



Failing the Fix

GRADING LAPTOP AND CELL PHONE COMPANIES
ON THE FIXABILITY OF THEIR PRODUCTS

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The author bears any responsibility for factual errors.

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Executive summary

We rely on our cell phones and computers to work, learn, stay connected and much more. When your device breaks, you need to be able to fix it. Unfortunately, many phones and laptops on the market are made to be so difficult to fix they become essentially disposable.

How are consumers supposed to know which products are designed to last and how easily they can be repaired? This report calculates a repairability score for the most popular cell phone and laptop brands, and grades which manufacturers are designing devices to last and which are “Failing the Fix.”

Since January of 2021, France has required companies to provide detailed information about how fixable certain products are, and to post an overall repair score at the point of sale.¹ Our second edition of “Failing the Fix” reviews the detailed repair information now available from this requirement for 330 devices and tracks changes in grades since our last report. Overall, scores have increased, indicating that repair scores incentivize manufacturers to design more repairable products, which is a win for the planet and consumers. This report highlights the improvements from last year, and advises manufacturers on steps to further raise their scores. Our research shows price isn’t a reliable indicator of durability. According to French repair scores, despite being more expensive, Apple MacBooks are twice as difficult to open up and repair as Dell laptops.² We also found that Chromebooks, while more affordable than other devices, are less repairable than other laptops.

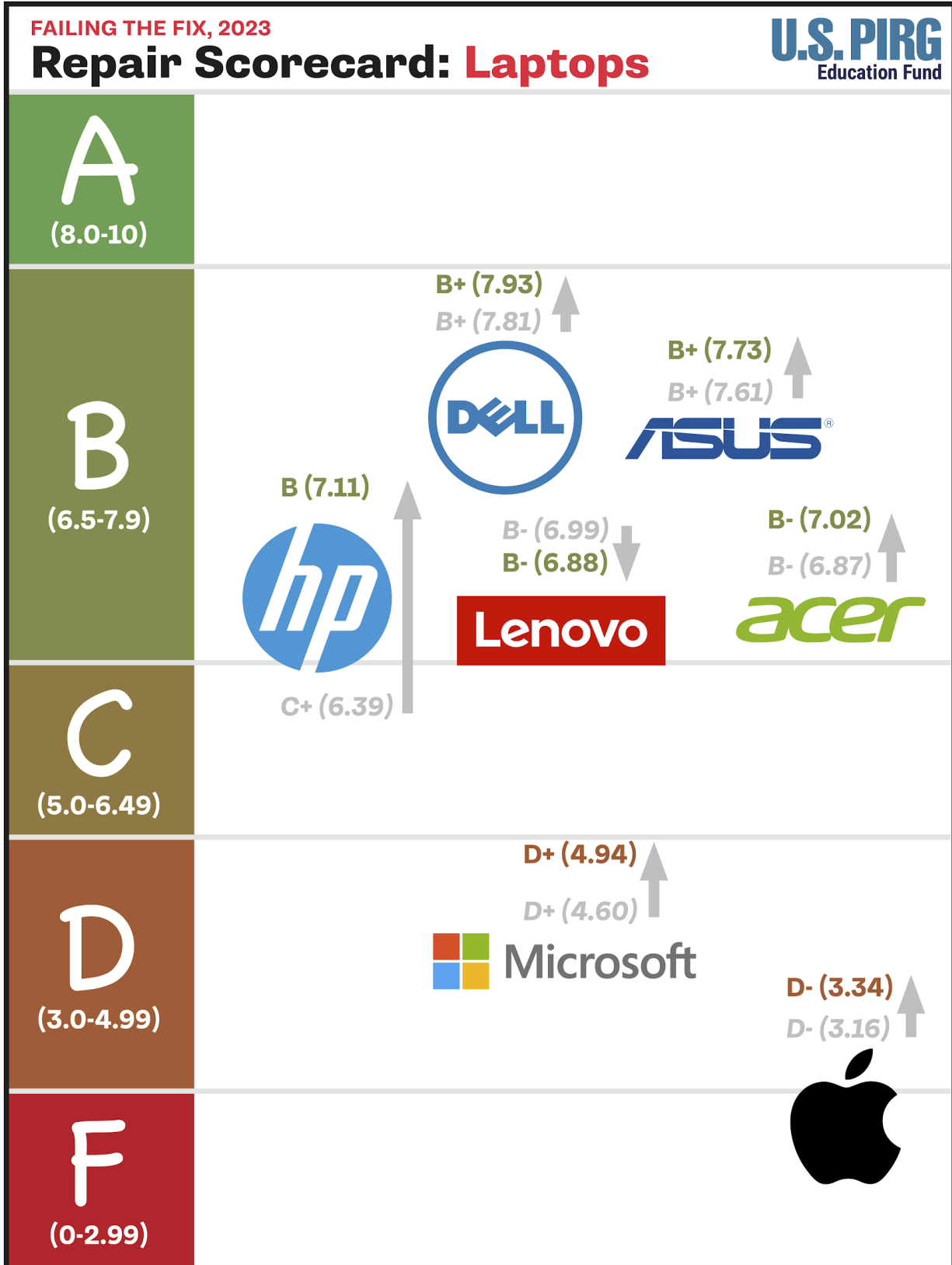
Unrepairable devices are a disaster for the environment and fuel a growing electronic waste crisis. Globally, we trash 59 million tons of used electronics (the weight of 161 Empire State Buildings) each year.³ Electronic waste is the fastest growing waste stream in the world,⁴ and the U.S. EPA reports that it is now the fastest growing part of our domestic municipal waste stream.⁵

Fixable devices are also a boon for Americans whose budgets are squeezed by rising prices. An average family spends nearly \$1,500 on new electronics per year. A previous PIRG report found that consumers could save a combined \$40 billion if they were able to repair instead of replace products and extend the lifespans of their electronics by 50 percent.⁶

The detailed repairability information provided by manufacturers in France are composed of five categories which help consumers understand what challenges they could face during repair. Our report more heavily weights the disassembly score because we think this better reflects what consumers think a repairability score indicates, and because the other categories can be country specific. Consumers’ ability to fix their devices is limited by efforts to stop the Right to Repair, so our final grades remove points from companies who directly lobby or are members of trade groups which lobby against repair legislation. (See more in the methodology section.)

Consumers who seek to purchase easily repairable products – especially from companies who do not fight to prevent Right to Repair – can use these grades as a starting point for comparison shopping. Additionally, repair scores encourage companies to design products that are repairable and stop their lobbying efforts against Right to Repair legislation. Both are important steps to protect consumers and our planet.

Findings



Italicized scores from last year's report, Feb. 2022.

Repair Scorecard: Cell Phones

A
(8.0-10)

B
(6.5-7.9)

C
(5.0-6.49)

D
(3.0-4.99)

F
(0-2.99)



motorola

B+ (7.8)

B+ (7.2)



SAMSUNG

C (5.7)

C (5.6)



Google

D+ (4.7)

D+ (4.6)



D (4.2)

F (2.7)



France's repairability index

The European Union's Ecodesign Directive, established in 2009, sets goals to improve the environmental performance of consumer products around energy usage and sustainability by "bringing all products produced or sold in the EU in line with technical standards for sustainability."⁷ The European Parliament, as part of that directive, voted in November 2020 to approve new repairability measures, in order to address the rise in throwaway electronics. Part of that measure requires the European Union to create repairability and durability labels for consumer products, which the European Commission is tasked with developing, with the goal of addressing the shortening lifespans of electronics.⁸

France debuted the first repairability scores in January 2021, ahead of an EU-wide law requiring other countries to follow suit.⁹ These labels are meant to incentivize manufacturers to abandon unsustainable design practices such as designing products that are impossible to repair, requiring proprietary tools, refusing to provide access to tools or service instructions, and other anti-repair tactics.

On behalf of Samsung, OpinionWay investigated how the French repairability index has influenced French consumer attitudes and behavior since its introduction on January 1, 2021. Among the key findings: 71% have heard about the index, and 86% say that the index impacts their purchasing behavior – including 8 out of 10 who indicated they would give up their favorite brand for a more repairable product.¹⁰

The repairability index scores devices on five criteria, with a max score of 20 for each criterion. Those criteria are: availability of repair documentation (manuals and service guides), ease of disassembly (how easy or hard it is to open the device), availability of spare parts, affordability of spare parts (calculated as a percentage of the cost of the whole product), and a device-specific category. The scores for the five categories are then summed and divided by 10 to create a total score ranging from 0 to 10.

Our grade more heavily weighs the disassembly score (more on our process and rationale in the Methodology portion of this report). This edition reviews devices that were available for sale in the U.S. directly from manufacturers in January 2023.

Laptop drill down

Companies	Number of devices	Average French Score	Average Disassembly Scores (Out of 10)	Did we find direct lobbying?	TechNet membership	CTA membership	Lobbying deduction	Overall grade	Letter grade
Acer	32	6.4	7.7	no	no	no	0.00	7.02	B-
Apple	9	6.2	3.5	yes	yes	yes	-1.50	3.34	D-
Asus	55	6.8	9.2	no	no	yes	-0.25	7.73	B+
DELL	42	7.3	9.6	no	yes	yes	-0.50	7.93	B+
HP	56	6.7	8.5	no	yes	yes	-0.50	7.11	B
Lenovo	40	7.5	6.8	no	no	yes	-0.25	6.88	B-
Microsoft	6	4.6	7.2	yes	no	no	-1.00	4.94	D+
Average across devices		6.8	8.2						
Average across companies							-0.57	6.42	C+

Just as last year, Dell ranked highest for the ease to disassembly, despite Lenovo recording the best overall scores in the French index. Microsoft devices are much more physically repairable than their French scores might lead you to believe – however, because access to documentation and parts is limited, those devices lose points to result in a 4.6 average French score.

Apple lost the greatest number of points for their active lobbying against Right to Repair and support for other trade groups who are most visible in opposition. Microsoft also lost points for lobbying against California’s Right to Repair law (21-22 SB 983) but isn’t part of anti-repair trade groups.

Companies	Avg. Documentation score	Avg. disassembly score	Avg. parts availability score	Avg. parts pricing score	Avg. laptop specific score	
Acer		16.9	15.3	10.5	1.2	19.6
Apple		14.0	6.9	11.7	9.7	20.0
Asus		13.2	18.3	2.2	15.9	18.2
DELL		17.0	19.2	12.1	4.5	20.0
HP		17.0	17.0	7.8	5.6	20.0
Lenovo		18.5	13.5	14.1	10.3	18.8
Microsoft		13.1	14.5	3.4	0.0	15.5
Average across devices		16.2	16.4	8.7	8.0	19.2



Q

Drilling down further into the five different categories represented in the French score provides additional insight into where manufacturers excel or lag in terms of supporting repair.



Framework laptop shown with its repair score 9.7 of 10. (Image: CC-BY-SA Credit: Framework Computer Inc.)

Scores marked in bold represent the highest score in the category (with a three-way tie for the laptop-specific category), and italic scores indicate the lowest. Just as last year, Lenovo received the highest scores for availability of documentation (service manuals), as well as parts availability. Asus had the best parts pricing score, indicating affordable replacement parts.

Apple continues to lag behind in disassembly with the lowest score. This category is more heavily weighted in our final grade because we think it best reflects what consumers expect a repairability score indicates. The challenges in opening and fixing an Apple Macbook help illustrate that a higher retail price does not mean the product will be easily repaired. Consumers could be spending four times as much as a Dell laptop on an \$1000 Apple Macbook, that is significantly less repairable.¹¹

Company	Device	French Repair Score (out of 10)	Disassembly score (out of 20)
Acer	Chromebook 14b-nb0041nf	5.5	15.5
Acer	Chromebook 15a-na0003nf	5.2	11.5
Acer	Chromebook 317 (CB317-1H)	5.4	12
Asus	Chromebook CM3200FVA-HW0054	6.1	14.8
Asus	Chromebook CM5500FDA-E60009	6.2	19.5
Asus	Chromebook CX1500CKA-EJ0075	6.1	19.5
Asus	Chromebook CX1500CNA-EJ0059 Gris	6.1	19.5
Asus	Chromebook CX1700CKA-AU0043	6.6	19.5
Asus	Chromebook Pack C433TA	5.3	13.1
Asus	Chromebook Spin 513 (CP513-1H)	5.4	12
HP	Chromebook tactile CM1400FXA-EC0013	6.1	19.5
	Chromebook average	5.8	16.0
	Average of all non-Chromebook laptops	6.9	

Three of the brands assessed produce Chromebooks. On average, the Chromebooks have lower French repairability scores of 5.8 than the average laptop which isn't a Chromebook at 6.9. While Chromebooks are sold to consumers, especially schools and parents, as an affordable option, the lack of repairability could lead to higher costs than expected when issues crop up.

The laptop manufacturer Framework, which launched in 2021, promised to build a much more fixable product. Their debut laptop outscored all of the laptops we reviewed for the best-selling brands, with a 9.7 French score out of 10 overall, and 20 out of 20 on disassembly.¹² Those scores would be consistent with an A+ grade in this scorecard (though we did not fully score Framework).

Companies	Last year's French score	This year's French score	French scores change	Last year's disassembly score	This year's disassembly score	Disassembly score change	Last year's grade	This year's grade	Grade change	Last year's letter grade	This year's letter grade
Acer	6.32	6.36	1%	14.80	15.34	4%	6.87	7.02	2%	B-	B-
Apple	6.08	6.22	2%	6.50	6.92	6%	3.16	3.34	6%	D-	D-
Asus	6.43	6.79	6%	18.60	18.33	-1%	7.61	7.73	2%	B+	B+
DELL	7.07	7.27	3%	19.10	19.18	0%	7.81	7.93	2%	B+	B+
HP	5.94	6.73	13%	15.70	16.97	8%	6.39	7.11	11%	C+	B
Lenovo	7.93	7.51	-5%	13.10	13.50	3%	6.99	6.88	-2%	B-	B-
Microsoft	3.87	4.65	20%	14.70	14.47	-2%	4.60	4.94	7%	D+	D+
Average across devices	6.50	6.85	5%	15.83	16.43	4%					
Average across companies							6.21	6.42	3%		

Comparing last year's laptop scores to this year's edition we can see modest improvement across devices with a 5% increase in average device French scores. Microsoft has improved their French repair scores the most from last year, while still having the lowest score among manufacturers. Microsoft's improvement results from a 4-fold increase in their parts availability score and 77% increase in their documentation scores from last year.¹³ This indicates that spare parts are available to repair devices. In addition, Microsoft has released products that are easier to repair, such as the Surface Go 2 which scores 18 out of 20 for disassembly. Laptops are slowly improving overall with an increase in the average disassembly score of 4% across all devices compared to last year. Manufacturers are slowly improving, too, with overall grades improving from 6.21 to 6.42 for a 3% increase across company's scores.

Cell phone drill down

Companies	Number of devices	Average French score	Average disassembly scores (Out of 10)	Did we find direct lobbying?	TechNet membership	CTA membership	Lobbying deduction	Overall grade	Letter grade
Apple	9	6.6	4.8	yes	yes	yes	-1.50	4.2	D
Google	5	6.7	5.8	yes	yes	yes	-1.50	4.7	D+
Motorola	39	7.0	7.4	no	no	no	0.00	7.2	B
Samsung	37	7.9	3.9	no	no	yes	-0.25	5.6	C
Average across devices		7.3	5.6						
Average across companies							-0.81	5.4	C-

For cellphones, we again see some disparities between the total French repairability index and the physical ease of opening the device. Just as in the last edition, Samsung had the highest overall French score, but a considerably lower score on ease of opening the device relative to Motorola. This year as well, Apple and Google lost the most points due to their opposition to repair-friendly legislation.

Companies	Avg. documentation score	Avg. disassembly score	Avg. parts availability score	Avg. parts pricing score	Avg. cellphone specific score
Apple	13.7	9.5	11.9	10.6	20.0
Google	7.0	11.6	10.3	19.8	18.0
Motorola	13.8	14.7	5.5	18.2	18.0
Samsung	16.6	7.7	16.0	19.0	19.8

Average across devices	14.6	11.1	10.7	17.8	19.0

A closer look at the five categories for the French score shows that Samsung provides the best access to documentation and parts for French customers, which helps it overcome low scores on the physical ease of repair and price of parts.

The Fairphone 4 5G has a total score of 9.3, and a disassembly score of 19 out of 20 – higher than any phone we reviewed, and scores consistent with a total grade of A+ (though we did not score Fairphone).¹⁴ It is therefore reasonable to believe that all manufacturers could produce phones with similar features that are much easier to fix.

Companies	Last year's French score	This year's French score	French scores change	Last year's disassembly score	This year's disassembly score	Disassembly score change	Last year's grade	This year's grade	Grade change	Last year's letter grade	This year's letter grade
Apple	5.64	6.57	17%	5.70	9.51	67%	2.7	4.2	51%	F	D
Google	6.33	6.67	5%	11.90	11.56	-3%	4.6	4.7	2%	D+	D+
Motorola	7.15	7.01	-2%	16.80	14.73	-12%	7.8	7.2	-7%	B+	B
Samsung	8.10	7.91	-2%	7.60	7.71	1%	5.7	5.6	-1%	C	C
Average across devices	6.81	7.32	8%	9.90	11.15	13%					
Average across companies							5.21	5.43	4%		

When we compare last year's cellphone scores to this edition, we notice some bright spots. Apple's overall grade improved the most, with a 51% increase, due to the 67% improvement in their average disassembly score. However, Apple still has a long road ahead with the lowest overall grade due to a high lobbying deduction and a low parts pricing score of 10.6, which is 69% below the average (not shown in table.)

Phones are slightly improving with an average disassembly score increase of 13% across all devices. Manufacturers are improving as well with an overall grade increase of 4%.

Conclusion

Some devices are not easily repairable, and it can be difficult to know which ones are hard to fix: Consumers need better information about repairability at the point of sale. Expensive laptops aren't necessarily more repairable, and cheaper Chromebooks might have higher maintenance costs. Overall, the improved results from last year show that repair scores incentivize manufacturers to design products that last, which is a win for the planet and consumers who want repairable devices.

Having a repairable product requires that the product be designed to facilitate repairs, have an ecosystem of support where owners can access parts and documentation, and consumers with access to a range of repair businesses to provide service. The French score gives valuable information about the design of the product and an indication of the support the manufacturer provides to the repair ecosystem. Our score further reflects how the manufacturers treat repair competition legislation and the physical ease of repairing.

The long-term value of a product is generally tied to its ability to keep working over time. Consumers should be able to know if the product they are purchasing is repairable, as it impacts the value of their purchase. Our report shows that some expensive models have low repair scores, while other more affordable models are very repairable – so price alone does not convey how repairable a product is, and therefore how long it will hold value. There is a significant benefit for consumers to have access to this information as they make their purchases, especially because consumers are concerned about durability while comparison shopping. In a study by Avery Dennison, almost 30% of consumers ranked durability as a top three concern and 48% as a top five concern.¹⁵ Repairability transparency also increases incentives for manufacturers to make more repairable products, resulting in significant environmental benefits. Manufacturers are already scoring these products; American consumers should have the benefit of knowing the repair score at the point of purchase.

Manufacturers are moving in the right direction—slowly.

Laptops improved slightly with an increase in the average disassembly score of 4% across all devices. Manufacturers improved as well with overall grades improving by 3%. Apple, while still the lowest scoring manufacturer in the laptop and cell phone categories, increased their disassembly score by 6% for laptops and 67% for cell phones. Cell phone manufacturers made a larger improvement than laptops with a 4% increase in overall grades from last year. Most companies are still losing points in this report's grading rubric for lobbying against consumer's Right to Repair, or participating in trade associations which do this lobbying..

Manufacturers need to improve access to parts and service information.

There are a variety of ways manufacturers gain and lose points on their product scores. Some products are physically repairable, according to their disassembly scores, but the pricing or availability of spare parts greatly lowers the final score. For example, just as last year, Motorola phones were the most physically repairable of the four rated manufacturers (average score of 14.7 out of 20), but had the lowest parts availability score which helped Samsung have the highest French score while having the lowest disassembly score this year (while Apple had the lowest last year). Similarly, Apple has increased the physical repairability of their phones by 67% increase over last year, but their overall score is held back due to having the lowest parts pricing score. Microsoft has increased their laptop parts availability score from 0.6 to 3.4, a four-fold over last year.¹⁶

Manufacturers should increase access to parts and service instructions to improve their scores and take advantage of fixable designs by creating robust repair markets around their products.

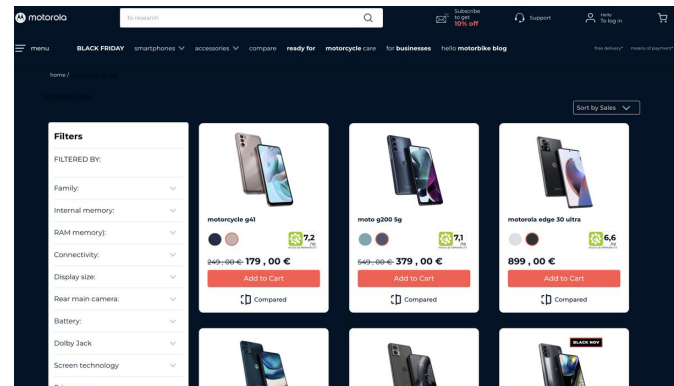
Right to Repair reforms would help consumers fix their stuff.

Requiring companies to provide access to parts and service instructions, as well as any necessary software tools, would improve repair scores across the board, and result in more products getting fixed, avoiding electronic waste. By passing Right to Repair reforms at the state and national levels, we can ensure consumers can fix their products.

Methodology

This report compared scores from the same manufacturers in the last edition in order to capture trends over time. For the inaugural edition, in order to select which brands to compare, we reviewed popular laptop manufacturers in the American market, of which the top eight were HP, Dell, Apple, Acer, Lenovo, Asus, Microsoft and Samsung.¹⁷ Because Samsung discontinued sales of laptops in Europe, we could not review the French repair score for these products, so we scored the remaining seven brands.¹⁸ For cell phones, we also reviewed popular brands.^{19 20} Our final list was Apple, Samsung, Motorola and Google.

We attempted to gather as many full repair score breakdown sheets as possible. First, we checked the manufacturers' French web marketplace for their products, accessing and recording as many products as they included scores for. Next, we checked the popular French electronics retailer [boulangercorner.com](https://www.boulangercorner.com) for any other models which might be for sale there, but not from the manufacturer's site. This edition reviews devices that were available for sale in the U.S. directly from manufacturers in January 2023. We included manufacturer-refurbished devices but not any devices that were only available from third-party or aftermarket retailers.



Motorola's French website displays repairability scores next to each device.

Some brands provided a full accounting of all their repair scores in one central place, while others posted them alongside each product individually. We found the Motorola scores the easiest to access because they were displayed at point of sale on their website.²¹ Although we were able to find the scores from all of the targeted manufacturers, Microsoft and Apple link to their scores on a support page rather than on the store listing for each device.^{22 23}

There were a number of products which did not include scores, such as Lenovo's ThinkPad P14s Gen 3, which includes the disclaimer: "Cet indice de réparabilité n'est pas encore disponible, il sera publié dans les meilleurs délais," or "the repairability index is not yet available and will be provided as soon as possible."²⁴ Some links were broken or linked to documentation that didn't include the device's full repair scores. In total 16 laptops weren't able to be scored. Seven cellphones weren't able to be scored due to missing documentation for this edition. In cases where model numbers were the same for devices with various device names marketed, we scored only one version of the device. In the several cases where model numbers were identical but scores in the linked PDFs were different, we counted each score as a separate device.

The repairability index scores devices on five criteria, with a max score of 20 for each criterion, for a total of 100 points, and then divides the total by 10. Each score is based on a worksheet which shows the breakdown of all five criteria. We collected the full score worksheet for each scored product to better identify and evaluate products according to the different criteria measured by the French repair index. We did not include products for which we could not locate this detailed scoring information. There were a small number of products where there appeared to be a discrepancy in the overall score and the full score breakdown. We elected to use the score suggested by the full repair worksheet in those cases.

We also collected information about the lobbying record of each company. We reviewed lobbying records from the 2021-2022 legislative session in California to assess which companies had lobbied on SB 983 which was introduced on February 14, 2022, after the release of this report's last edition.²⁵ We also reviewed lobbying by manufacturers on Right to Repair bills in two other states: Massachusetts bill 2021-22 HB 341 and Colorado 2022 HB 1031.²⁶ We used the Open Secrets database to assess federal lobbying on the following Right to Repair bills: Senate Bill 3549, House Bill 6566, House Bill 4006, Senate Bill 3830.²⁷ In addition, we reviewed membership for trade associations which are highly visible Right to Repair opposition lobbying groups TechNet and the Consumer Technology Association (CTA).²⁸

In this report, we calculate averages in several ways. For French repair scores and repair score categories we average across all devices included in this report to reveal overall device trends. For our grades, we calculate an average for each manufacturer, because our grades are intrinsically about manufacturer performance and deduct points for lobbying activity. For industry trends using our grades, we average the manufacturers' grades to reveal trends from year-to-year.

Just as last year, in calculating the final grade, we decided to give significant weight to the physical ease of disassembly of the product. Because a large portion of the French score gauges access to repair manuals and spare parts, and that access can change over time or from country to country, we wanted the score to reflect the design of the product more prominently. We believe this is what consumers generally expect when learning about a "repair score." Each company grade averages the total French score and the disassembly score with equal weight, and then deducted 1 point for lobbying directly against Right to Repair, and 0.25 points for each case of membership in TechNet or CTA. While Lenovo owns Motorola, just as last year we decided against deducting Lenovo's trade association memberships from Motorola, since the brand has its own lobbying efforts and appears to act independently.²⁹

Our scores, out of ten, were translated to letter grades using the following breakdown from the previous edition of this report:

9 or above	A+
8.5-8.99	A
8.0-8.49	A-

7.5-7.99	B+
7.0-7.49	B
6.5-6.99	B-
6-6.49	C+
5.5-5.99	C
5-5.49	C-
4.5-4.99	D+
4-4.49	D
3.0-3.99	D-
2.99 or below	F

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