

Python, Data Science & AI

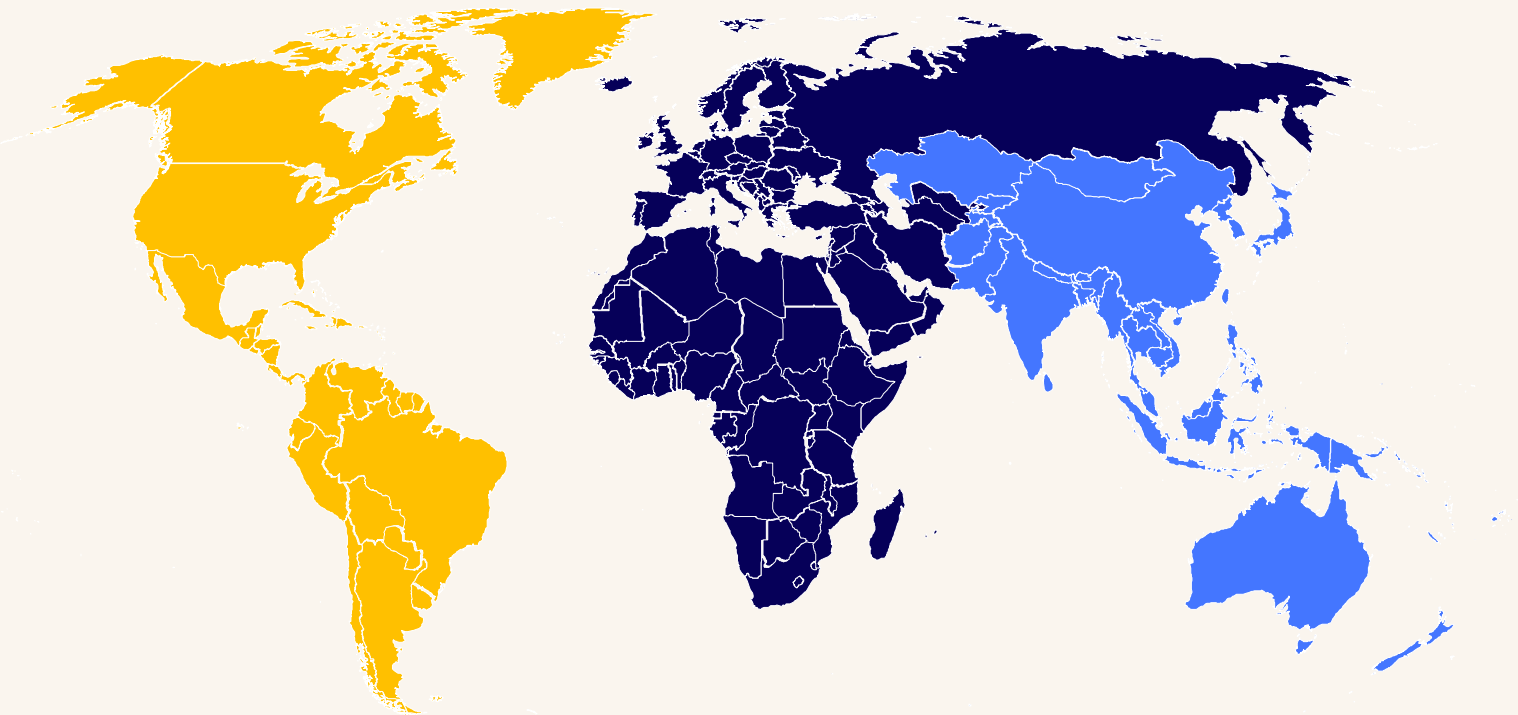
The evolution of the CFA Program

A Unique Force Within the Investment Profession

- A global not-for-profit organization.
- The world's largest association of investment professionals.
- Industry leaders promoting the highest standards of ethics, education, and professional excellence.
- A vast global network of members, societies, and relationships with key financial organizations around the world.



Membership, Candidates, and Societies



160 local societies
More than 190,000 members in 160 markets

Americas 57%
Members > 105,000
CFA Program Candidates > 48,000
Societies: 92

EMEA 22%
Members > 41,000
CFA Program Candidates > 36,000
Societies: 47

Asia Pacific 21%
Members > 39,000
CFA Program Candidates > 118,000
Societies: 21

Data As of 03/31/2022
In the mainland of China, CFA Institute accepts CFA Charterholders only.

Largest Association of Investment Professionals

Our large global network of members and relationships with key financial organizations, universities and regulators around the world provides global connectivity and a medium through which to engage on key industry issues and to positively affect the investment profession.

Americas

105,614 CFA Charterholders

92 CFA Societies

56,281 CFA® Program
candidates

365 Affiliated Universities

EMEA

41,668 CFA Charterholders

47 CFA Societies

44,490 CFA Program
candidates

204 Affiliated Universities

Asia Pacific

38,900 CFA Charterholders

21 CFA Societies

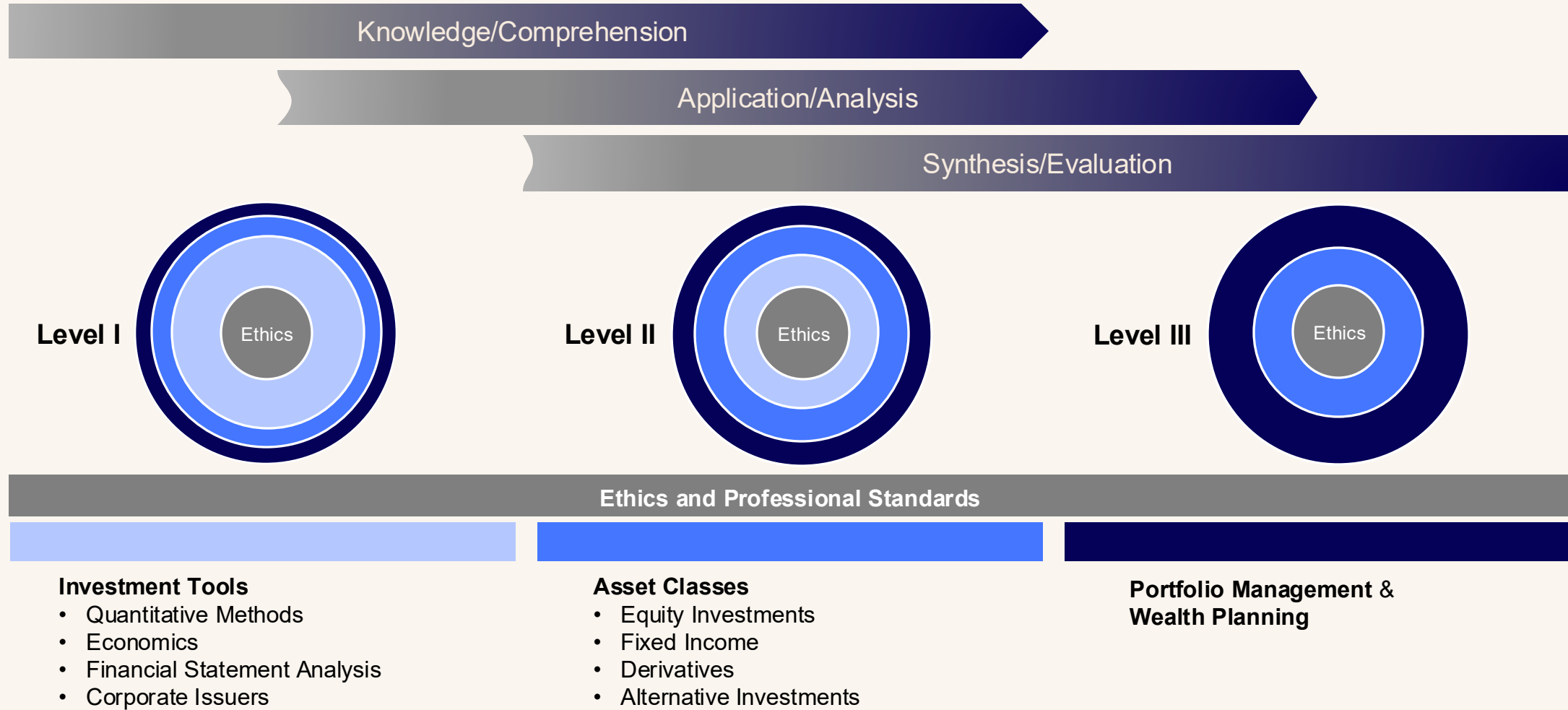
148,295 CFA Program
candidates

182 Affiliated Universities

We build relationships and engage with diverse organizations:

**Institutional Investors | Investment Managers
Investment Consultants | Regulators | Universities**

The Three Levels of the CFA Program



Changes to the CFA Program

Evolution of the CFA Program

What and Why?

- Why evolve?
 - Relevance. To employers, to candidates, to prospects.
- What is changing?
 - Establish practical skills modules at Level 1 & 2.
 - Introduce specialized pathways at Level III.
 - Expand program eligibility rules for those in university.
 - Launch additional mock exams and practice questions.
 - Acknowledge Level I completion with digital badging.
 - Reduce page count and overall volume of study materials at each level to keep the baseline preparation and 'brand promise' at 300 hours.

Eligibility Change

We have expanded program eligibility rules for those in university, namely those who are two years away from completing their undergraduate degree

Benefits

- Meet the expressed needs of student candidates, providing them with the opportunity to prepare for internships and investment careers.
- Addressing industry demand for well-trained, ethical professionals.
- University students are well prepared to tackle the more advanced, higher education curriculum of the CFA Program.
- Provides students with the opportunity to use Level I of the CFA Program as a clear signal to employers that they are serious about a career in the investment industry.

Practical Skills Modules - Objectives

Level I

Financial Modeling

Objective: Create financial models in Excel from scratch

Python Programming Fundamentals

Objective: Use basic Python coding skills to solve practical real-world problems

Level II

Analyst Skills

Objective: Master the core competencies and key skills of successful analysts

Python, Data Science & AI

Objective: Apply advanced Python coding skills to case studies on data science and AI

Practical Skills Modules - Specs

Level I

Financial Modeling

- 5 hours videos, 5 hours practice
- 61 videos
- 50 MCQ
- Assets to build a financial model in Excel

Python Programming Fundamentals

- 5 hours videos, 5 hours practice
- 80 videos
- 30 - 40 MCQ
- Assets to code with a practical case study

Level II

Analyst Skills

- 5 hours videos, 5 hours practice
- 45 video count
- 50 - 60 MCQ
- Assets to practice with given scenarios or your own

Python, Data Science & AI

- 5 hours videos, 5 hours practice
- 80 videos
- 30 - 40 MCQ
- Assets to use Data Science and program AI in practical case study

Practical Skills Modules - Topics Covered

The screenshot displays a financial modeling software interface with a 'Summary Outputs' tab. It shows a table of financial metrics for 'Blu Containers Company' across various years (2020A to 2023). The table is divided into 'SUMMARY VALUES - BASE CASE' and 'SUMMARY VALUES - BEST CASE'. The metrics include Net Revenue, EBITDA, Margin, Net Income, and Growth, with values in millions of dollars. The interface also includes a 'Data' tab and a 'Model' tab.

	Trend	2020A	2021A	2022A	2023	2024	2025	2026	2027
SUMMARY VALUES - BASE CASE									
Net Revenue		\$214	\$237	\$255	\$282	\$234	\$281	\$281	\$280
Growth		10.8%	(13.4%)	23.2%	(7.5%)	20.4%	(0.7%)	(4.6%)	
EBITDA		\$80	\$88	\$93	\$14	\$47	\$86	\$77	\$54
Margin		23.5%	24.8%	18.1%	20.2%	20.2%	30.7%	27.3%	20.2%
Net Income		\$14	\$24	\$2	\$30	\$13	\$30	\$33	\$19
Growth		8.6%	62.2%	1.1%	11.8%	5.5%	12.8%	11.8%	7.2%
SUMMARY VALUES - BEST CASE									
Net Revenue		\$214	\$237	\$255	\$282	\$234	\$281	\$281	\$280
Growth		10.8%	(13.4%)	23.2%	(7.5%)	20.4%	(0.7%)	(4.6%)	
EBITDA		\$80	\$88	\$93	\$14	\$47	\$86	\$77	\$54
Margin		23.5%	24.8%	18.1%	20.2%	20.2%	30.7%	27.3%	20.2%
Net Income		\$14	\$24	\$2	\$30	\$13	\$30	\$33	\$19
Growth		8.6%	62.2%	1.1%	11.8%	5.5%	12.8%	11.8%	7.2%

1. Variable Assignment & Data Types

- In Python, variables are used to hold values which could be Integers, Floats or Booleans.
- In one line of code, provide a variable name and assign a value to it using the assignment operator "=".

Assignment Operator

Variable Name

Value to be assigned

revenue_A = 3500

revenue_B = 9500.5

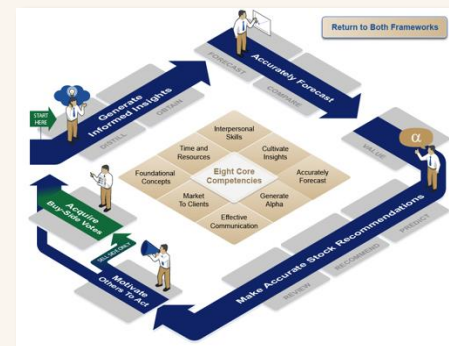
dividend_paid = True

Integer (int)

Floating Point (float)

Boolean (Bool)

```
In [1]: # Let's assume that we have two companies A and B that are reporting their revenue
# Let's define a variable named "revenue_A" and assign an integer number to it
# Integers are whole numbers (no decimals) that could be positive or negative
# In python, you do not need to create a variable and then assign a value to it
# You can run the cell by clicking "shift + enter" or by clicking run
revenue_A = 3500
```



calculate the dividends per share for ABC Inc. given the following assumptions:

- Next year's sales revenue = \$150 million
- Next year's net profit margin = 10%
- Dividend payout ratio = 50%
- Number of outstanding shares = 6 million

Write a Python code that:

1. Defines Python variables for: (1) next year's sales revenue, (2) next year's net profit margin, (3) dividend payout ratio and (4) number of outstanding shares and assigns values to them. For Example, next year's sales revenue can be defined as follows:

```
sales_revenue = 150000000
```

2. Calculates ABC Inc. net earnings
3. Calculates ABC Inc. dividends per share

Hint:

- Net earnings = Sales Revenue * Net Profit Margin
- Dividends Per Share = (Net earnings * Payout ratio) / Number of Outstanding Shares

```
In [20]: # Let's define our variables first
sales_revenue = 150000000
net_profit_margin = 0.1
dividend_payout_ratio = 0.5
num_outstanding_shares = 6000000
```

Financial Modeling

- Revenues
- Costs
- Depreciation
- Income Tax
- Working Capital
- Capital Structure
- Financial Statements
- Outputs

Python Programming Fundamentals

- Environmental Setup
- Variables
- Data Types
- Comparison Operators
- Conditional Statements
- Loops
- Functions
- Pandas
- Portfolio Optimization

Analyst Skills

- Critical Factors of a Stock
- Generating Insights
- Choosing Valuation Methodology
- Target Prices
- Communicating Stock Calls
- Time and Information Management

Python, Data Science & AI

- Financial Data Scraping, Wrangling, Cleaning
- Dividend Payout Predication Using Machine Learning Regression & Artificial Neural Networks
- Edgar Data Ingestion & Sentiment Analysis Using AWS Comprehend and LSTM Neural Networks

Practical Skills Modules

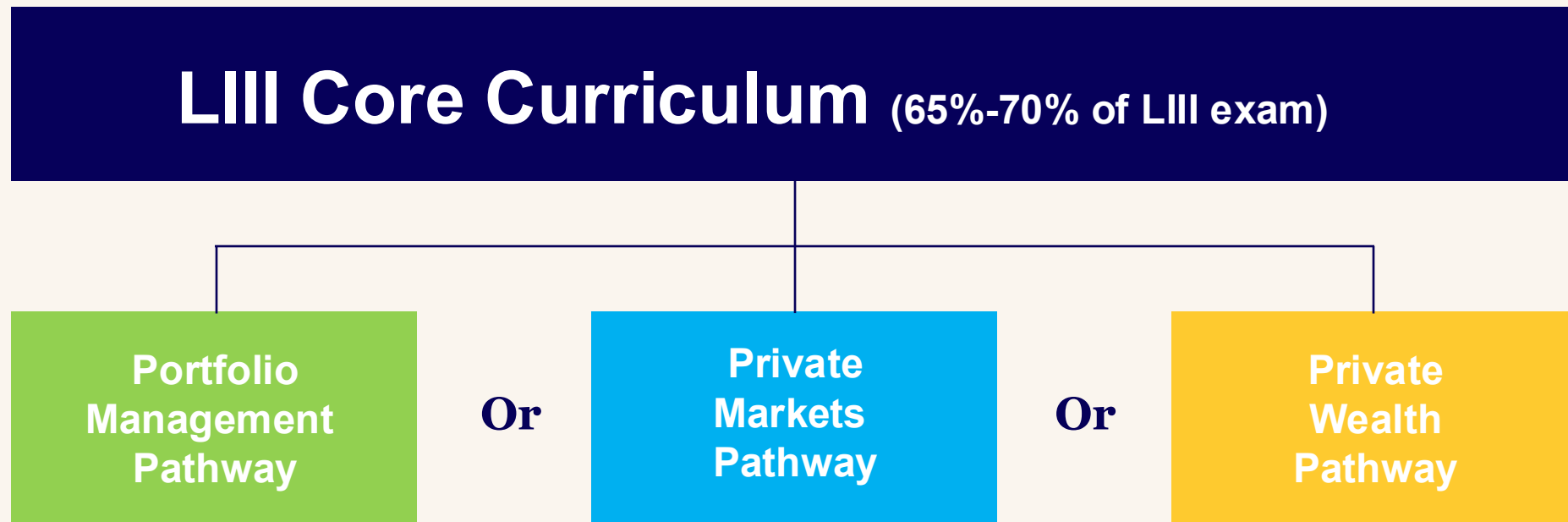
The CFA® Program has been expanded to include practical, relevant skills training to provide candidates with on-the-job application of what they are learning in the curriculum.

2025

	Level I	Level II	Level III
Analyst Skills		✓	✓
Financial Modeling	✓		✓
Portfolio Development and Construction			✓
Python, Data Science & AI		✓	✓
Python Programming Fundamentals	✓	✓	✓

CFA Level III—from 2025: Core Curriculum + Specialized Pathways

LIII Core curriculum provides knowledge and skills which are key across all three Pathways: Portfolio Management, Private Markets, and Private Wealth.



CFA® Program

- The investment profession does not stand still and every year, we evaluate and adjust the Program to keep pace with the industry, and the needs of employers and candidates. Therefore, we have made six significant changes to the CFA Program. `
- Expanded program eligibility rules
- Practical Skills Modules at each level on topics such as Financial Modeling and Python
- Focused curriculum
- Optional extra practice questions and mock exams
- Specialised Pathways for Level III
- Digital Badges for Level I and Level II

Student Resource Pack



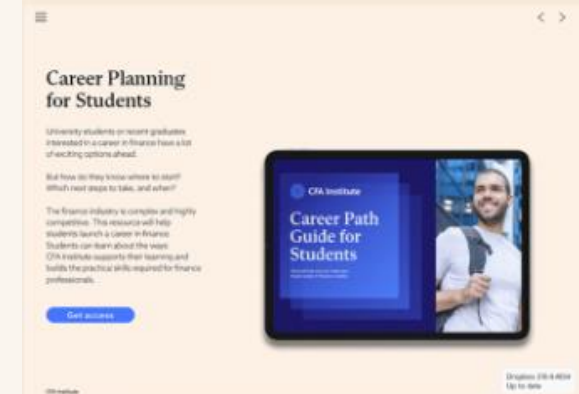
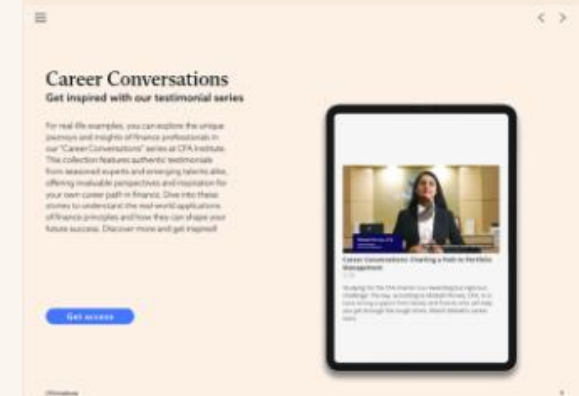
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Download the Student Resource Pack

Scan the QR code for free access to a range of student resources and a chance to sign up for future webinars and downloads.

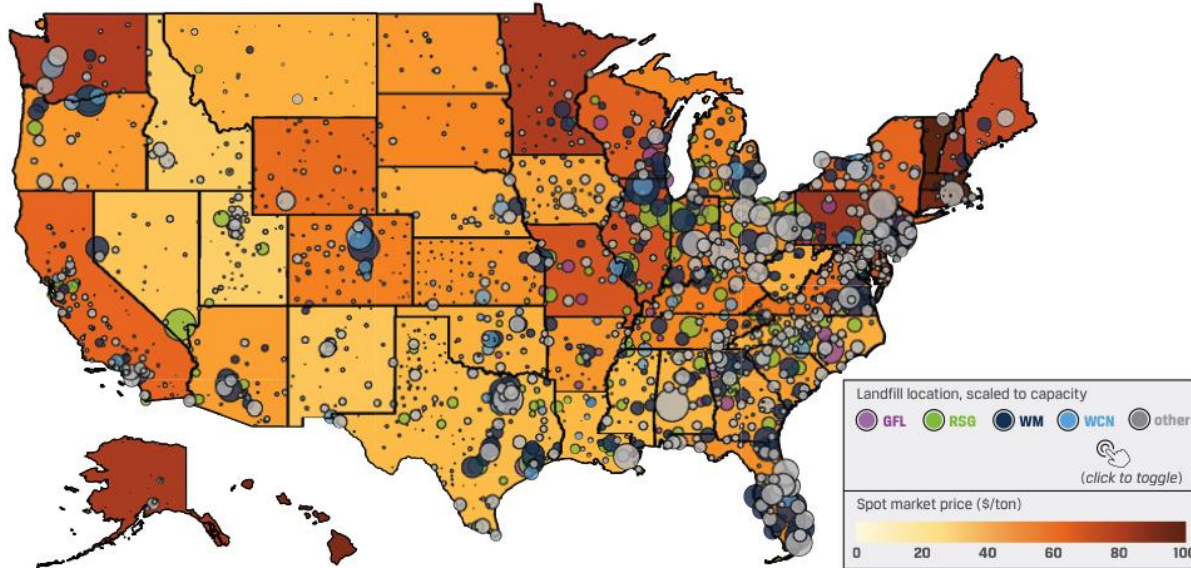
SECTION 1	SECTION 2	SECTION 3
Career Resources	Educational Content	Research for Students
Investment Industry Career Paths 04	Overview of Investment Foundations® Certificate 10	Research & Policy Center (RPC) 15
Career Planning for Students 05	CFA® Program 11	Student Focused Content 16
Career Conversations 06	Scholarships 13	
Buildable Quiz 07		
Do You Speak Finance? Quiz 08		



CFA Institute Research

CFA Institute Research

Exhibit 2. Leveraging Geospatial Analysis Applied in One Industry to Another Industry



Sources: "Americas Environmental Services: Compounding Unit Profitability amid Building Local Market Share," published by lead equity analyst Jerry Revich, CFA, on 6 April 2021. Analysis by Goldman Sachs Global Investment Research based on data compiled from the *Waste Business Journal*, the New York State Department of Environmental Conservation, the California Water Boards, and other state sources.

Visualize the top 5 topics over time

```
1 import matplotlib.pyplot as plt
2 import matplotlib.dates as mdates
3 fig = plt.figure(figsize=(25,10))
4 ax = plt.axes()
5 # re-name topic names
6 plt.plot(top_topics_pivot[0], label='Apps', color='purple',linewidth=3.0)
7 plt.plot(top_topics_pivot[1], label='Covid', color='black',linewidth=3.0)
8 plt.plot(top_topics_pivot[2], label='Inflationary Concerns', color='blue',linewidth=3.0)
9 plt.plot(top_topics_pivot[3], label='Stock Market', color='green',linewidth=3.0)
```

CFA INSTITUTE RESEARCH FOUNDATION / MONOGRAPH

HANDBOOK OF ARTIFICIAL INTELLIGENCE AND BIG DATA APPLICATIONS IN INVESTMENTS

LARRY CAO, CFA
EDITOR

CFA Institute Research

This report addresses the ethical concerns and risks of AI washing in finance, providing crucial questions for stakeholders to evaluate managers' AI claims and ensure transparency, integrity, and the genuine application of AI in investment strategies.

[Research and Policy Center](#) / [Research](#) / [AI Washing](#)



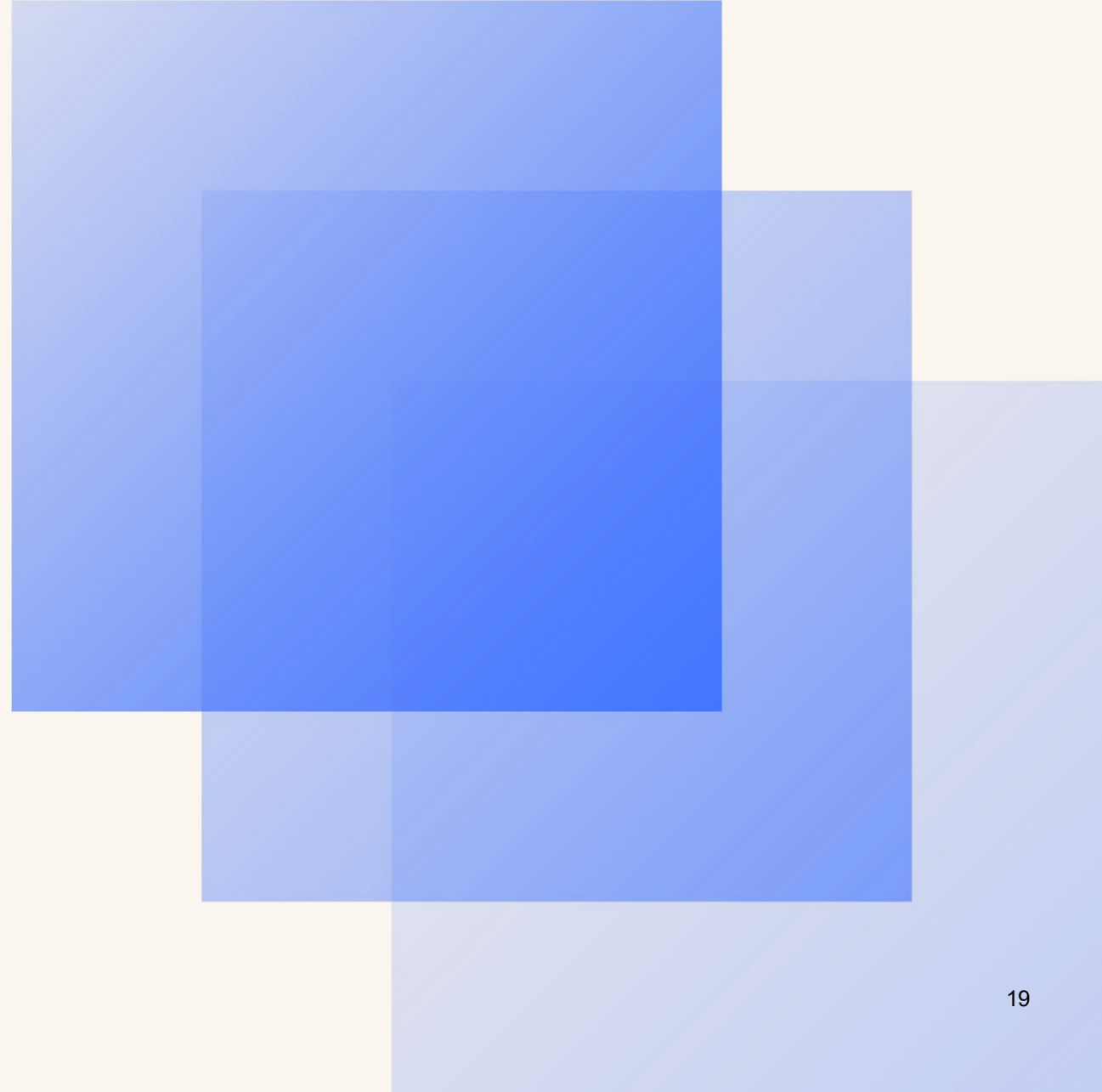
THEME: TECHNOLOGY

10 June 2025 | Research Reports

AI Washing: Signs, Symptoms, and Suggested Solutions for Investment Stakeholders

By [Joseph Simonian](#)

Appendix



Social Media

CFA Institute maintains an active and growing social media presence on:



@cfainstitute
@cfaprogram



@cfainstitute
@cfaprogram



@cfainstitute
@cfaprogram



@cfaprogram



@cfainst



@cfainstitute
@cfaprogram

An abstract geometric pattern composed of numerous blue lines of varying lengths and orientations, arranged in a radial, star-like fashion on the right side of the slide.

Thank you

For any additional questions, please email