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THE START OF THE COVID-19 PANDEMIC TO PRESENT USING  
ENGAGEMENT, ATTENDANCE, AND GRADES AS INDICATORS**

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# ASSESSING STUDENT PERFORMANCE AND INTEREST FROM THE START OF THE COVID-19 PANDEMIC TO PRESENT USING ENGAGEMENT, ATTENDANCE, AND GRADES AS INDICATORS

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## PRELIMINARY FINDINGS: EFFECTIVE TOPICS

Preliminary data analysis involving several introductory geology courses, mostly tied with general education curriculum, indicated that when comparing interest and engagement between different geological topics being taught, there was no clear winner. However, topics that drew the most attention tended to be any that contained sub-topics that were controversial or exciting. For example: volcanoes (destructive capability and evacuation measures), earthquakes (similar magnitude with variable destruction), fluvial processes (frequency of mega-flood and impact on urban areas) and groundwater (contamination due to over pumping). Topics that did not yield positive outcomes, or generate enough curiosity, were those typically less sensational by their nature (mineral chemistry, identification of minerals and rocks, taxonomy, mapping exercises, etc.).

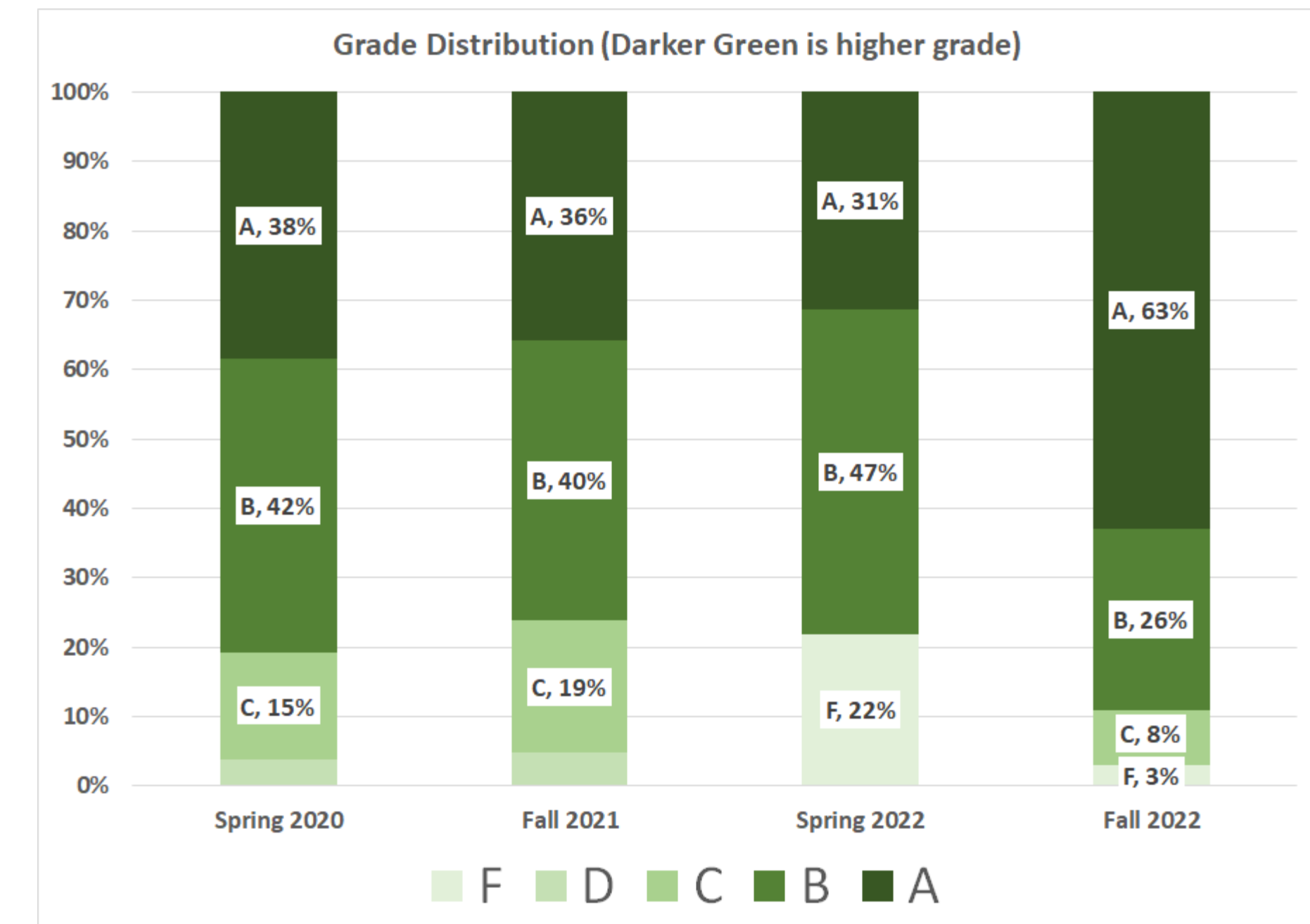
## POINTS OF INTEREST: CURRENT EVENTS

Interestingly, a scarcity of rare earth rich minerals drew attention, as the dwindling resource potential may cripple manufacturing of electronics and communication devices. Students seemed to be thoroughly engaged to participate in topics that connected with a broader spectrum of socio-economic consequences. In a way, it demonstrated the significance of applied geology as a cornerstone as part of geoscience knowledge gathering. Being in urban setting, where many students are commuting or non-traditional type, dissemination of content knowledge required incorporation of current events such as extreme weather-related mega-floods, forest fires, landslides, hurricanes, coastal surges etc.

## DECLINING GRADES & RECOMMENDATIONS

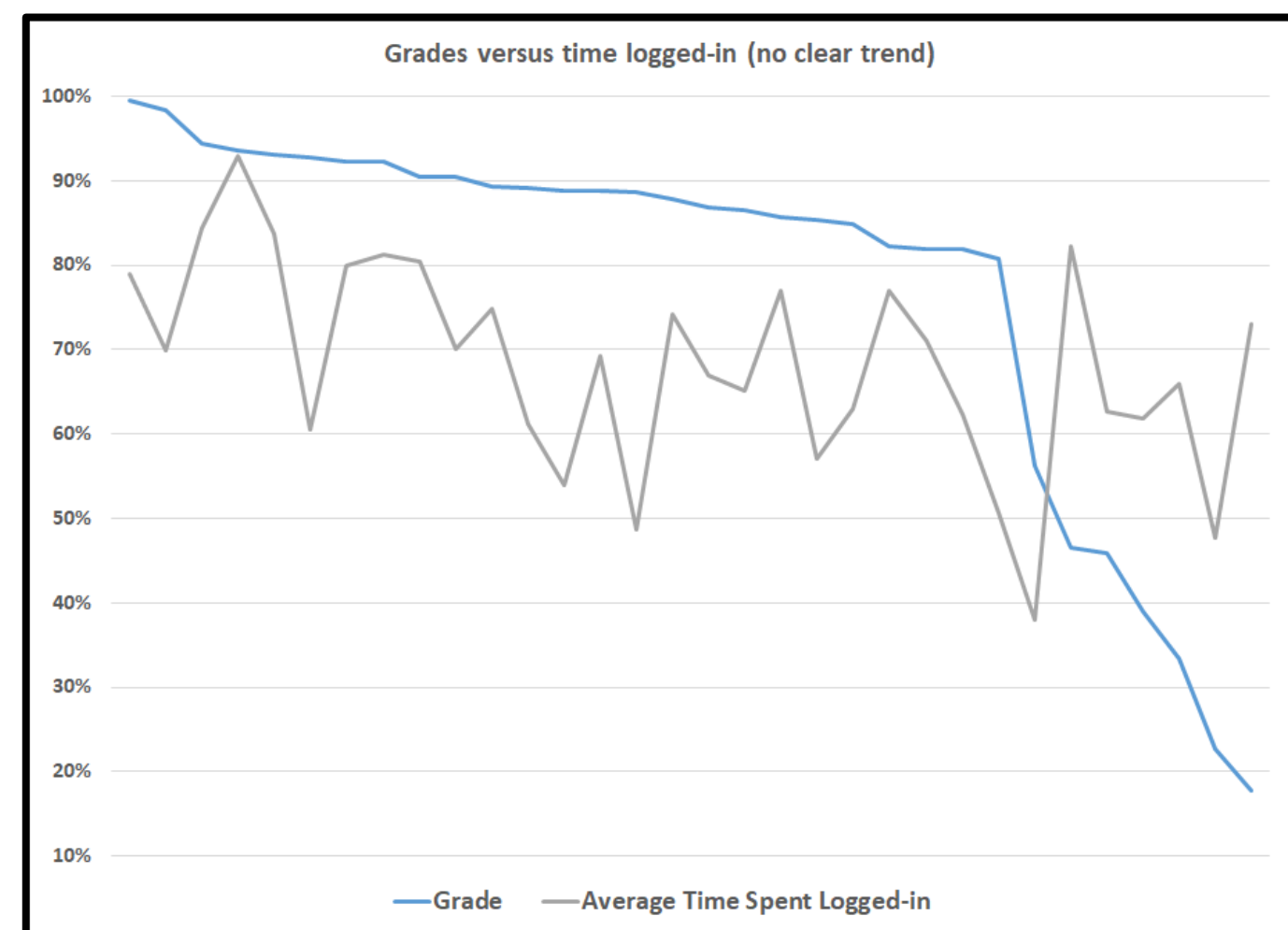
Assessing interest poses a challenge because of multiple variables and interconnectedness. Students tended to spend less time in class on Fridays, but more time during the last topic before an examination in anticipation of a review. Grades have been mixed, but are generally lower between Spring 2020 and Spring 2022 semesters for the same class covering the same topics, in the same order. Overall learning comprehension appears to have decreased. It is recommended to practitioners for devising pedagogically-sound lessons on any geology/environmental science-related topic to include using as many recent, real-world incident examples as possible and especially relying on controversial, debatable, and sensational sub-topics (within reason).

## RESULTS

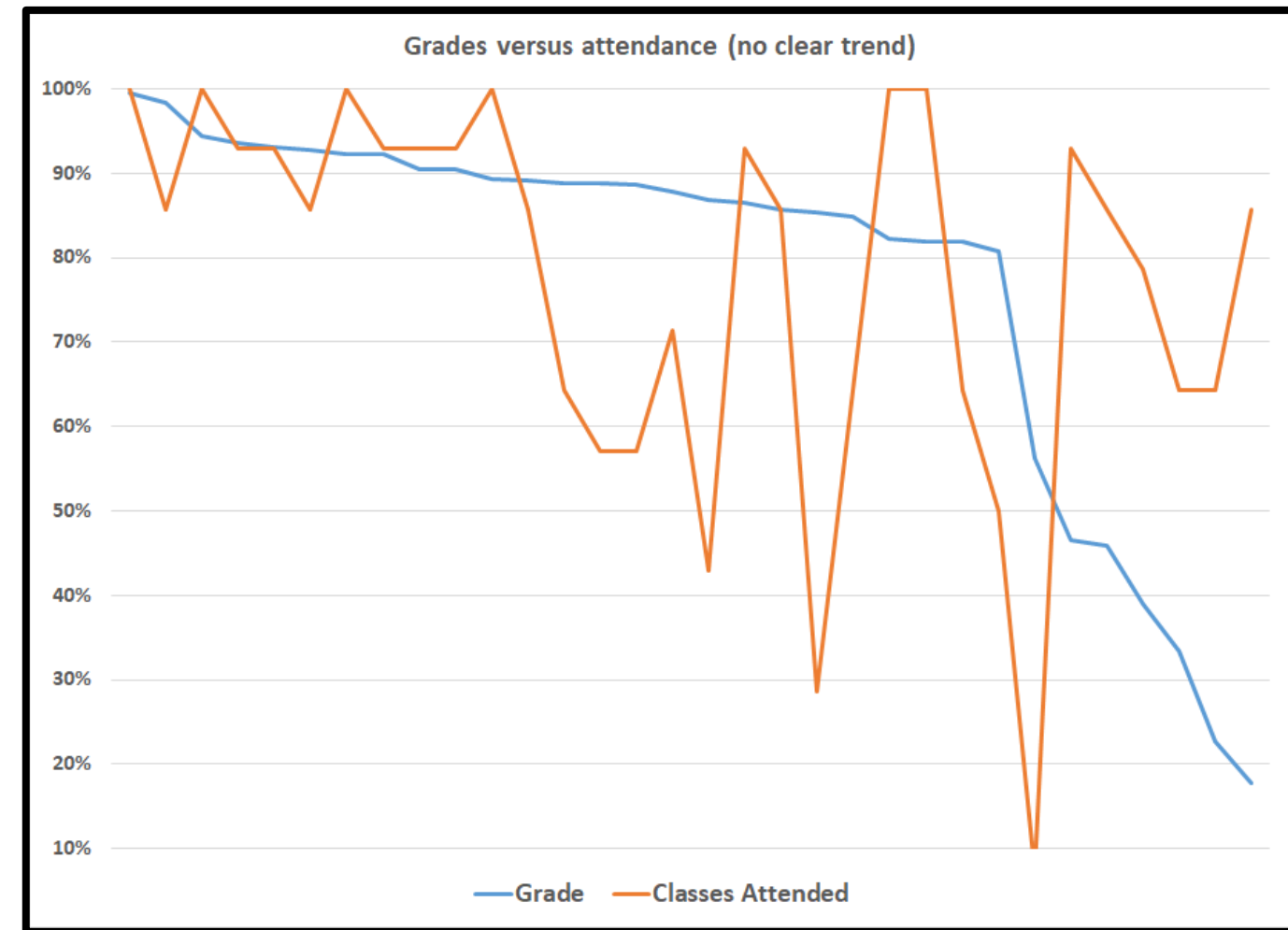


Graph 1: Grade Distribution over time (generally decreasing with time) (Updated, Fall 2022)

Spring 2022 Attendance metrics			Table 1:
Attendance %	Class Logged in %	Grade	Attendance and Logged in time versus grades
94%	78%	A- to A+	
71%	65%	B- to B+	
68%	62%	F	



Graph 2: Grades versus time logged-in (no clear trend)



Graph 3: Grades versus attendance (no clear trend)

## UPDATED FINDINGS, FALL 2022

Regarding grades, the fall 2022 data is significantly different from the average of the three previously recorded semesters. Spring 2020, Fall 2021 and Spring 2022 grades were fairly constant. If "A's" and "B's" are combined to form a group of top performers, then the average "A+B" group is about 78% with the bottom performers making up about 22%.

	Spring 2020	Fall 2021	Spring 2022	Average	Fall 2022
Top Performers	81%	76%	78%	78%	89%
Bottom Performers	19%	24%	22%	22%	11%

Table 2: Grade distribution showing changes in previous semester average versus Fall 2022.

In Fall 2022, half of the bottom performers were converted to top performers in large part through educator and support staff intervention.

## INSTRUCTOR INTERVENTION

- 1) Followed up with several students throughout the semester by email and phone, providing numerous reminders on submission deadlines or missing work.
- 2) Provided numerous extensions on quiz deadlines, as well as multiple attempts for quizzes.
- 3) Provided encouragement throughout the semester to boost class morale. Many students stated they had given up on completing the class with a good grade once they were behind. Encouragement helped.

## STAFF INTERVENTION

York College has multiple departments that support students. Students were directed to: 1) Student Development, 2) Counseling Center, 3) Hardship funding) and 4) Food Pantry. Student Development reached out to each professor for every student with document hardships to advocate for extensions, make-ups, and other leniency to assist passing. Authors will explore in future studies.

## SAMPLE OF CORE TOPICS WITH BEST ENGAGEMENT

**Above:** Volcanic eruptions cause great harm to humans, resulting in an estimated 250,000 deaths over the past two millennia [Stephen Marshak]

**Right:** Thrusting can also crush bridge supports.

Across the top metal brace that overlies corners. Strapping around corner studs. Corner double brace on base.

**Above:** Volcanic Hazards: Threat from Lava Flows [USGS; Vittoriano Rastelli/Getty Images]

Wrapping a bridge's support columns in cable and bolting the span to the columns will prevent the bridge from collapsing so easily.

Placing buildings on rollers or shock absorbers lessens the severity of the vibrations.

**Above:** The natural hydraulic gradient can be reversed by groundwater withdrawal. A large irrigation well creates a large cone of depression that reverses the hydraulic gradient and causes septic contamination of the home well.

**Above:** Shearing can cause building and roadway foundations to fail. [AP Photo; Pacific Press Service/Alamy]

## EFFECTIVE CURRENT EVENTS

**UNICEF/UN0698138/Hussain/AFP:** On 26 August 2022, a man (L) and a youth (R) use a satellite dish to move children across a flooded area after heavy monsoon rainfalls in Jaffarabad District, Balochistan Province, Pakistan

**Noah Berger / AP:** Firefighter Davis Sommer lights a backfire to burn off vegetation while battling the Mosquito Fire in the Volcanville community of El Dorado County, Calif., on Sept. 9, 2022.

**National Oceanic and Atmospheric Administration NOAA:** Hurricane Sally, seen here by GOES EAST on September, 14, 2020.

## CITED LITERATURE

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## ABSTRACT

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