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EXECUTIVE SUMMARY

Spending spike due to vaccines

- Materials, goods and supplies have risen to account for lion's share of spending (over 70% in 2021)
- Despite the high amount of suppliers, the supply chain is dominated by top suppliers.



Top 3 suppliers contribute an average of **64 %*** of the category expenditure.



Number of suppliers

2020: 2036
2021: 2064



Total spend

2020: 120,2 m€
2021: 278,3 m€

COVID-19 Effect

- Vaccine purchases from Pfizer and Moderna increased the costs of materials significantly in 2021.
- The number of new COVID-19 cases correlates to THL's spending early in the pandemic, but the rapid increase in cases during the end of 2021 didn't increase the spending as clearly.

Future Focus

- Mapping opportunities in supplier consolidation to reduce the amount of suppliers and the fixed costs.
- Develop supplier relationships in the *HR services* category.
- New strategy developing *ICT and experts services* to forecast demands during a pandemic situation.

THL – SPEND ANALYSIS 2020 & 2021



Data description and goal

- This presentation includes a spend analysis of THL's expenditures to external suppliers.
 - The goal is to find out where THL is spending, how it has developed and what is the dynamic of THL's supply structure.
 - In addition, the analysis investigates how the COVID-19 pandemic has affected THL's spending.
- The analysed data includes the public spending history and coronavirus cases of the Finnish Institute for Health and Welfare over the years 2020 and 2021.

Data was collected and is available from avoindata.fi and thl.fi.



Methods for analysis

- Negative invoices were kept in the analysis, we assume, that they represent corrective invoices/returns.
- 20401 invoices with missing date information are excluded in the analysis of the influence of Covid-19.
- Some suppliers are “Confidential”. These were considered as one supplier, since they do have significant contributions depending on the procurement categories.
- There are big differences in spend volumes between procurement categories
 - ▶ Suppliers are analysed on a category level rather than organizational level to gain visibility to suppliers within the lower expenditure categories as well.

SUPPLIERS WITHIN PROCUREMENT CATEGORIES

Contribution of top 3 suppliers to the category total expenditure

Top 3 suppliers by volume within category, 2020	Spend out of Category total	Top 3 suppliers by volume within category, 2021	Spend out of Category total
Materials, goods and suppliers	59 %	Materials, goods and suppliers	85 %
Sanofi Oy	24 %	Pfizer Oy	61 %
GlaxoSmithKline Oy	23 %	Moderna Biotech Spain S.L.	18 %
MSD Finland Oy	12 %	Sanofi Oy	6 %
Expert and office services	23 %	Expert and office services	46 %
NIUVANNIEMEN SAIRAALA	9 %	KANSANELÄKELAITOS	17 %
Salassa pidettävä	8 %	Salassa pidettävä	15 %
Helsingin ja Uudenmaan Sairaanhoidopiirin kuntayhtymä	6 %	HELSINGIN YLIOPISTO	14 %
Administrative services	79 %	Administrative services	60 %
Salassa pidettävä	63 %	Salassa pidettävä	29 %
SEQUIRUS UK LIMITED	10 %	SEQUIRUS UK LIMITED	18 %
Valtion talous- ja henkilöstöhallinnon palvelukeskus	6 %	Valtion talous- ja henkilöstöhallinnon palvelukeskus	13 %
HR services	98 %	HR services	96 %
Suomen Terveystalo Oy	86 %	Suomen Terveystalo Oy	85 %
Mehiläinen Oy	9 %	Mehiläinen Oy	8 %
Leijona Catering Oy	3 %	Salassa pidettävä	3 %
ICT-procurement	76 %	ICT-procurement	70 %
Valtion tieto- ja viestintätekniikka keskus Valtori	66 %	Valtion tieto- ja viestintätekniikka keskus Valtori	61 %
CSC-Tieteen tietotekniikan keskus Oy	6 %	CSC-Tieteen tietotekniikan keskus Oy	5 %
HELSINGIN YLIOPISTO	4 %	Valamis Group Oy	4 %
Machinery, equipment and vehicles	28 %	Machinery, equipment and vehicles	23 %
Qiagen Finland, filiaal av Qiagen AB	15 %	Brüker Nordic AB	8 %
PerkinElmer Finland Oy	7 %	Agilent Technologies Finland Oy	8 %
AGCO Suomi Oy	6 %	Oy G. W. Berg & Co Ab	8 %
Educational and cultural services	37 %	Educational and cultural services	44 %
ePassi Payments Oy	16 %	ePassi Payments Oy	28 %
Smartum Oy	11 %	Smartum Oy	11 %
Haus Kehittämiskeskus Oy	10 %	TTK Traumatologiakeskus Oy	5 %
Accommodations and catering services	70 %	Accommodations and catering services	59 %
Leijona Catering Oy	55 %	Leijona Catering Oy	30 %
Nordea Rahoitus Suomi Oy	12 %	Nordea Rahoitus Suomi Oy	15 %
Pirkanmaan Kansanterveys ry	3 %	Scandic Hotels Oy	14 %
Travel and transportations services	49 %	Travel and transportations services	60 %
Nordea Rahoitus Suomi Oy	19 %	VR-Yhtymä Oy	31 %
CWT Finland Oy	16 %	Nordea Rahoitus Suomi Oy	17 %
Salassa pidettävä	14 %	CWT Finland Oy	11 %
Building and area maintenance	92 %	Building and area maintenance	92 %
Senaatti-kiinteistöt	88 %	Senaatti-kiinteistöt	87 %
Energia Myynti Suomi Oy	2 %	Energia Myynti Suomi Oy	3 %
Lindström Oy	2 %	Lindström Oy	1 %
Construction	72 %	Construction	95 %
Rakennus Oy MTM-Vaasa	35 %	ISS Palvelut Oy	83 %
ISS Palvelut Oy	32 %	AM Security Oy	6 %
Are Oy	5 %	Oy Aj-Tuotteet Ab	5 %
Total	64 %	Total	80 %

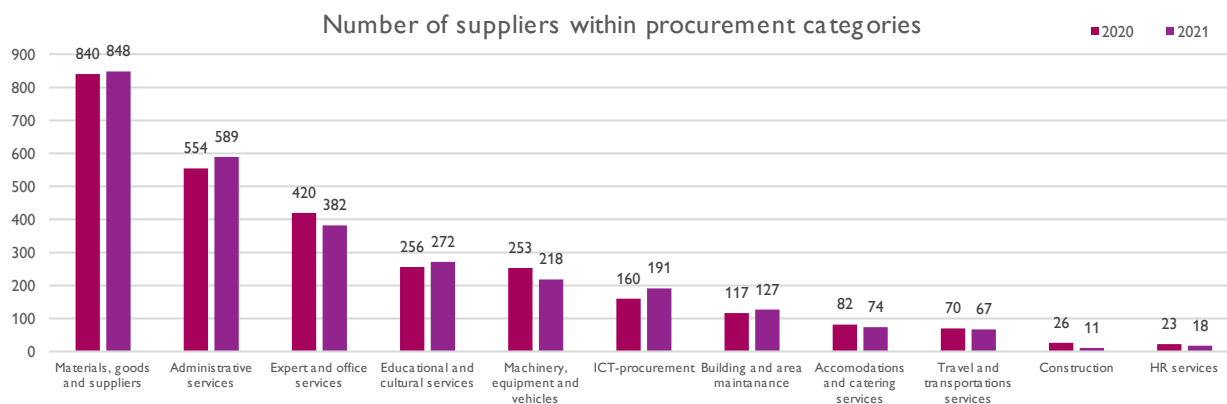
See appendix 1 for clarification

During 2020 and 2021 THL had 2036 and 2064 individual suppliers respectively.

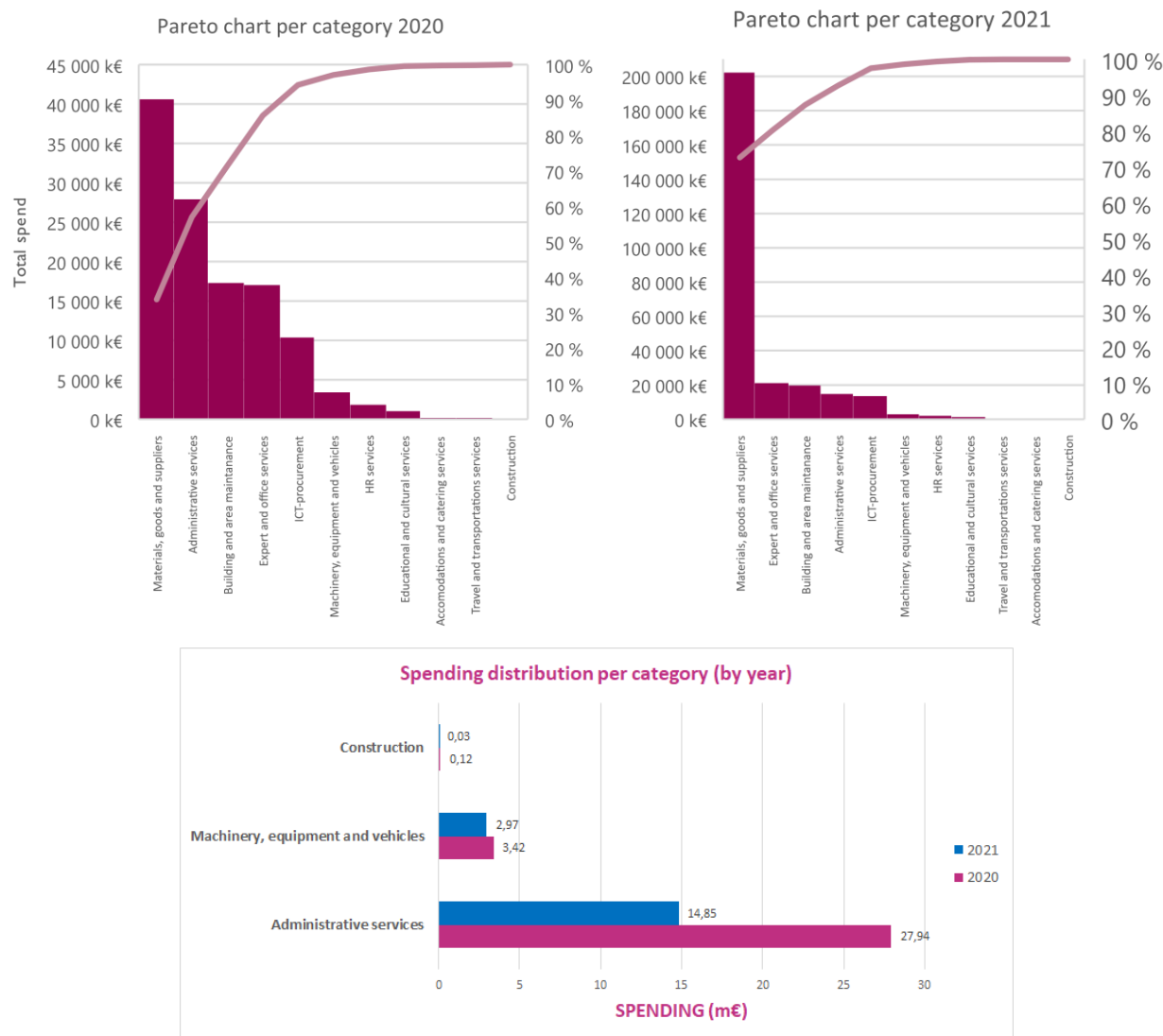
- No significant development in the supplier distribution within categories between 2020 and 2021.
- Materials, goods and suppliers*; *Administrative services*, as well as *Expert and office services* had the highest amount of individual suppliers and their expenditure was also amongst the top.
- HR services* had a high expenditure relative to its low supplier amount.
- Educational and cultural services* had high amounts of suppliers but low relative spending.
 - Over 250 suppliers and under 1,5m€ spending implies a fragmented supply network
 - Similar to *machinery, equipment and vehicles* category, with over 200 suppliers under 3m€ spending.

Top 3 suppliers of each category contribute an average of 64 %* of the category expenditure.

- This indicates, that even though there is a high amount of suppliers, the procurement categories are dominated by few top suppliers.
 - Highest domination within HR services and Building and area maintenance, where top 3 contributed over 90% of the expenditure.
 - During 2021 Pfizer contributed over 60% of the materials, goods and suppliers category expenditure.
 - HR-services is being dominated by *Suomen Terveystalo Oy* contributing over 85 % of the category expenditure, leading into a high dependency on *Terveystalo*.



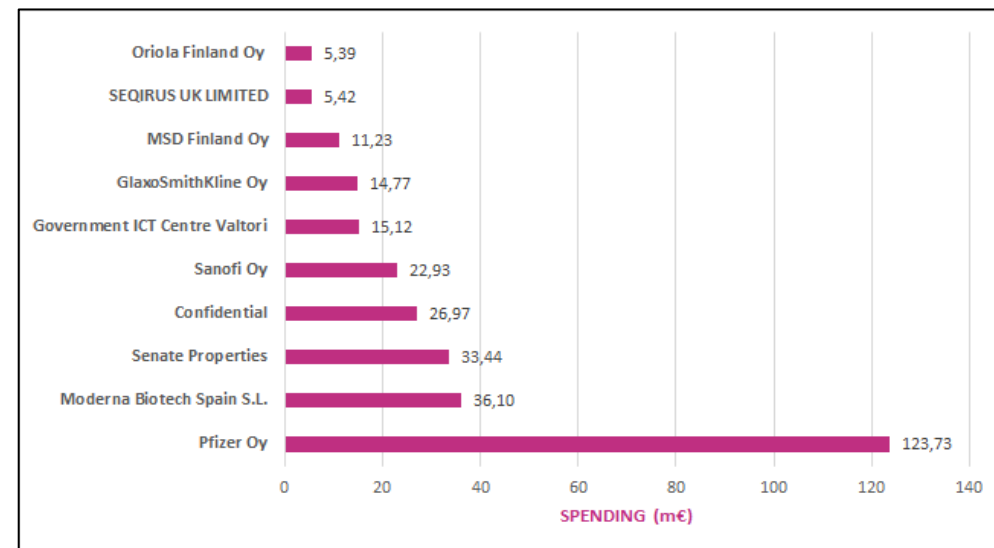
A. SPENDING DISTRIBUTION PER CATEGORY (BY YEAR)



- In 2021, the share of 'Materials, goods, and supplies' in total THL's spending increased drastically, from 33% to 72%, during the given period. This outcome happened possibly because products of 3 vaccine-manufacturers Pfizer, Moderna, and Astra are recorded under this category.
- When the pandemic emerged in 2020, vaccines were imported but utilized mainly on critical cases. After the public vaccination rollout started at the beginning of 2021, THL needed to invest more substantially on vaccines to fulfil increasing social demand.
- In 2020, THL spent considerably on building and administrating hospitalization facilities and machines to deal with the outbreak of the pandemic. After one year, when the COVID-situation gradually put under control, the spending amount on those categories (Administrative services, and Machinery, equipment, and vehicles, and Construction) declined slightly.

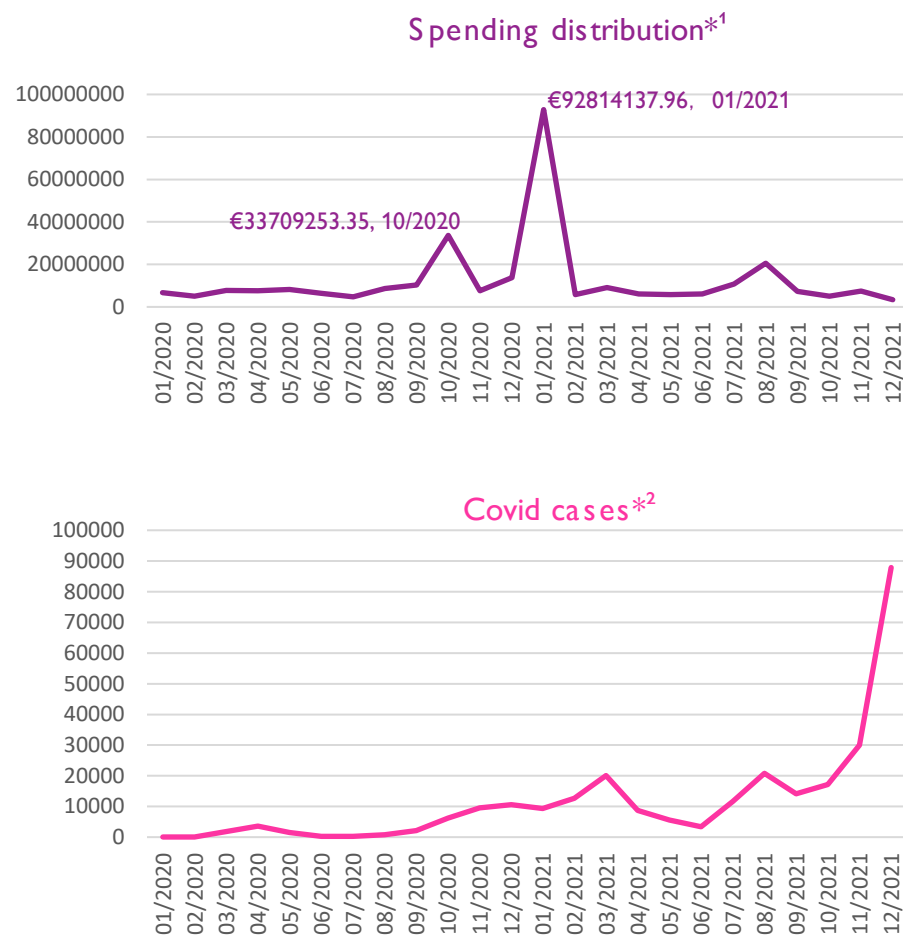
B. SPENDING DISTRIBUTION TOP 10 SUPPLIER (2020-2021)

- Under the influence of COVID-19, demand for vaccines and relevant medicals stuff rocketed. Hence, there were 70% of companies in top 10 operate in the healthcare industry.
- During given period, vaccine-manufacturer Pfizer ranked in the first place. THL's spending figure on this company alone is equal to the sum of 8 bottom-counterparts in the top-10 list.
- In 2020, when the pandemic first emerged, Finland mainly administrated Astra vaccines to risk-group and people over 65. That's why Pfizer and Moderna names did not appear in top 10 Supplier in 2020. Since 2021, when Finnish authority approved the usage of vaccines from Pfizer and Moderna in public vaccination rollout to less-risk group, including younger peoples, THL's spending on these two companies has risen significantly.



Rank	Top 10 Supplier in 2020	Top 10 Supplier in 2021
1	Confidential	Pfizer Oy
2	Senate Properties	Moderna Biotech Spain S.L.
3	Sanofi Oy	Senate Properties
4	GlaxoSmithKline Oy	Sanofi Oy
5	Government ICT Centre Valtori	Government ICT Centre Valtori
6	MSD Finland Oy	Confidential
7	SEQIRUS UK LIMITED	MSD Finland Oy
8	Oriola Finland Oy	GlaxoSmithKline Oy
9	Astra Zeneca Oy	University of Helsinki
10	Meira Nova Oy	Kela

C. SPENDING DISTRIBUTION VS. COVID CASES (2020-2021)



The spending of THL had a substantial growth from 10 million euros in September to 33 M€ in October 2020. The top three suppliers Confidential, Sanofi Oy, and GlaxoSmithKline Oy, at least two of which are in the medical and health care industry. This trend shows the impact of Covid on the procurement of THL.

The spending experienced a steep rise at the beginning of 2021, peaking at 93 M€ in January. Pfizer Oy, Senate Properties, and Moderna Biotech Spain S.L. were the top three suppliers at that time. This growth trend aligns with the fact that the THL procured a large number of vaccines from December 2020 to January 2021.

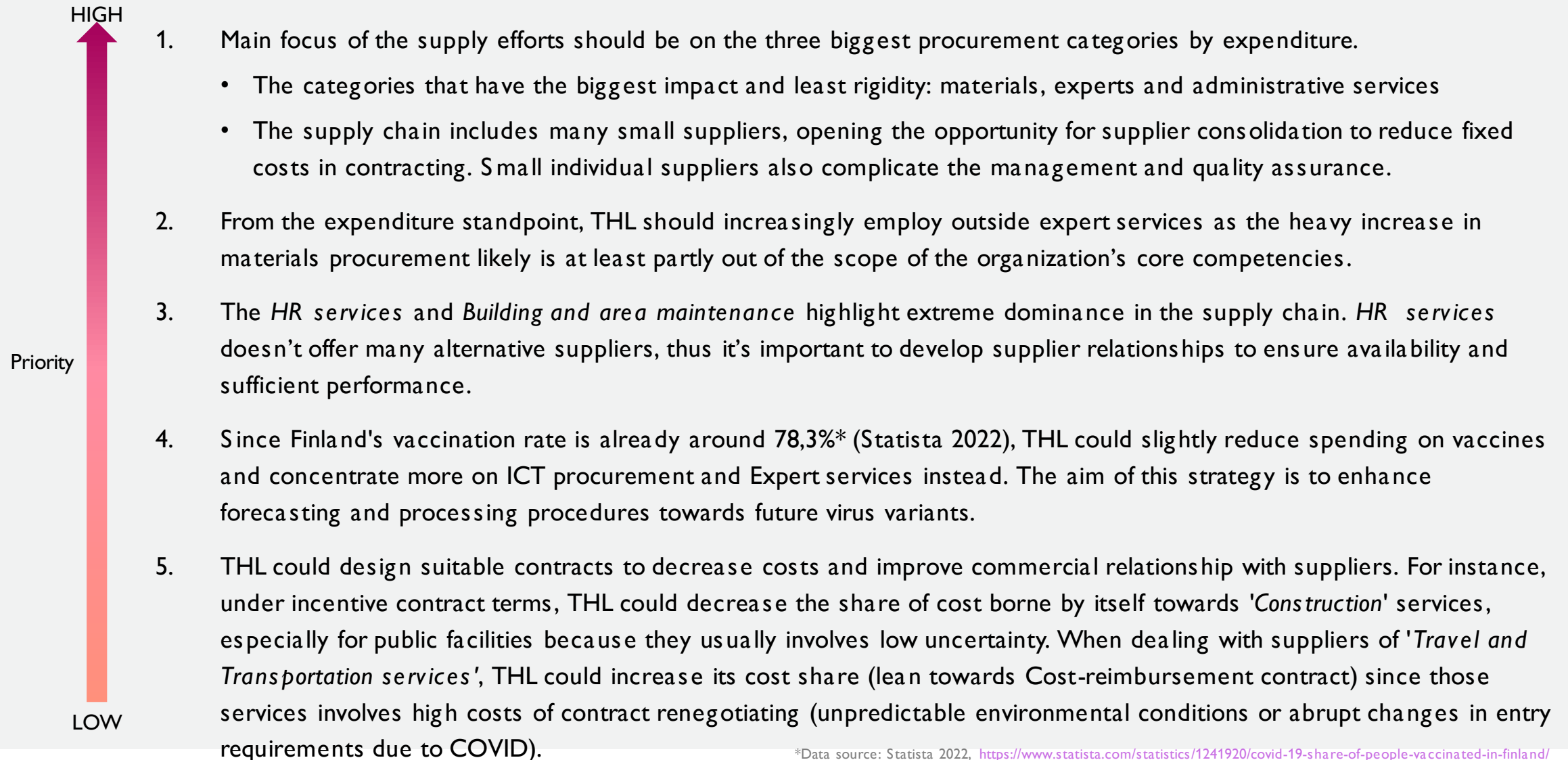
According to the comparison between the two line charts, the augment of spending is consistent with the increasing Covid cases in 2020. However, surprisingly, the dramatic increase in Covid cases which has started from the October 2021 did not cause a corresponding increase in THL's spending. By contrast, the spending declined.

Overall, it's fair to say that the spending of THL has reflected the change of its attitudes, policies, and actions towards the Covid-19 in the past two years.

*¹Note: 20401 invoices with missing date are excluded in the calculation (out of 100641 invoices).

*²Data source: Finnish institute for health and welfare. COVID-19 cases in the infectious diseases registry. Available at : https://sampo.thl.fi/pivot/prod/en/epirapo/covid19case/fact_epirapo_covid19case?row=dateweek20200101-509030&column=measure-444833.445356.492118.&fo=1

FUTURE FOCUS & RECOMMENDATIONS



*Data source: Statista 2022, <https://www.statista.com/statistics/1241920/covid-19-share-of-people-vaccinated-in-finland/>

LIMITATIONS IN OUR ANALYSIS AND RECOMMENDATIONS



- The recommendation of transferring budget from the materials expenditures to ICT and experts in order to develop better forecasting models is heavily reliant on the availability and source of the budget.
 - The budget used to the vaccinations is most likely specific to vaccinations, thus not easily transferrable.
- We have limited information of the procurement structure in some of the procurement categories. Some suppliers were clearly governmental, how much room is there to improve?
- A more in-depth analysis would require domain specific knowledge to evaluate, for example, what are the relevant priorities between different suppliers and procurement categories.
 - Lacking this domain knowledge leaves our analysis quite shallow and prone to error in conclusions.
- There are 20 401 missing values in 'invoice_entry_date' column of 2021 dataset. This issue leads to a decrease in accuracy of analysing spending distribution through time-series type.
- In this analysis, our team assumes that products of Pfizer and Moderna suppliers are mainly vaccines. However, there is limited information on the share (%) of vaccines in 'Material, goods, and supplies' products of both companies, especially based on THL's dataset.
- Supplier amount calculations assume that each company with their own company name / business ID is their own separate entity. This might introduce double counting through subsidiaries etc.
- As many of the aspects of the procurement process in vaccines (which constitute the large increase in spending) are heavily dependent of political processes, quotas and interorganizational collaboration, the operational independence and flexibility of THL is likely significantly restricted.