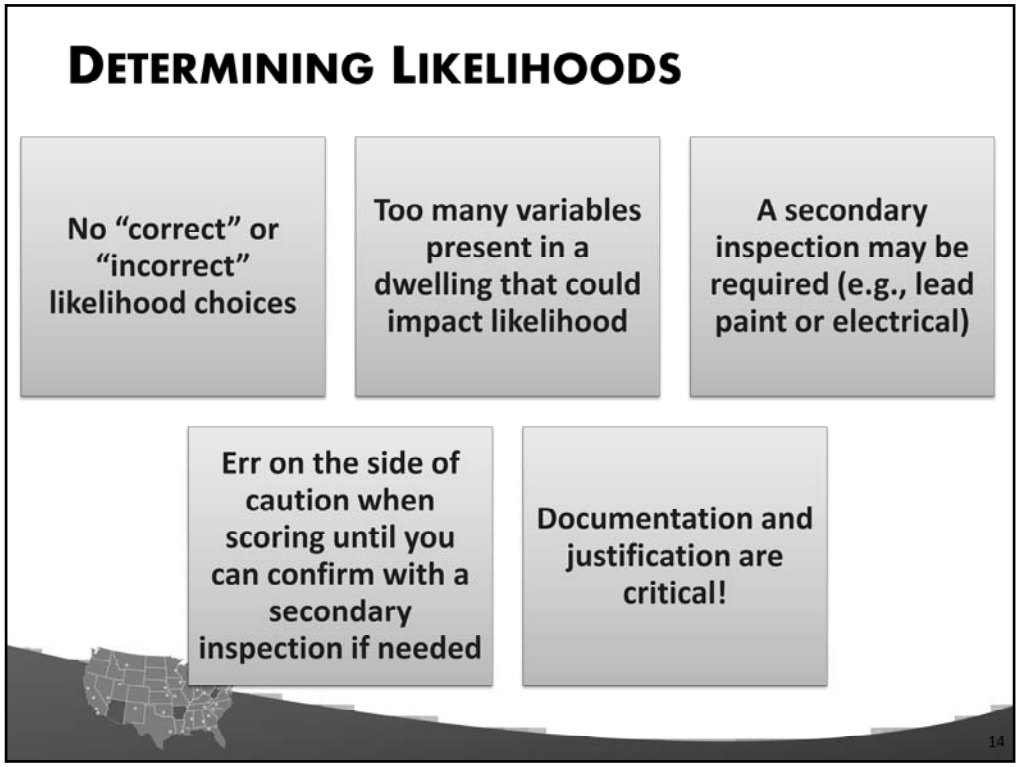
Where data is available, these are given for different age groups and types of dwellings. These averages represent
the likelihood for the typical condition that could be expected in a dwelling of that particular age and type. Also provided in the Hazard profiles is guidance on dwelling characteristics that may affect the likelihood of an occurrence. HUD will begin updating likelihood and outcome data.



Remember: it may be helpful initially to think of a scale from 1 to 16, with 1 being the least likely to occur and 16 being the most likely. (there are 16 boxes)

Having noted no exhaust fan in bathroom and a leaking sink, you judge that dampness and mold is a greater hazard in this apartment than the national average (remember extent/severity of deficiencies as well as location). Assessor should asses the collective likelihood of an occurrence.

Explain to the students that the score mid-range between 24 and 42 is 32, the representative scale point. The representative scale point is the number used in the hazard rating formula to calculate the hazard score. Explain that this is also true for spread of harm outcomes as they will see next.



There are no "correct" or "incorrect" likelihood choices, the likelihoods chosen are based on the professional judgment of the assessor. Explain to students that as we calculate the scoring, they will see that assessors can have a reasonable degree of differences but end up with a similar Hazard Score (will practice this after discussing spread of harm). Urge students to be patient and focus on the rationale or **justification** of the likelihood score they did choose.

It may be helpful at this time to use the Excel tool to show how different choices impact the overall Hazard Score to reassure students. Pick any of the hazards (may be helpful to continue using the same hazard damp and mold) and demonstrate the impact on final Hazard Score. Have students choose different likelihoods.

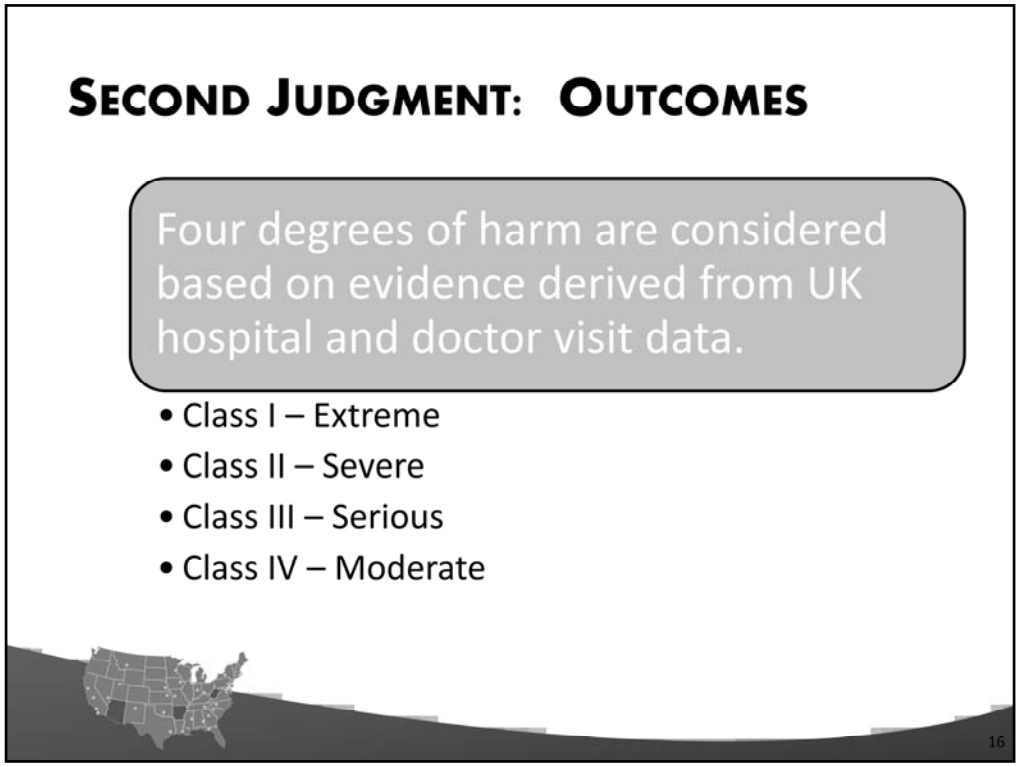
SECOND JUDGMENT: OUTCOMES

After judging the likelihood of an occurrence, the assessor makes the second judgment:

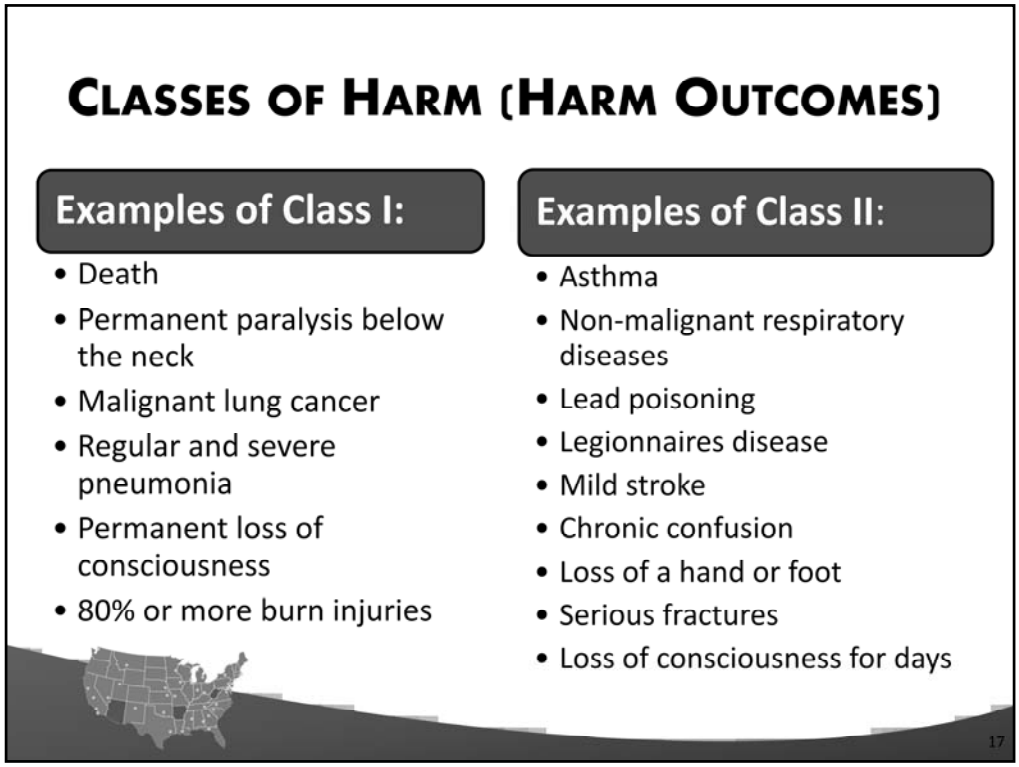
- What is the range of harm outcomes for the vulnerable age group that may result from the hazard?

15

When calculating the Hazard Score, the more serious the outcome, the heavier the weighting.



When calculating the Hazard Score, the more serious the outcome, the heavier the weighting. The weighted calculation is done for you in the HHRS assessment program. The only time you will use it is if you decide to do the math longhand. This is more to let the assessor know how the formula works.



Refer to Appendix B in the Operating Guidance

Classes of Harm (Harm Outcomes)

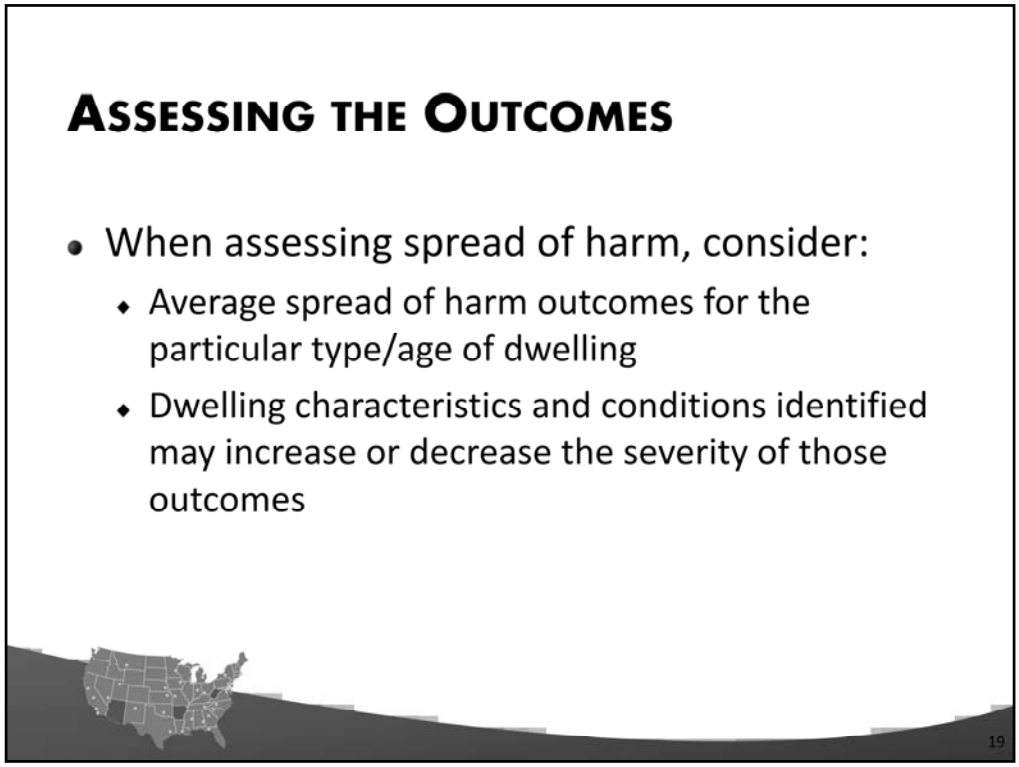
Examples of Class III :

- Rhinitis
- Hypertension
- Sleep disturbance
- Gastro-enteritis
- Chronic severe stress
- Loss of a finger
- Serious puncture wounds
- Regular and severe migraine

Examples of Class IV:

- Occasional severe discomfort
- Occasional mild pneumonia
- Broken finger
- Slight concussion
- Moderate cuts to face or body
- Mental stress
- Severe bruising to body
- Regular serious coughs or colds

18



Have the students refer to the Excess Heat profile on page 63 of the operating guidance. As they did with the average likelihoods, now have the students fill in the classes of harm from the chart on their handout (the average likelihoods will be filled in for them and they will have to fill in the spread of harm outcomes). This will give them an opportunity to know where to find the classes of harm percentages in the hazard profile charts.

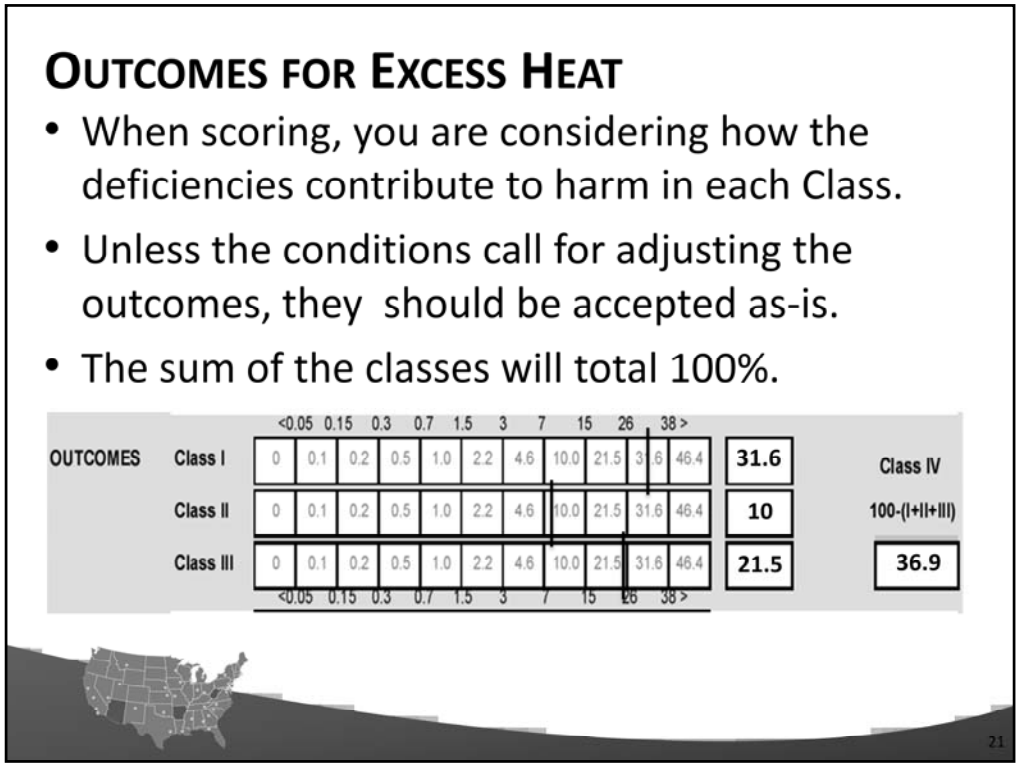
Outcomes for Excess Heat

Excess Heat
Average likelihood and health outcomes for all persons aged 65 years or over, 1997-1999

Dwelling type & age		Average likelihood 1 in	Spread of health outcomes				Average HHSRS scores
			Class 1 %	Class II %	Class III %	Class IV %	
Houses	All ages	–	31.0	8.0	25.0	36.0	0 (J)
Apts	Pre 1920	60,000	31.0	8.0	25.0	36.0	5 (J)
	1920-45	90,000	31.0	8.0	25.0	36.0	4 (J)
	1946-79	130,000	31.0	8.0	25.0	36.0	3 (J)
	Post 1979	110,000	31.0	8.0	25.0	36.0	3 (J)
All Dwellings		**900,000**	**31.0**	**8.0**	**25.0**	**36.0**	**0 (J)**

20

Refer to the Excess Heat Hazard Profile in the Operating Guidance.



Now have students refer to their scoring sheet again, this time looking at the spread of harm section. Now go through the section making sure they understand the classes, the numbers in the boxes and the numbers along the scale on the top. Explain to them the classes along the side are the classes of harm we discussed from page 33 of the operating guidance. The number above and below the boxes are the likelihood ranges; the numbers in the boxes are the representative scale points. You can also implement the “teach-back” method here to test their understanding before giving them the answers. If you don’t get any or few responses, you can proceed by providing the answers.

During the teach back, make sure to have the students explain to you what the red lines represent. Again, this is where you mark the average spread of harm from the excessive heat profile chart on page 33.

Outcomes for each hazard are not specific to region or location, but reflect the impact those hazards have on human health generally.

THE NUMERICAL SCORE

- The hazard score is determined by adding up the individual scores from each class of harm using the standard formula.
- The likelihood remains constant but the weight of each class alters the score for that class.

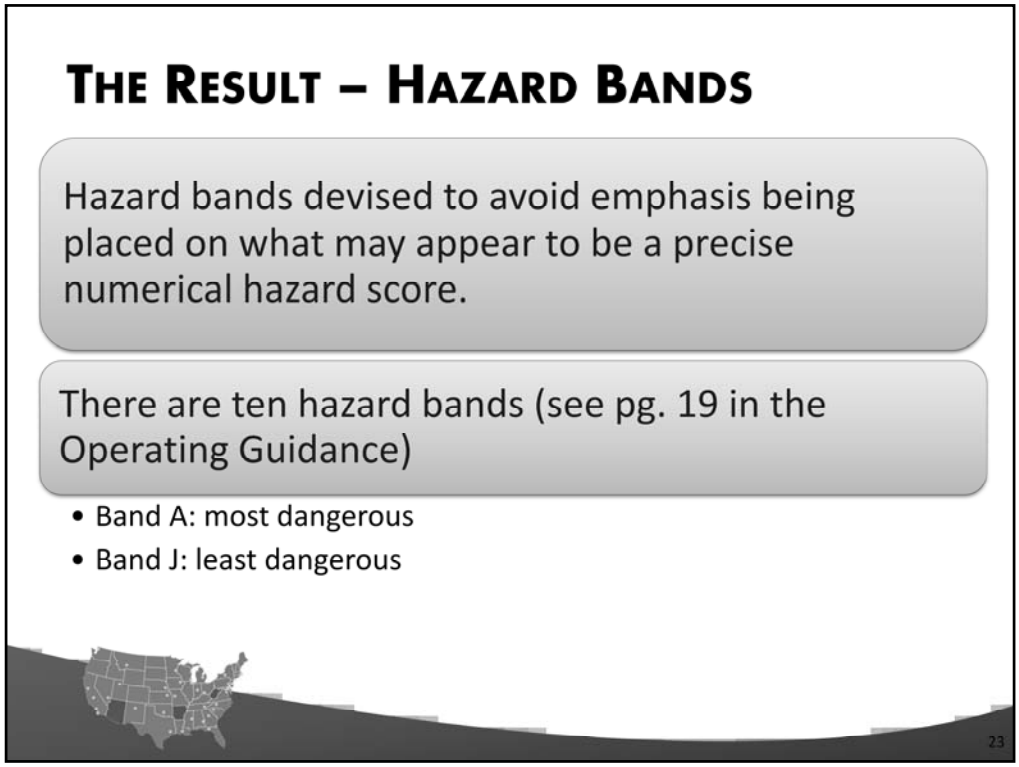
BOX 7. Generating a Hazard Score

Class of Harm Weighting			Likelihood		Spread of Harm (%)		Score
Class I	10,000	X	1/18	X	4.6	=	2,556
Class II	1,000	X	1/18	X	10.0	=	556
Class III	300	X	1 /18	X	21.5	=	358
Class IV	10	X	1/18	X	63.8	=	35
					Hazard Score	=	**3,505**

22

Based on our Case Study #3, let's compute the numerical score.

Make sure students understand they will not have to calculate this by hand; they are able to use the excel software.



YOU WILL NOT HAVE TO CALCULATE THIS BY HAND!
USE THE EXCEL SOFTWARE and DEMONSTRATE on the following examples.

Hazard Bands also provide a simple means for handling the potentially wide range of Scores – from under 0.2 to 1,000,000

Based on our previous Case Study #3, what is the Hazard Band for that hazard? It's a "B" band hazard; the second most serious.

The numerical Hazard Score can appear too specific.
It can also falsely imply that the score is a precise statement of the risk, rather than a representation of the assessor's judgment.

Band Hazard Score Range

Band	Score
A	5,000 or more
B	2,000 to 4,999
C	1,000 to 1,999
D	500 to 999
E	200 to 499
F	100 to 199
G	50 to 99
H	20 to 49
I	10 to 19
J	9 or less

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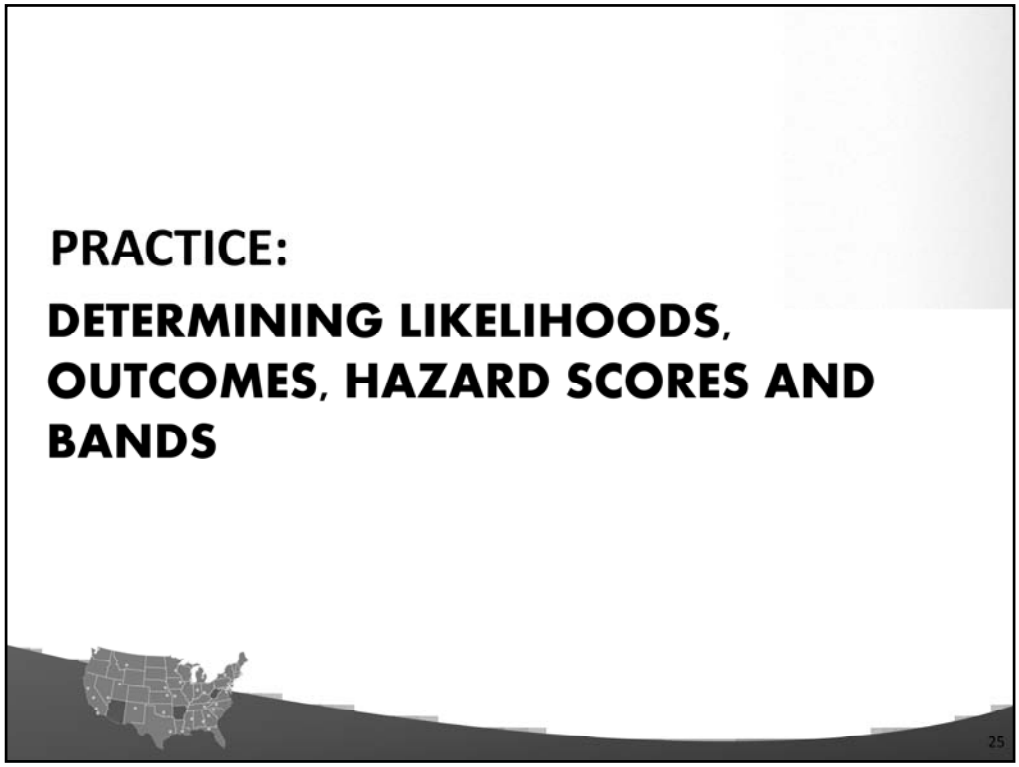


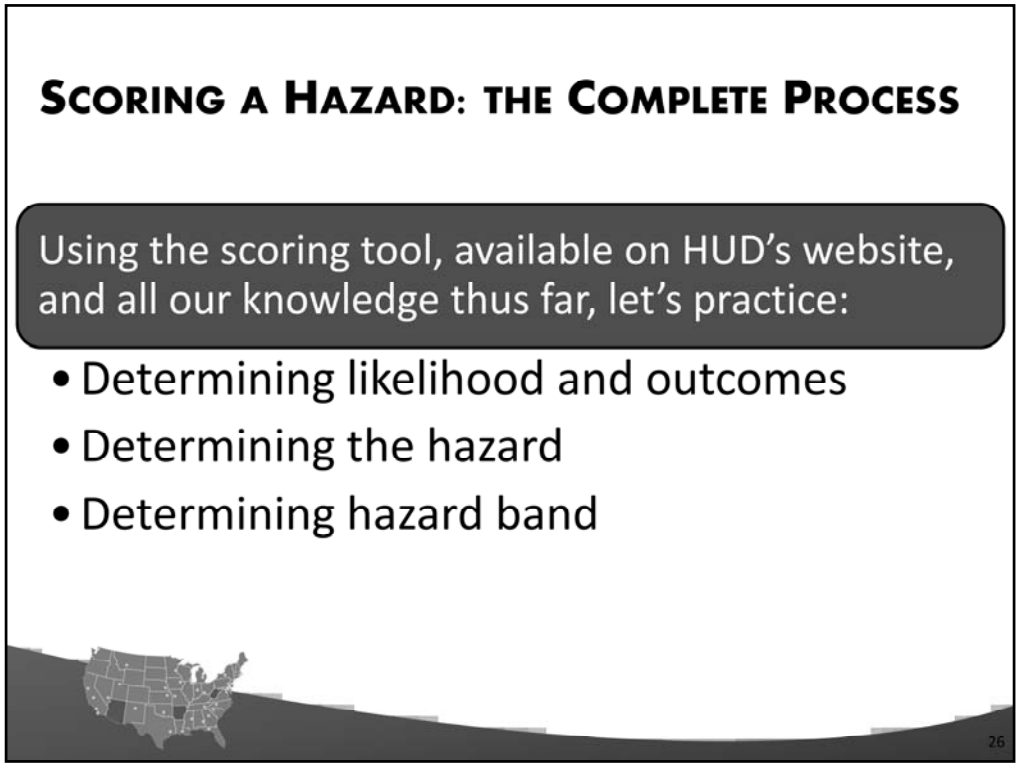
This session will take about 90-120 min including lecture, demonstration, and practice.

This is a good time to recap what the students have learned thus far. One quick method that could be used to determine what the students have learned is teach back; have the students recall what they have learned when prompted by a series of questions. This could simply be the steps in the process of using the tool that have been covered so far. Ask the students the following questions:

1. What is the first step in the HHRS process? Inspecting the dwelling for deficiencies utilizing any tool that is broad enough to address the 29 hazards.

2. What is the second step in the HHRS process? Once you have identified the deficiencies, you are able to link the deficiencies to potential hazards.

Now we are on step 3: Evaluating the significant health impacts related to the hazards found in the dwelling.



If the students haven't done so thus far, this would be a good time to score hazards found during the field portion of the training. Remind students to make decisions about the deficiencies and hazards as they relate to health and they should be able to justify the decisions they made. Point out the relevant matters section of the hazard profile and how that can be used to guide their justifications.

Again, remind students that they identified this deficiency as a “Falling on Level Surfaces” hazard. Before we looked at the deficiency as it relates to likelihood; now we want to consider how the deficiency contributes to Spread of Harms.

Who is the most vulnerable?
What is the Spread of Harm for “Falling on Level Surfaces” in the Operating Guidance?
The Spread is so similar across all housing types/ages that we’ll just use the Pre-1920 House as an example.

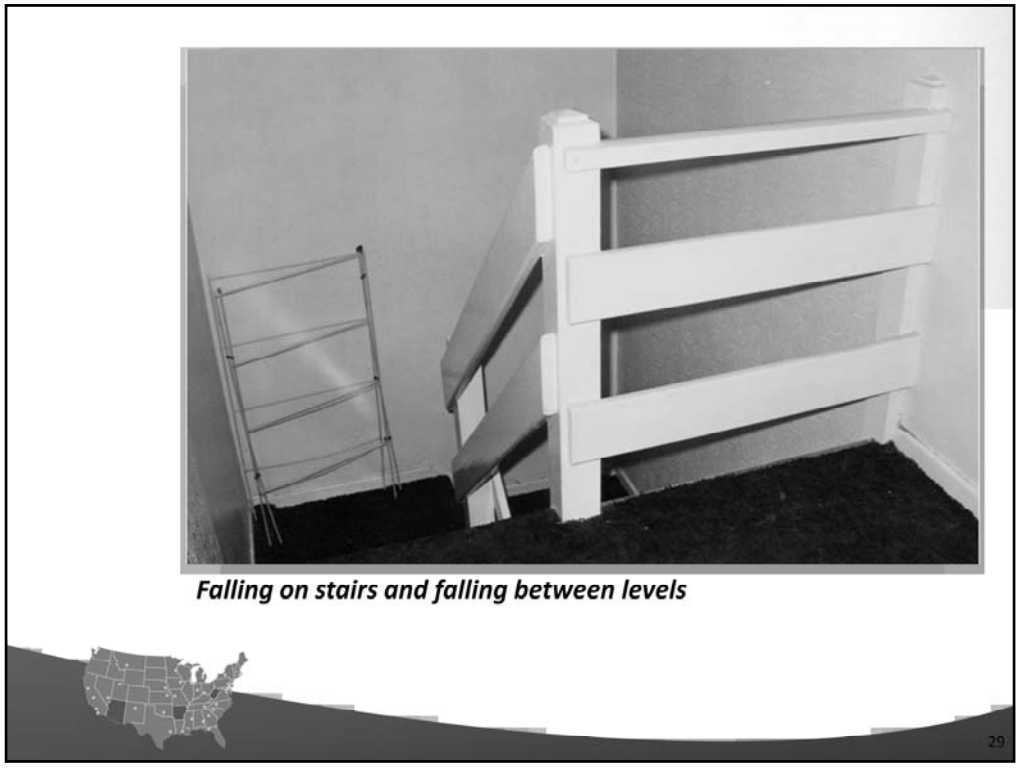
- Class 1= 0.2%
- Class 2= 13.8%
- Class 3= 27.3%
- Class 4= 58.7%

How might the conditions associated with this hazard impact the Spread of Harms?
Might an elderly person suffer more harm falling on concrete vs. wood?
What other conditions surrounding the deficiency itself may impact Outcome?

Remind students that they identified this deficiency as a “Mold and Moisture” hazard (and possibly “Lead”). Before we looked at the deficiency as it relates to likelihood (extent, location, surrounding conditions, etc); now we want to consider how the deficiency contributes to Spread of Harms.

How might the location influence the Spread of Harms? Bedroom vs. bathroom? A lot of mold or a little? In the case of Mold and Moisture, some of the reasons we judge increased LIKELIHOOD also relate to why we might consider increased SPREAD OF HARM.

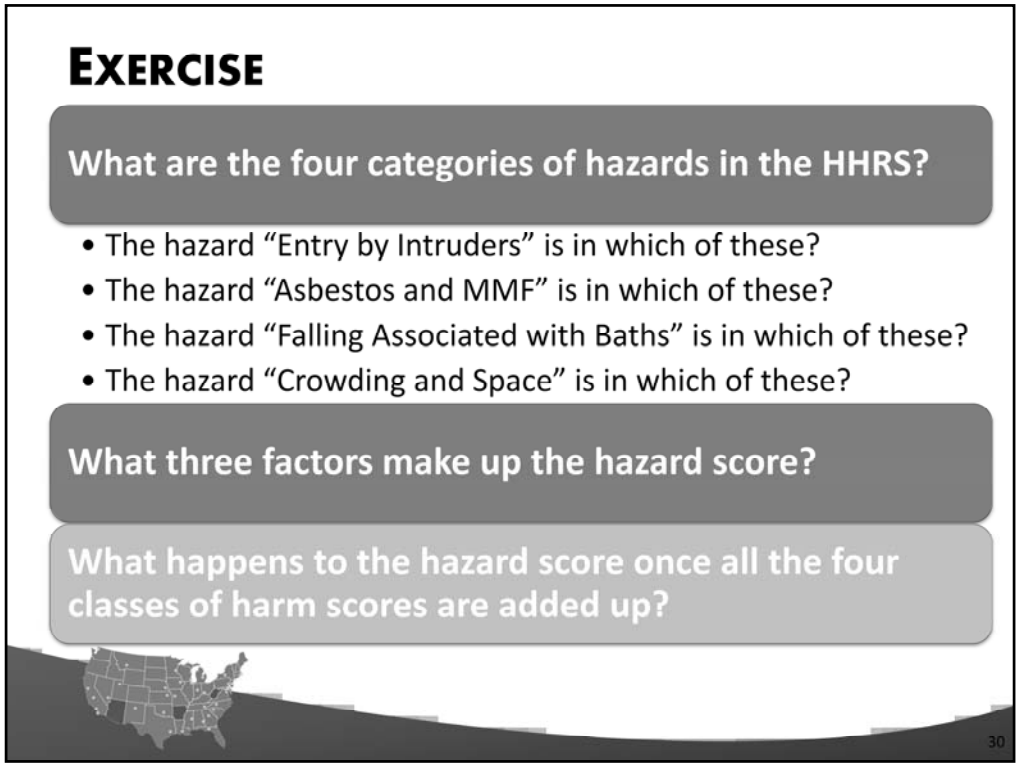
Point out how flexible the HHRS is in making judgments about real-life situations.



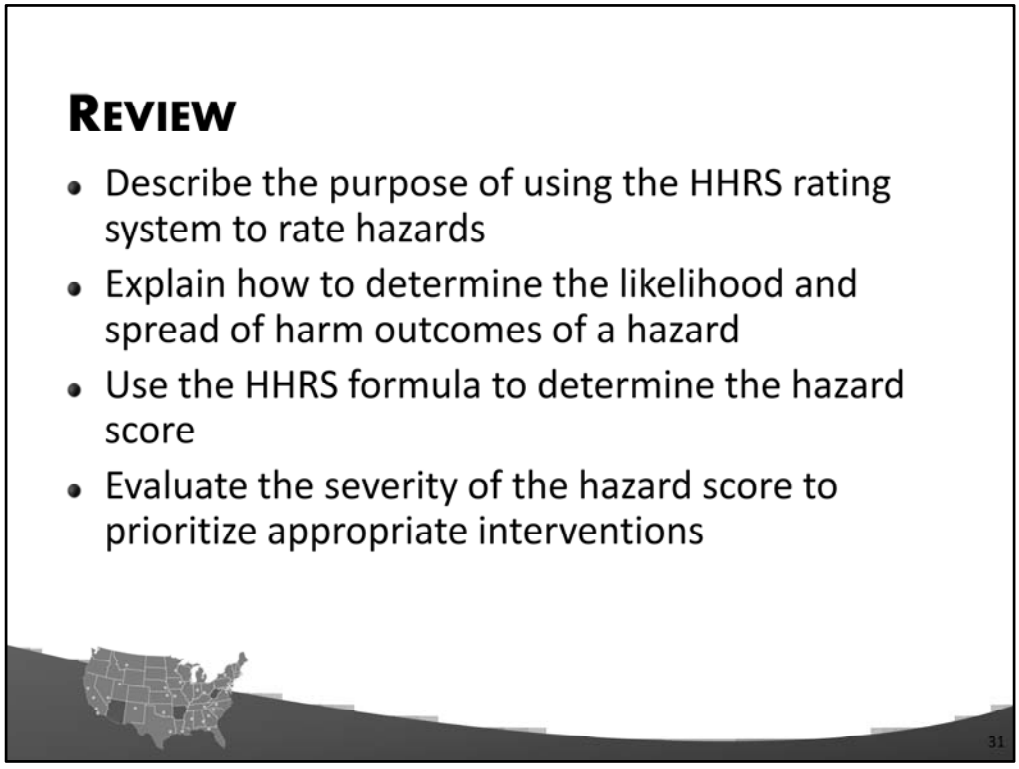
Staircase and landing in single family house.
Hazards: Falling on Stairs and Falling between Levels.

What are the Spread of Harms for “Falling on Stairs” and “Falling Between Levels” in the Operating Guidance?
Notice that the older the home, the more people suffer Class 1 harms. But more suffer Class 1 harms in newer apartments? Why might this be the case?

How might the conditions associated with this hazard impact the Spread of Harms?
What other conditions surrounding the deficiency itself may impact Outcome?



1. Physiological, Psychological, Infection, Safety/Accidents
2. Psychological
3. Physiological
4. Safety/Accident
5. Infection
6. The weight of the Class of Hazard (10,000; 1,000; 300; and 10), the likelihood of occurrence, and the Spread of Harm
7. It's added up then translated into a Hazard Band of A through J; A the most severe and J the least.



Purpose: standardized evidence-based system
Explain likelihood and spread of harms: identify hazard, use operating guidance to determine evidence based likelihood and spread of harms, justify any reasons to differ from data in operating guidance
Use formula: use a spreadsheet or do the math to determine score
Evaluate severity: determine hazard band and rank accordingly