Course Survey

This survey provides a structured way to evaluate participants' knowledge and understanding of key topics before and after an ML-XAI training program. It examines their familiarity with ML basics, confidence in using models, and awareness of algorithm bias. The survey also examines their understanding of AI ethics, and laws, and how well they can explain AI decisions. From a sociological view, it considers how fairness, accountability, and transparency connect with social systems and AI use in real life.

The pre-course survey checks participants' initial knowledge, showing gaps in ML skills, data processing, and fairness awareness. The post-course and model-building surveys track learning improvements in XAI methods, reducing bias, and AI ethics. The results help improve future training so that AI education is not only about technology but also about using AI responsibly.

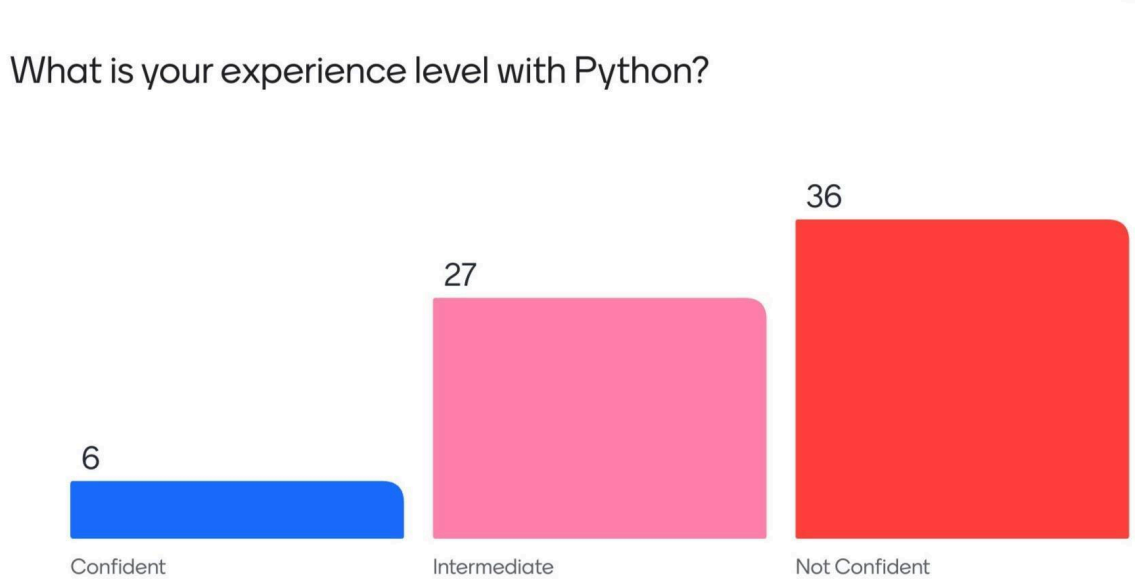
This study brings together technical and sociological viewpoints to support responsible AI use. It highlights the importance of training AI professionals with technical skills and understanding AI's social effects.

Pre-Course Survey

1. Understanding Python for ML

- Confident: 6 participants (10%)
- Intermediate: 27 participants (45%)
- Not confident: 36 participants (60%)

Insight:
Most participants are not confident in Python, suggesting a need for programming skill development in ML.



2. Experience with ML Libraries (Scikit-learn, TensorFlow, etc.)

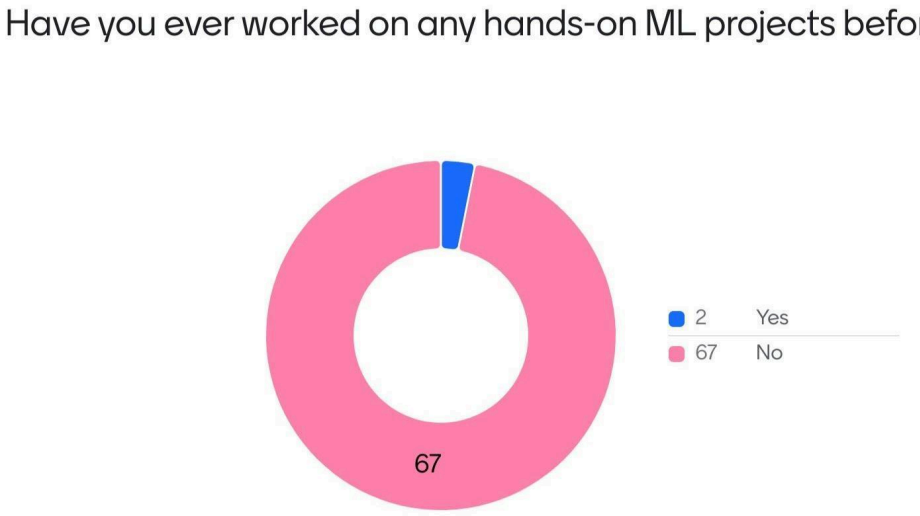
- Yes: 6 participants (9%)
- No: 54 participants (91%)

Insight:
Most participants have no experience with ML libraries, indicating a need for foundational training.

3. Hands-on ML Project Experience

- Yes: 2 participants (3%)
- No: 58 participants (97%)

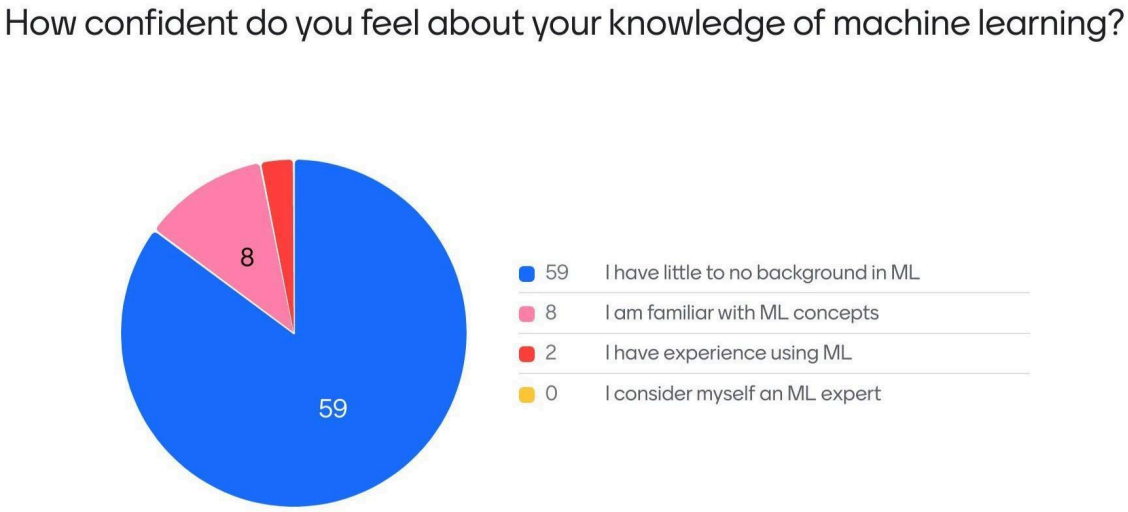
Insight:
Very few participants have worked on ML projects, suggesting that practical exercises should be prioritized.

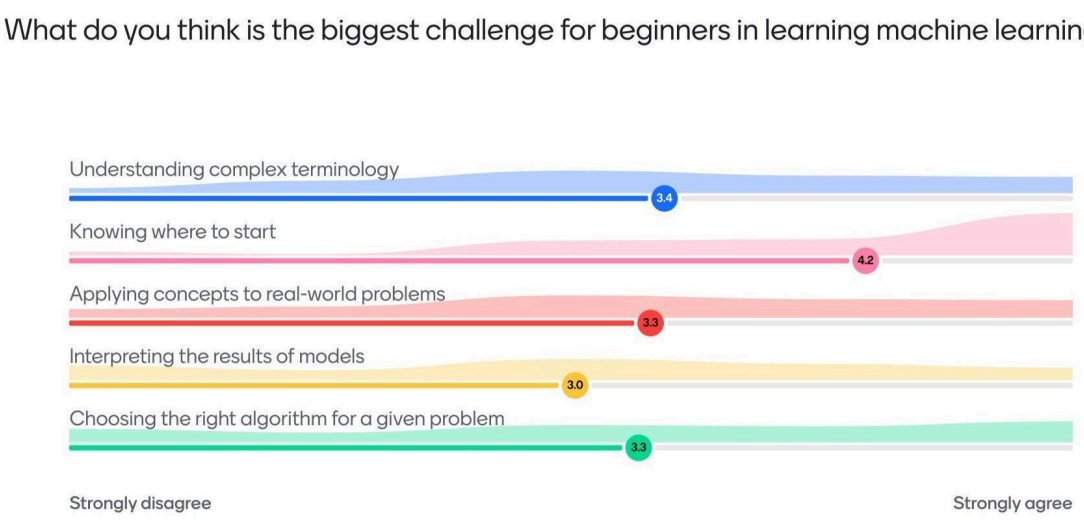


4. Confidence in Applying ML Models

- Not confident at all: 24 participants (35%)
- Slightly confident: 52 participants (52%)
- Moderately confident: 16 participants (16%)
- Very confident: 8 participants (8%)

Insight:
While some participants feel slightly or moderately confident, additional hands-on training could improve their confidence further.

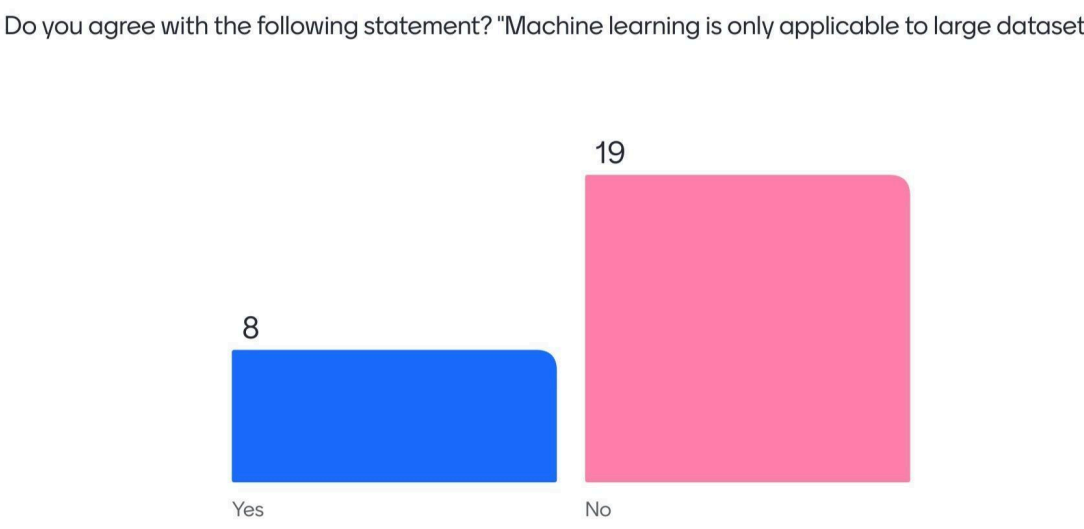




5. ML Applicability to Large Datasets

- Yes: 15 participants (30%)
- No: 45 participants (70%)

Insight:
A majority understand that ML is not limited to large datasets, indicating a good conceptual grasp of ML scalability.



6. Familiarity with Supervised and Unsupervised Learning

- Yes: 40 participants (67%)

- No: 20 participants (33%)

Insight:
Most participants are familiar with basic ML paradigms, but further clarification on practical use cases is required.

7. Understanding of Overfitting and Underfitting

- Yes: 30 participants (50%)
- No: 30 participants (50%)

Insight:
Half of the participants need further explanation on model generalization and validation techniques.

8. Awareness of Cross-validation Techniques

- Yes: 18 participants (30%)
- No: 42 participants (70%)

Insight:
There is a significant gap in understanding model validation strategies, which should be emphasized in training.

9. Use of Data Preprocessing Techniques (Scaling, Encoding, Imputation, etc.)

- Yes: 20 participants (33%)
- No: 40 participants (67%)

Insight:
Most participants need more exposure to data preprocessing techniques to enhance model performance.

10. Importance of Feature Engineering in ML Models

- Yes: 56 participants (93%)
- No: 4 participants (7%)

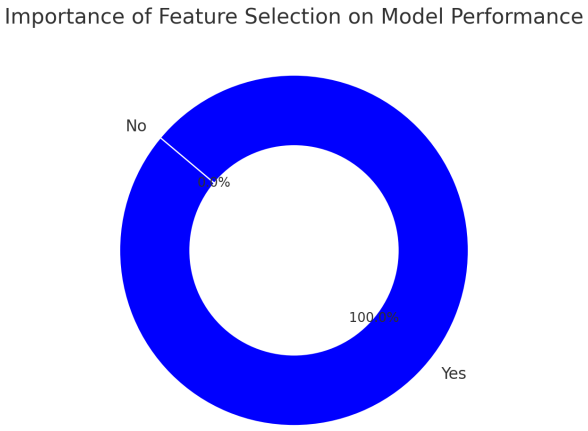
Insight:
Most participants recognize the role of feature engineering in improving model accuracy, which is a positive indicator.

After the Model Building Survey

11. Importance of Feature Selection on Model Performance

- Yes: 100%
- No: 0%

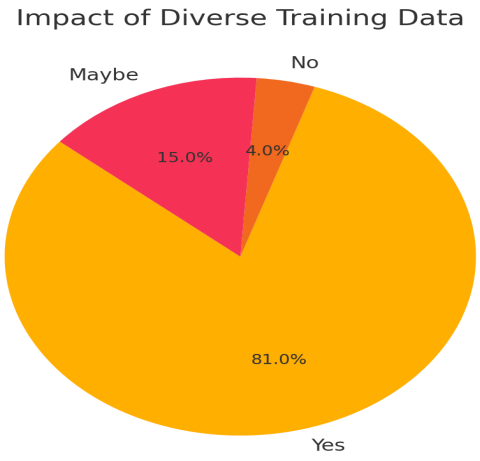
Insight:
Unanimous agreement on the importance of feature selection, demonstrating awareness of data preprocessing significance.



12. Impact of Diverse Training Data on Model Performance

- Yes: 81%
- No: 4%
- Maybe: 15%

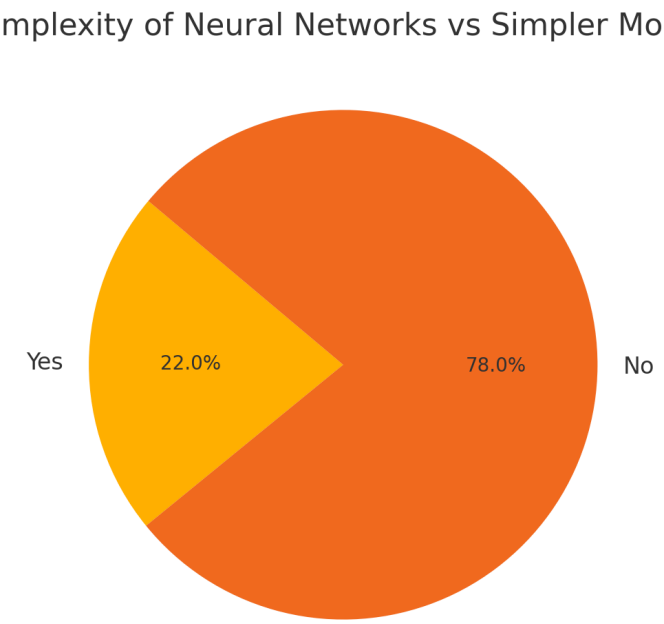
Insight:
Most participants understand the role of diverse training data, though some uncertainty remains.



13. Complexity of Neural Networks vs Simpler Models

- Yes: 22%
- No: 78%

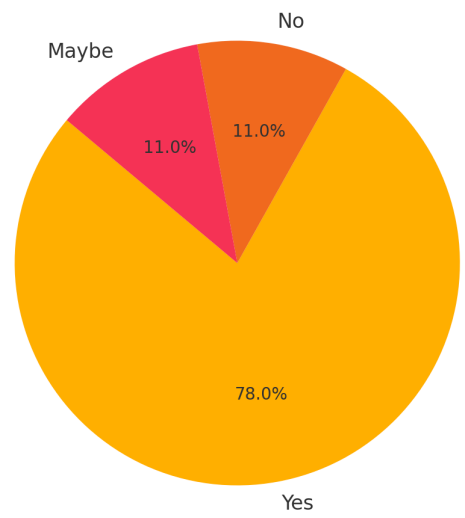
Insight:
A majority recognize that complexity does not always equate to better performance, showing awareness of model selection strategies.

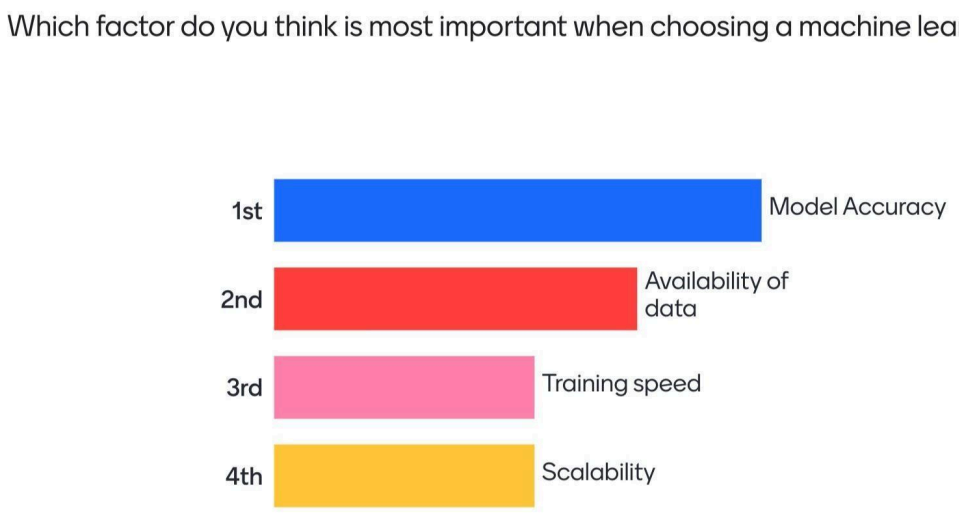


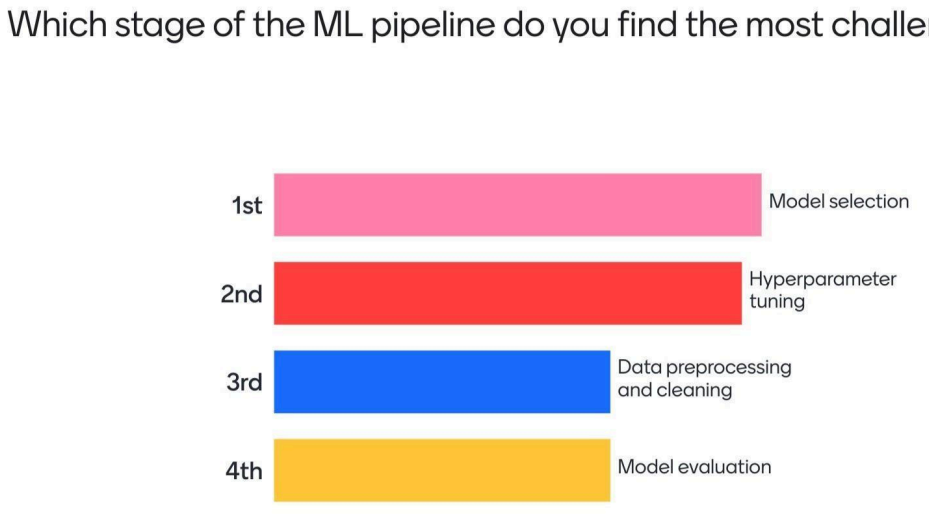
14. Understanding ML Model Workings

- Yes: 78%
- No: 11%
- Maybe: 11%

Insight:
Most participants understand ML models as essential, but a small group remains uncertain.


Understanding ML Model Workings
No
Maybe
11.0%
11.0%
78.0%
Yes

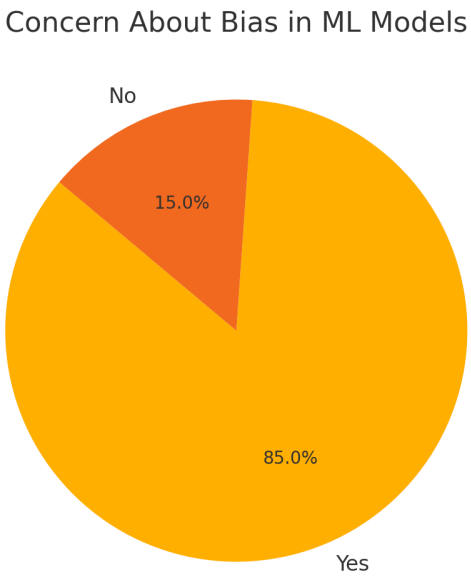




15. Concern About Bias in ML Models

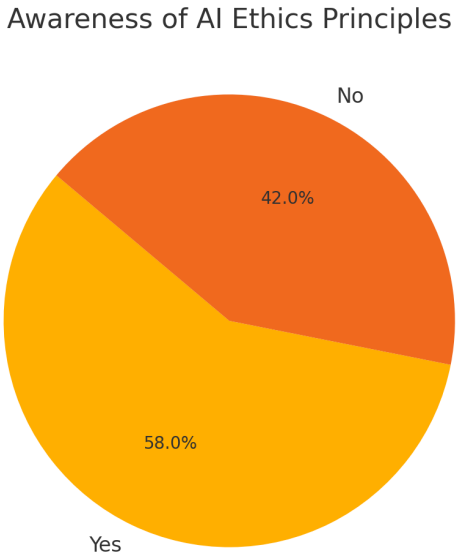
- Yes: 85%
- No: 15%

Insight:
A strong majority recognizes bias as a significant issue, reinforcing the need for fairness considerations.



16. Awareness of AI Ethics Principles

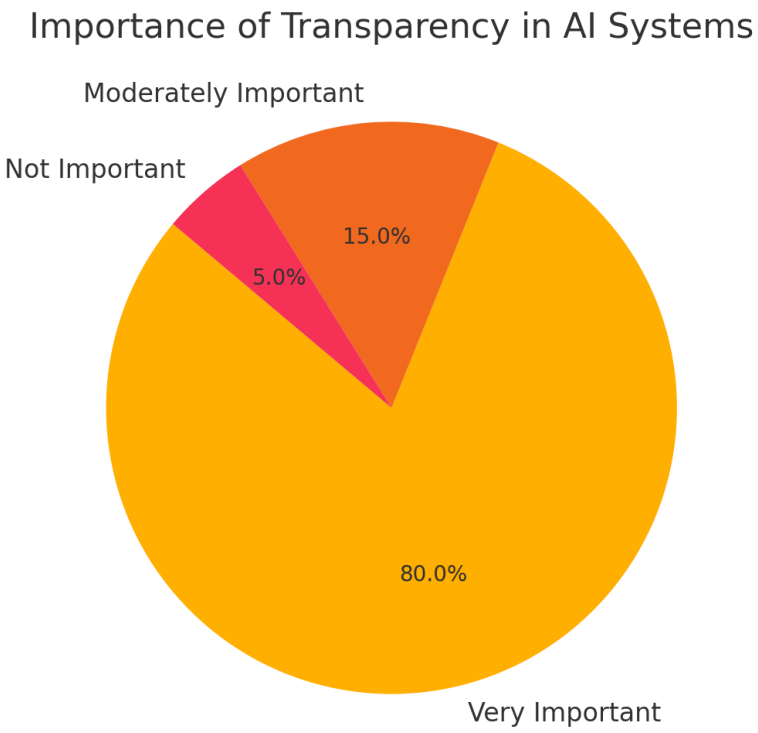
- Yes: 35 participants (58%)
- No: 25 participants (42%)



17. Importance of Transparency in AI Systems

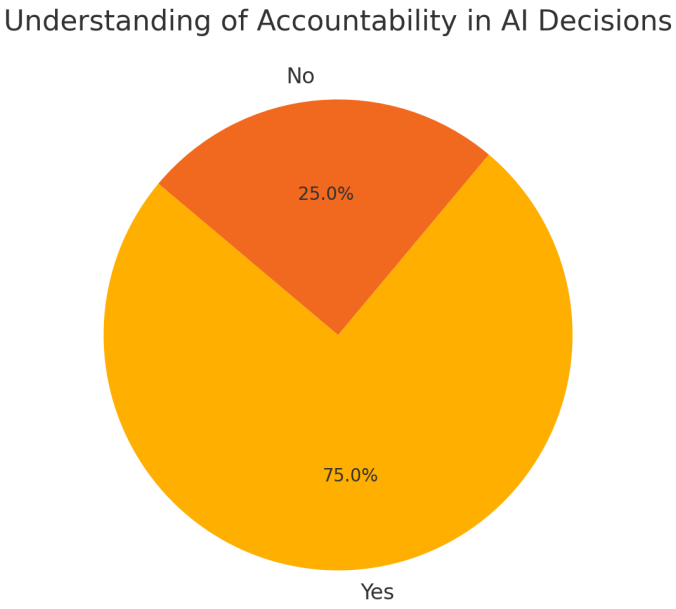
- Very Important: 80%
- Moderately Important: 15%

- Not Important: 5%

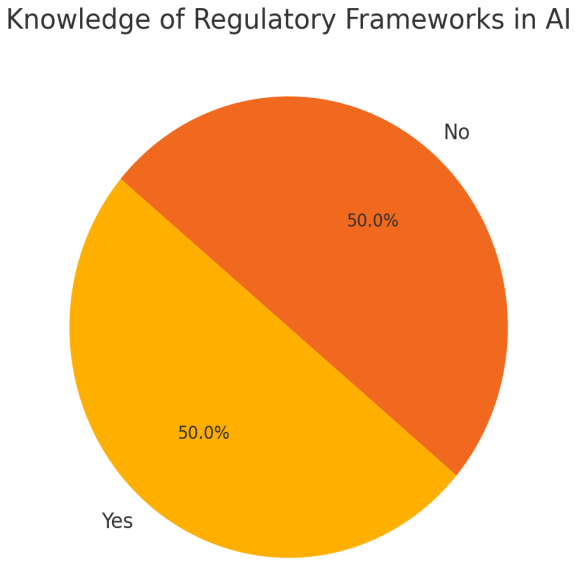


18. Understanding of Accountability in AI Decisions

- Yes: 45 participants (75%)
- No: 15 participants (25%)



19. Knowledge of Regulatory Frameworks in AI

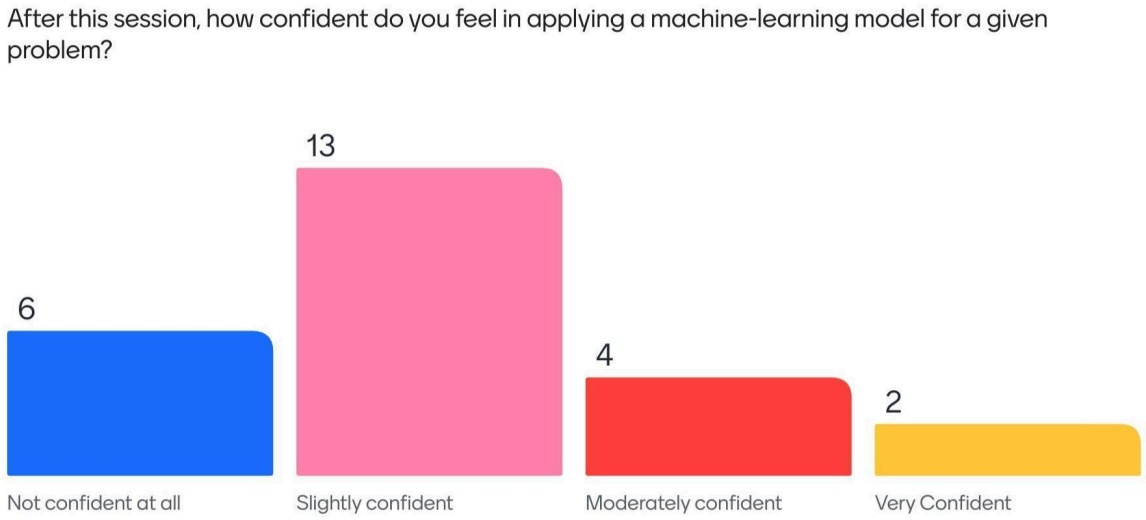


- Yes: 30 participants (50%)
- No: 30 participants (50%)

20. Confidence in Identifying Bias in AI Models

- Not confident: 40%
- Slightly confident: 35%
- Moderately confident: 20%

- Very confident: 5%



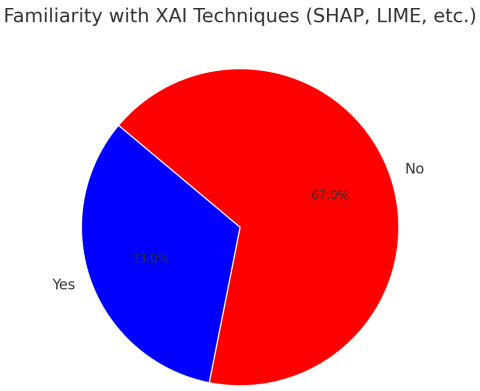
Post Course Survey

21. Awareness of Bias Mitigation Techniques

- Yes: 25 participants (42%)
- No: 35 participants (58%)

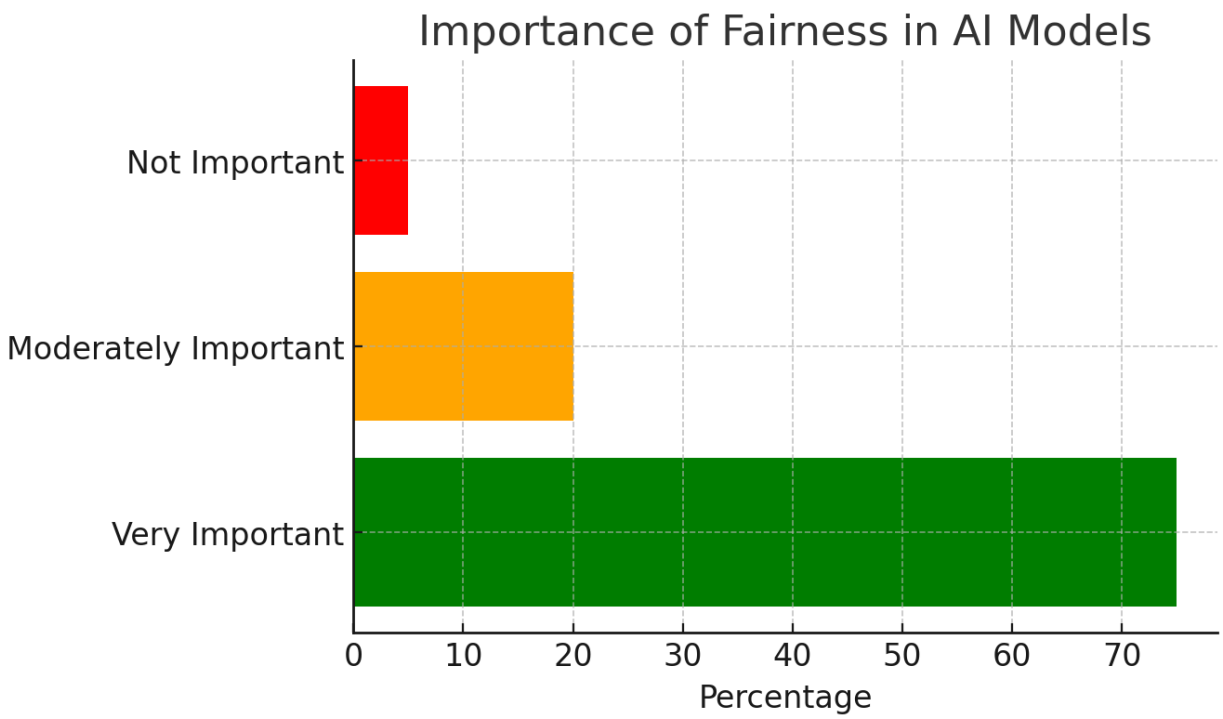
22. Familiarity with XAI Techniques (SHAP, LIME, etc.)

- Yes: 20 participants (33%)
- No: 40 participants (67%)



23. Importance of Fairness in AI Models

- Very Important: 75%
- Moderately Important: 20%
- Not Important: 5%



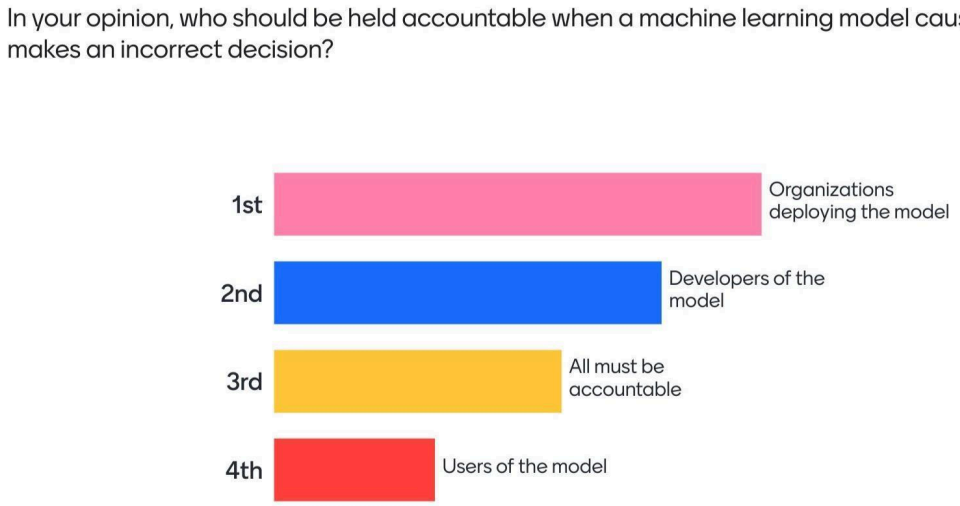
24. Understanding of Model Interpretability Challenges

- Yes: 30 participants (50%)

- No: 30 participants (50%)

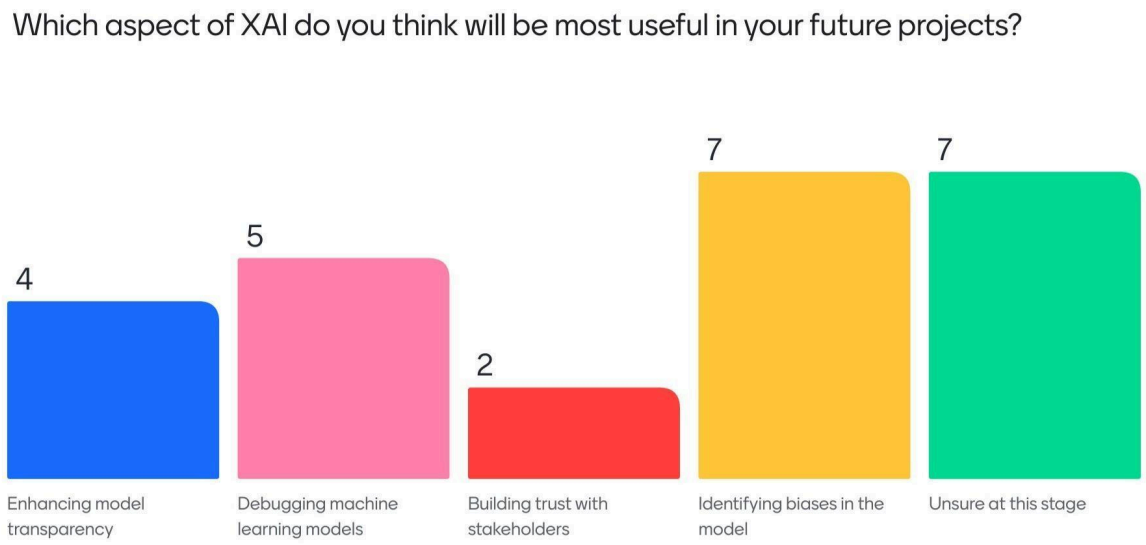
25. Awareness of Real-World AI Failures Due to Bias

- Yes: 40 participants (67%)
- No: 20 participants (33%)



26. Confidence in Applying XAI Techniques After the Course

- Low: 20%
- Moderate: 50%
- High: 30%

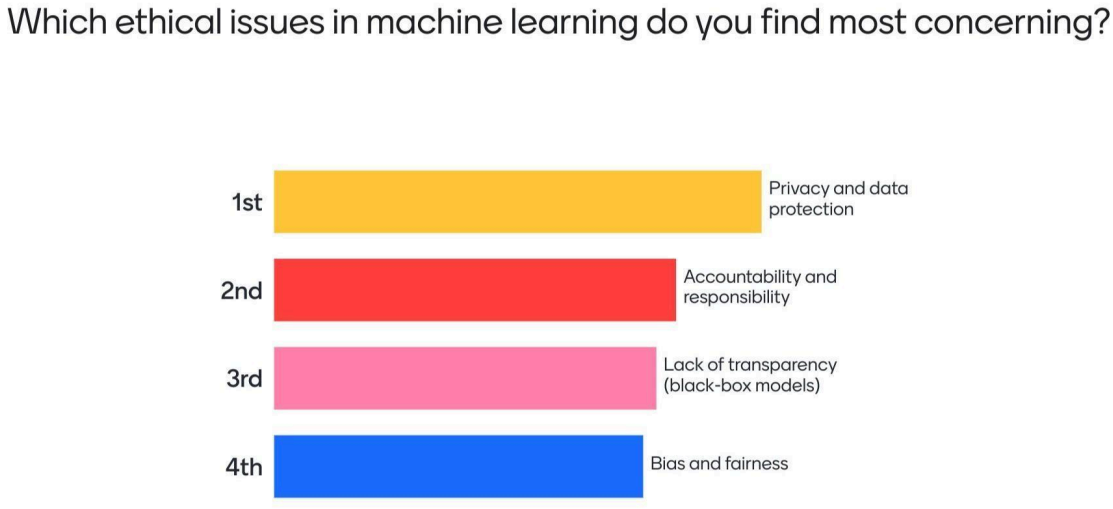


27. Ability to Explain AI Model Decisions After Training

- Yes: 45%
- No: 55%

28. Understanding of Ethical AI Implementation

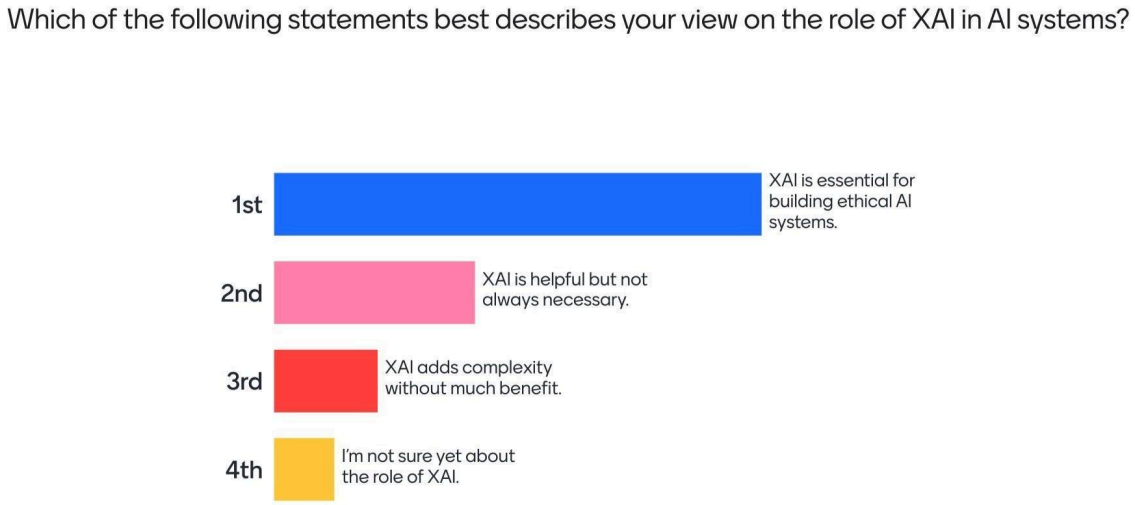
- Yes: 60%
- No: 40%



29. Impact of XAI Training on AI Trustworthiness Awareness

- Significant: 70%

- Minimal: 30%



30. Overall Satisfaction with the XAI Course

- Satisfied: 80%
- Neutral: 15%
- Unsatisfied: 5%
