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STRUCTURED DISCLOSURES & ANALYTICS DURING COVID-19

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Discussion Topics

- Why Structured Disclosures
- Inline XBRL
- COVID-19 Guidance
- Quality Matters
- Analytical Insights
- Potential Research Considerations

- Appendix

Why Structured Disclosures

Why Structured Disclosure

- Unstructured for Human readability (also machine readable):

  Revenue   125,843

- Structured for machine readability:

```
<us-
gaap:RevenueFromContractWithCustomerExcludingAssessed
Tax id="F_000028" contextRef="C_0000789019_20180701_2
0190630" decimals="-
6" unitRef="U_iso4217USD">125843000000</us-
gaap:RevenueFromContractWithCustomerExcludingAssessed
Tax>
```

Why Use Structured Disclosures?

Amazon per Data Aggregator A **12/31/2019**

Amazon 10-K (As Reported)

|	2019
Net product sales	$ 160,408
Net service sales	120,114
Total net sales	280,522
Operating expenses:	
Cost of sales	165,536
Fulfillment	40,232
Technology and content	35,931
Marketing	18,878
General and administrative	5,203
Other operating expense (income), net	201
Total operating expenses	265,981
Operating income	14,541
Interest income	832
Interest expense	(1,600)
Other income (expense), net	203
Total non-operating income (expense)	(565)
Income before income taxes	13,976
Provision for income taxes	(2,374)
Equity-method investment activity, net of tax	(14)
Net income	$ 11,588

	12/31/2019
Total Revenue	280,522,000
Cost of Revenue	205,768,000
Gross Profit	74,754,000
⌄ Operating Expenses	60,213,000
Research Development	35,931,000
Selling General and Administrati	24,081,000
Total Operating Expenses	60,213,000
Operating Income or Loss	14,541,000
Interest Expense	1,600,000
Total Other Income/Expenses Net	203,000
Income Before Tax	13,976,000
Income Tax Expense	2,374,000
Income from Continuing Operation	11,588,000
Net Income	11,588,000

Why Use Structured Disclosures?

- Immediate access to 100% of financial statement *and footnote* disclosures (numeric and narrative)

- Immediately reusable

- Freely available

- Includes all of the meta-data
  - Dimensional insights (e.g. sectors, geography, products)
  - Company specific disclosures
  - Explicit definitions
  - Relationships (e.g. calculations, references, etc.)
  - Narrative disclosures

Structured Disclosure Levels

Footnote

All Financial Statement and Footnote Amounts →

Tables

Policies

Structured Disclosure Levels

- ## Narrative Blocks
  - Policy
  - Texts
  - Tables
- ## Enhances analytical access – Examples:
  - Commitments and contingencies for specific risks
  - Income taxes for CARES Act carryback liquidity options
  - Intangible assets & weighted-average remaining useful lives
  - Goodwill related impairments
  - Liquidity sources
  - Accounting policy changes for revenue recognition
  - Segment reporting

Inline XBRL

Inline XBRL

Inline XBRL Viewer

- Familiar view (enhanced)
- Leverages structured data:
  - Review of detailed information
  - Navigation of content
  - Search and filtering
- Open source
  - Completely browser-based web technologies
  - Code available to public (e.g., 3rd party applications)

Why Inline XBRL Viewer?

- Demo
  - Sections
  - Search
  - Data
  - Tags
  - More Filters
- Other Features
  - Disclosure Checklist
  - Time series graphs
  - Benchmarking
  - Red-lining narrative disclosures
  - Collaborative queries
  - And More

COVID-19 Guidance

SEC Coronavirus (COVID-19) Response

SEC Coronavirus (COVID-19) Response website:
https://www.sec.gov/sec-coronavirus-covid-19-response

Statement on the importance of disclosures – for investors, markets and our fight against COVID-19, Jay Clayton, Chairman of the SEC, and William Hinman, Director of the Division of Corporation Finance (4/8/2020)

https://www.sec.gov/news/public-statement/statement-clayton-hinman

COVID-19- CF Disclosure Guidance Topics

CF Disclosure Guidance Topic 9: Coronavirus (COVID-19) (3/25/2020) - https://www.sec.gov/corpfin/coronavirus-covid-19

- Assessing and disclosing the impact of COVID-19
- Management's discussion and analysis (MD&A)
- Risk factors
- Legal proceedings
- Disclosure controls and procedures
- Internal control over financial reporting (ICFR)
- Non-GAAP financial measures

COVID-19 - CF Disclosure Guidance Topics

- CF Disclosure Guidance Topic 9A: Coronavirus (COVID-19) Disclosure Considerations Regarding Operations, Liquidity, and Capital Resources (6/23/2020) - https://www.sec.gov/corpfin/covid-19-disclosure-considerations

- Highlights a numbers of areas for disclosure considerations
  - Ex. Funding sources, debt covenants, share repurchase programs, dividends, modifications, concessions
- Government Assistance – CARES Act
- Company's Ability to Continue as a Going Concern

FASB Staff Q&A – COVID-19

- APPLICATION OF THE TAXONOMY FOR COVID-19 PANDEMIC AND RELIEF DISCLOSURES <u>HERE</u>
- FASB Taxonomy staff created this Q&A to address the application of the Taxonomy to disclosures in the following areas:
  - Income taxes
  - Payroll taxes
  - Loans
  - Grants
  - Pensions
  - Overall discussion of the COVID-19 pandemic

Tagging Reminders

- Review disclosure requirements and taxonomies to determine appropriate standard tags

- Review rule requirements on taxonomy extensions

- Custom tags allowed in limited cases

- Quality matters
  - Structured data processed by machines
  - Quality errors linked to R and r

Quality Matters

Quality Matters

- Use of outdated revenue tags after new standards

- Context Dates – DEI (6 months ended June 30) v Document Period End date (March 31)

- Scaling - Unremitted Foreign Earnings $B vs. $M

- Inappropriate extensions - for 'Total Revenues' and 'Other Income'

- Negative values - for a 'Contingent Liability'

- Incorrect tagging - Tagging Gross Revenue with 'Discount Rate' tag

- Duplicate tagging - same data with different tags

- Disclosures not tagged

- Staff Observations and Guidance here

Quality Matters - Examples

Scaling Error in Public Float

Public Float in HTML	Public Float in XBRL
$8 Billion	$8 Trillion

Inappropriate Extensions

GAAP Tag: PropertyPlantAndEquipmentNet

Inappropriate Extension:
PropertyAndEquipmentZeroThreeEightFourZeroZerohSevenFThreeLySevenFivewxQx

Quality Matters – Example (Aggregation)

Aggregation - Research & Development Expense

<u>2019</u>

ALPHABET INC.	26,018,000,000
MICROSOFT CORP	16,876,000,000
APPLE INC	16,217,000,000
FACEBOOK INC	13,600,000,000
INTEL CORP	13,362,000,000
MERCK & CO. INC.	9,872,000,000
NOVARTIS AG	9,402,000,000
GILEAD SCIENCES INC	9,106,000,000
FORD MOTOR CO	7,400,000,000
GENERAL MOTORS CO	6,800,000,000
CISCO SYSTEMS INC.	6,577,000,000
BRISTOL MYERS SQUIBB CO	6,148,000,000
ALIBABA GROUP HOLDING LTD	6,085,000,000
ASTRAZENECA PLC	6,059,000,000
ORACLE CORP	6,026,000,000
ELI LILLY & CO	5,595,000,000
QUALCOMM INC/DE	5,398,000,000
DELL TECHNOLOGIES INC.	4,992,000,000
UBER TECHNOLOGIES INC	4,836,000,000
BOEING CO	3,219,000,000
TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD	3,056,500,000
REGENERON PHARMACEUTICALS INC.	3,036,600,000
UNITED TECHNOLOGIES CORP /DE/	3,015,000,000
NVIDIA CORP	2,829,000,000
SALESFORCE.COM INC.	2,766,000,000

Quality Matters – Example (Extensions)

- ## Company A element extension
  - Tradeaccountsreceivablenet – with no definition provided

- ## US GAAP Taxonomy element alternative
  - AccountsReceivableNetCurrent – defined as "Amount due from customers or clients, within one year of the balance sheet date (or the normal operating cycle, whichever is longer), for goods or services (including trade receivables) that have been delivered or sold in the normal course of business, reduced to the estimated net realizable fair value by an allowance established by the entity of the amount it deems uncertain of collection."

COVID Tagging

Example: Tagging of COVID Related Disclosures

XBRL US

- **XBRL US** consists of filers, data aggregators, vendors, accounting standards bodies

- Bi-annual meetings with Commission staff

- XBRL US publishes data quality "validation rules" that filers may freely use

- XBRL US' filing and data quality check

Analytical Insights

Financial Statement Query Viewer (FSQV)

- Intuitive, quick and easy-to-use web browser interface.
- Search and review filings and **all** facts across **all** filers in ways not previously possible.
- Potential staff uses include:
  - Search using various criteria (e.g., CIK, ticker, industry, filer status, country).
  - Search by Fact (e.g. specific disclosure type and/or specific taxonomy element)
  - Search by Text (e.g. any text within a narrative disclosure)
  - Compare footnote narrative text differences between periods (e.g. 'red-line' changes).
  - Save all results and searches locally for further analysis and reuse.

iView

- Leverages the open source freely available publicly available Inline XBRL Viewer

- Includes all public filters and query capabilities

- Offers time series charting for numeric values

- Offers benchmarking charting for numeric values

- Provides interface for contextual delivery of compliance, risk, liquidity, etc. models

- Proxy for an 'augmented reality' platform for report analysis.

Financial Statement and Notes Data Sets
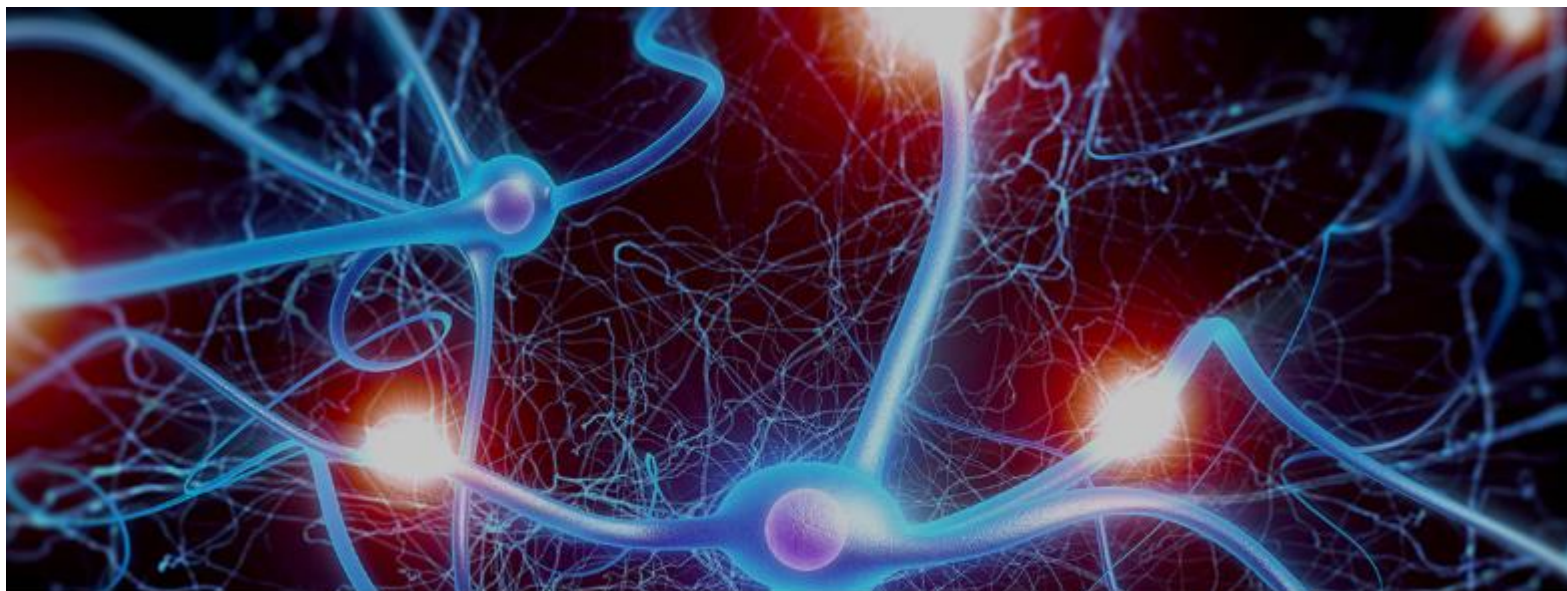
The Financial Statement and Notes Data Sets provide the text and detailed numeric information from all financial statements and their notes. This data is extracted from exhibits to corporate financial reports filed with the Commission using eXtensible Business Reporting Language (XBRL).

Analytical Insights - Liquidity

- Liquidity Analysis
  - Aggregation of Cash Flows from Operations
  - Aggregation of Cash flows from Financing
  - CARES Act carrybacks
  - Other Liquidity sources
  - COVID-19 Narratives
  - Company Specific Extensions
 - Measurements
  - Others

Analytical Insights Example - Text

- Text Analytics

- Targeted Disclosures

- Search 'terms' and 'topics'

Potential Search Terms:

- Coronavirus
- COVID-19
- 2019-nCoV
- Pandemic
- Epidemic
- Wuhan
- China
- Italy
- Cares Act
- margin call
- counterparty
- forbearance
- collateral
- obligation
- MBS
- repurchase
- default
- penalties
- book value
- Impair
- Etc.

Analytical Insights Example - Topic Analysis

1. Identify "topics" (groupings of words that tend to co-occur)
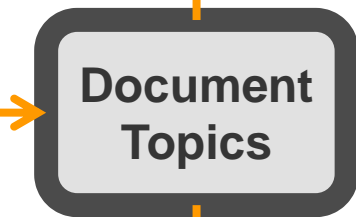
Topic 1	Topic 2	Topic 3	Topic 4	Topic 5
fees, charged, expenses, charges, paid, performance based, charge, mutual, distinct, separate, negotiable,	value, market, conditions, decline, fair, price, line, based, money, stock, relative, rates, cash, factors, valuation,	risk, loss, bear, risks, prepared, investing, involves, tolerance, liquidity, return, term, methods, market, approach, investor,	disciplinary, legal, history, criminal, regulatory, civil, report, evaluation, events, activities, personnel, material, reportable,	conflicts, potential, conflict, interests, fiduciary, arise, duty, incentive, affiliates, manner, resolve, create, avoid,

Document Topics

Text File

2. Identify distribution of topics per document

Bar chart of topic distribution: Topic 1 ≈ 0.1, Topic 2 ≈ 0.3, Topic 3 ≈ 0.1, Topic 4 ≈ 0, Topic 5 ≈ 0.6 (y-axis from 0 to 0.7)
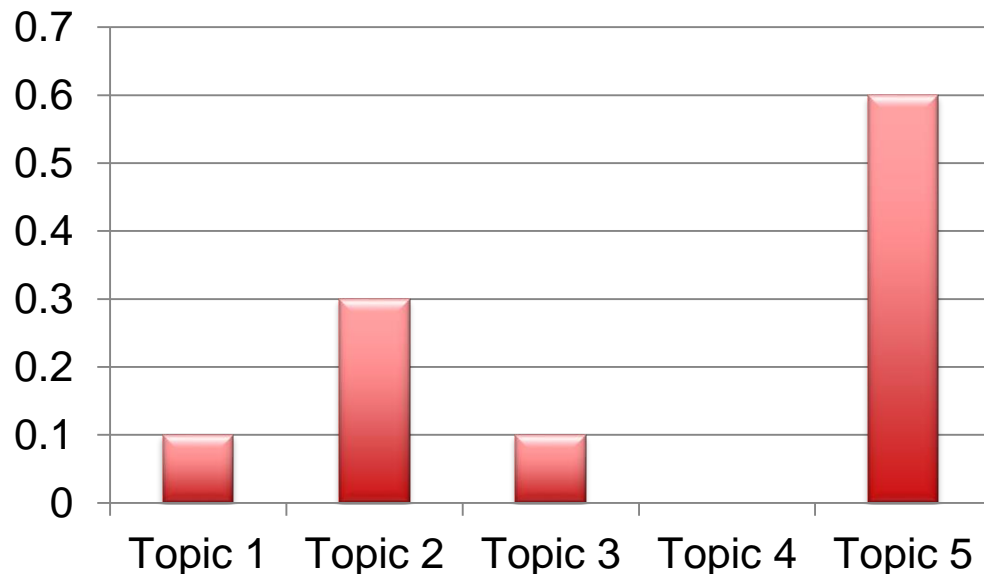
Analytical Insight Example - Machine Learning

Topic Analysis
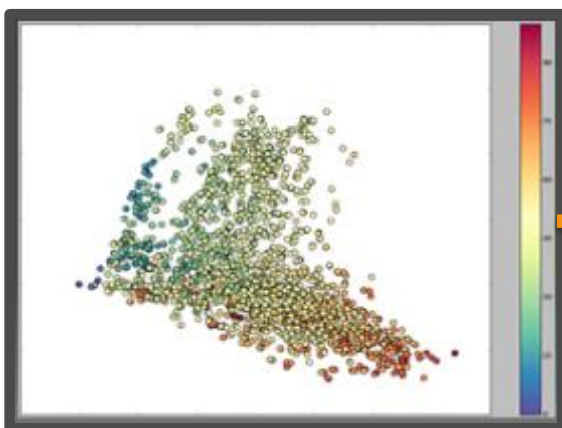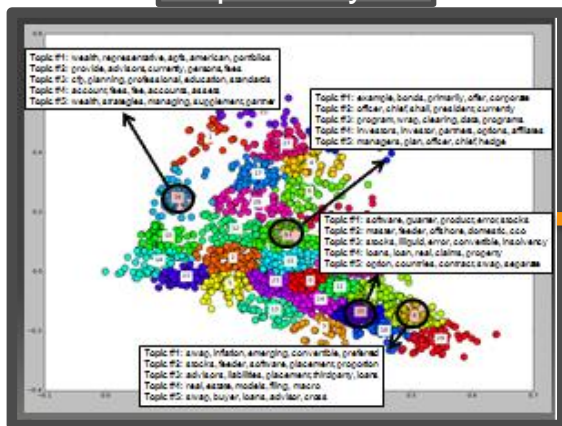
Tonality Analysis

Machine learning allows us to map signals in text to outcomes of interest

Machine Learning

Targets
High Risk
Medium Risk
Low Risk

Requires significant effort to train ML algorithms

Analytical Insight Example – Aggregation

Cash from Operating Activity for Hotels & Lodging Places
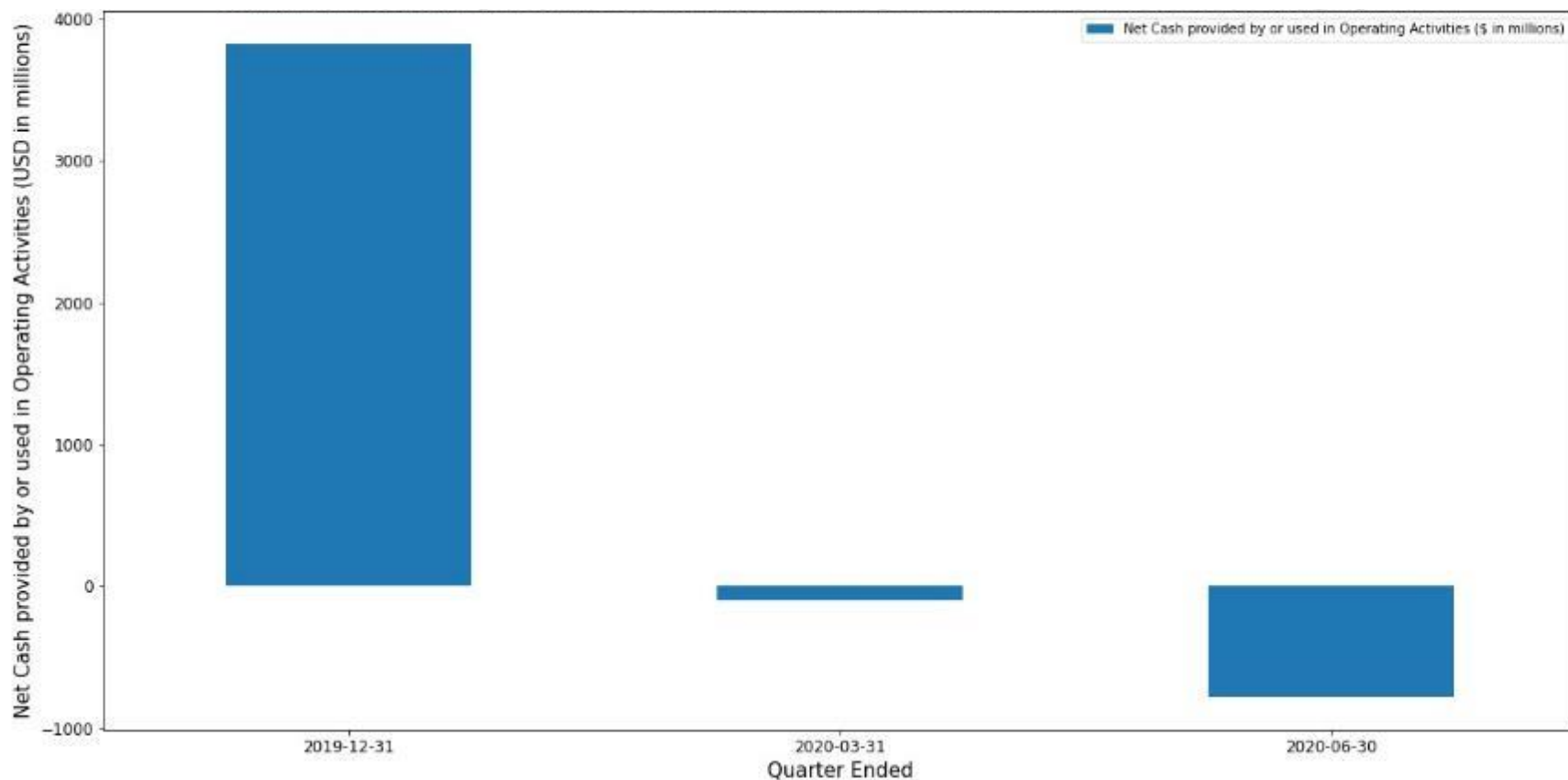
Python code used for aggregation example

Create a Data Frame for Quarterly Cash from Operating Activities

```python
quarterlyCashData = {'Quarter Ended': ['2019-12-31', '2020-03-31', '2020-06-30'], 'Net Cash provided by or used in Operating Activities ($ in millions)': [totalCashQuarterEnded2
cashFromOperatingActivitiesDF = pd.DataFrame(data=quarterlyCashData)
cashFromOperatingActivitiesDF
```
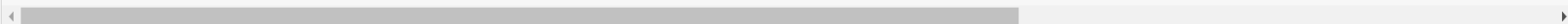
	Quarter Ended	Net Cash provided by or used in Operating Activities ($ in millions)
0	2019-12-31	3823.51
1	2020-03-31	-102.15
2	2020-06-30	-782.85

Visualize Cash from Operations using Matplotlib

```python
%matplotlib inline
cashFromOperatingActivitiesDF.plot(x='Quarter Ended', y='Net Cash provided by or used in Operating Activities ($ in millions)', kind='bar', figsize= (20,10), fontsize=12)
plt.title('Cash from Operating Activities for Hotels, Rooming Houses, Camps, and Other Lodging Places', fontsize=20)
plt.xlabel('Quarter Ended', fontsize=15)
plt.ylabel('Net Cash provided by or used in Operating Activities (USD in millions)', fontsize=15)
plt.ticklabel_format(axis="y", style="plain")
plt.xticks(rotation=0)
plt.yticks(np.arange(-1000, 5000, step=1000))
plt.savefig("barChartOfCashFromOps.jpg")
plt.show()
```

Analytical Insight Example – Text Blocks

Custom COVID-19 Text Block Tags

AccountingEffectsOfGlobalPandemicTextBlock
AccountingEffectsofWorldwidePandemicTextBlock
BusinessImpactOfCovidNineteenTextBlock
COVID19AccountingPolicyPolicyTextBlock
COVID19AndBusinessInterruptionPolicyTextBlock
COVID19AssessmentPolicyTextBlock
COVID19DisclosureTextBlock
COVID19EffectPolicyTextBlock
COVID19GlobalPandemicPolicyTextBlock
COVID19GlobalPandemicTextBlock
COVID19PandemicAndCARESActDisclosureTextBlock
COVID19PandemicAndCARESActPolicyTextBlock
COVID19PandemicImplicationsTextBlock
COVID19PandemicPolicyTectBlock
COVID19PandemicPolicyTextBlock
COVID19PandemicTextBlock
COVID19PolicyTextBlock
COVID19RelatedImpactsTableTextBlock
COVID19RelatedImpactsTextBlock
COVID19RelatedLiabilitiesTableTextBlock
COVID19RisksAndUncertaintiesPolicyTextBlock
COVID19TextBlock
COVIDNineteenImpactPolicyTextBlock
COVIDNineteenPolicyPolicyTextBlock
COVIDNineteenPolicyTextBlock
COVIDNineteenRisksAndUncertaintiesPolicyTextBlock
COVIDTextBlock

CoronavirusAidReliefAndEconomicSecuritiesCARESActDisclosureTextBlock
CoronavirusAidReliefAndEconomicSecuritiesCARESActPolicyPolicyTextBlock
CoronavirusAidReliefAndEconomicSecurityActPolicyPolicyTextBlock
CoronavirusAidReliefAndEconomicSecurityActPolicyTextBlock
CovidNineteenPandemicTextBlock
CovidNineteenPolicyTextBlock
CovidNineteenRelatedRisksAndUncertaintiesPolicyTextBlock
CovidNineteenUncertaintiesPolicyTextBlock
EffectOfCovid19PandemicPolicyTextBlock
EffectOfCovid19PandemicTextBlock
EffectsOfCOVID19DisclosureTextBlock
EffectsOfCoronavirusDiseasePolicyTextBlock
ImpactOfCOVID19PandemicPolicyTextBlock
ImpactOfCOVID19PandemicTextBlock
ImpactOfCOVID19PolicyPolicyTextBlock
ImpactOfCOVID19TextBlock
LiquidityAndImpactOfCOVID19PolicyTextBlock
LiquidityAndImpactOfCovid19PandemicTextBlock
PandemicImpactOnOurBusinessPolicyTextBlock
PandemicImpactPolicyTextBlock
UnusualOrInfrequentItemsCovid19PandemicPolicyTextBlock

Python code used for text block example

Find Custom Textblock Tags For COVID-19 using Python

Import Python Libraries

```
In [ ]:   import pandas as pd
          import csv
```

Read Tags Data Set for 2020 Q1 and 2020 Q2 into Pandas DataFrame

```
In [ ]:   tags2020Q1 = pd.read_csv('data/2020q1_notes/tag.tsv', sep='\t', encoding='cp1252', quoting=csv.QUOTE_NONE)
          tags2020Q2 = pd.read_csv('data/2020q2_notes/tag.tsv', sep='\t', encoding='cp1252', quoting=csv.QUOTE_NONE)
          tags = tags2020Q1.append(tags2020Q2, ignore_index=True)
          tags.head(3)
```

Filter for text block tags

```
In [ ]:   textBlockTags = tags[tags.datatype == 'textBlock']
          textBlockTags.head(2)
```

Find COVID-19 related tags by searching for coronavirus, covid or pandemic

```
In [ ]:   covidRelatedTagsFilter = (textBlockTags.tag.str.contains('coronavirus', case=False, regex=False) |
              textBlockTags.tag.str.contains('covid', case=False, regex=False) |
              textBlockTags.tag.str.contains('pandemic', case=False, regex=False))
          covidRelatedTags = textBlockTags[covidRelatedTagsFilter]
          covidRelatedTags = covidRelatedTags[['tag', 'tlabel', 'doc', 'version']].sort_values('tag')
          covidRelatedTags
```

Generate a unique list of Tags

```
In [ ]:   print(covidRelatedTags.tag.unique())
```

Save COVID Related Tags to Excel

```
In [ ]:   covidRelatedTags.to_excel('covid19CustomTags.xlsx', index = False)
```

Potential Research Considerations

Potential Research Considerations

- Data Quality (extensions, negative values, inappropriate element selection, etc.) v earnings quality

- Data Quality vs CAMS

- Data Quality vs Reporting Internal Controls

- COVID-19 tagging vs Guidance

- FSANDS Github analytical collaboration

- Open Source Inline Viewer filters, references, others?

- Assurance on structured disclosures

- Extension 'Appropriateness'

- Disclosure modeling variances across 'comparable' companies

- Others?

structureddata@sec.gov

Appendix
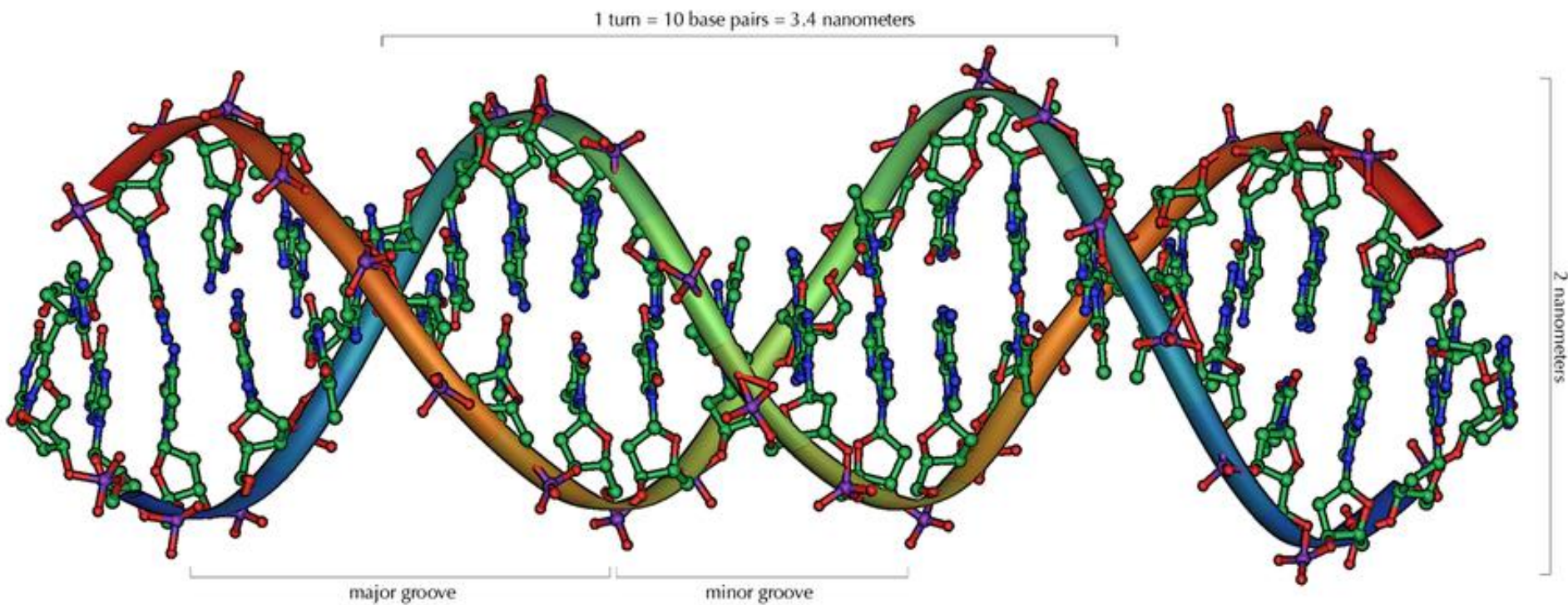
Resources

- Information on Structured Data: https://www.sec.gov/StructuredData

- U.S. GAAP Taxonomy: https://www.fasb.org/jsp/FASB/Page/LandingPage?cid=1176164131053

- SEC Reporting Taxonomy: https://www.fasb.org/jsp/FASB/Page/LandingPage?cid=1176164131053

- IFRS Taxonomy: http://www.ifrs.org/issued-standards/ifrs-taxonomy/

- Staff Observations, Guidance, and Trends on Interactive Data Quality: https://www.sec.gov/structureddata/staffobsandguide

- XBRL US Data Quality: https://xbrl.us/data-quality/

- Technical Questions on Structured Data: StructuredData@sec.gov

- Sign-up to Receive Emails from the Office of Structured Disclosure: https://www.sec.gov/structureddata/news

Division of Corporation Finance COVID-19

- Commission extends effective period for Regulation Crowdfunding relief to facilitate capital formation for small businesses impacted by coronavirus disease 2019 (COVID-19) (8/28/2020)

- Division of Corporation Finance Statement Regarding Submission of Supplemental Materials and Information Subject to Rule 83 Confidential Treatment Requests in Light of COVID-19 Concerns (8/4/2020)

- Staff Statement Regarding Rule 302(b) of Regulation S-T, Relating to Signature Authentication, in light of COVID-19 Concerns (6/25/2020)

- Division of Corporation Finance Statement Regarding Requirements for Form 144 Paper Filings in Light of COVID-19 Concerns (6/25/2020)

- Division of Corporation Finance Statement Regarding Requirements for Certain Paper Documents (other than Forms 144) in Light of COVID-19 Concerns (6/25/2020)

- CF Disclosure Guidance Topic: COVID-19 Disclosure Considerations Regarding Operations, Liquidity, and Capital Resources (6/23/20)

- COVID-19 Related FAQs (5/4/2020)

Division of Corporation Finance COVID-19

- COVID-19 Related FAQs (5/4/2020)

- Staff Guidance for Conducting Shareholder Meetings in Light of COVID-19 Concerns (4/7/2020)

- Staff Interpretations Regarding Certain Exchange Act Forms (Form 10-K, Part III; Form 40-F) (4/6/2020)

- Staff Interpretations Regarding Rule 12b-25 (3/31/2020)

- Relief for Form ID Filers and Regulation Crowdfunding and Regulation A Issuers Related to COVID-19 (3/26/2020)

- Extension of Conditional Regulatory Relief from Reporting and Proxy Delivery Requirements for Public Companies (3/25/2020)

- CF Disclosure Guidance Topic: Coronavirus (COVID-19) (3/25/2020)

- Conditional Regulatory Relief and Assistance for Companies Affected by COVID-19 (3/4/2020)

- Statement on Continued Dialogue with Audit Firm Representatives on Audit Quality in China and Other Emerging Markets; Coronavirus — Reporting Considerations and Potential Relief (2/19/2020)

Academic Research Paper

The Impact of Information Processing Costs on Firm Disclosure Choice: Evidence from the XBRL Mandate

Abstract: "This paper examines the effect of market participants' information processing costs on firms' disclosure choice. Using the recent eXtensible Business Reporting Language (XBRL) regulation, I find that firms increase their quantitative footnote disclosures upon implementation of XBRL detailed tagging requirements designed to reduce information users' processing costs. These results hold in a difference-in-difference design using matched non-adopting firms as controls, as well as two additional identification strategies. Examination of the disclosure increase by footnote type suggests that both regulatory and non-regulatory market participants play a role in monitoring firm disclosures. Overall, these findings suggest that the processing costs of market participants can be significant enough to impact firms' disclosure decisions."

https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3315561

Academic Research Paper

Effects of Information Processing Costs on Price Informativeness: Evidence from XBRL Mandate

Abstract: "Using the Securities and Exchange Commission's eXtensible Business Reporting Language (XBRL) mandate as a pseudo-natural experiment, we identify a causal link between information processing costs and stock price informativeness. We find prices have become more informative after the XBRL mandate, and such effect is upward-trending over the first three years post adoption, which indicates a learning curve for firms and investors. Examining the tagging process reveals that detailed tagging contributes to improved price informativeness, whereas block tagging has no impact. Further, firms with relatively shorter trading age have more benefit from XBRL adoption than older firms, supporting the conjecture that XBRL accelerates the information incorporation process and facilitates the market to learn about younger firms faster."

https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3324198

Academic Research Paper

Digital corporate reporting and value relevance: evidence from the US and Japan

Abstract:

"The study improves current understanding concerning the implications of digital corporate reporting technology on the informativeness of accounting information. It looks at how XBRL, an exemplar digital corporate financial reporting technology, affects value relevance of accounting information in the US and Japan, two key jurisdictions where XBRL has been mandated. We operationalise stock price and return value relevance models to assess and compare predicted associations between selected accounting measures and market value of equity in these countries. We predict that the selected accounting measures are more value relevant after XBRL was mandated than before. We find evidence to support our prediction for the US sample. We also predict and find that the contribution of XBRL to the value relevance of the selected accounting measures is greater in the US than in Japan. Overall, our evidence provides support that digital corporate reporting technology enhances relevance and reliability of accounting measures."

https://www.emerald.com/insight/content/doi/10.1108/IJMF-01-2020-0018/full/html