ViewSonic Projector

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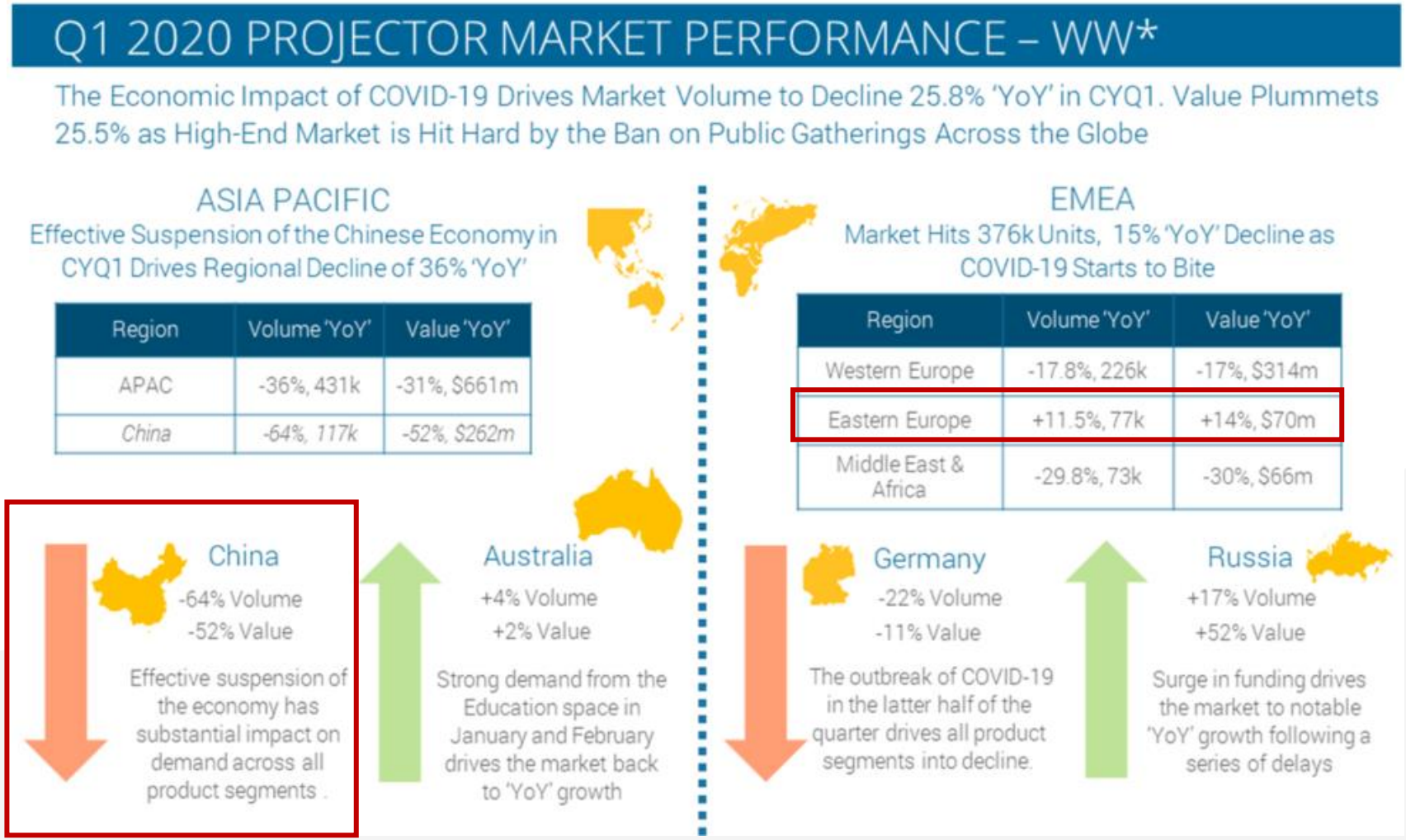
1. How has the pandemic affected the projector market?
2. Is there a significant difference between segments such as education, commercial and consumer?
3. Are there significant regional differences?
4. Given the high performance and low cost of LCDs and OLEDs, is there still a market for consumer projectors?
5. How is laser phosphor penetrating the market?

How has the pandemic affected the projector market?

How has the pandemic affected the projector market?

2020 PJ Market



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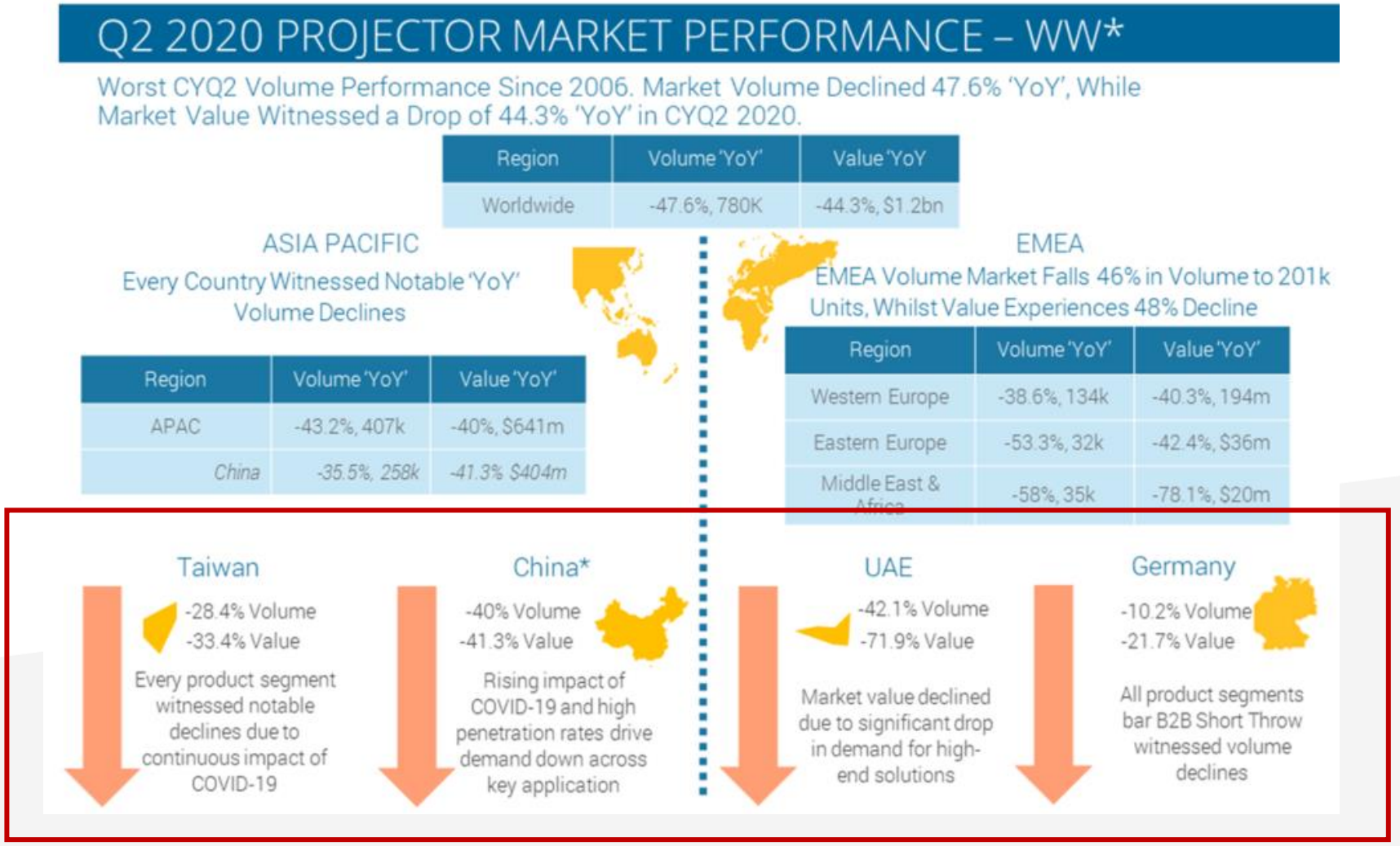
How has the pandemic affected the projector market?

2020 PJ Market



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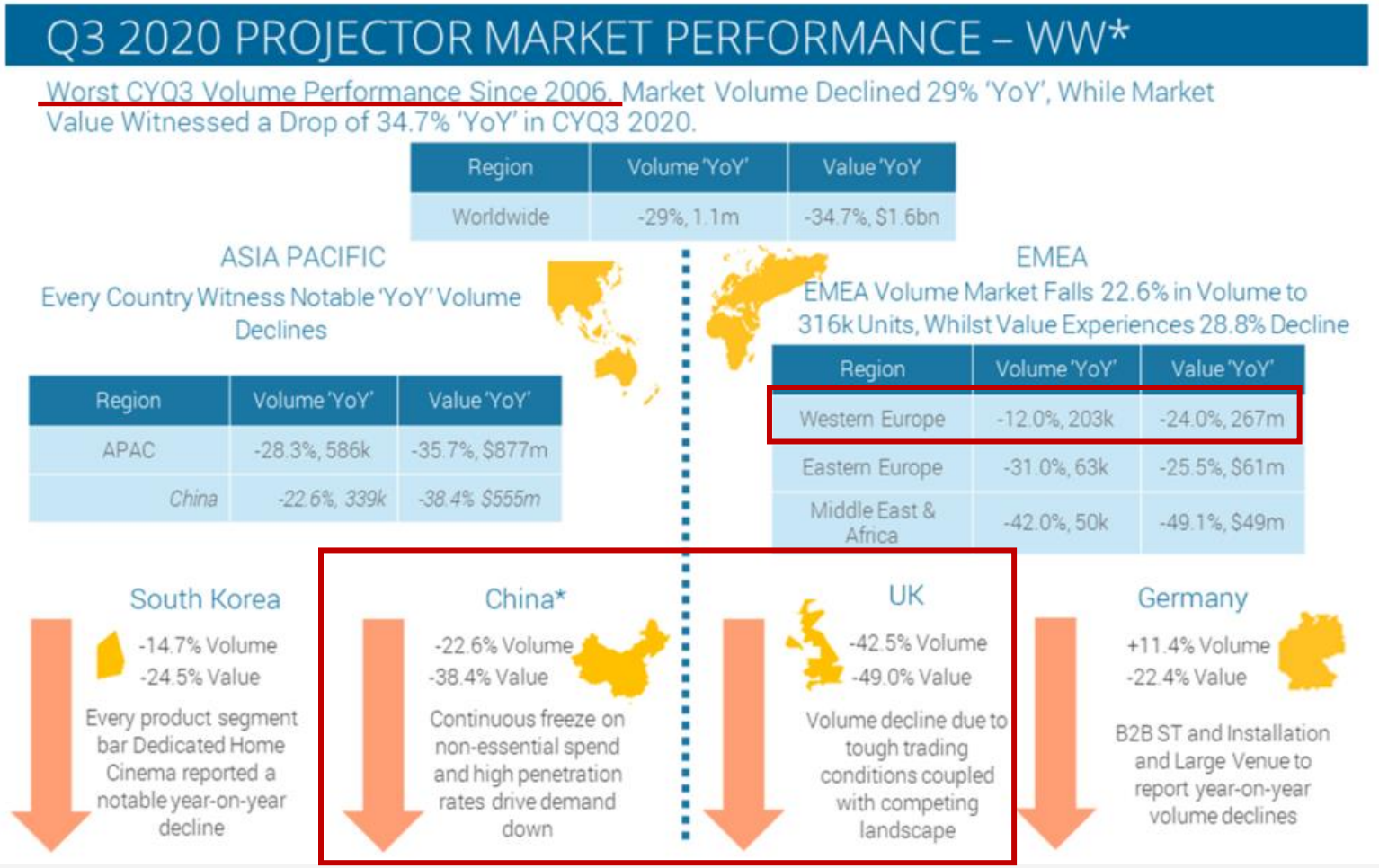
Are there significant regional differences?

2020 PJ Market



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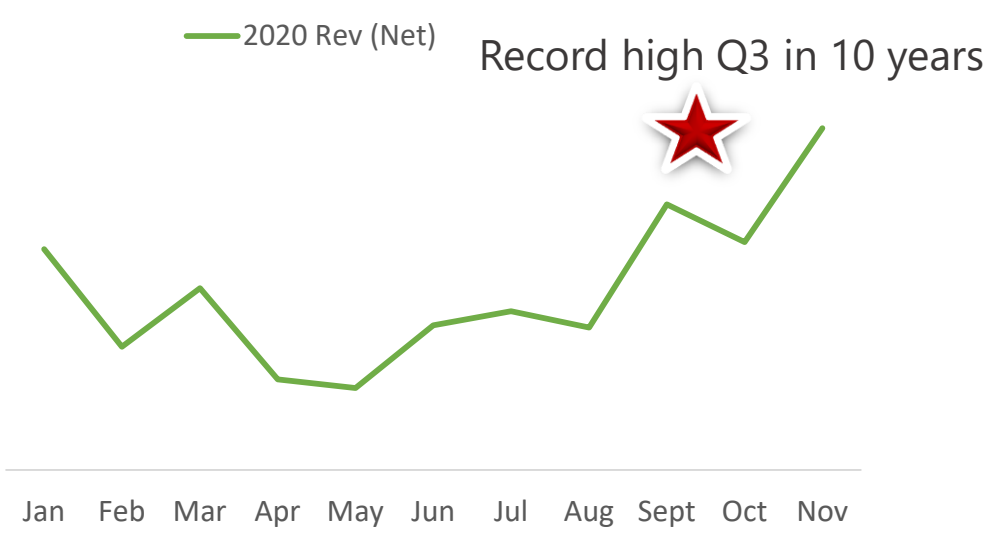
How has the pandemic affected the projector market?

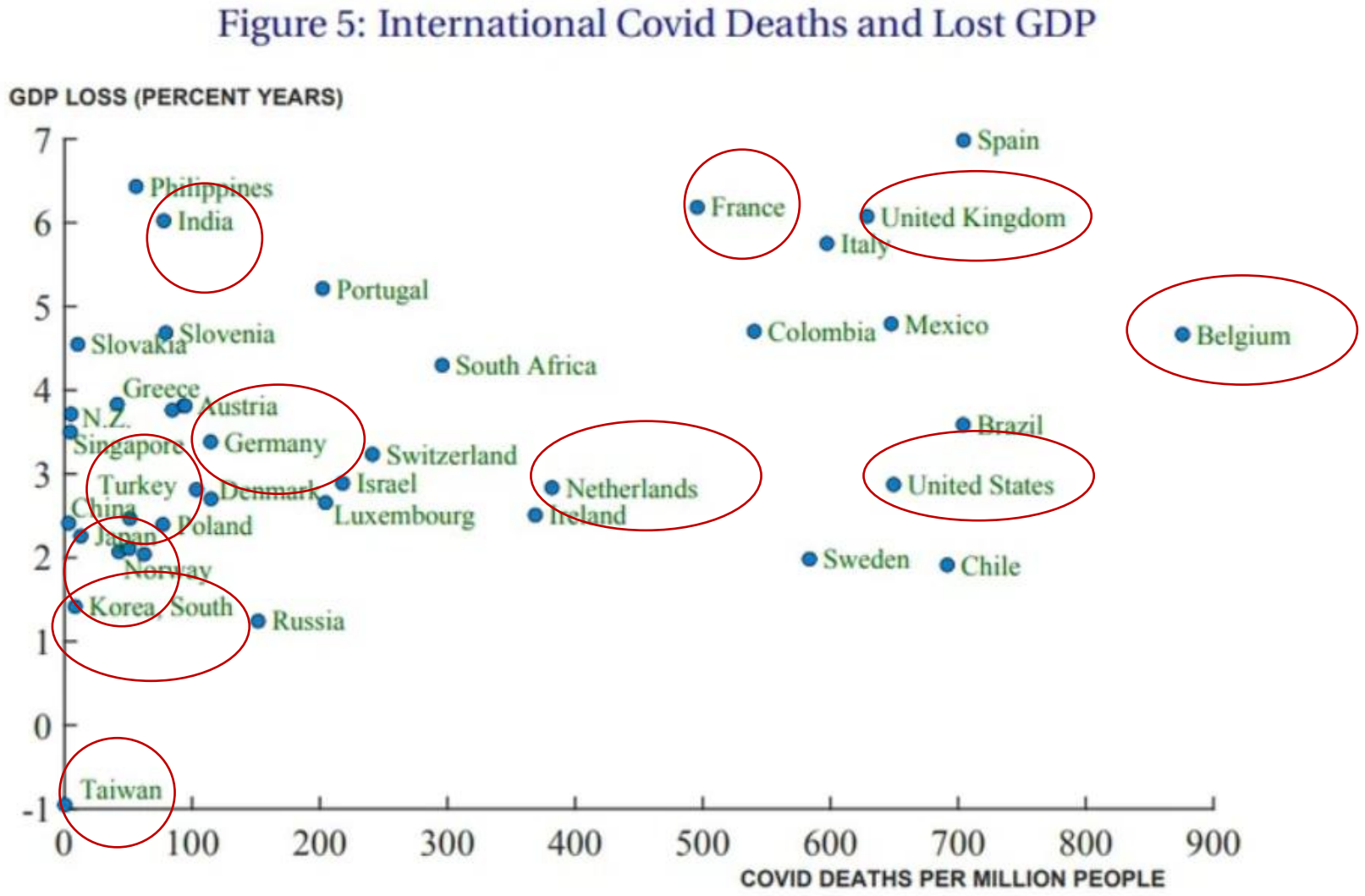
- Big impact on B2B: Major projects postpone
  - Corporate, Office, Meeting Room
  - Education, Classroom, Assembly Hall, Auditoria Room
  - Museum, Art Gallery
  - Exhibition, Events
- **ViewSonic Europe**: Sales slow down in first lockdown, sales boom after 1st Lockdown and surge significantly in 2nd Lockdown. **ViewSonic Europe as NO.1 LED Projector Brand in European Region for Q3'20**

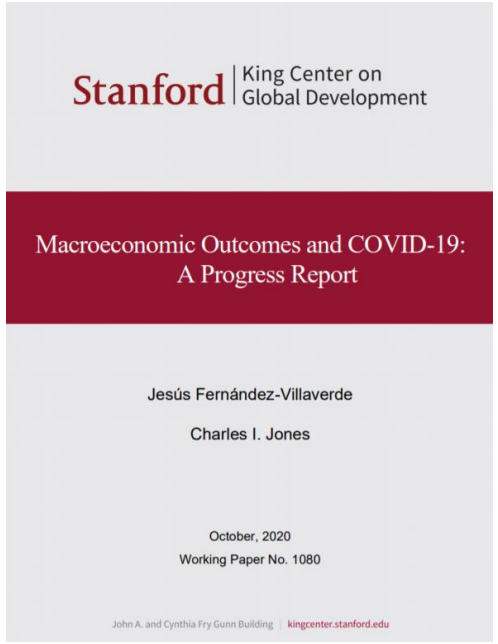


*Data from Futuresource Q3'20 report by volume

Are there significant regional differences?

Pandemic Impact – Region/Segment

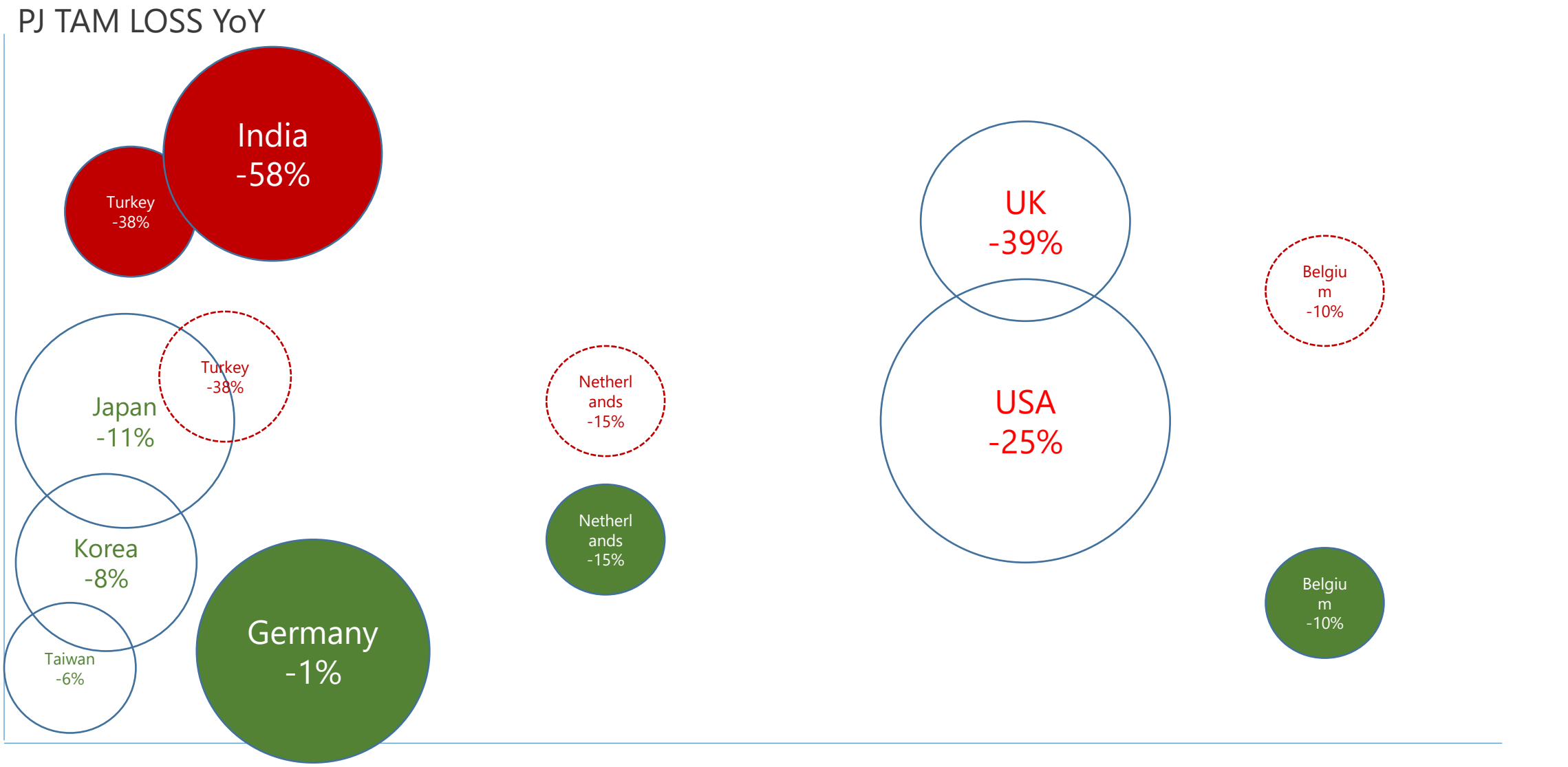




NBER: National Bureau of Economic Research

*Data from NBER https://siepr.stanford.edu/sites/default/files/publications/wp1080.pdf

Pandemic Impact – Region/Segment



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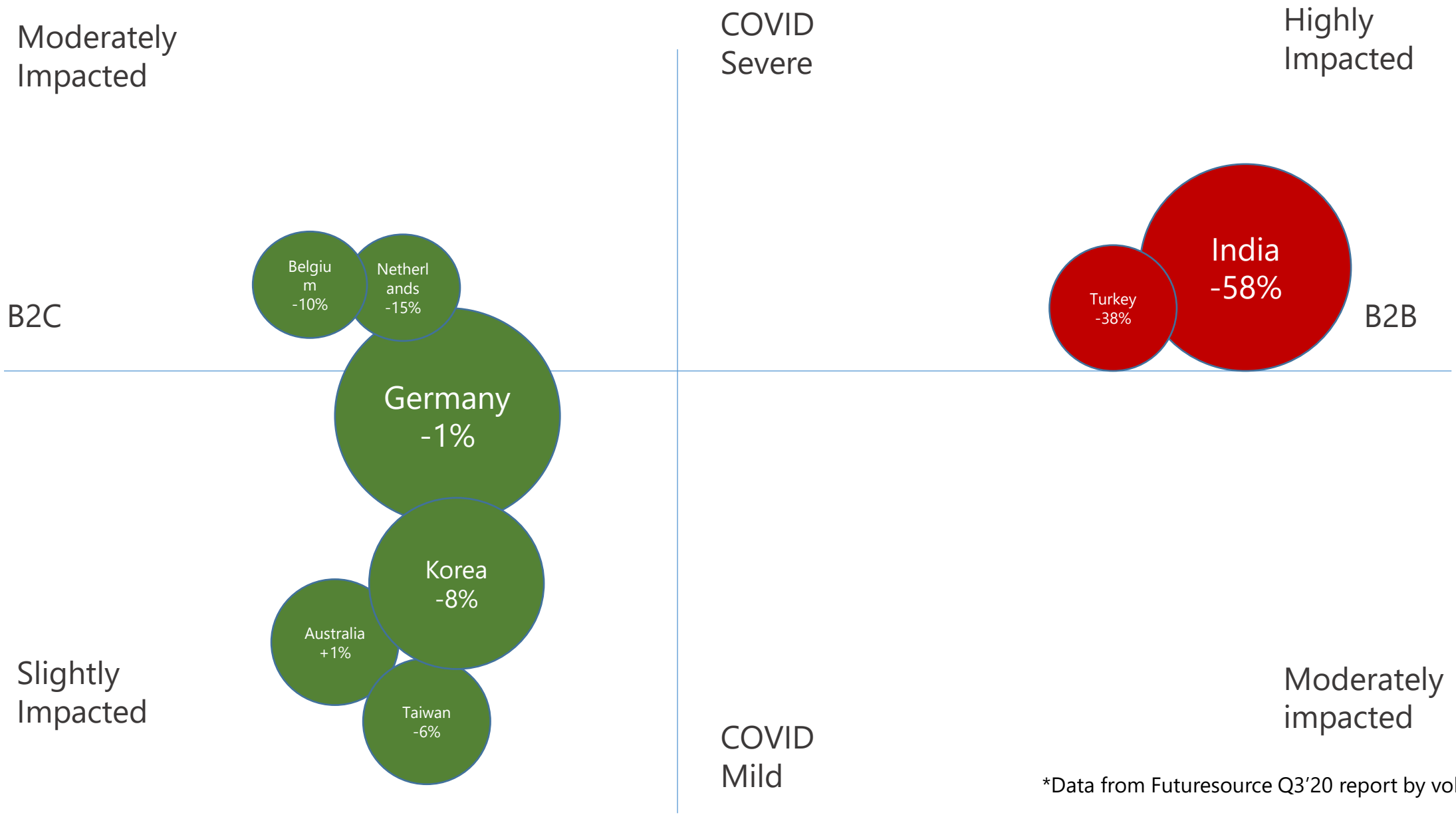
Pandemic Impact – Region/Segment



*Data from Futuresource Q3'20 report by volume

Pandemic Impact – Germany/ India

Germany

	Q1-Q3 2020	2019	YoY
A: B2B	108,018	125,859	-14%
B: Dedicated Home	69,810	54,066	29%
C: Digital Cinema	210	317	-34%

	Q1-Q3 2020	2019	YoY
Epson	9,443	11,313	-17%
Optoma	12,037	7,547	59%
Acer	18,190	17,220	6%
Viewsonic	6,065	3,144	93%
BenQ	4,823	6,463	-25%
LG	2,082	4,648	-55%
Anker	15,728	1,881	736%

India

	Q1-Q3 2020	2019	YoY
A: B2B (90%)	89,245	221,070	-60%
B: Dedicated Home	11,523	19,252	-40%
C: Digital Cinema	423	443	-5%

Turkey

	Q1-Q3 2020	2019	YoY
A: B2B (>70%)	13,613	29,868	-54%
B: Dedicated Home	9,741	7,822	25%
C: Digital Cinema	34	36	-6%

*Data from Futuresource Q3'20 report by volume

Pandemic Impact – UK/ Netherlands

UK	Q1-Q3		
	2020	2019	YoY
A: B2B	43,992	83,894	-48%
B: Dedicated Home	22,835	26,373	-13%
C: Digital Cinema	48	137	-65%

	Q1-Q3		
	2020	2019	YoY
Epson	4,855	5,277	-8%
Optoma	6,058	8,634	-30%
Acer	777	323	141%
Viewsonic	2,972	2,284	30%
BenQ	1,148	2,231	-49%
LG	1,045	1,455	-28%
Anker	5,160	4,982	4%

Netherlands	Q1-Q3		
	2020	2019	YoY
A: B2B	13,995	16,392	-15%
B: Dedicated Home	10,903	12,892	-15%
C: Digital Cinema	42	62	-32%

Belgium	Q1-Q3		
	2020	2019	YoY
A: B2B	11,312	15,929	-29%
B: Dedicated Home	5,817	3,189	82%
C: Digital Cinema	10	18	-44%

*Data from Futuresource Q3'20 report by volume

Is there a significant difference between segments such as education, commercial and consumer?

Difference between segments such as education, commercial and consumer

- Dedicated Home segment has better performance than others

	Q1-Q3		
	2020	2019	YoY
A: B2B	2,441,702	3,927,268	-38%
B: Dedicated Home	1,917,977	1,847,488	4%
C: Digital Cinema	5,040	10,528	-52%

	Year	All Quarters							
		2019			2019 Total	2020			2020 Total
Product Segment	2019 Q1	2019 Q2	2019 Q3		2020 Q1	2020 Q2	2020 Q3	
A: B2B	1,273,178	1,271,108	1,382,982	3,927,268	914,103	615,420	912,179	2,441,702
B: Dedicated Home	613,813	662,018	571,657	1,847,488	594,354	644,324	679,299	1,917,977
C: Digital Cinema	2,909	3,310	4,309	10,528	2,384	1,213	1,443	5,040

*Data from Futuresource Q3'20 report by volume

Difference between segments such as education, commercial and consumer

	Q1-Q3		
	2020	2019	YoY
Epson	178,398	203,564	-12%
Viewsonic	111,875	50,036	124%
Optoma	105,411	108,998	-3%
BenQ	81,343	93,099	-13%
Acer	44,423	52,943	-16%
LG	87,551	102,844	-15%

*Data from Futuresource Q3'20 report by volume

Difference between segments such as education, commercial and consumer

- Dedicated Home – Resolution

	Q1-Q3		
	2020	2019	YoY
B: SVGA	2,006	2,679	-25%
C: XGA	97	1,096	-91%
D: WXGA/WXGA+	57,245	174,064	-67%
F: WUXGA	2,229	8,175	-73%
H: 480p	244,796	214,625	14%
J: 720-768p	345,406	375,228	-8%
K: 1080p	1,024,850	876,433	17%
M: 4K	190,544	166,860	14%
N: 4K e-shift	50,775	28,264	80%
P: 8K e-shift	29	64	-55%

*Data from Futuresource Q3'20 report by volume

Difference between segments such as education, commercial and consumer

- Dedicated Home – Light source

		Year	All Quarters							
		2019			2019 Total	2020			2020 Total	Grand Total
Values	Light Source	2019 Q1	2019 Q2	2019 Q3		2020 Q1	2020 Q2	2020 Q3		
Units	E: RGB LED	409,301	453,474	357,217	1,219,992	434,391	466,920	466,543	1,367,854	2,587,846
	F: HLD LED	60	89	83	232	45	172	24	241	473
	J: Blue Laser-Phosphor	50,223	46,005	49,938	146,166	26,770	46,075	45,287	118,132	264,298
	L: RGB Laser					8,097	14,318	14,308	36,723	36,723
	K: Red & Blue Laser-Phosphor	304	1,284	16,497	18,085	1,955	1,750	1,734	5,439	23,524
	A: Mercury Lamp	153,925	161,166	147,922	463,013	123,096	115,089	151,403	389,588	852,601
Sum of Brand Share	E: RGB LED	66.68%	68.50%	62.49%	66.04%	73.09%	72.47%	68.68%	71.32%	68.73%
	F: HLD LED	0.01%	0.01%	0.01%	0.01%	0.01%	0.03%	0.00%	0.01%	0.01%
	J: Blue Laser-Phosphor	8.18%	6.95%	8.74%	7.91%	4.50%	7.15%	6.67%	6.16%	7.02%
	L: RGB Laser	0.00%	0.00%	0.00%	0.00%	1.36%	2.22%	2.11%	1.91%	0.98%
	K: Red & Blue Laser-Phosphor	0.05%	0.19%	2.89%	0.98%	0.33%	0.27%	0.26%	0.28%	0.62%
	A: Mercury Lamp	25.08%	24.34%	25.88%	25.06%	20.71%	17.86%	22.29%	20.31%	22.64%

	Q1-Q3		
	2020	2019	YoY
E: RGB LED	1,367,854	1,219,992	12%
F: HLD LED	241	232	4%
J: Blue Laser-Phosphor	118,132	146,166	-19%
L: RGB Laser	36,723	0	#DIV/0!
K: Red & Blue Laser-Phosphor	5,439	18,085	-70%
A: Mercury Lamp	389,588	463,013	-16%

*Data from Futuresource Q3'20 report by volume

Difference between segments such as education, commercial and consumer

- B2B EDU

	Q1-Q3 2020	2019	YoY
A: < 0.38	236,191	385,043	-39%
B: => 0.38 to < 0.75	209,698	323,800	-35%
C: => 0.75 to < 1.1	14,797	25,091	-41%
D: => 1.1+	1,981,016	3,193,334	-38%

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Difference between segments such as education, commercial and consumer

- Digital Cinema

	Q1-Q3 2020	2019	YoY
ZZZOTHERS	2,360	5,084	-54%
NEC	881	1,998	-56%
Sony	482	621	-22%
ChristieDigital	1,317	2,818	-53%
Sinolaser	0	7	-100%

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Given the high performance and low cost of LCDs and OLEDs, is there still a market for consumer projectors?

Given the high performance and low cost of LCDs and OLEDs, is there still a market for consumer projectors?

- PJ and TV is not zero-sum game, they can work with each other and fulfil different needs and wants.
- TV VS. Movie theater, TV VS. Laptop, TV VS. Monitor, TV VS. Mobile phone
- People have desire for “big” and “Impressive” image and experience, >100” truly makes difference.
- And projectors remain—by **far—the most cost effective way on a per-inch basis to attain pictures of 100-inch diagonal or larger.**
- PJ’s limitation is not from TV, it is itself, can it fulfil customers’ needs and wants with the reasonable price which they can pay? **Namely Times/efforts/price**
- **Projector central: https://www.projectorcentral.com/home-theater.htm**
- **redefining lifestyle-oriented**
- We want to enable more people to enjoy a new flexible big-screen audiovisual experience in their daily lives.

Given the high performance and low cost of LCDs and OLEDs, is there still a market for consumer projectors?

- For work at home, a smart LED projector can serve as a convenient second or third display on any surface, allowing higher productivity on a **big screen** without taking up too much space.
- For home entertainment, smart LED projectors offer a **big screen** for all their entertainment and leisure needs during lockdown to maintain mental wellbeing and a sense of normalcy.
- Smart LED projectors are also conducive to distance learning, offering a **big screen** for virtual lectures and other schooling activities for a more personal experience.
- Smart LED projectors **cause less eyestrain for children** and adults alike as they emanate nearly blue light-free reflective light as opposed to emitted light on TVs and that they provide a much larger screen size than laptops and tablets.
- A projector will emit blue light just as a television will. But this light is reflected onto a wall, so it is not shining directly into the retina. The back lighting is being disbursed onto the wall rather than directly into your eyes

ViewSonic's Solution – LED Smart Projector

- **What to look for when buying a portable projector?**
- **Key Considerations**
  - **Situations/environment.**
  - **Durability. (Environment friendly)**
  - **Resolution/Sound.** (Sharing/Experience)
  - **Smart features. (Connected/ OTA)**

Audiovisual Excellence, Smart Capabilities, User-Centric Design, and Eco-Friendliness

- Think about durability, LED technology avoids dimming projector issues, allowing smart projectors to shine brightly for up to 30,000 hours. LED light sources run much cooler than bulb-based light sources (meaning less fan noise). "Lamp-Free" is what to look for. It means you no longer have to rely on bulbs, which need to be replaced over time. They're eco-friendly, too. Lamp Free means no glass bulb is needed, which means no mercury.
- Power consumption: M2 (LED) 75W/PX701HD (Lamp) 300W (4 times)
- Noise level: M2 (LED) 26db/PX701HD (Lamp) 31db (17% down)
- Size: M2 (LED) /PX701HD (Lamp), only 34%

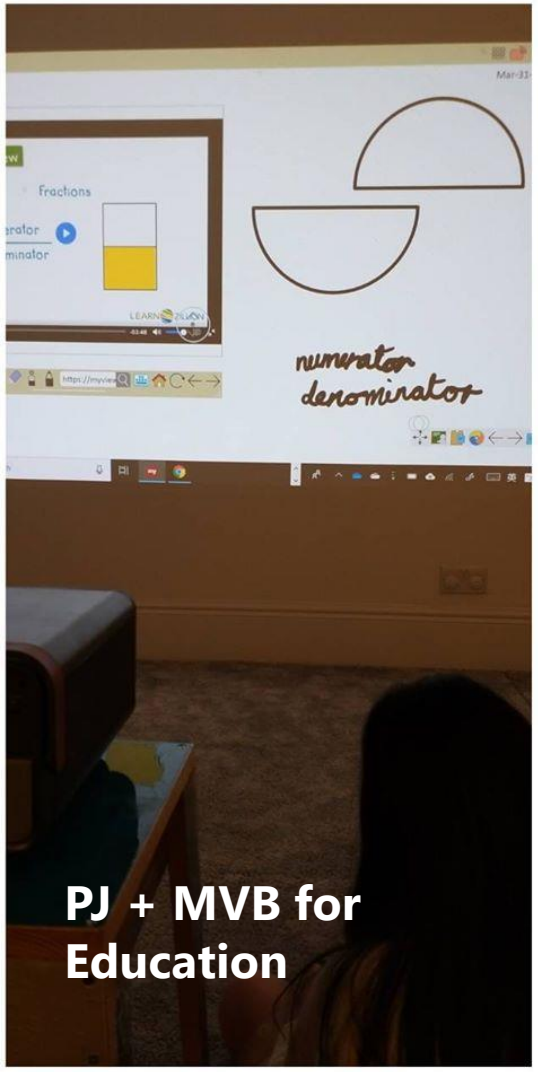
Top Complains about Conventional Projector

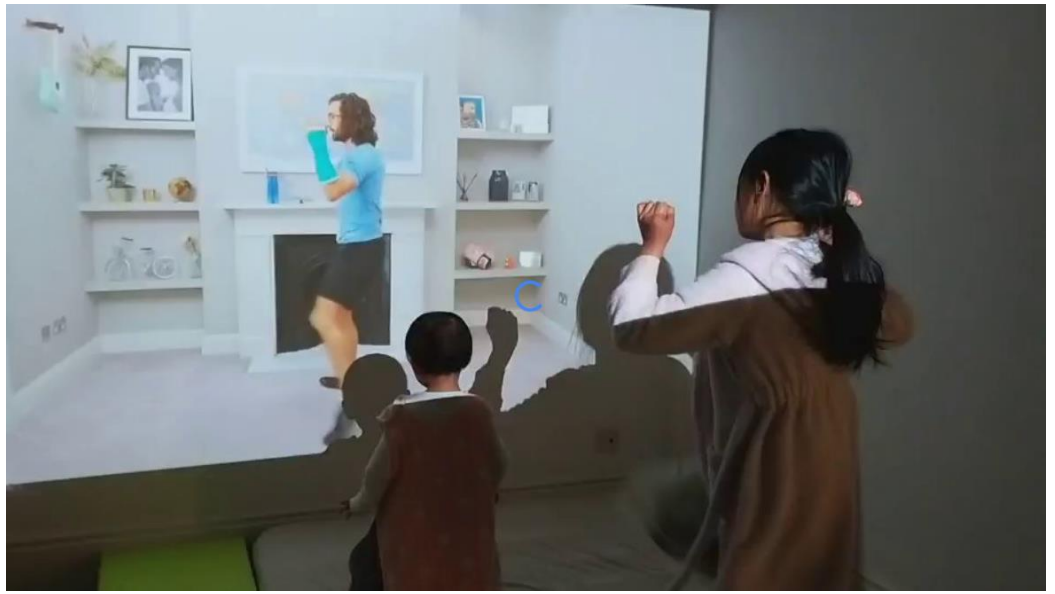
Amazon UK Projector End User Feedbacks

- Installation: Cables, Focus
- Poor Audio Performance
- High Noise Level
- Heat
- Maintenance: Lamps

Not possible to have >100” visual experience at your cosy flat or house living room

LED Smart Project Solution for Home Entertiment





ViewSonic's Solution – LED Smart Projector

- **What to look for when buying a portable projector?**
- It's important to know what to look for when buying a smart projector. By considering how you're going to use it, you'll get the right mix of features. We asked Luke Chen, senior business line manager at Viewsonic Europe, a display and projector specialist for his point of view (no pun intended).
- First off, you need to think about **the situations** you're going to be using your projector and find one that fits your requirements. Taking your smart projector on-the-go? Consider how well the projector achieves a portable design. Does it come with a carry handle? Or can it fold into a travel-ready container? If your projector is going to sit on your coffee table, make sure it says it's a "short throw."
- Think about **durability**, LED technology avoids dimming projector issues, allowing smart projectors to shine brightly for up to 30,000 hours. LED light sources run much cooler than bulb-based light sources (meaning less fan noise). "Lamp-Free" is what to look for. It means you no longer have to rely on bulbs, which need to be replaced over time. They're eco-friendly, too. Lamp Free means no glass bulb is needed, which means no mercury.
- Something else to consider is **resolution**. Smart projectors are much smaller than standard projectors, this makes resolution the first thing to go. For those who enjoy camping, and just want some form of entertainment next to the campfire, a lower resolution works. Mini projectors have the hardest time with resolution. But, not all smart projectors suffer from poor resolution. 4K Smart LED projectors are now on the market. If home entertainment is your preferred use, opt for 4K resolution. The highest-end smart projectors will call themselves "True 4K" projectors.
- **Apps** - your projector is only as smart as the apps running on it. So, it makes sense to have an app store enabled on your projector. Does the projector you're looking at come with app store integration? To work with apps, enable voice commands, and stream movies (all at the same time) look for a smart projector with ample processors, memory, and storage.
- Most smart projectors have to compromise on **sound**. This is the only way to fit all the components into such a small size. If you don't already have a premium sound system integrated into your home theatre, opt for premium speakers. In short, there's no such thing as a one-size-fits-all projector.

ViewSonic's Solution – LED Smart Projector

- **Q1: Why an LED projector?**
- LED projectors are developed with eco-friendliness in mind. ViewSonic smart LED projectors are a much more eco-friendly alternative to other projector types, especially given the incorporation of second-generation LED technology. For example, they consume **significantly less power** than lamp-based and laser-based projectors for improved efficiency. The use of LEDs also means ViewSonic smart LED projectors are free from the **toxic mercury** found in lamps. What's more, LEDs are a more durable light source than lamps, offering a lifespan of up to **30,000 hours**, thus, reducing maintenance and lowering the total cost of ownership. Thanks to LED light source's **low running temperature** and ViewSonic's exclusive thermal design, users can be fully immersed in their viewing experience free from irritating **fan noise.** Plus, our smart LED projectors perform **great colors** compared with other light sources.

ViewSonic's Solution – LED Smart Projector

- **Q2: What is a smart projector?**
- A smart projector is usually a portable device that combines the latest audiovisual technologies with smart integrated functionality. The latest generation will connect with your mobile devices, home network, and content services for a seamless viewing experience.
- Take ViewSonic smart projedtor for examples: The smart features include **wireless casting** from smart devices via 5G Wi-Fi for easy projecting of streaming content or other multimedia. On top of 5G Wi-Fi, users can also take advantage **of Bluetooth connectivity** to broadcast audio from their smart mobile devices with our projectors' professional Harman Kardon speakers, or connect to external Bluetooth headphones to immerse yourself.
- Users can make use of intuitive touch controls via their mobile devices as an alternative powerful remote control. Convenient voice control via Amazon Alexa or Google Assistant lets users take advantage of the latest features from these ecosystems, and USB Type-C connectivity puts a fun twist on streaming videos and video calls by allowing users to project content directly from their phone or tablet. Last but not least, **a built-in app center** enables users to enjoy their favorite apps directly from the projector on the big screen.

ViewSonic's Solution – LED Smart Projector

- 2020 Q3 MS
- EU: 27.6% (Overall 8.4%)
- America: 28.9% (Overall 11.5%)
- Asia Pacific: 25.3% (Overall 10.9%)
- FR: 57.8%
- UK: 40.7%
- NR: 46.8%
- TR: 47.7%

How is laser phosphor penetrating the market?

How is laser phosphor penetrating the market?

- Winner of consumer – **LED/RGB Laser**

	Q1-Q3 2020	Q1-Q3 2019	YoY	
E: RGB LED	1,391,113	1,261,238	10%	
F: HLD LED	5,363	7,223	-26%	
I: LED/Laser-Phosphor	49,096	94,957	-48%	Casio
J: Blue Laser-Phosphor	409,345	503,708	-19%	
M: RGB Laser (6P)	89	273	-67%	
L: RGB Laser	37,600	1,223	2974%	China Only
K: Red & Blue Laser-Phosphor	8,349	22,316	-63%	
A: Mercury Lamp	2,462,427	3,890,783	-37%	

*Data from Futuresource Q3'20 report by volume

How is laser phosphor penetrating the market?

- Winner of consumer – **LED/RGB Laser**

		Year	All Quarters						
		2019				2020			
Values	Light Source	2019 Q1	2019 Q2	2019 Q3	2019 Total	2020 Q1	2020 Q2	2020 Q3	2020 Total
Units	A: Mercury Lamp	1,273,123	1,274,762	1,342,898	3,890,783	914,491	627,894	920,042	2,462,427
	E: RGB LED	426,097	468,069	367,072	1,261,238	446,304	472,705	472,104	1,391,113
	J: Blue Laser-Phosphor	150,915	160,199	192,594	503,708	113,226	130,910	165,209	409,345
	I: LED/Laser-Phosphor	35,551	27,002	32,404	94,957	23,755	10,387	14,954	49,096
	F: HLD LED	1,019	2,072	4,132	7,223	882	1,668	2,813	5,363
	M: RGB Laser (6P)	78	72	123	273	39	25	25	89
	L: RGB Laser	182	426	615	1,223	8,519	14,537	14,544	37,600
	K: Red & Blue Laser-Phosphor	1,663	2,753	17,900	22,316	2,949	2,556	2,844	8,349
	B: Xenon Lamp	1,272	1,081	1,210	3,563	676	275	386	1,337
Sum of Brand Share	A: Mercury Lamp	67.36%	65.83%	68.55%	67.25%	60.53%	49.80%	57.76%	56.42%
	E: RGB LED	22.55%	24.17%	18.74%	21.80%	29.54%	37.49%	29.64%	31.87%
	J: Blue Laser-Phosphor	7.99%	8.27%	9.83%	8.71%	7.49%	10.38%	10.37%	9.38%
	I: LED/Laser-Phosphor	1.88%	1.39%	1.65%	1.64%	1.57%	0.82%	0.94%	1.12%
	F: HLD LED	0.05%	0.11%	0.21%	0.12%	0.06%	0.13%	0.18%	0.12%
	M: RGB Laser (6P)	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%
	L: RGB Laser	0.01%	0.02%	0.03%	0.02%	0.56%	1.15%	0.91%	0.86%
	K: Red & Blue Laser-Phosphor	0.09%	0.14%	0.91%	0.39%	0.20%	0.20%	0.18%	0.19%
	B: Xenon Lamp	0.07%	0.06%	0.06%	0.06%	0.04%	0.02%	0.02%	0.03%

*Data from Futuresource Q3'20 report by volume

How is laser phosphor penetrating the market?

- High Brightness/ Installation

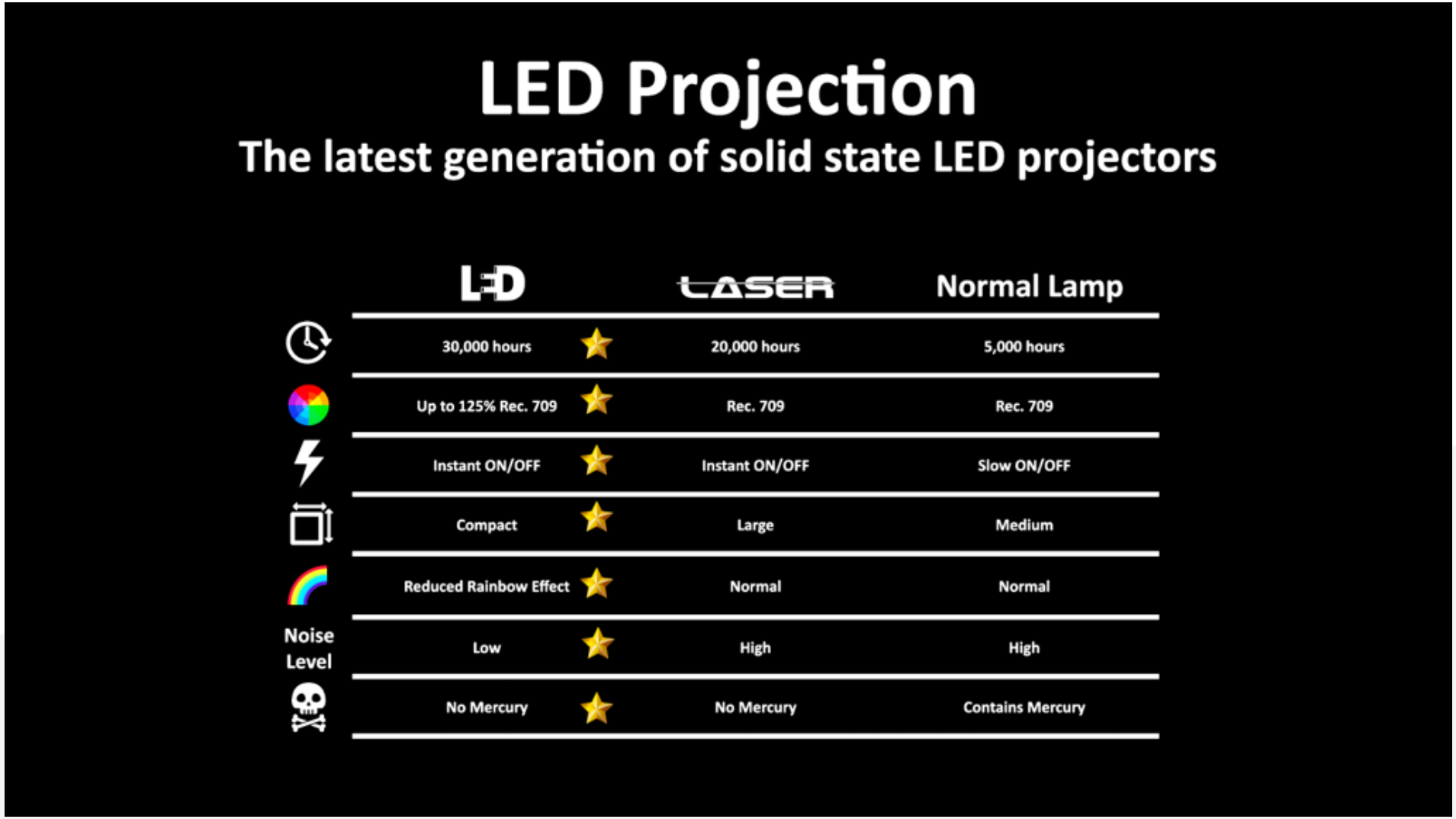
Values	Light Source	2019 Q1	2019 Q2	2019 Q3	2019 Total	2020 Q1	2020 Q2	2020 Q3	2020 Total	Grand Total
Units	A: Mercury Lamp	169,476	169,040	175,769	514,285	134,471	109,453	163,471	407,395	921,680
	J: Blue Laser-Phosphor	70,509	83,410	97,565	251,484	62,892	68,217	89,205	220,314	471,798
	I: LED/Laser-Phosphor	8	701	1,280	1,989	1,470	1,774	1,273	4,517	6,506
	E: RGB LED			360	360	240	600	795	1,635	1,995
	F: HLD LED	531	1,409	2,928	4,868	427	876	1,509	2,812	7,680
	K: Red & Blue Laser-Phosphor	592	1,145	1,177	2,914	735	761	748	2,244	5,158
	B: Xenon Lamp	33	34	14	81	33	26	66	125	206
Sum of Brand Share	A: Mercury Lamp	70.28%	66.10%	62.98%	66.28%	67.15%	60.24%	63.59%	63.75%	65.14%
	J: Blue Laser-Phosphor	29.24%	32.62%	34.96%	32.41%	31.40%	37.54%	34.70%	34.48%	33.34%
	I: LED/Laser-Phosphor	0.00%	0.27%	0.46%	0.26%	0.73%	0.98%	0.50%	0.71%	0.46%
	E: RGB LED	0.00%	0.00%	0.13%	0.05%	0.12%	0.33%	0.31%	0.26%	0.14%
	F: HLD LED	0.22%	0.55%	1.05%	0.63%	0.21%	0.48%	0.59%	0.44%	0.54%
	K: Red & Blue Laser-Phosphor	0.25%	0.45%	0.42%	0.38%	0.37%	0.42%	0.29%	0.35%	0.36%
	B: Xenon Lamp	0.01%	0.01%	0.01%	0.01%	0.02%	0.01%	0.03%	0.02%	0.01%

	Q1-Q3 2020	Q1-Q3 2019	YoY
A: Mercury Lamp	407,395	514,285	-21%
J: Blue Laser-Phosphor	220,314	251,484	-12%
I: LED/Laser-Phosphor	4,517	1,989	127%
E: RGB LED	1,635	360	354%
F: HLD LED	2,812	4,868	-42%
K: Red & Blue Laser-Phosphor	2,244	2,914	-23%
B: Xenon Lamp	125	81	54%

Casio

*Data from Futuresource Q3'20 report by volume

How is laser phosphor penetrating the market?



ViewSonic

How is laser phosphor penetrating the market?

- Winner– RGB **Laser**

	Q1-Q3 2020	Q1-Q3 2019	YoY
J: Blue Laser-Phosphor	409,345	503,708	-19%
M: RGB Laser (6P)	89	273	-67%
L: RGB Laser	37,600	1,223	2974%
K: Red & Blue Laser-Phosphor	8,349	22,316	-63%

*Data from Futuresource Q3'20 report by volume

How is laser phosphor penetrating the market?

- Blue laser

	Q1-Q3		
	2020	2019	YoY
Epson	107,889	105,498	2%
Optoma	34,437	19,309	78%
Changhong	36,033	20,107	79%
Hisense	16,238	33,850	-52%
HiteVision	13,332	34,464	-61%
NEC	19,455	25,740	-24%
Panasonic	44,500	53,983	-18%
Sony	10,968	27,053	-59%
Maxell	21,172	25,692	-18%
Ricoh	19,054	10,731	78%
BenQ	7,443	10,281	-28%

*Data from Futuresource Q3'20 report by volume

Laser VS. LED

- **Loads of Expensive Laser**

Epson EH-LS500W
€2649

Optoma CinemaX P2
€3099

BenQ V6000
€3999

- **See and Hear the Different**

ViewSonic X1000-4K
€1999

Thank you.

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