CPA Exam Practice Analysis

Richard Gallagher, CPA
Sr. Director, Examination Content

AICPA

Faculty Hour

A webcast series

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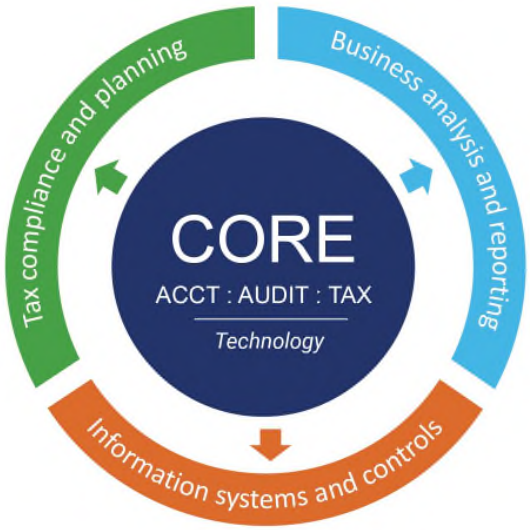
CPA Evolution licensure model / New CPA Exam (January 2024)



= CPA

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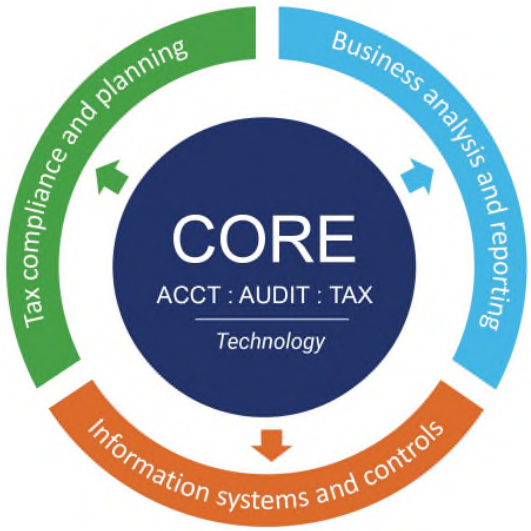
New licensure model: Core and Disciplines



Strong core with accounting, auditing, and taxation along with a recognition of the impact of technology

Deeper knowledge in three primary disciplines

Reflects reality of practice

Adaptive and flexible

One CPA license

Enhances public protection

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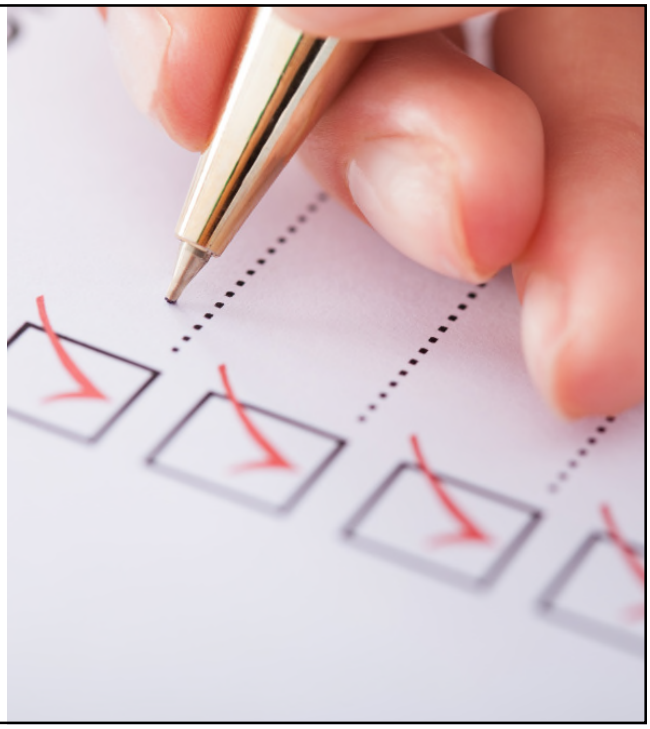
What might the Exam look like?

What we expect would stay the same:

- Designed for 1 – 2-year level
- No more than a 16-hour Exam
- No new experience requirements to sit for the Exam
- Candidates pass 4 sections
- Exam sections can be taken in any order
- No separate time limits to pass core and discipline



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How may the Exam change?

Navigating the core + disciplines:

Candidates pass the three core sections and one discipline section (max = 4 sections)

Candidates don't have the option to pass additional disciplines

All sections cover discrete content and a range of skills (including higher order)

Discipline passed will not differentiate the license granted

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What is a Practice Analysis?

- Foundation of the validity and legal defensibility of a licensure examination
- A research project to define the knowledge and skills required by newly licensed CPAs
- Ensures a direct link between the knowledge and skills assessed on the CPA Exam and the important aspects of newly licensed CPA (nlCPA) practice

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CPA Exam practice analysis timeline

December 2020 – Kicked off 12 to 18-month practice analysis

July 2021 – Survey stakeholders on CPA Exam Core + Discipline content

July 2022 – Expose draft CPA Exam Blueprint for public comment

January 2023 – Finalize Blueprint/Announce new CPA Exam

January 2024 – Launch new CPA Exam

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A webcast series

Data Analytics in Accounting: How to Help Your Students Become Better Critical Thinkers

Susan Wolcott, Ph.D., CPA, CMA

Guido Geerts, Ph.D.

June 25, 2021

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Susan K. Wolcott, Ph.D., CPA, CMA
Educational Consultant
WolcottLynch

Susan is an educational consultant and independent scholar. She integrates cognitive development, neuroscience, and other education literatures to create practical approaches for the teaching, learning, and assessment of critical thinking, professional judgment, ethical reasoning, and similar skills. She is author of the AICPA faculty guide, *How to Help Your Students Become Better Critical Thinkers*. Susan is a frequent speaker at education conferences and has consulted with more than 80 universities and professional organizations. She currently teaches part-time at Indian School of Business (Mohali and Hyderabad), coauthors a cost accounting textbook, and serves on the IMA-Greater Seattle Chapter Board of Directors.

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Guido L. Geerts , Ph.D.
Professor of Accounting and EY Faculty Scholar
University of Delaware

Guido is a professor of accounting and EY Faculty Scholar at the Lerner College of Business, University of Delaware, where he teaches accounting information systems and data analytics. He received a Ph.D. in accounting information systems from the Free University of Brussels, Belgium in 1993. Guido has published more than twenty articles in accounting and information systems journals. He has received numerous teaching, research, and service awards, including the 2015 University of Delaware's Excellence in Teaching Award and the 2018 American Accounting Association Outstanding Service Award. Guido is the former chair of the Technology Task Force for the Pathways Commission Recommendation 4 (Curriculum and Pedagogy) and currently serves as a Trustee on the AICPA Foundation Board.

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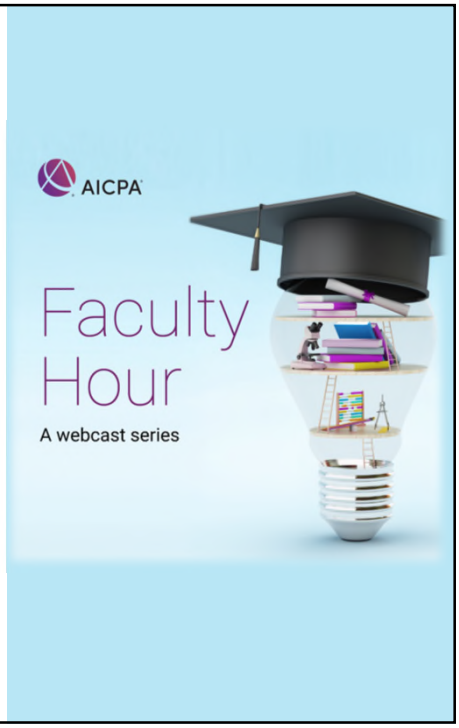
AGENDA

- CPA Evolution Update
- Learning Objectives:
  - *Identify major data analytics skills for accountants*
  - *Describe the relationships between data analytics and critical thinking*
  - *Design data analytic assignments that challenge students, but do not overwhelm them*
  - *Generate ideas for effectively integrating data analytics in various accounting courses*
- Resources
- Feedback



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Data Analytics Skills vs. Critical Thinking

Some Parts of Data Analytics Are Well-Defined Such As:	Other Parts of Data Analytics Require Critical Thinking Such As:
• Use software to correctly extract, profile, clean, restructure, and integrate data • Correctly explain and apply a specific data structure • Correctly create a specified data report • Use a data report to correctly answer well-defined questions	• Determine whether data are sufficiently relevant and/or credible • Use cost-benefit analysis to choose methods/ approaches to data cleaning • Use priorities to choose a data structure and/or report format for the situation • Interpret data reports to gain insights, improve predictions, make decisions, etc.

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1. **Susan's Critical Thinking Guide**

   Click here to download Susan's Faculty Guide

2. **Susan's AICPA seminars on critical thinking**

   Click here to view Susan's previous AICPA's webinars

3. **Textbook on Data Analytics with a Strong Focus on Critical Thinking**
   Forthcoming | Wiley

   Dzuranin, Ann, Guido Geerts, Margarita Lenk.
   Data and Analytics in Accounting: An Integrated Approach
   Forthcoming | Wiley
   Consider volunteering as Reviewer
   Click here for more information (includes some exercises you can integrate in your class)

4. **Textbook on Power BI**
   Forthcoming Wiley

   Guido Geerts
   Introduction to Power BI
   geerts@udel.edu

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5. **Data Process Chain**

   Guido L. Geerts. "Drive business success with data analytics."
   Journal of Accountancy. June 2021. pp. 37-51.
   Request a copy: https://www.journalofaccountancy.com/info/drive-business-success-with-data-analytics.html

6. **AICPA Evolution Model Curriculum**

   https://thiswaytocpa.com/program/modelCPAcurriculum/

7. **Stephen Few. 2012.**

   Show Me the Numbers: Designing Tables and Graphs to Enlighten.
   Analytics Press, El Dorado Hills, CA, USA.

8. **Bernard Marr. 2016**

   Big data in practice: how 45 successful companies used big data analytics to deliver extraordinary results. John Wiley & Sons,

14

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9 **Misleading Graphs**

Click here for some real-world examples of misleading graphs.

10 **PCARD case – Fraud Analytics**

NASDAX: Being an Accountant for a Day.
Contact Nadia Schwartz: nadiaschwartz@augustana.edu

11 **REA Accounting**

Click here to visit Bill McCarthy's website or drop him an email at mccarthy@broad.msu.edu

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Integrating Data Analytics Into the Accounting Curriculum

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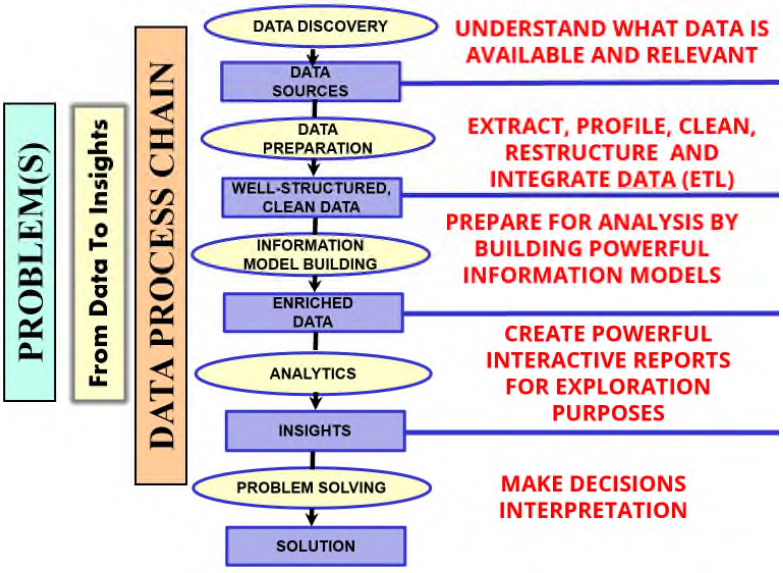
DATA ANALYTICS AS A PROCESS



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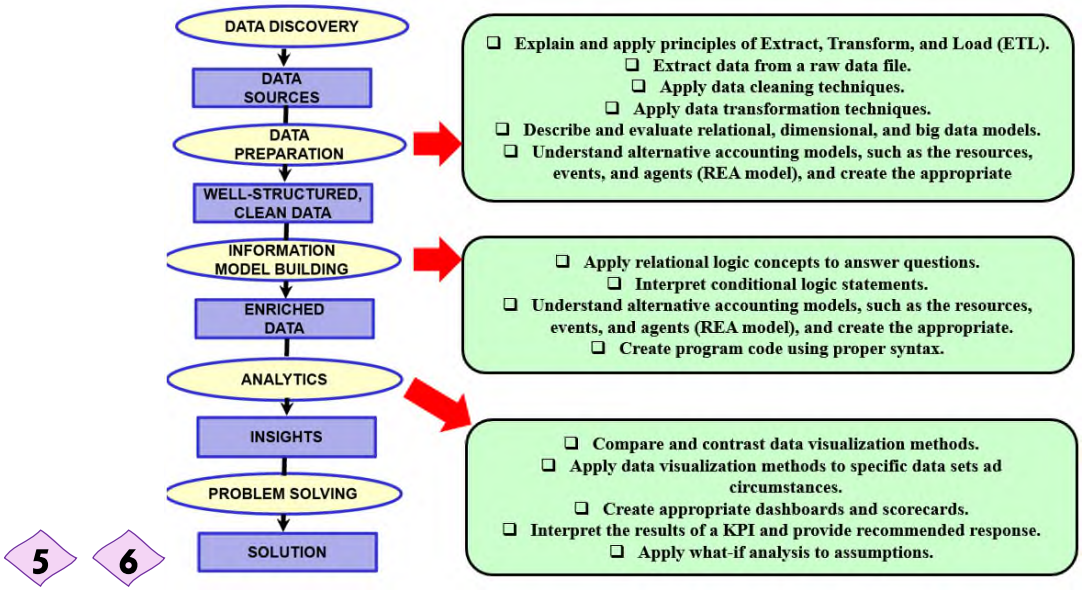
DATA PROCESS CHAIN | CPA EVOLUTION



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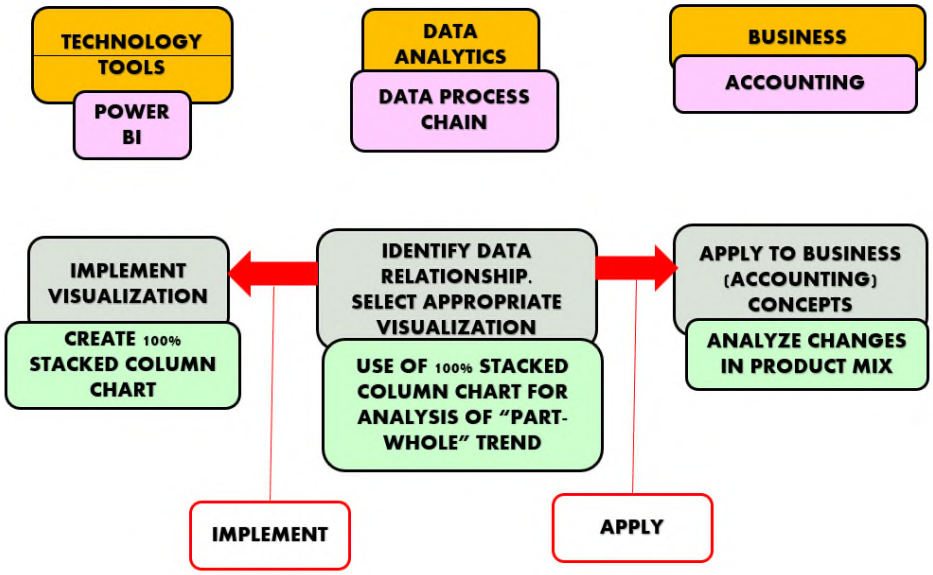
SKILLS



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TECHNOLOGIES/TOOLS

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POWER BI

Excel++
Easy transition for accounting students and accounting professionals

Fully Integrated
ETL | Extract-Transform-Load
Information Modeling
Data Visualizations | Analytics

You can download it for free and start today (the best business model ☺)!

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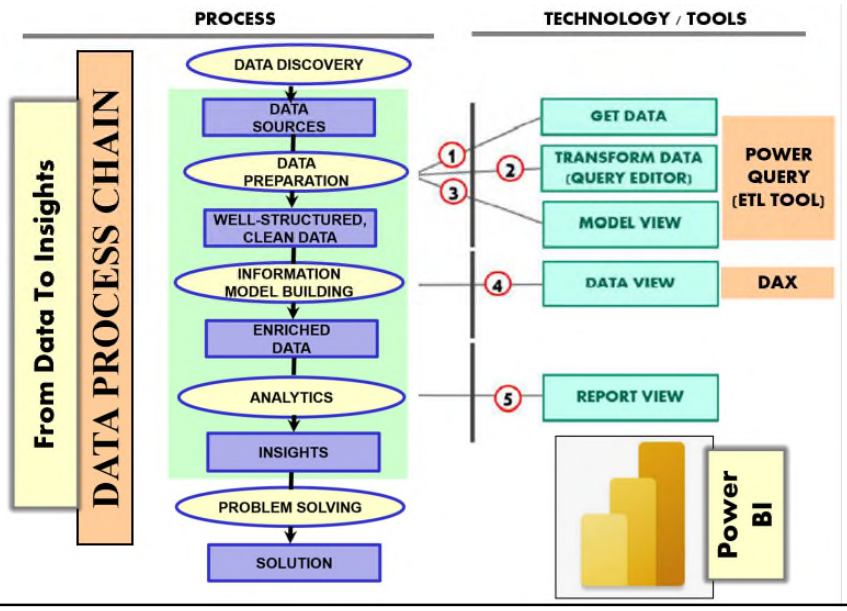
PROCESS ~~ TECHNOLOGIES/TOOLS



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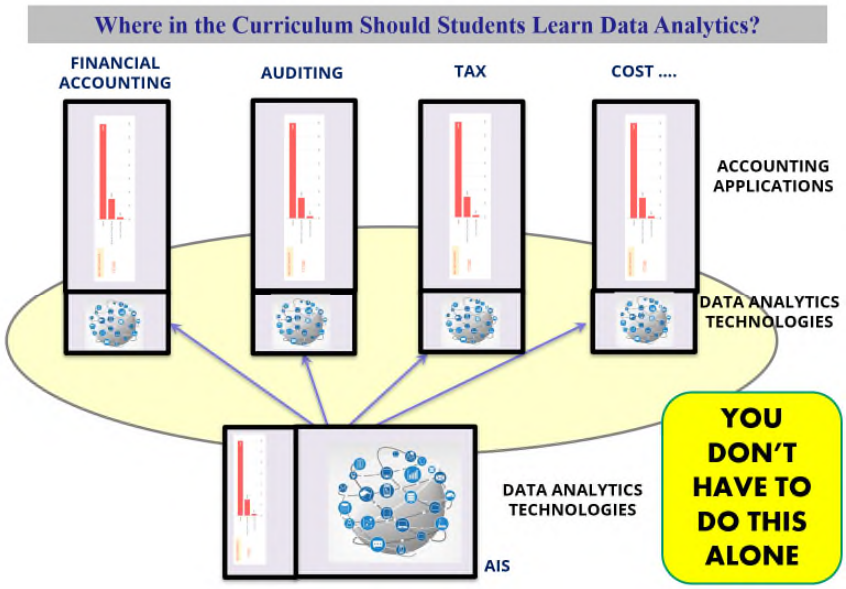
CURRICULUM DESIGN



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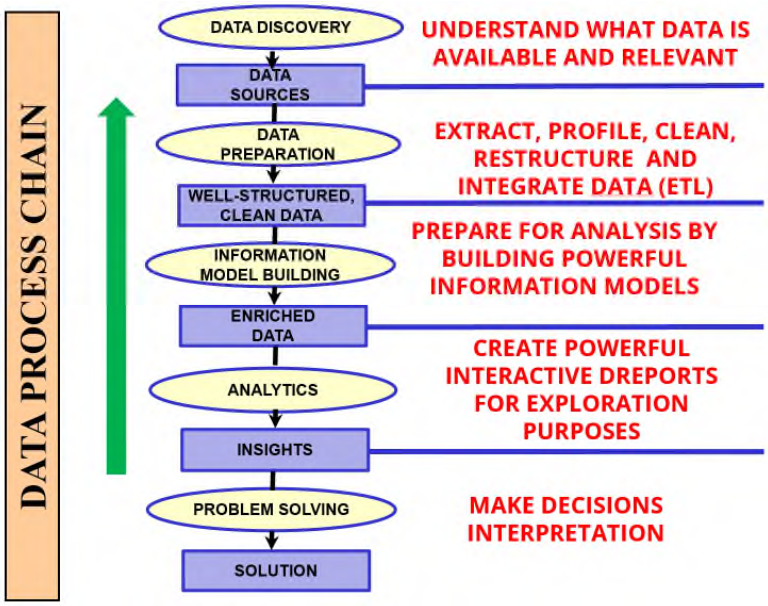
TEACHING DATA ANALYTICS (1)



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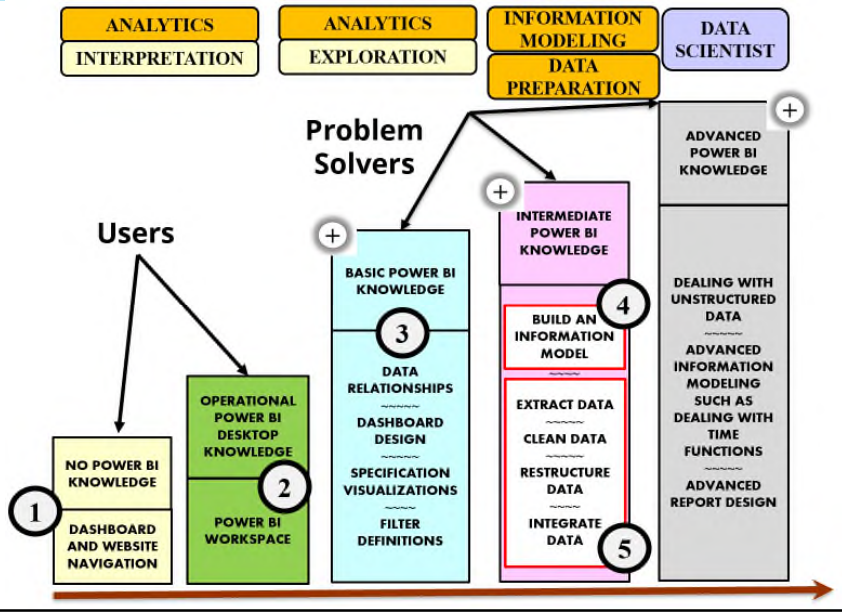
TEACHING DATA ANALYTICS (2)



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DATA ANALYTICS ~ VALUE CREATION CASE (1)

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Source: Marr (2016)

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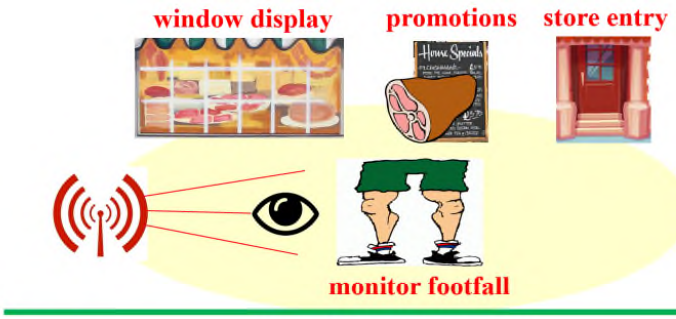
DATA ANALYTICS ~ VALUE CREATION CASE (2)



How many people walked by?
How many people stopped for the window display?
How many people stopped for the promotions?
How many people walked in?

Unexpected revenue stream:
Selling hot dogs and burgers to the bar crowds

Source: Marr (2016)

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Development of Critical Thinking

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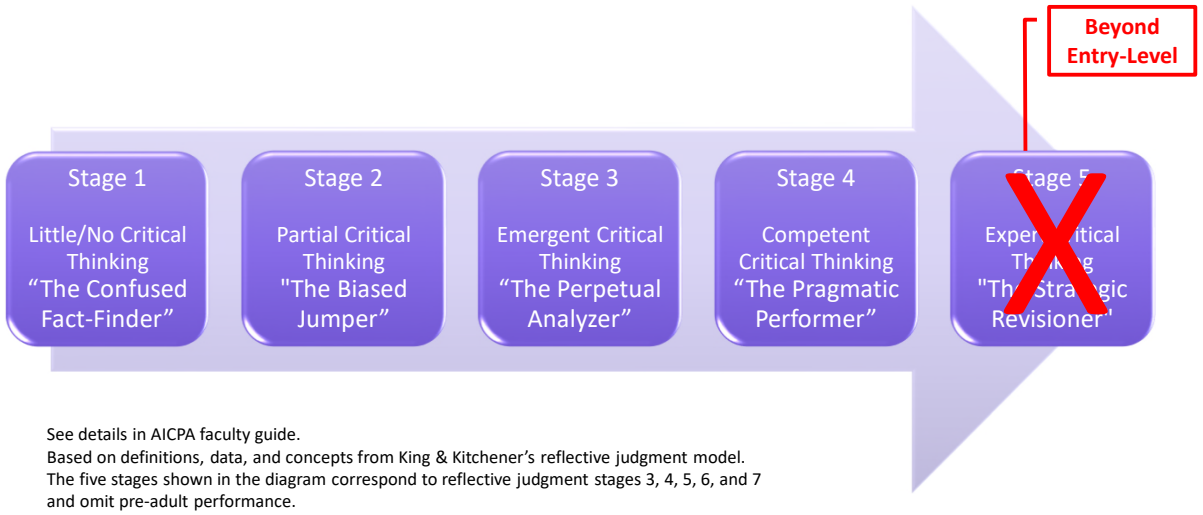
Stages of Development



See details in AICPA faculty guide.
Based on definitions, data, and concepts from King & Kitchener's reflective judgment model.
The five stages shown in the diagram correspond to reflective judgment stages 3, 4, 5, 6, and 7 and omit pre-adult performance.

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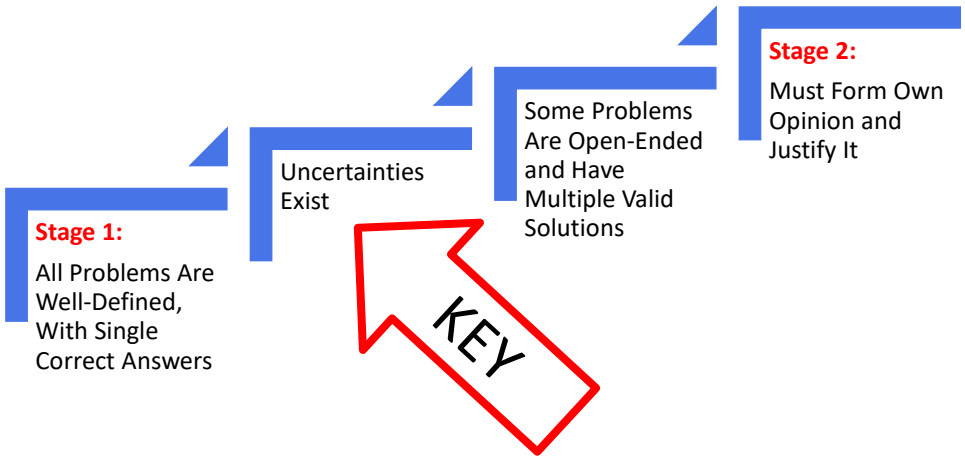
Scaffolding: Stage 1 ➔ Stage 2



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Uncertainty Question Examples

Intro Fin
- Is the allowance for bad debts "accurate"?
- Does a financial ratio have only one meaning?

Intro Mgmt
- Is the cost function "accurate"?
- Which costs are relevant for a decision?

Tax
- Will tax laws change (i.e., are future tax estimates "accurate")?
- Will a tax strategy be challenged under audit?

Assurance
- Can audit risk be assessed "accurately"?
- Are a client's verbal statements "truthful"?

At Stage 1: Students believe that all information is accurate/inaccurate, right/wrong, good/bad, true/false, etc.

Students who have moved to Stage 2 in one course might revert to Stage 1 in a new course.

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Scaffolding: Stage 2 ➔ Stage 3

Stage 2:
It Is Sufficient to Generate Arguments to Support One's Own Position

Delay Judgment to Thoroughly Explore Pros and Cons

Must Identify and Control Biases to Objectively Consider Different Viewpoints

Stage 3:
Develop a Thorough, Objective Understanding Before Reaching a Conclusion

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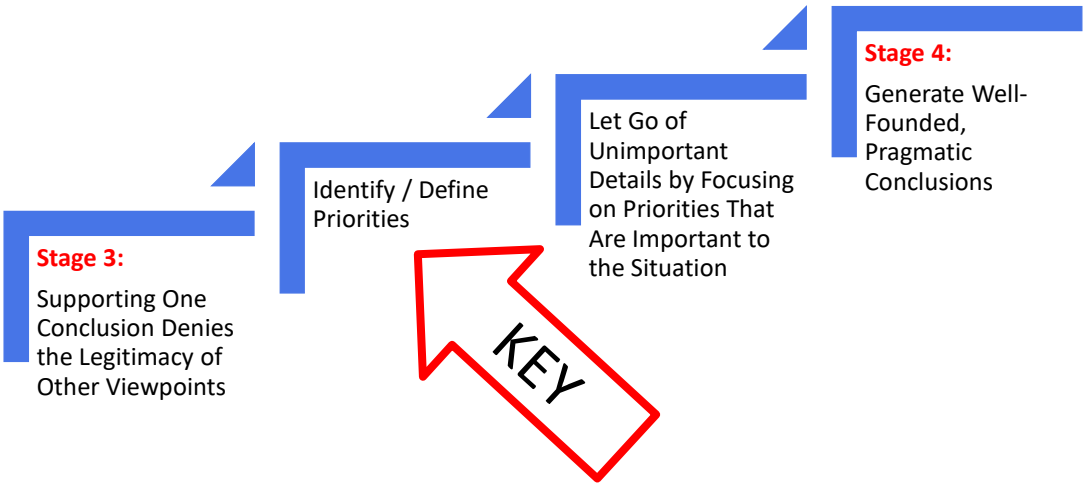
Scaffolding: Stage 3 ➔ Stage 4



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Examples of Data Analytics Questions

Stage 1 ➔ 2 Uncertainties

- Are all data relevant and credible?
- Is there only one way to extract, profile, clean, restructure, and integrate data?
- Is only one data structure "correct"?
- Is only one data report format "correct"?

Stage 2 ➔ 3 Pros and Cons

- Discuss arguments for/against the relevance and credibility of data
- Evaluate the costs and benefits of different methods/ approaches to data cleaning
- Discuss strengths and weaknesses of a data model and/or data report format
- Provide alternative interpretations of data

Stage 3 ➔ 4 Situational Priorities

- Determine whether data is sufficiently relevant and/or credible
- Use cost-benefit analysis to choose methods/ approaches to data cleaning
- Use situational priorities to choose a data model and/or report format
- Draw conclusions from interpretations of data

Stage 2: Progress to Stage 3 is slow and unstable, with many reversions ➔ Most students graduate at Stage 2

Stage 3: Progress to Stage 4 is fast when students learn to use priorities

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Integrating Data Analytics Into the Accounting Curriculum Scenarios 1& 2: Analytics | Interpretation

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SCENARIO 1 | OVERVIEW

ANALYTICS | INTERPRETATION DASHBOARD LITERACY

- TECHNOLOGY POWER BI
- DATA ANALYTICS
- ACCOUNTING
- NAVIGATE WEB SITE
- INTERPRETATION DASHBOARDS
- DEPRECIATION
- NAVIGATE POWER BI DASHBOARD
- UNDERSTAND DATA RELATIONSHIPS

A visualization is a specific way of representing data.

A dashboard consists of one or more visualizations that can interact with one another.

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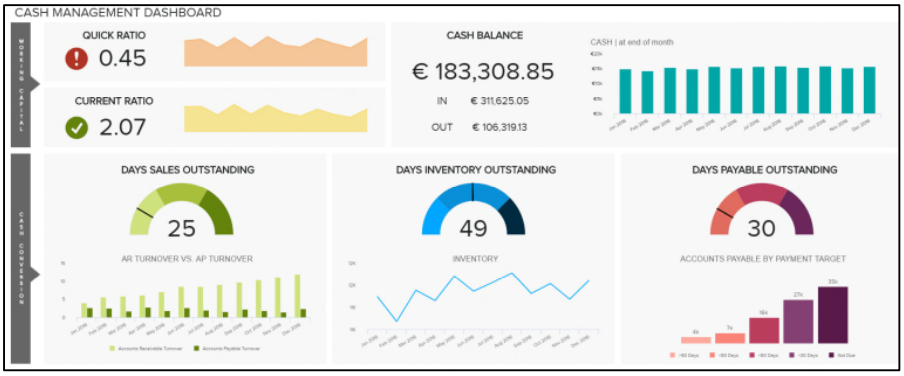
DASHBOARD / VISUALIZATION



Source
https://www.datapine.com/dashboard-examples-and-templates/finance

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DATA RELATIONSHIPS

A data relationship describes how data elements (or values) relate to each other.

Relationship	Description	Examples
Nominal Comparison	Describes a set of discrete quantitative values that can be used for comparison purposes.	How many customers are there per state?
Distribution	Describes how quantitative values are distributed across an entire range.	How are salaries distributed among our employees?
Deviation	Describes how one or more sets of quantitative values differ from a reference set of values.	How much do the actual expenses for each department vary from the budgeted expenses?
Ranking	Describes how a set of quantitative values relate to each other sequentially.	What are the best-selling products? What employees make the most errors?
Part-to-whole	Describes composition. How can a number (the whole) be divided into smaller parts, how do the parts relate to each other, and how do the parts relate to the whole?	How much does each region (part) contribute to the company's (whole) total revenue?
Correlation	Describes whether and to what extent two paired sets of quantitative values relate to one another.	Is there a negative relationship between an employee's years of experience and the number of mistakes that the employee makes?
Time Series	Describes how something changes over time, helping to identify patterns of change, rise, increase, fluctuation, growth, decline, and decrease.	What has happened to our sales since the beginning of the year – steady growth; sharp, seasonal fluctuations; etc.?
Geospatial	Assigns numerical values to locations.	What is the total revenue generated by U.S. states (location)

Exhibit 1
Data Relationships

Stephen Few. 2012

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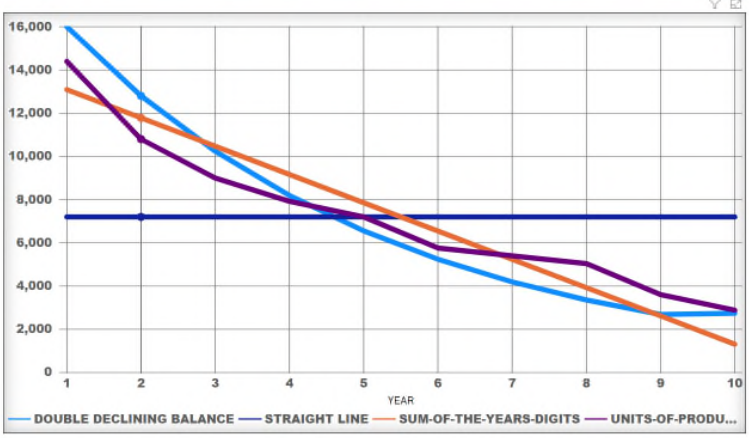
COGNITIVE TOOL (1)

DEPRECIATION EXPENSES COMPARISON



WEB SITE | CLICK HERE **PAGE 6**

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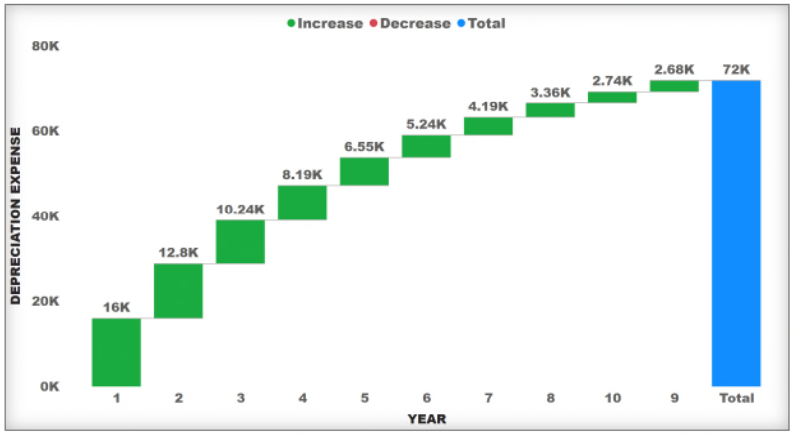
COGNITIVE TOOL (2)

DOUBLE DECLINING BALANCE DEPRECIATION EXPENSES



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INTERPRETATION / CONTEXT

UNITS SOLD
HONDA

COUNTRY	MODEL	TYPE	2016	2017	2018	2019	2020	2020 BUDGETED UNIT SALES
US	CIVIC	SEDAN	320981	301882	292331	291002	255423	300000
US	ACCORD	SEDAN	243192	245998	231441	309885	344771	350000
US	CR-V	SUV	175883	160886	190001	220877	252019	250000
US	PILOT	SUV	140444	142980	139441	142917	125090	160000
US	ODYSSEY	MINIVAN	188664	167123	150872	150881	139009	145000
US	RIDGELINE	TRUCK	58322	55897	56889	55899	54891	55000
CANADA	CIVIC	SEDAN	230887	242998	275667	381998	480871	425000
CANADA	ACCORD	SEDAN	195232	200872	210665	253988	319755	275000
CANADA	CR-V	SUV	135423	129809	126592	114119	98077	110000
CANADA	PILOT	SUV	40998	35672	39811	43125	47329	45000
CANADA	ODYSSEY	MINIVAN	25229	7761	26981	22099	19822	30000
CANADA	RIDGELINE	TRUCK	19008	31887	42001	55089	88081	65000
			1774263	1723765	1782692	2041879	2225138	2210000

Units Sold

ID	YEAR
1	2016
2	2017
3	2018
4	2019
5	2020

Year

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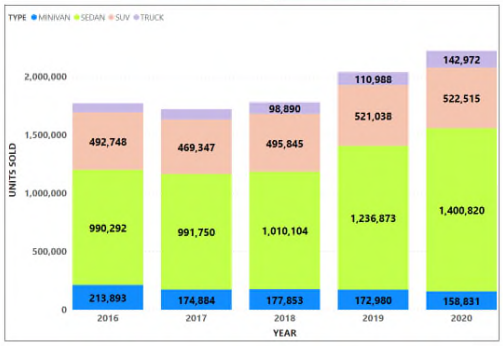
INTERPRETATION

TOTAL UNITS SOLD 2016-2020: 9,547,737



INTERPRETATION | STRENGTH AND WEAKNESSES
WHAT DOES THE VISUALIZATION TELL YOU | DATA RELATIONSHIPS
WHAT DOES THE VISUALIZATION TELL YOU | BUSINESS CONCEPTS

WEB SITE | CLICK HERE

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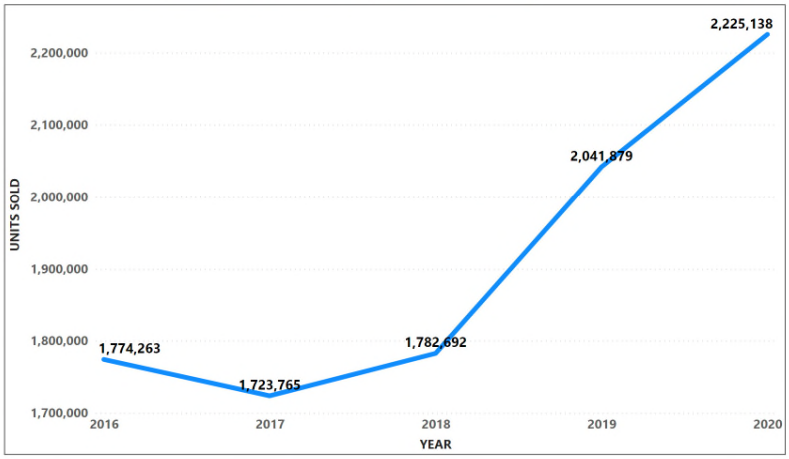
INTERPRETATION / DECEPTION (1)

TOTAL UNITS SOLD 2016-2020 | 9,547,737



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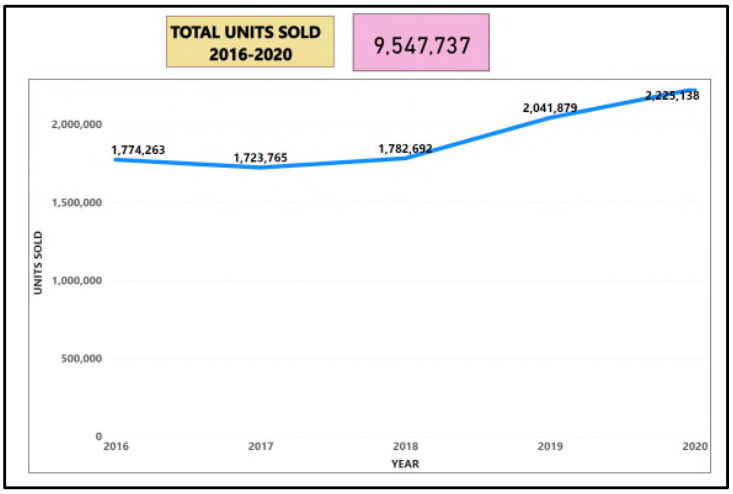
INTERPRETATION / DECEPTION (2)

TOTAL UNITS SOLD 2016-2020 | 9,547,737



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EXPLORATION / CONTEXT

NASDAX CASE: FRAUD ANALYTICS

Q1 – IDENTIFY (ANALYZE) "SMALL" PURCHASES FROM "LOCAL" "DINING PLACES."
SMALL = <= $8
LOCAL=EAST PEORIA, PEKIN, PEORIA, PEORIA HEIGHTS
DINING PLACES = "FAST FOOD RESTAURANTS", "EATING PLACES"
DETERMINE EMPLOYEES WITH A LARGE NUMBER OF SUCH PURCHASES

Q2 – IDENTIFY SPLIT TRANSACTION. ANALYZE SPLIT TRANSACTIONS PER EMPLOYEE.

Q3 – DETERMINE ALL MERCHANTS THAT HAVE SOLD TO ONE CARDHOLDER ONLY (FICTITIOUS VENDORS)

Q4 – IDENTIFY THE VENDORS (MERCHANTS) WE SHOULD NEGOTIATE WITH

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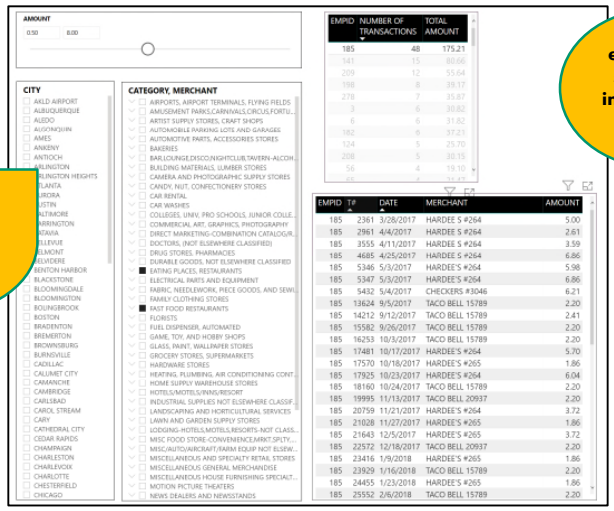
EXPLORATION

Identify relevant question

TRANSACTION SELECTION

DRILL DOWN



Which employees should be investigated further?

Identify relevant information (set of transactions)

NASDAX CASE: FRAUD ANALYTICS

WEB SITE | CLICK HERE

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SCENARIO 2 | OVERVIEW

ANALYTICS | INTERPRETATION
DASHBOARD LITERACY

- TECHNOLOGY POWER BI
- DATA ANALYTICS
- ACCOUNTING
- NAVIGATE POWER BI WORKSPACE
- INTERPRETATION DASHBOARDS
- BREAKEVEN ANALYIS
- NAVIGATE POWER BI DESKTOP DASHBOARD
- UNDERSTAND DATA RELATIONSHIPS

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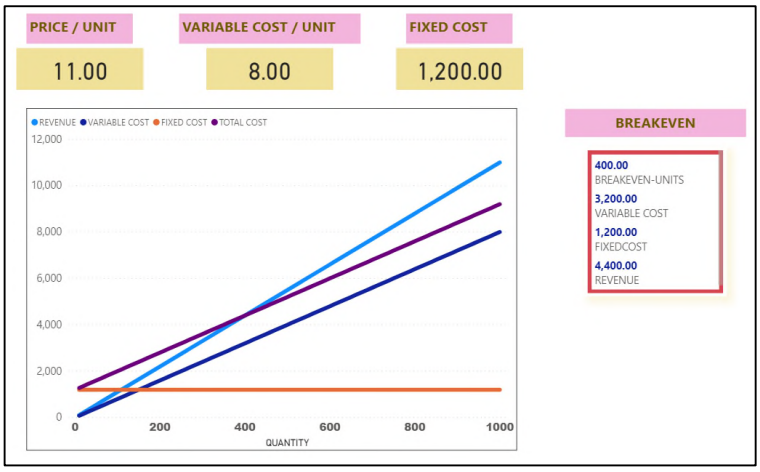
BREAKEVEN ANALYSIS



POWER BI FILE | CLICK HERE

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Scenarios 1 & 2: Analytics | Interpretation Critical Thinking Opportunities

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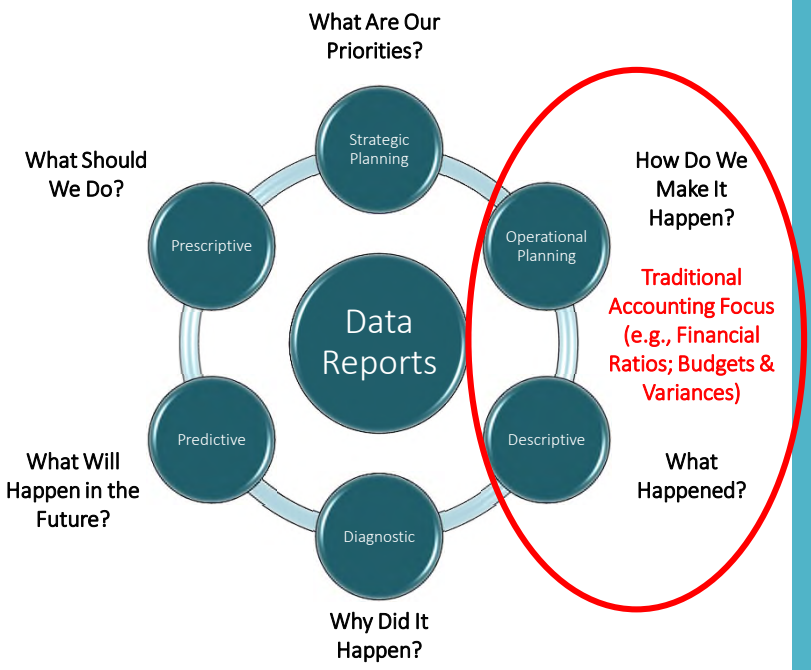

Linking Data Reports to the Business Context

Who Should Use the Report, and What Should They Use It For?

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Integrating Data Analytics Into the Accounting Curriculum Scenario 3: Analytics | Exploration

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SCENARIO 3 | OVERVIEW

ANALYTICS
DASHBOARD CREATION/EXPLORATION/INTERPRETATION

TECHNOLOGY POWER BI	DATA ANALYTICS	ACCOUNTING
CREATE A VISUALIZATION	SELECT RELEVANT DATA	PRODUCT MIX ANALYSIS
CREATE A DASHBOARD	IDENTIFY DATA RELATIONSHIPS	
DEFINE A FILTER (BASIC BOOLEAN LOGIC)	SELECT VISUALIZATIONS	
	IDENTIFY INSIGHTS	

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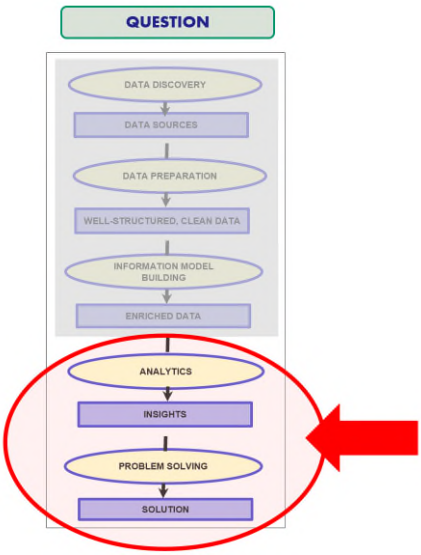
ANALYTICS | DATA PROCESS CHAIN



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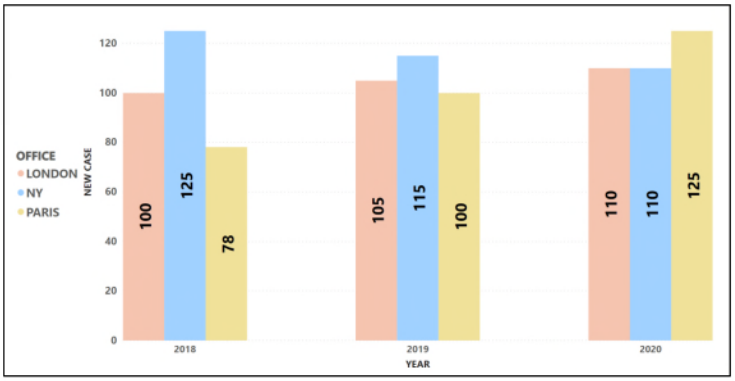
TECHNOLOGY
CREATING VISUALIZATIONS / DASHBOARDS



ASSIGNMENT	ITEM	GRADE	SCORE
ASS#2 W2-2ASS	CORRECT CHART AND NUMBERS (NO PARTIAL CREDIT)	1.5	
	FORMATTING		
	LEGEND: LEFT CENTER	0.25	
	CORRECT COLORS FOR THE THREE CITIES	0.25	
	TOTAL	**2**	

54

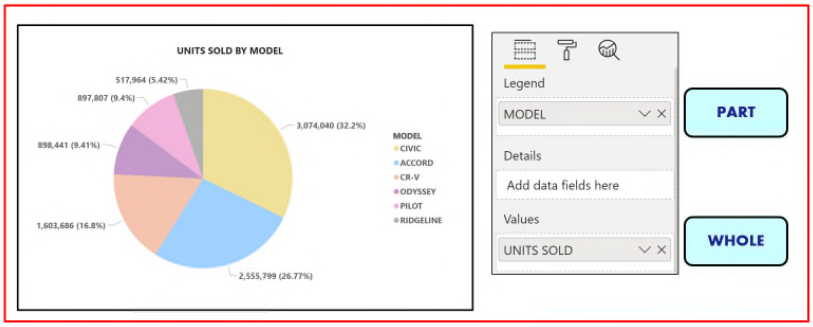
Click HERE to download a complete assignment

54

3

THREE-STEP PROCESS FOR CREATING VISUALIZATIONS

Exhibit 9
Three-Step Process for Defining Visuals



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3

DATA EXPLORATION

a. Trucks are growing faster in the US than in Canada.
b. In 2020, the Ridgeline was the least popular model.
c. The CR-V is the most popular model in both the US and Canada.
d. The Ridgeline is the only model with continuous growth since 2016.

For 2017, rank the models based on their relative importance (%) in the total units sold.

Analyze HNA's growth during the 2016-2020 period.

What do the data tell you?

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56

3

IDENTIFY DATA RELATIONSHIPS

UNITS SOLD
HONDA

COUNTRY	MODEL	TYPE	2016	2017	2018	2019	2020	2020 BUDGETED UNIT SALES
US	CIVIC	SEDAN	320981	301882	292331	291002	255423	300000
US	ACCORD	SEDAN	243192	245998	231441	309885	344771	350000
US	CR-V	SUV	175883	160886	190001	220877	252019	250000
US	PILOT	SUV	140444	142980	139441	142917	125090	160000
US	ODYSSEY	MINIVAN	188664	167123	150872	150881	139009	145000
US	RIDGELINE	TRUCK	58322	55897	56889	55899	54891	55000
CANADA	CIVIC	SEDAN	230887	242998	275667	381998	480871	425000
CANADA	ACCORD	SEDAN	195232	200872	210665	253988	319755	275000
CANADA	CR-V	SUV	135423	129809	126592	114119	98077	110000
CANADA	PILOT	SUV	40998	35672	39811	43125	47329	45000
CANADA	ODYSSEY	MINIVAN	25229	7761	26981	22099	19822	30000
CANADA	RIDGELINE	TRUCK	19008	31887	42001	55089	88081	65000
			1774263	1723765	1782692	2041879	2225138	2210000

Units Sold

ID	YEAR
1	2016
2	2017
3	2018
4	2019
5	2020

Year

Analyze HNA's growth during the 2016-2020 period.

- Part-Whole
- Time-Series
- Deviation

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3

DECISIONS TO BE MADE

Analyze HNA's growth during the 2016-2020 period.

QUESTION	WHAT DATA RELATIONSHIP	WHAT VISUALS?	IDENTIFY INSIGHTS INTERPRETATION
ANALYZE GROWTH	TIME SERIES TIME UNIT?	LINE CHART AREA CHART COLUMN CHART	OVERALL GROWTH? GROWTH BY: COUNTRY MODEL TYPE
	PART-WHOLE BREAK DOWN?		

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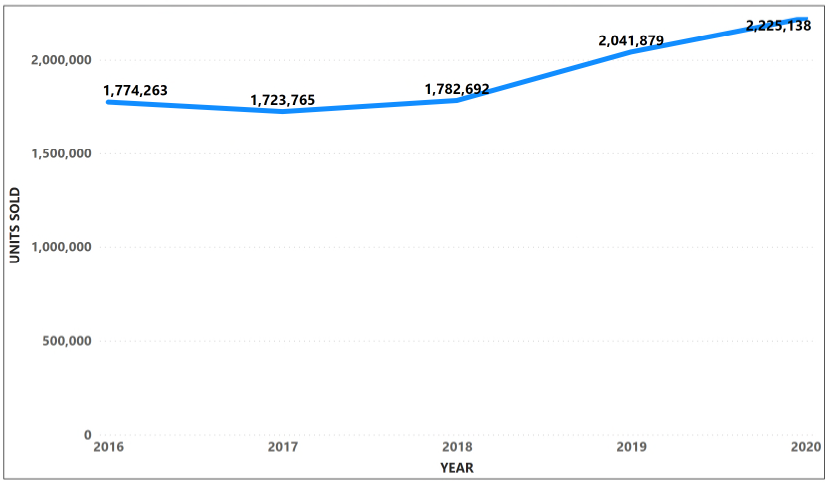
OVERALL TREND

TOTAL UNITS SOLD 2016-2020: 9,547,737



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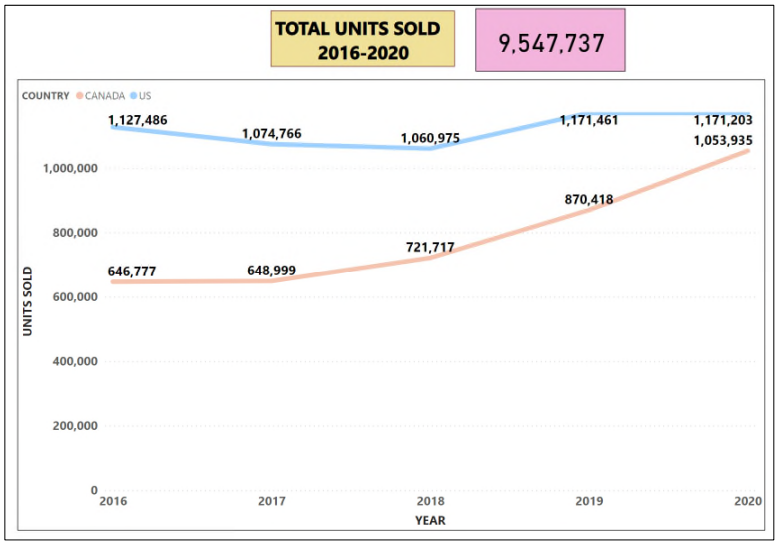
TREND BY COUNTRY

TOTAL UNITS SOLD 2016-2020: 9,547,737



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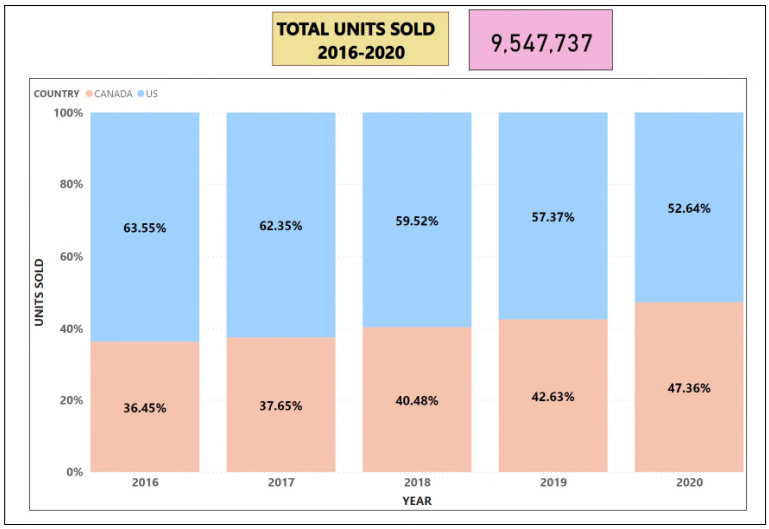
PROPORTIONAL GROWTH BY COUNTRY



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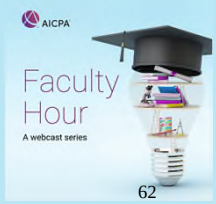
Scenario 3: Analytics | Exploration Critical Thinking Opportunities



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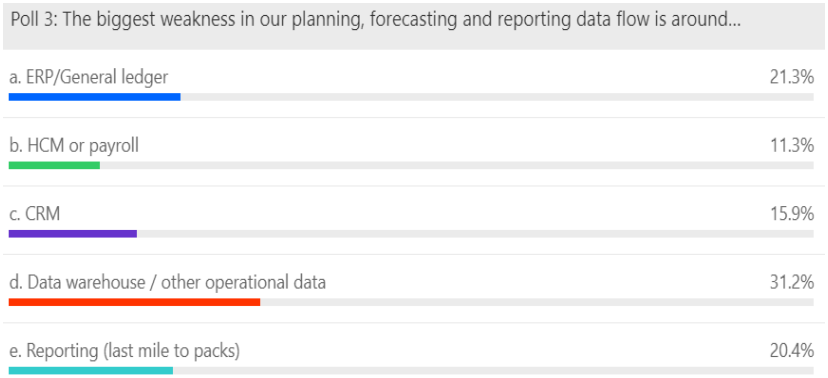
Conference Presentation Polling Data



Source: IMA Conference, June 15, 2021

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Integrating Data Analytics Into the Accounting Curriculum Scenario 4: Information Modeling

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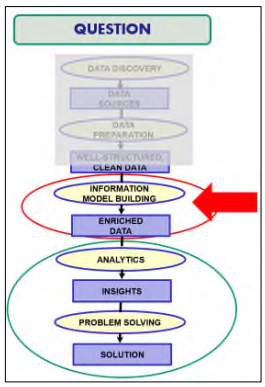
SCENARIO 4 | OVERVIEW

INFORMATION MODELING | **Create Information Models Questions "about" Information**



TECHNOLOGY (POWER BI)

IMPLEMENT ALGORITHMS

HOW TO CODE? DAX

DATA ANALYTICS

INFORMATION REQUIREMENT ANALYSIS

MEASURES?

DIMENSIONS?

ACCOUNTING

CALCULATE PERFORMANCE INDICATORS

FINANCIAL ANALYSIS
BUSINESS PROCESS ANALYSIS

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4

INFORMATION

INFORMATION

TOTAL NUMBER OF "LARGE AMOUNT" TRANSACTIONS (1)

TOTAL NUMBER OF TRANSACTIONS (4)

TOTAL SALES AMOUNT

DATA

#	DATE	AMOUNT
1	6/1/2021	100
2	6/2/2021	1200
3	6/2/2021	50
4	6/3/2021	150

SALES TRANSACTIONS

66

66

4

CODING (1)

#4

Determine the number of transactions that meet the following criteria:

- The transaction amount is less than $200.
- Only include purchases made from "fast food restaurants" in Ohio or "Eating Places, Restaurants" in Delaware

Note: You must use the CALCULATE() function.

NUMBER OF TRANSACTIONS WITH SPECIFIC CRITERIA

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COUNTIF

```
1  NUMBER OF TRANSACTIONS WITH CRITERIA =
2  CALCULATE(
3      COUNT(PCARD[TRANSACTION NUMBER (T#)]),
4      FILTER(
5          PCARD,
6          (PCARD[AMOUNT] < 200) &&
7          (
8              (PCARD[CATEGORY] = "FAST FOOD RESTAURANTS" && PCARD[STATE] = "OH")
9          ||
10         PCARD[CATEGORY] = "EATING PLACES, RESTAURANTS" && PCARD[STATE] = "DE"
11         )
12 ))
```

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4

CODING (2)

#1

Determine the total $ amount spent on PLUMBING AND HEATING EQUIPMENT; make sure to include the taxes payed.

An extra challenge for this problem is that you don't know the answer.

You must use an ITERATOR.

TOTAL$ AMOUNT PLUMBING AND HEATING EQUIPMENT

?

```
1  TOTAL $AMOUNT PLUMBING AND HEATING EQUIPMENT =
2  SUMX(
3      FILTER(
4          PCARD,
5          PCARD[CATEGORY] = "PLUMBING AND HEATING EQUIPMENT"),
6          PCARD[AMOUNT] + PCARD[TAX]
7  )
8
```

- **INTRODUCING UNCERTAINTY**
- **METHODS TO VALIDATE THE RESULT**

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4

IDENTIFY MEASURES / DIMENSIONS

ANALYSIS	
WHAT	HOW
What is our profit growth	?
What is our employee churn?	?
What is our customer churn?	?
What is our relative market share?	?
What is our growth in terms of revenue?	?

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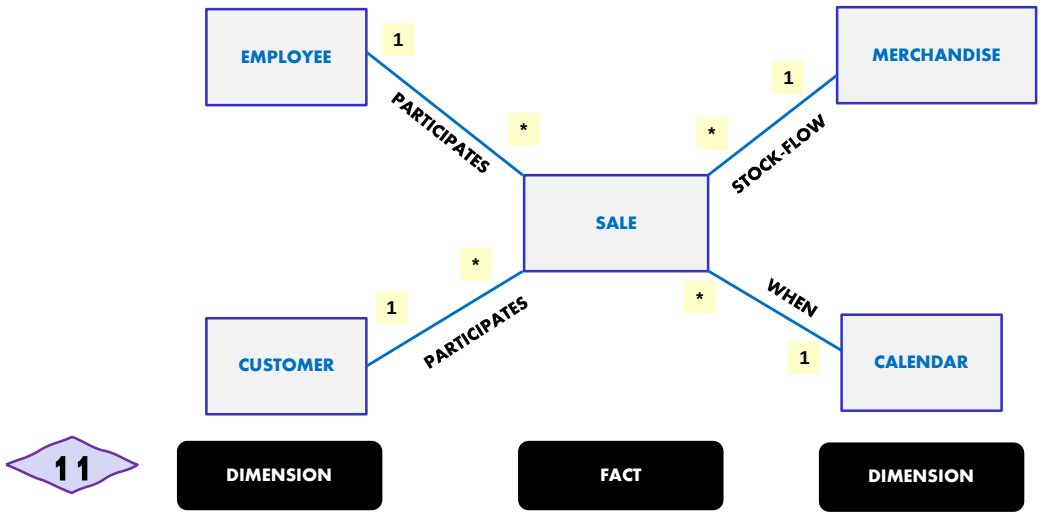
3

DIMENSIONAL / REA MODELING (1)



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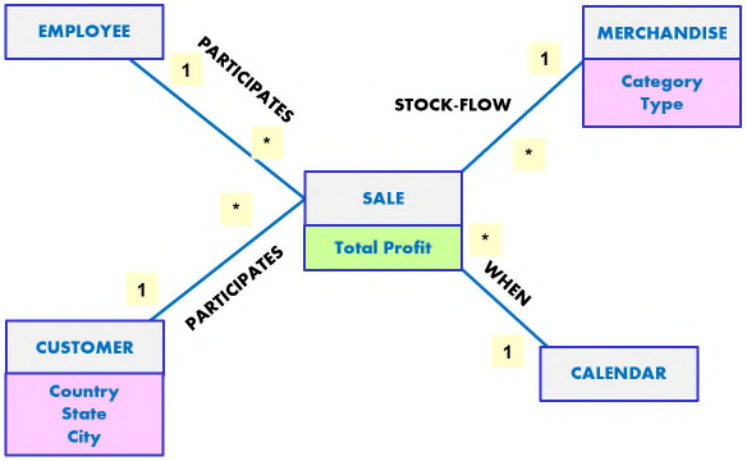
3 DIMENSIONAL / REA MODELING (2)



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DIMENSION | FACT | DIMENSION

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3 DIMENSIONAL / REA MODELING (3)

TOTAL PROFIT CROSS-TAB

CATEGORY / COUNTRY	Electronics					Garden					Total
	Alarm Clock	Floor Lamp	Hair Dryer	Printer	Total	Garden Hose	Herbicide	Mulch	Spreader	Total	
⊟ CA	1448	1082	1201	984	4715	393	1370	2168	280	4211	8926
⊟ AB	36	105	36		177			990		990	1167
Calgary	36	105			141			450		450	591
Grande Prairie								540		540	540
Wainwright			36		36						36
⊞ BC	701	200	414		1315	35	55			90	1405
⊞ NB		35			35		500			500	535
⊞ NU				130	130						130
⊞ ON	531	445	69	724	1769	192	220	220	159	791	2560
⊞ QC	180	262	512	130	1084	136	540	508	84	1268	2352
⊞ SK		35	170		205	30	55	450	37	572	777
⊞ US	428	548	399	1903	3278	258	1251	2510	41	4060	7338
Total	1876	1630	1600	2887	7993	651	2621	4678	321	8271	16264

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Scenario 4: Information Modeling Critical Thinking Opportunities

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Wells Fargo Scandal

2002-2005	2013	2016	2017	2018-2020
• First fake accounts created • Employees first attempted to "blow the whistle"	• *LA Times* story about high pressure and fake accounts	• Company acknowledged creation of fake accounts • Company launched internal investigation • Fines totalling $185 million from the various regulators • 5,300 employees fired (1,780 were later rehired after being cleared of wrongdoing) • Created nNew code of conduct • CEO resigned and forfeited $41 million in stock award bonuses	• Independent directors issued special report • Estimated 3.5 million fake accounts • $5.4 million awarded to former employee for whistleblower retaliation • Accrued $3.25 billion for legal costs and settlements • New performance management and rewards plan	• Agreed to pay $3 billion fine to settle civil and criminal charges for the fake account scandal (excluding customer refunds) • Federal regulators placed restrictions on the bank's growth • Estimates $2.4 billion cumulatively in refunds and lawsuit payments to customers • John Stumpf (former CEO) was fined $17.5 million • Chief internal auditor and chief administrative officer suspended for oversight failures at the request of regulators • Issued "Business Standards Report" describing restructuring activities

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Critical Success Factors ➔ Performance Measures (KPIs)

Organization	Division-Level	Bank Branch-Level	Bank Cashiers
Goal: Cross-Sell Services to Existing Customers	CSF: Open New Accounts for Existing Customers KPI: # of New Accounts	CSF: Open New Accounts for Existing Customers KPI: # of New Accounts	CSF: Open New Accounts for Existing Customers KPI: # of New Accounts

Does this make any sense?
Are all new accounts by existing customers equally desirable?
Is the number of new accounts the best way to measure and motivate the strategic goal?
What was the purpose of the strategic goal?

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Integrating Data Analytics Into the Accounting Curriculum Scenario 5: Data Preparation

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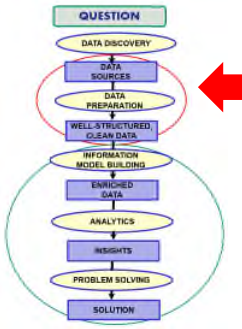
5

SCENARIO 5 | OVERVIEW

DATA PREPARATION

Create integrated, well-structured data set. Questions "about" the data



- TECHNOLOGY (POWER BI)
- EXTRACT DATA
- CLEAN DATA
- RESTRUCTURE DATA
- INTEGRATE DATA

- DATA ANALYTICS
- PROFILING (DETECTION)
- CLEANING, TRANSFORMATION (CORRECTION)
- COST/BENEFIT ANALYSIS OF DATA PREPARATION
- ACCOUNTING
- AUDIT EVIDENCE

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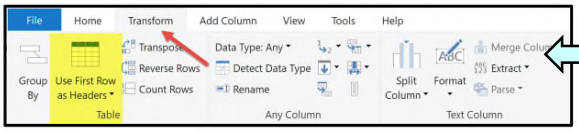
5

REPLICATE DATA TRANSFORMATION (1)

	Column1	Column2	Column3
1	number	4/27/2017	4/28/2017
2	4	1200	0
3	6	300	0

YOU HAVE EXTRACTED DATA FROM EXCEL. IN EXCEL, HEADERS ARE TYPICALLY THE FIRST ROW



"HOW TO"
HOW TO TRANSFORM THE FIRST ROW INTO A HEADER IN POWER BI.

	number	4/27/2017	4/28/2017
1	4	1200	0
2	6	300	0
3	7	300	0
4	8	550	
5	9	0	495
6	12	0	200
7	14	0	800
8	15	0	1350
9	17	0	300

"TRANSFORMED TABLE

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5

REPLICATE DATA TRANSFORMATION (2a)

STARTING POINT

FILE: Grades.xlsx

Excel file with two worksheets: "StudentGrade" and "Course"

NAME	ADDRESS	ACCT302	ACCT415	ACCT350	ACCT400	MISY200	MISY330	MISY430
JIM	NEWARK,DE	A	B	A	A-			
SUZY	WILMINGTON,DE	C+	B	D	C			
PETER	CAMDEN, NJ	A		A	A	A	A	
LILLY	BALTIMORE,MD		B	B+	C	B	B-	B
JEREMY	ORLANDO,FL	C+	A	A				
JIM	CAMDEN,NJ	B	B+	A-	A	B+		
ELIZABETH	BETHANY BEACH,DE	C+		C-		B+	B+	
JOHN	CHICAGO,IL	A		A-	A	B+	B	

StudentGrade

COURSE	NAME
ACCT302	ACCOUNTING INFORMATION SYSTEMS
ACCT415	EMERGING TECHNOLOGIES IN ACCOUNTING
ACCT350	BUSINESS LAW
ACCT400	INCOME TAX
MISY330	DATABASE TECHNOLOGIES
MISY430	SYSTEMS ANALYSIS
MISY200	PROGRAMMING

Course

ASSIGNMENT

Determine the Average Grade per student, course, area (e.g. ACCT), and state.

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REPLICATE DATA TRANSFORMATION (2b)

AVERAGE GRADE STUDENTS

NAME	AVERAGE GRADE
ELIZABETH	3.37
JEREMY	3.71
JIM	3.80
JOHN	3.82
LILLY	3.42
PETER	4.00
SUZY	3.04

AVERAGE GRADE COURSE

COURSE	AVERAGE GRADE
ACCT302	3.56
ACCT350	3.60
ACCT400	3.64
ACCT415	3.65
MISY200	3.74
MISY330	3.63
MISY430	3.50

AVERAGE GRADE AREA

AREA	AVERAGE GRADE
ACCT	3.61
MISY	3.67

AVERAGE GRADE STATE

STATE	AVERAGE GRADE
NJ	4.00
DE	3.41
FL	3.71
IL	3.82
MD	3.42
NJ	3.76

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80

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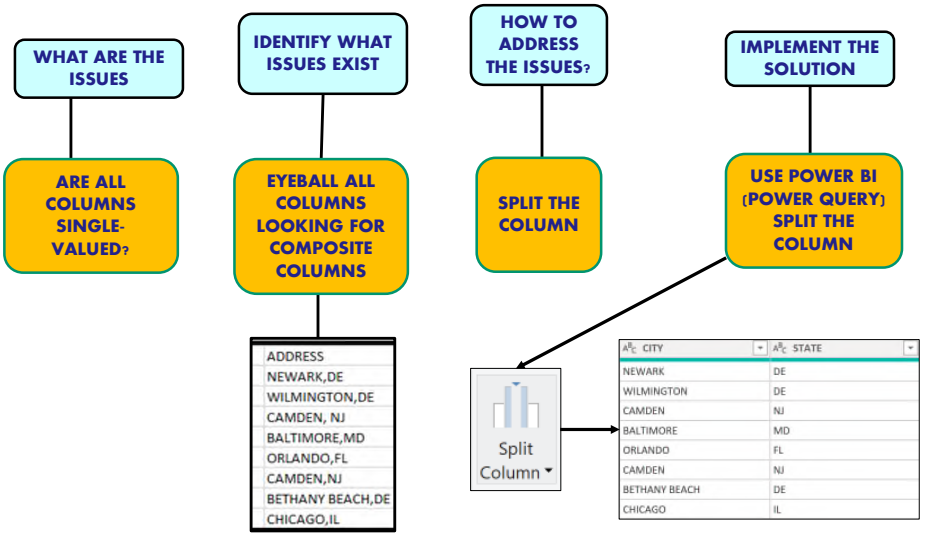
DECISIONS TO BE MADE



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A PATTERNS APPROACH TO DATA PREPARATION

3

Dzuranin, Geerts, Lenk (Forthcoming), WILEY.

		WHAT ISSUES TO LOOK FOR	HOW TO IDENTIFY THE ISSUE	HOW TO ADDRESS THE ISSUE
ID	CODE	ISSUE	PROFILING	ETL
EXTRACTION				
1	EV#1	Have all the data been transferred?	Compare row counts	Add missing records
2	EV#2	Have all the data been transferred correctly?	Compare control amounts	Correct data
TRANSFORMATION				
COLUMN				
3	CS#1	Do columns contain irrelevant or unreliable data?	Inspect the column's content	Delete columns
4	CS#2	Are column names incorrect or ambiguous?	Inspect the column's content	Rename column
5	CS#3	Do columns have the correct data type?	Inspect the column's content	Change data type
6	CS#4	Are all columns single-valued?	Inspect the column's content	Split composite columns Unpivot columns containing lists
7	CV#1	Do columns contain incorrect values?	Look for unusual values	Correct data
8	CV#2	Do columns contain inconsistent values?	Inspect distinct values Analyze frequency tables	Decide which representation to keep. Correct data
9	CV#3	Are columns incomplete?	Determine the existence of incomplete data, %, and inconsistent representations	Delete columns, modify null values, implement a consistent representation
10	CV#4	Do columns contain invalid values?	Define validation rules. Determine values that don't comply	Correct data
TABLE				
11	TS#1	Are table names incorrect or ambiguous?	Inspect the table's content	Rename table
12	TS#1	Does the table have a primary key?	Identify candidate keys: unique values and no null values	Create an artificial primary key
13	TS#2	Do two or more columns have the same or overlapping content?	Column-by-column comparison	Delete redundant columns. Recreate columns with dependent values
14	TV#1	Are there invalid values based on intra-table rules?	Design validation rules. Determine values that don't comply	Correct data
MODEL				
15	MS#1	Should tables be combined or merged?	Tables have the same structure. Data regarding the same entity are spread across tables.	Union and join tables
16	MS#2	Is the model compliant with dimensional modeling principles?	Who-What-When Analysis	Restructure model
17	MV#1	Are there invalid values based on inter-table rules?	Design validation rules. Determine values that don't comply	Correct data
LOADING				
18	LV#1	Have all the data been transferred?	Compare row counts	Add missing records
19	LV#2	Have all the data been transferred correctly?	Compare control amounts	Correct data
20	LS#1	Are all the relationships defined and are their definitions correct?	Inspect relationships for completeness and correctness	Create, modify, and delete relationships

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FROM DATA TO INSIGHTS

Click here to see one of my Fall 2019 student projects

	QUESTION	IMPLEMENTATION (POWER BI)	INSIGHTS
Q1	5	5	5
Q2	5	5	5
Q3	5	5	5
Q4	5	5	5
Q5	5	5	5

Grade Sheet Project

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STUDENT PROJECT: QUESTION

What percentage of incidents have involved males? What percentage of incidents have involved females? Also, what percantage of incidents have involved children, teens, and adults?

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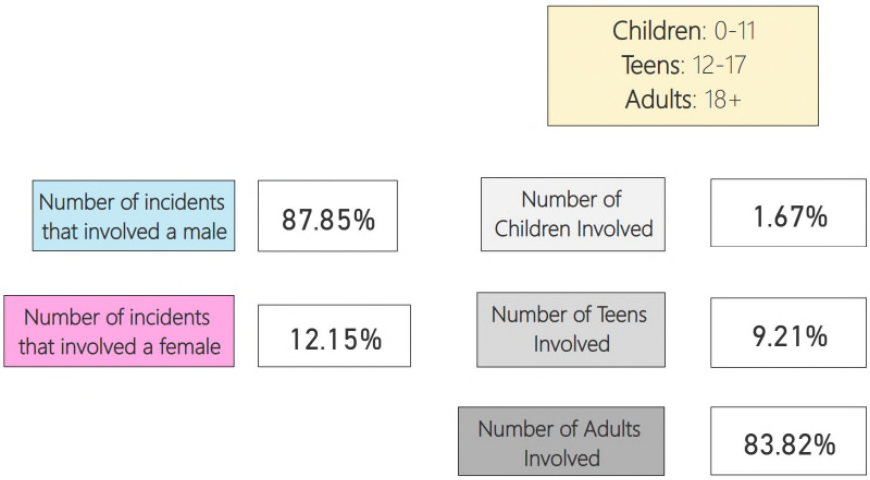
STUDENT PROJECT: IMPLEMENTATION (POWER BI)



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STUDENT PROJECT: INSIGHTS/DISCUSSIONS

From this data you can see that significantly more males are involved and either killed or injured in these gun incidents than females. This leads to a few questions regarding gender and gun violence. For instance, whether men are targetted more frequently than woman. If women are more aware of the dangers of guns and more observant during these occurances? Or if it has been purely situations of coincedence.

Also, the second main part of the dashboard is the information regarding age groups and how frequently each of these age groups have been involved in gun violence incidents. After coming up with the data you can see that children are least involved in these incidents. Adults, by far, are most involved at 83.82%.

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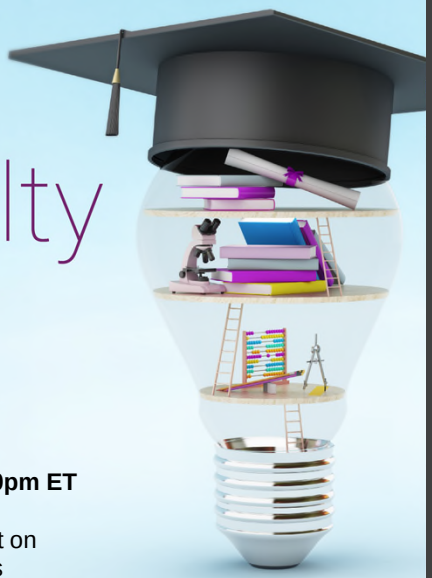
A webcast series

July 23, 2021, 2-3:30pm ET

CPA Evolution Impact on Accounting Programs



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Email: jan.taylor-morris@aicpa-cima.com

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Thank You

Questions: academics@aicpa.org

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Appendix

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APPENDIX
DATA PROCESS CHAIN
CPA EVOLUTION | MODEL CURRICULUM

Topic 2: Advanced logical thinking

Summary	Estimated Hours	Suggested course(s)
Demonstrate ability to apply logical thinking to interpret and create conditional statements and apply relational concepts.	4-7	ADA; AMDA

Learning objective(s):

1. Apply relational logic concepts to answer questions. DATA PREPARATION INFORMATION MODELING
2. Interpret conditional logic statements. INFORMATION MODELING
3. Create a condition statement. INFORMATION MODELING
4. Understand alternative accounting information system models, such as the resources, events, and agents (REA) model, and create the appropriate model. DATA PREPARATION INFORMATION MODELING
5. Apply relational concepts. INFORMATION MODELING DATA PREPARATION
6. Create program code using proper syntax. INFORMATION MODELING

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APPENDIX
DATA PROCESS CHAIN
CPA EVOLUTION | MODEL CURRICULUM

Topic 3: Advanced data concepts

Summary	Estimated Hours	Suggested course(s)
Demonstrate ability to extract, transform, and load data.	3-5	ADA; AMDA

Learning objective(s):

1. Apply appropriate joins to analyze data. INFORMATION MODELING
2. Explain and apply principles of Extract, Transform, and Load (ETL). DATA PREPARATION
3. Design and implement controls used to ensure completeness, accuracy, and validity of data. DATA PREPARATION
4. Extract data from a raw data file. DATA PREPARATION
5. Construct a data set. DATA PREPARATION
6. Apply data cleaning techniques. DATA PREPARATION
7. Apply data transformation techniques. DATA PREPARATION
8. Describe and evaluate relational, dimensional, and big data models. DATA PREPARATION
9. Explain and implement data loading processes. DATA PREPARATION
10. Identify the capabilities needed in tools that support data modeling and analysis. DATA PREPARATION INFORMATION MODELING ANALYTICS

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APPENDIX
DATA PROCESS CHAIN
CPA EVOLUTION | MODEL CURRICULUM

Topic 4: Advanced data mining

Summary	Estimated Hours	Suggested course(s)
Apply data mining techniques.	0.5-1	ADA; AMDA
Learning objective(s):		
1. Apply data mining techniques to a data set. INFORMATION MODELING ANALYTICS		

Topic 5: Advanced data analysis

Summary	Estimated Hours	Suggested course(s)
Determine and interpret appropriate predictive and prescriptive analysis.	3-5	ADA; AMDA
Learning objective(s):		
1. Determine/interpret appropriate predictive analysis, (e.g., regression, time series, forecasting). ANALYTICS INFORMATION MODELING		
2. Determine/interpret appropriate prescriptive, (e.g., optimization modeling, Monte Carlo simulation INFORMATION MODELING ANALYTICS		

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APPENDIX
DATA PROCESS CHAIN
CPA EVOLUTION | MODEL CURRICULUM

Topic 6: Advanced data visualization

Summary	Estimated Hours	Suggested course(s)
Explain and apply data visualization methods.	4-7	ADA; AMDA
Learning objective(s):		
1. Compare and contrast data visualization methods. ANALYTICS		
2. Apply data visualization methods to specific data sets and circumstances. ANALYTICS		
3. Create appropriate dashboards and scorecards. ANALYTICS		

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APPENDIX
DATA PROCESS CHAIN
CPA EVOLUTION | MODEL CURRICULUM

Topic 7: Communicating results on advanced data analytics

Summary	Estimated Hours	Suggested course(s)
Design and interpret the results of a Key Performance Indicators (KPI) dashboard; apply what-if analysis to assumptions.	1-3	ADA; AMDA

Learning objective(s):

1. Design a KPI dashboard based on business user roles. ANALYTICS
2. Interpret the results of a KPI and provide recommended response. ANALYTICS
3. Apply what-if analysis to assumptions. ANALYTICS
4. Design analytic with built in controls for completeness, accuracy, and validity. ANALYTICS DATA PREPARATION

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Educator Resources

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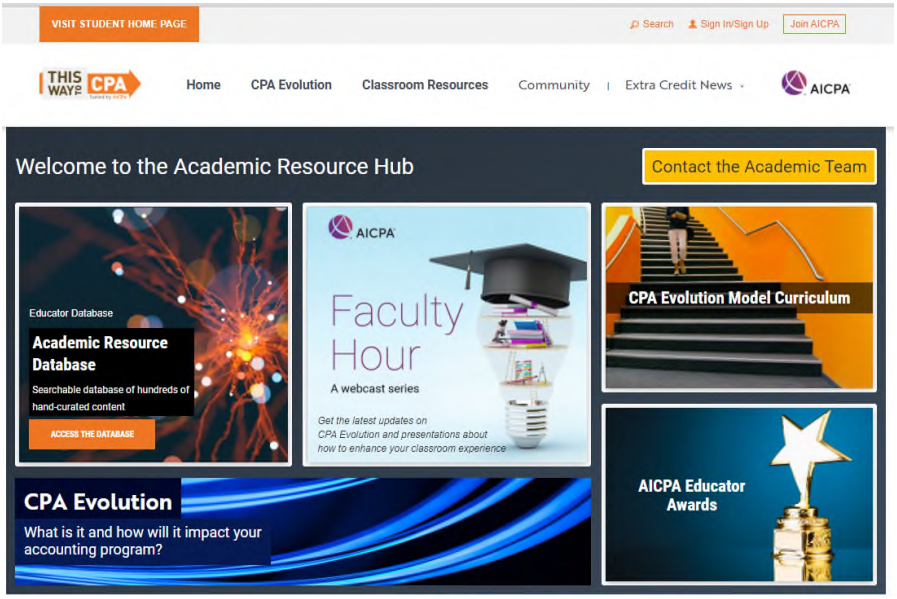
Academic Resource Hub on ThisWayToCPA.com



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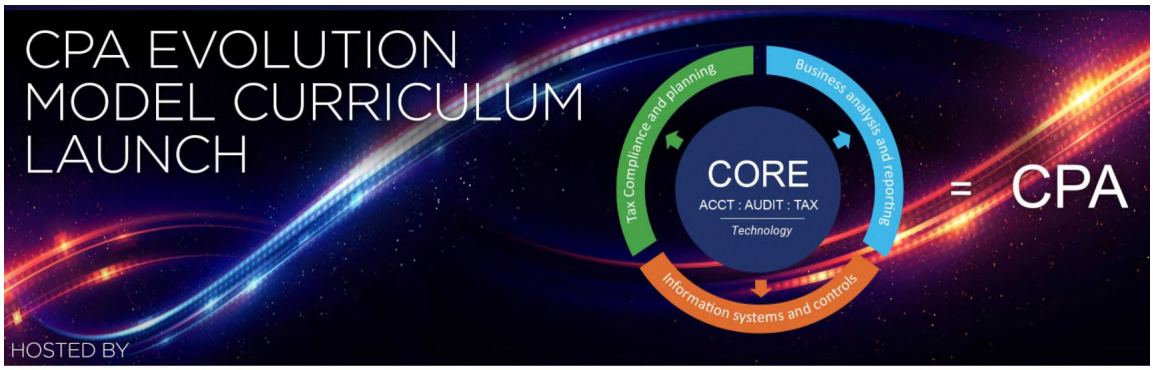

AICPA NASBA American Accounting Association

Launch Event Session Recordings

CPA Evolution Site

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AICPA Certifications and Digital Badges

AICPA certificate offerings available to educators and students at substantial discounts.

www.ThisWayToCPA.com/CertificatePrograms

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Featured certificate programs include:

- Data Analytics Learning Programs for Fundamentals and Audits
- Cybersecurity Fundamentals and Beyond the Fundamentals
- Blockchain Fundamentals for Accounting and Finance Professionals
- Retirement Planning
- COSO Internal Control

Certificate program	Hours
Application of Data Analysis Essentials	14
Blockchain Fundamentals for Accounting and Finance Professionals	16
Core Forensic Accounting	16
Cybersecurity Advisory Services	15.5
Cybersecurity Fundamentals for Finance and Accounting Professionals	15.5
Data Analyst Certificates Bundle	63
Data Analysis Fundamentals	10
Data Analytics Modeling	14
Data Visualization	10
Forecasting and Predictive Analytics	15
IFRS	27
Investment Planning	18.5
Not-for-Profit I	40
Not-for-Profit II	30
Retirement Planning	20
Robotic Process Automation Fundamentals for Accounting and Finance Professionals	16
SOC for Cybersecurity	14.5
Specialized Forensic Accounting	43

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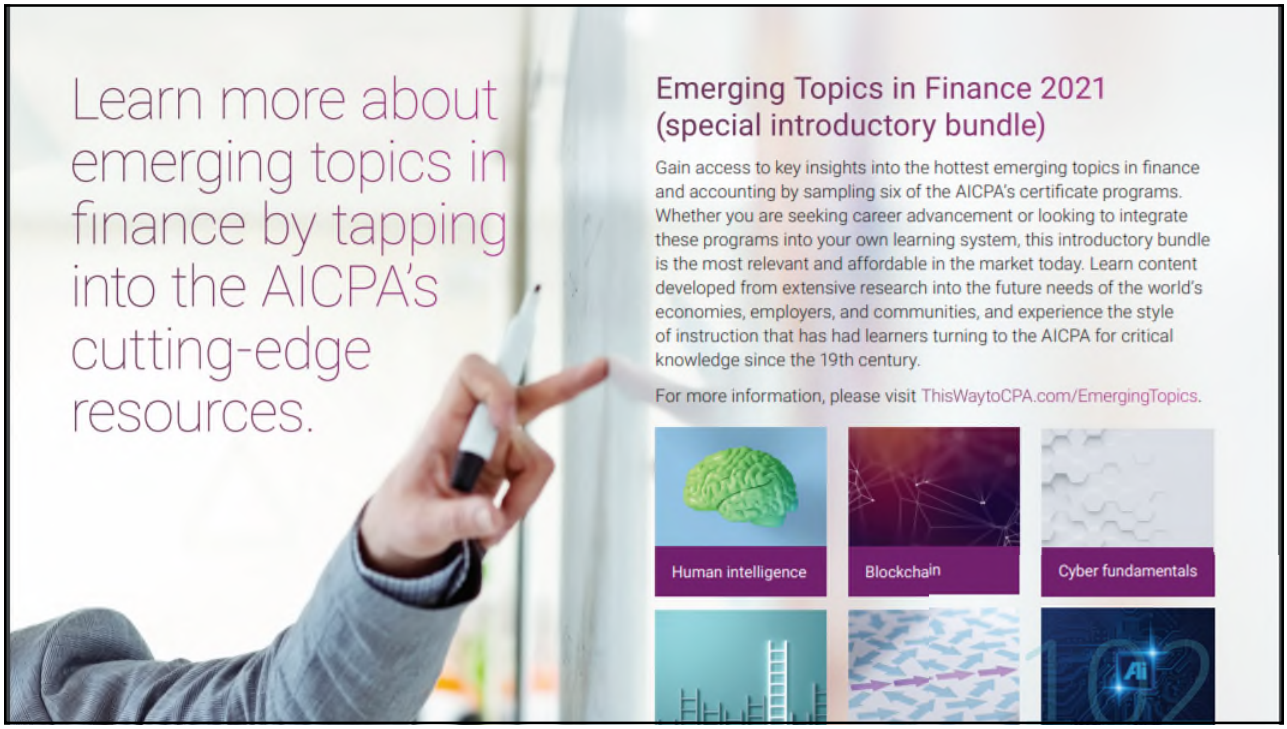

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Association World Class

Build your future on the foundation of 150 years of relevant, rigorous, and cutting-edge education developed by the Association of International Certified Professional Accountants. With more than 650,000 members and learners in over 170 countries, the Association provides 3,000+ on-demand courses to professionals around the globe.

The Emerging Topics in Finance 2021 bundle provides modules that can progress into full certificate programs. Through these full specialization certificates, gain technical and professional competency and earn a digital certificate that broadcasts your forward-thinking abilities on social media and career development sites.

Kick-start your technical understanding in emerging hot topics in finance and international business management by clicking on the link below.

For more information or to inquire about classroom use, please visit ThisWaytoCPA.com/CertificatePrograms.

Advance your career by learning about the hottest emerging topics in finance

Through narration by industry subject matter experts and application exercises, this informative and engaging online education is comprised of a series of introductory courses covering the hottest emerging topics in finance today.

What is covered for you:

- The central role people play in successful change initiatives
- The importance of cybersecurity and developing a security mindset
- Your role and what it takes to have a security mindset to be a trusted adviser and key contributor toward cybersecurity risk management
- Bitcoin and blockchain characteristics
- Review of the fundamental attributes and properties of money
- Review of the evolution of blockchain, from pre-cryptocurrency to digital crypto assets
- Robotic process automation
- Business value of RPA
- RPA recognition
- RPA's transformation of business
- Capabilities you need to grow your data-driven strategy
- Challenges in implementing successful change initiatives.
- Recall how a data strategy will affect your executive team, technology, people and processes, as well as what new capabilities you need to grow your data-driven strategy
- Differences between AI, ML and DL
- Benefits of artificial intelligence (AI)
- Basic concepts related to AI
- AI's importance

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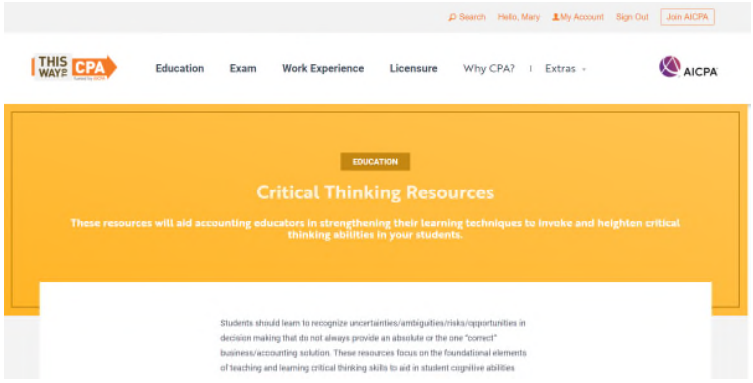
Critical Thinking Resources



Content will be added periodically. Available now:

- Educator Guide
- Reference Guide
- Articles
- Webcasts
- And more coming soon…

Source: www.ThisWayToCPA.com/program/CriticalThinking

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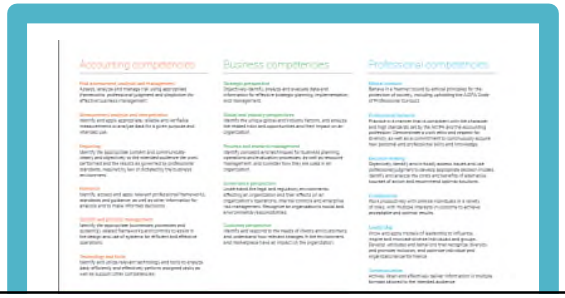

AICPA Pre-certification Core Competency Framework

Flyer outlines the foundational skill sets a student should acquire as they progress through to CPA-hood.

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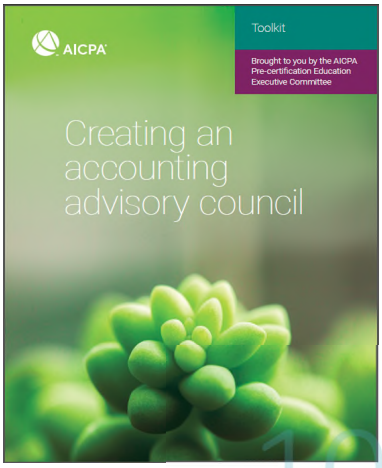
Creating an Accounting Advisory Council - AICPA Accounting Advisory Council Toolkit

Brought to you by the Academic Executive Committee

(formerly: Pre-certification Education Executive Committee)

The AICPA Accounting Advisory Council Toolkit provides some guidelines and best practices to use in building your own council of advisors. We surveyed some of the top accounting programs to provide you examples of successful councils.



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