# Assessing Adaptive Capacity of Farmers: A Pilot Study in the Pioneer Valley

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GOALS

- Evaluate farmers' adaptive capacity to climate change issues specific to PV region

- Using total farmers' adaptive capacity scores, evaluate resiliency of PV region with a rating scale

- Adaptive Capacity only included three aspects of many others: Knowledge, Actions, & Use of Resources

- Adaptive Capacity Index would be comparable across counties and regions to find intervention points where extension and organizations could support

- Develop a highly structured interview form for farm comparison

PIONEER VALLEY
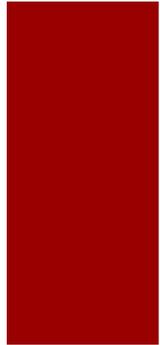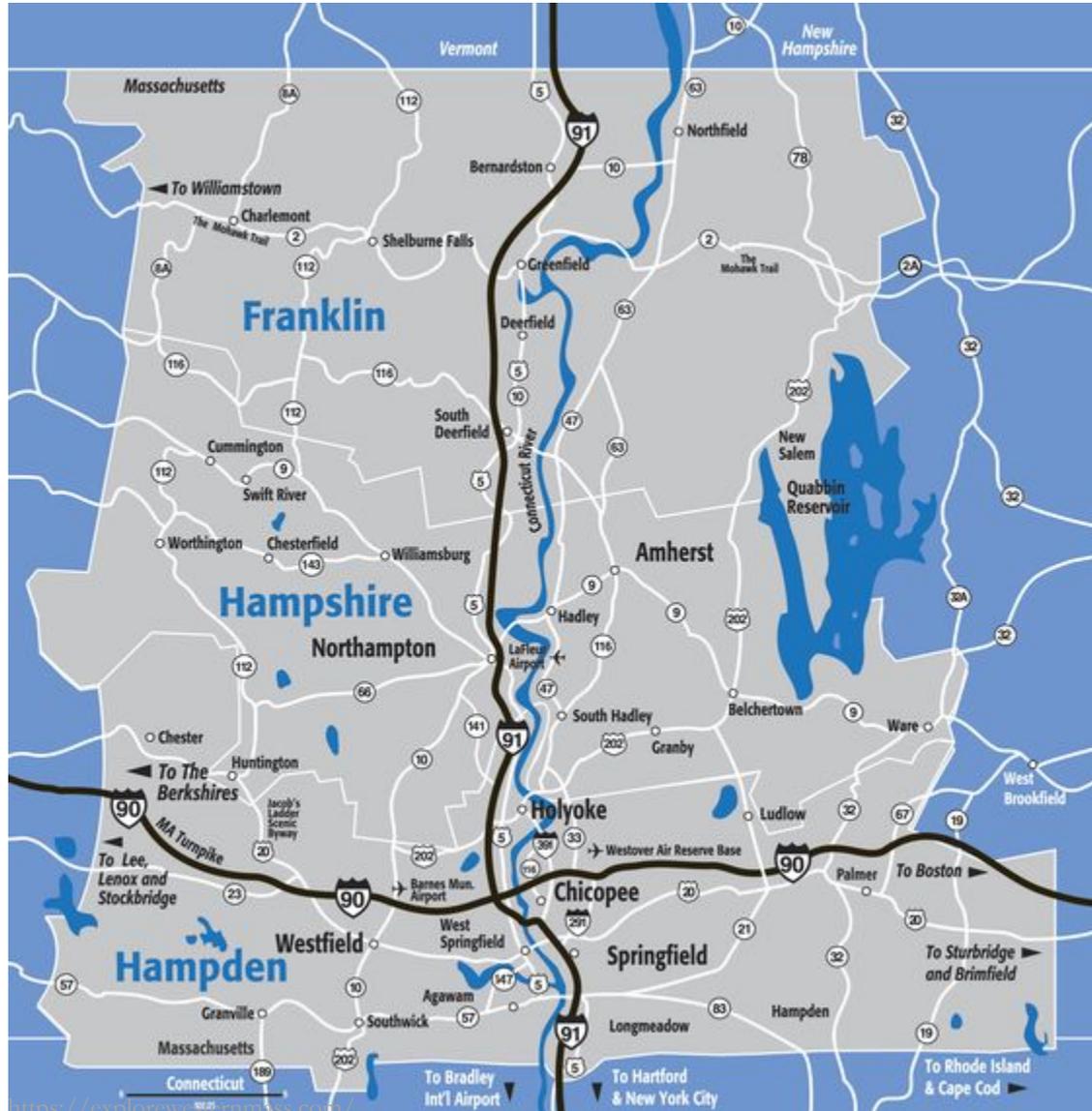
ADAPTIVE CAPACITY

- Resiliency includes different types of capital:
  - Social, Financial, Political, Business, Educational, etc.

- Capital types can each be measured to comprise a total resiliency score

- Resiliency v. Adaptive Capacity: Adaptive Capacity allows for depreciation or growth and includes many factors

- FOR THIS PILOT, 100% Adaptive Capacity was divided equally amongst:
  - 33% = Knowledge (professional/scientific) of climate change impacts and personal experience to changes in weather
  - 33% = Past actions taken to experienced weather changes (which will indicate likelihood to take action in future)
  - 33% = Awareness and use of resources (i.e. grants/subsidies, organizational support, technical advising) and best management practices

RESEARCH QUESTIONS

- What is each farmer's total Adaptive Capacity when considering each of these components?

- What is the adaptive capacity for each county and greater Pioneer Valley?
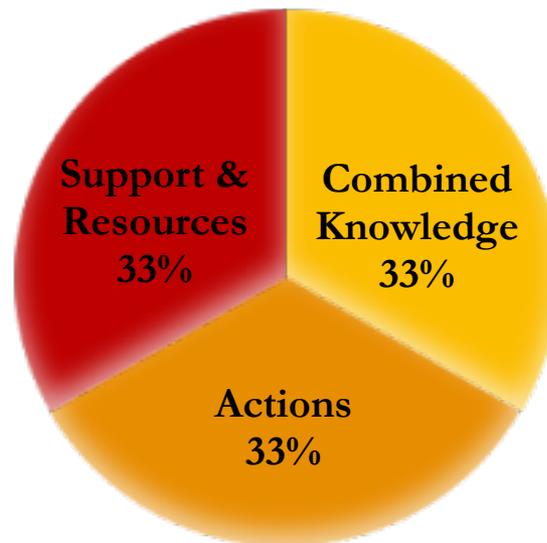
INTERVIEW SAMPLE

County	# Farms in Contact List	# Towns Represented	# Farms Surveyed	# Towns Represented
Franklin County	99	23	3	3
Hampshire County	87	17	4	2
Hampden County	42	17	3	2
Total	218	57	10	7
Rate Surveyed			0.046	0.123

- 12 Question Structured Interview (Likert & Open-Ended)

- 10 farmers from 7 towns in Pioneer Valley, all <10 miles of CT River

- # Questions that addressed Knowledge: 8

- # Questions that addressed Actions: 4

- # Questions that addressed Resources: 7

TOPIC BREAKDOWN
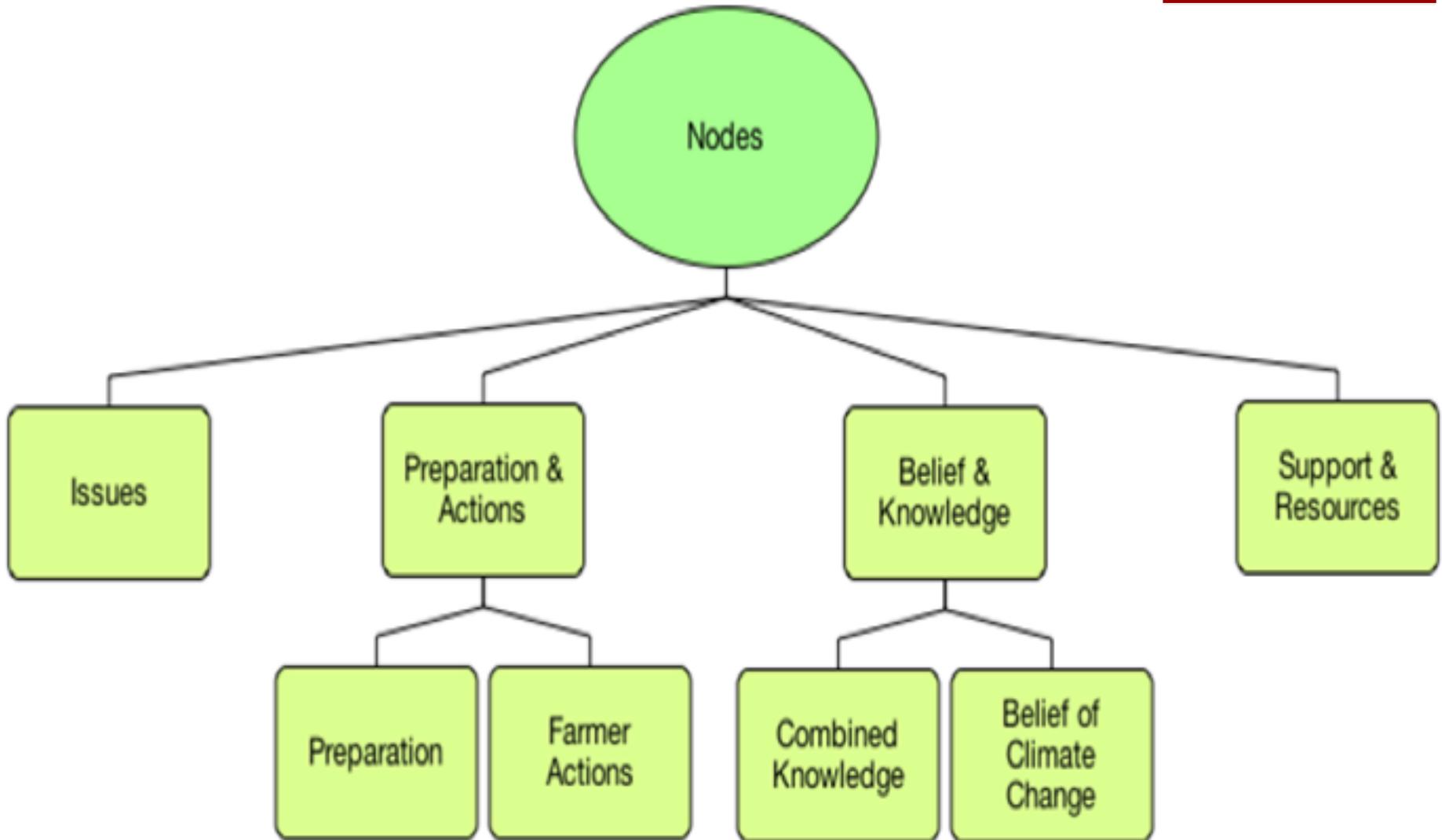
COMBINED KNOWLEDGE

- 80% farmers noticed changes to farming

- 80% agreed they changed their farming methods in response to Climate Change

- Only 1 farmer had Climate Change knowledge specific to local geography

- 70% articulated belief in climate change, but in differing degrees, often ambiguous or would contradict

- Mostly unsure if climate change impacts would be more positive or negative

- When asked if climate change would impact their ability to farm now v. future, more responded in future
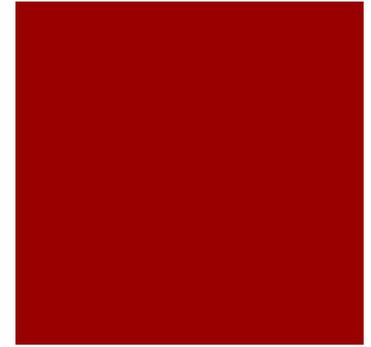
ISSUES & ACTIONS
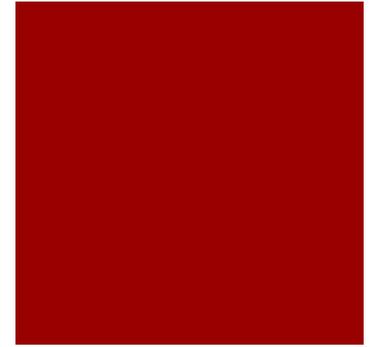
- Issues amongst Farmers
  - **Precipitation (36%)** – Drought, Dry Weather & Wetter Periods
  - **Temperature (19%)** – Seasonal Changes (Earlier start, longer season, temperature changes in season)
  - **Irrigation (16%)** – Included Municipal Water Use
  - Other issues included: Yield Loss, Diseases/Pests, Labor Costs & Government Regulation

- Actions Taken by Farmers (Reaction & Future)
  - **Irrigation (33%)**
  - **Soil Technique Manipulation (19%)**
 - **Costs associated with Labor (14%)**

SUPPORT & RESOURCES

- 80% were unaware of practices/recommendations/policies related specifically for climate change

- BUT, 90% agreed they felt slightly to highly prepared to start following these if they knew of them

- ~50% identified regional organizations that "support farmers with climate change preparedness" → Based on past work history and not actual use of climate change resources

- Organizations = CISA, Farm Bureau, USDA (nonprofit & government)

- Mistrust and broken relationships with Government and Extension

- 80% would still welcome future aid for climate change adaptation

FARMER PROFILES
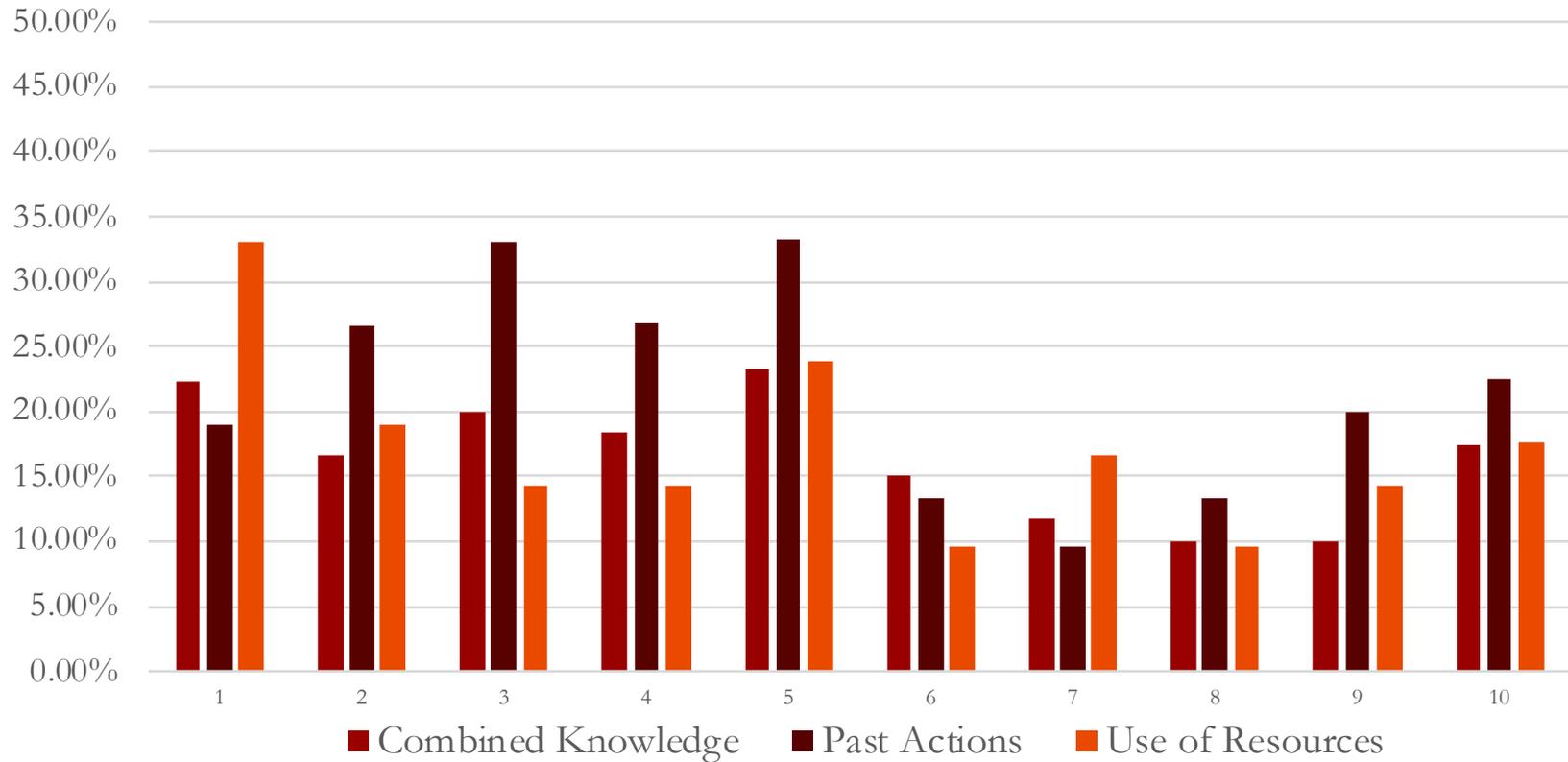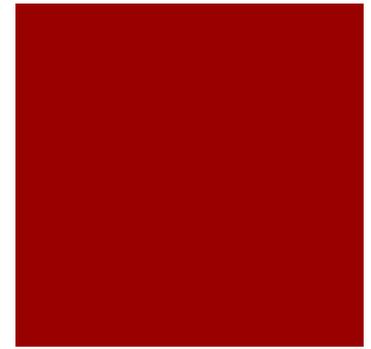
Adaptive Capacity Farms	Combined Knowledge	Past Actions	Support and Resources
Average	17%	22.48%	17.59%

100%

Exceptional
80.5%

Franklin 80%
Hampshire 78%

Hampshire 74%
Satisfactory
64%
Hampshire 67%

Hampshire 62%
Franklin 59%

Progressing
49%

Hampden 44%

Needs
Improvement
33%

Franklin & Hampden 38%

Hampden 33%

0%
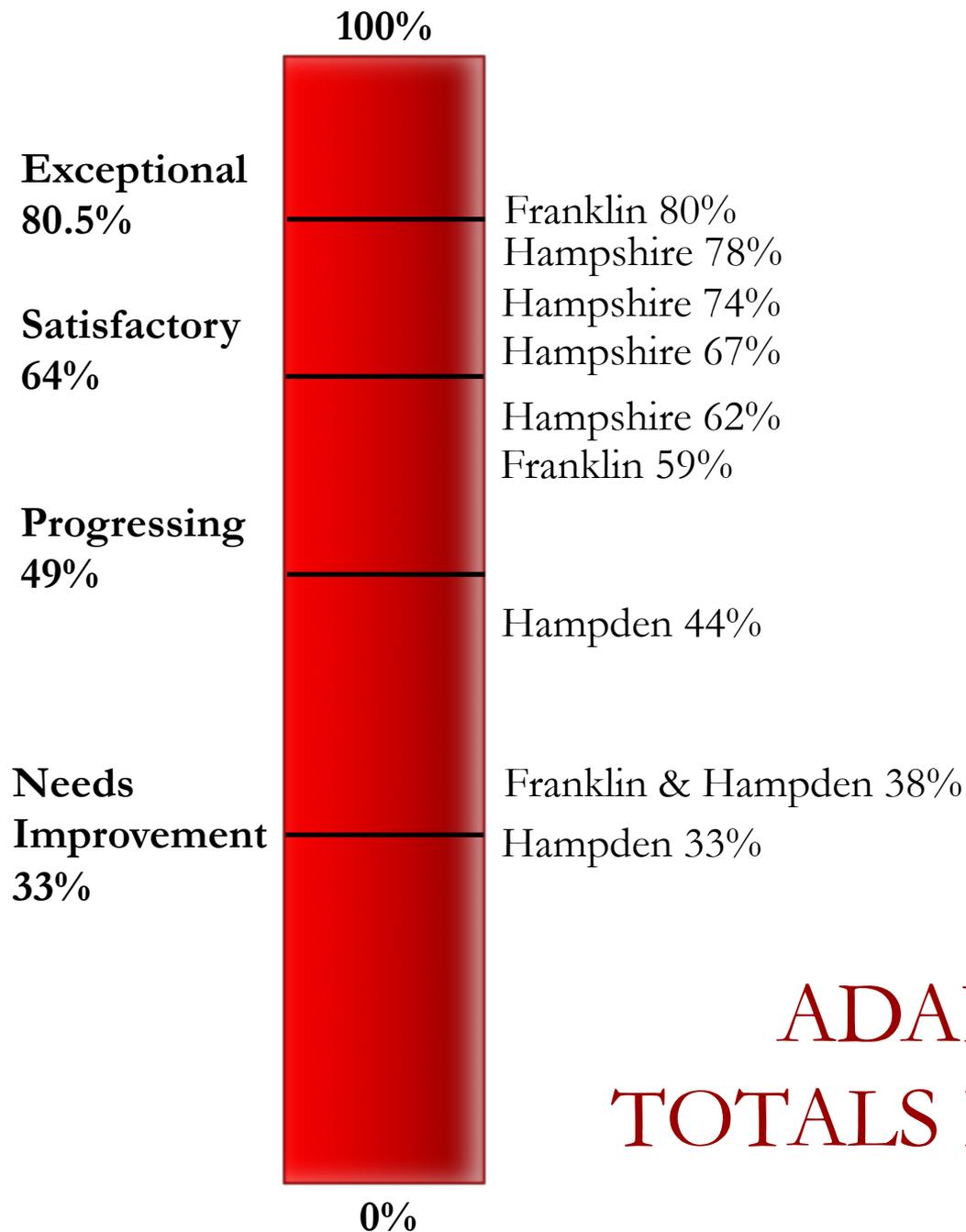
- Index scaled according to farms' scores

- Farms in Hampshire performed best

- Hampden farms performed worst

ADAPTIVE CAPACITY
TOTALS FOR EACH FARM

COUNTY ADAPTIVE CAPACITY
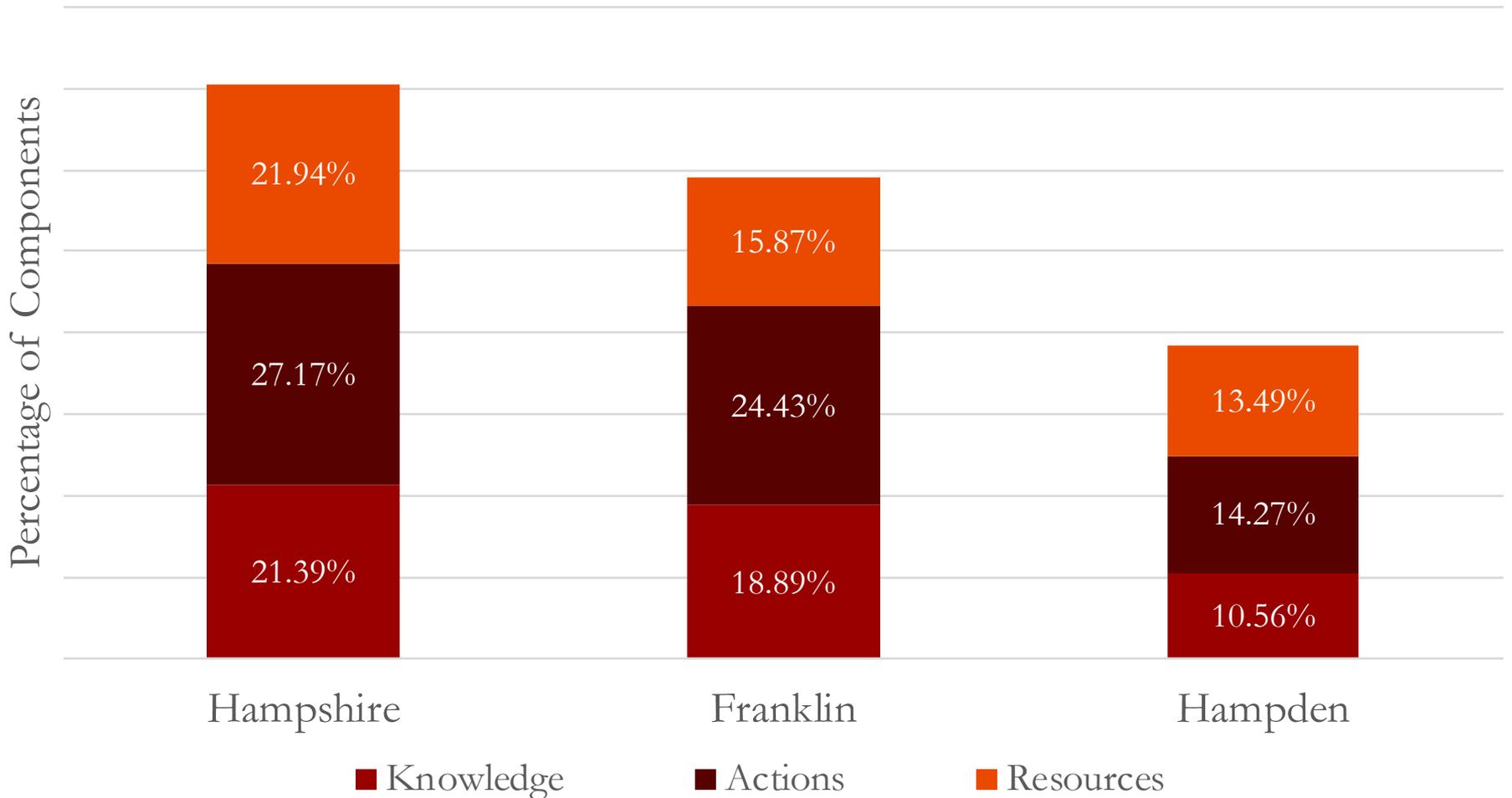
PIONEER VALLEY ADAPTIVE CAPACITY

Total Score for Region = **53.51%** ➔ **Progressing**

RECOMMENDATIONS
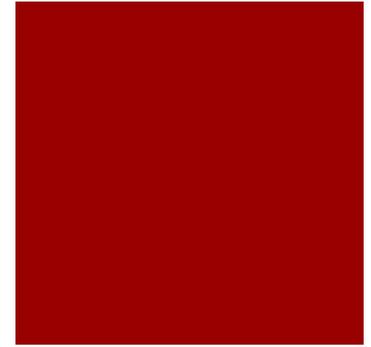
- Continue to test interview form to finalize and distribute for use (by extension)

- Increased federal/state support to advise farmers for Voluntary Environmental Farm Plans

- States agencies collaboratively create a Rural Land Stewardship Guide

- Continue scientific research on climate and agriculture and share knowledge and best practices

- Work with agricultural stakeholders to advance both climate and farming sectors and offer aid

- Incorporate regional planning agencies and local town plans/climate initiatives into Index to provide accuracy at finer grain of data

CONCLUSION
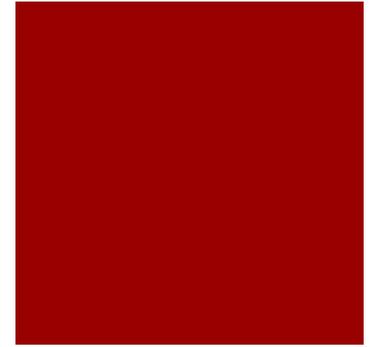
- Farmers know how to adapt, they just may not have all of the knowledge or resources to do so that is *most effective*

- Farmers are open to learning about climate change science and best practices, and most are willing to accept aid

- Many factors to consider when understanding adaptive capacity/resiliency → all are important but not necessarily equally

- Agricultural best practices designed to regional climate change impacts are needed and this must be shared with all key players

- More funding and educational outreach is needed to support small farmers who may want to adapt but do not have that capacity