



A Practical Roadmap for Improving Santiago's Business Permit Revenue Collection Process

Municipality of Santiago and Columbia SIPA

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Introduction

The Columbia SIPA team developed a suite of 'quick wins' and longer-term 'recommendations' that the Municipality of Santiago can act on to improve its revenue collection processes, and ultimately, strengthen its fiscal position.

The team -- six consultants from Columbia SIPA's Capstone program -- was selected in January 2019 to devise solutions that increase revenue collection for the Municipality of Santiago, providing a roadmap to City Hall for steps the city's administrators can take to improve their revenue collection processes, specifically focused on revenues from business permits.

This report and the May 3rd, 2019 presentation summarize the consultant team's work and represent their expert advice informed by 16 teleconference interviews with clients and stakeholders in the Municipality, 10 on-site meetings in Santiago the week of March 18th, and 7 interviews with experts and leading practitioners in addition to an extensive literature review. **(See *Annotated Bibliography*.)**

The Columbia SIPA team thanks especially Martín Vasquez Frias and Victor Soto for their enormous help coordinating meetings across the Municipality over nearly 4 months. Their availability, for project status updates and feedback, was a vital benefit to the Columbia SIPA team; their active participation was a principal reason that the team was able to deliver 16 detailed recommendations and quick wins.

Problem Definition

The Terms of Reference (ToR) for the engagement between the Municipality and Columbia SIPA tasked the consultants with "harnessing data to improve revenue collection processes" and to develop a detailed roadmap of specific improvements that the Municipality could initiate.

During the engagement, the Columbia SIPA students identified the growing arrears in business permit collections as the primary cause of poor revenue inflows. ***Reducing the arrears balance and improving City Hall's visibility into the revenue collection process are likely to be key to improving these income streams.*** To propose a practical set of recommendations required the Columbia SIPA team to provide a clear picture of the business permit revenue collection process. After obtaining a deep understanding of the current state, the Columbia SIPA team was able to tailor their best practice research and expert interviews to design a roadmap of quick wins and longer-term recommendations that are tailored to fit the context of the Municipality of Santiago's operating environment.

Methodology

Conscious of language differences, we sought to break down our quick wins and recommendations into specific segments: **process improvement (PI)**, **technology and data analysis (TDA)** and/or **behavioral interventions (BI)**.

The segments begin with an overview of the current state and proceed to answer the following questions:

- **What?**
- **Why?** The benefits.
- **How?** Detailed steps for action.
- **Who?** Ownership and teamwork.
- **When?** We have used a semi-annual (semester) basis for the timing of our recommendations and quick wins. For example, Quick Win 1 should be completed prior to the start of the 2019 second semester (July) of business permit revenue collections.

In addition, we conclude each quick win/recommendation with a review of possible roadblocks which, based on experience elsewhere or logic, might undermine the Municipality's efforts at implementation. At the bottom of each recommendation section, there is reference to the relevant best practice research. (**See *Annotated Bibliography*.**)

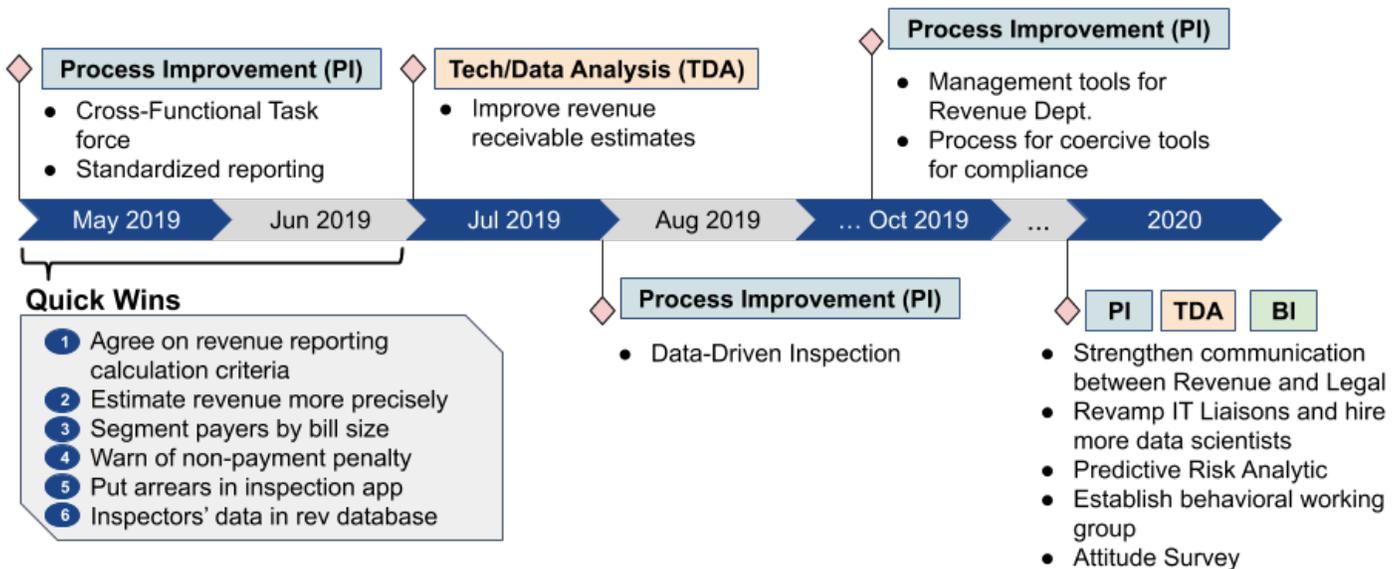
Operational Constraints

As mentioned in the Problem Definition section, we tailored our research and recommendations to the Municipality of Santiago's unique operating environment. Like any organization, the Municipality operates within constraints, some common across municipalities and some unique. What works for New York City will not necessarily work in Santiago without adjusting for the realities on the ground. We have identified three broad themes of operating constraints within the Municipality of Santiago:

- **Siloed Environment:** divided responsibilities for shared processes, with end-to-end accountability lacking. Combined with a historical lack of collaboration across departments, executing a shared process, such as the business permit revenue collection process, is sometimes characterized by duplicated efforts and redundant work, miscommunication, or failures in the process.
- **Technology:** The IT Department is resource constrained. 17 full-time employees are responsible for technology, systems, network maintenance, data quality and analysis, database maintenance, technology initiatives and innovation, and troubleshooting across the entire Municipality. Further, not all departments have equally trained staff. This skills issue means that often data analyses and other reports produced by the IT Department for these departments are not actionable. The effectiveness of the IT operation will be greatly enhanced when staff in departments external to IT have sufficient technology training in critical programs, such as Microsoft Excel, so that they can perform relevant data analysis. Moreover, a stronger understanding of data analysis is likely to translate into a more data-driven decision making process prioritizing actions based on the evidence in the data the Municipality collects and selecting the actions that offer the highest returns.
- **National law:** National laws are imposed on the Municipality with respect to the level, enforcement and timing of business permit revenues. Conversations with representatives from the Servicios de Impuestos Internos (SII) and the Subsecretaría de Desarrollo Regional y Administrativo de Chile (SUBDERE) informed the Columbia SIPA team that there is no political appetite to reform the Business Permit Law or the Municipal Solidarity Law, despite their obvious shortcomings with regards to matching revenue collection responsibilities with adequate revenue collection enforcement powers. Additionally, because the law does not allow for stiff enough penalties, and in response, negligent permit-holders do not face stiff enough penalties for non-payment, the Municipality of Santiago must adapt and accommodate, as best as possible, to the limits of the law. This will involve initiatives such forecasting, as best as possible, which businesses are operating branches (sucursales) in the Municipality even if they fail to provide their employee headcount, and then adjusting the internal forecast of the total revenue that could be collected in a given period.

A Practical Roadmap

We have created a practical Roadmap that fits to the revenue collection timeline established by the Municipal Revenue Calendar. The **first step** is to establish a **cross-functional task force**, which will act as the main agent to create the conditions for change and oversee our recommendations. **Then** we have prioritized **6 Quick-Wins** given their easiness to implement and benefits to the Municipality - these should be done as soon as possible to prepare for the next collection period in July. Before the end of collection period one month later, the revenue receivable estimates should be improved for better compliance and arrears calculations. **After the collection period**, once all our Quick-Wins have been in place, the Municipality will be able to develop a **data-driven inspection process** to aid it in implementing improvements to the revenue collection process and arrears management. **Finally**, we have placed the recommendations that will require **more human capital and more advanced technology** applications further into the future, given the resources needed for training current and possibly additional employees.



Prerequisite: Cross-Functional Task Force

Current state: One of the major constraints of the municipality is silos. Different departments involved in the revenue collection process are currently working separately. Individuals from these departments rarely have regular cross-functional meetings to discuss revenue issues together.

What: A cross-functional task force will be the main agent who drives and oversees all of our other recommendations. It should create sub-working group to focus on each areas of interventions, for example, the behavioral working group in Recommendation #9.

Why: The cross-functional task force will allow the Municipality to breakdown the silos, establish agile communication between departments, and eliminate redundancy of work between departments.

How: There are 5 necessary components in setting up a successful cross-functional team:

1. Include representatives from of all the revenue related departments such as the Revenue Department, IT, SECPLAN, Communications, Inspections, and Legal.
2. The leader of the task force should be the Municipal Administrator who has the power to direct all of the departments represented in the team. The Municipal Administrator can appoint leader for each of the tasks that will be implemented.
3. The team should develop a clear and shared objective, namely, to increase revenue.
4. The team must decide and commit to a regular meeting time (e.g. weekly) to keep the working process continuous.
5. Finally, at the end of each month, there should be a performance review reporting to the Municipal Administrator that measures the efficiency of the working process.

Who: The Municipal Administrator should responsible for forming the team. All critical departments involved in the revenue collection process should have representation on the task force.

When: As the task force will be the main agent to implement all of the recommendations, it should be established as soon as possible, hopefully, by the end of May 2019 before the new collection cycle starts.

Possible Roadblocks

1. The Municipality has no history or culture of cross-functional teams; thus, the task force and its leadership will have to break new ground to adjust internal culture and expectations to foster collaboration.
2. When different people from different departments come together, there can be misaligned priorities that the team will have to learn to navigate to work towards common goals.
3. Varying expertise levels and work styles can lead to communication difficulties.

Best Practices

1. The Australian Tax Office
2. The New York City Fire Department

Quick Win #1: Agree on revenue reporting calculation criteria

Current State: The Revenue Department, as the organization within the Municipality responsible for executing, managing, and reporting all municipal income, is the owner of the business permit revenue collection process. While business permit revenue collection process includes stakeholders across the Municipality, from IT to SECPLAN to Legal to Inspectors to Communications, it is the Revenue Department that is ultimately responsible for successful collection.

However, the Revenue Department is not the sole reporter of the business permit revenue collection status. For example, IT has generated reports independent of the Revenue Department for the Municipal Administrator. There is no defined policy and procedure for capturing revenue collection status information from the Revenue Database. Because of the amount of information captured in the database and the lack of defined reporting policies, there are high odds of misreporting. Secondly, reports are generated at inconsistent times of the month. This can add to confusion if different stakeholders are overseeing the revenue collection process based off of reports generated at various times in the collection process. The Columbia SIPA team witnessed examples of inconsistent reporting procedures when attempting to reconcile between IT- and Revenue-produced reports when in Santiago.

What: The first task of the task force is to establish strict revenue reporting policies and procedures. It is one of the most important pieces of groundwork the task force can lay prior to the start of the second semester in 2019. A task force member from the Revenue Department should lead the drafting of revenue reporting criteria in consultation with the Municipal Administrator, Administration and Finance Division, SECPLAN, and IT. The Revenue Department should be the sole owner of these policies and procedures, setting appropriate data sources needed to generate revenue collection status reports (i.e. identifying the relevant fields of information in the Revenue Database), timing of the reports (i.e. at month-end), and set internal controls to ensure that the collection status is reported accurately to management. These policies and procedures should be prescriptive, in that they clearly lay out each step to calculate revenues. However, even though the Revenue Department is the sole owner of the process in the ideal state, it's policies and procedures must be informed by the business needs of the stakeholders of the revenue collection process and should allow management timely insight into collection status.

Why: Establishing a strictly controlled revenue reporting process will reduce time spent reconciling different revenue collection numbers. This represents a reduction in wasted resources for the Municipality and frees up time for higher-value work. Moreover, it reduces the possibility of leadership making decisions based on an incorrect or incomplete picture of revenue.

How:

1. The task force should establish a project group led by the Revenue Department's leadership and comprised of data experts within the Revenue Department who are closest to the financial numbers in the Revenue Database and IT experts who understand the system feeds of the Revenue Database. The project group is responsible for developing the discrete set of procedures to accurately calculate revenue collected, revenue owed, and the total amount of to be earned for a given year. This should be enshrined in a formal policies and procedures document accessible to all within the Revenue Department, IT, SECPLAN, Legal, and the Department of Administration and Finance.
2. The Municipal Administrator and Revenue Department leadership should survey the Municipality to itemize the population of collection status reports currently being produced, how they are produced, when, and for whom. Subsequent to the survey, the business need of each report should be assessed. This assessment must be very strict, and the goal should be to reduce the amount of reports produced.
3. Valid business needs learned from the survey should be incorporated into new revenue reporting criteria that are being developed so that a diverse set of stakeholders can access the information they need from a standardized package of reports.
4. The task force should set the frequency of reporting (preferable 1x a month) and establish a formalized annual review process for the procedures to ensure their continued veracity.

Who: The Revenue Department will own the process once the task force, led by the Municipal Administrator, has agreed on the revenue reporting criteria and the frequency of reporting. The Revenue Department and the task force's posthumous operating group will review the reporting criteria annually to ensure they remain up to date with the Municipality's operating environment.

When: Developing reporting criteria is the cornerstone of developing a clear picture of where the Municipality stands with regards to revenue collected, revenue owed, and the total amount it can expect to receive semester-to-semester. It is the basis of subsequent recommendations, such as predictive risk analytics, business intelligence, permit-holder segmentation, etc. As such, the reporting criteria should be agreed as soon as possible and prior to the beginning of the second semester in 2019.

Possible Roadblocks

1. The task force and the Revenue Department has a short window of time to agree on the appropriate revenue reporting criteria and dates reports are to be generated. Surveying stakeholder needs and drafting policies and procedures within 2 months, concurrent with other reforms needed to improve the second semester's collection process, will require considerable focus and effort.
2. The Columbia SIPA team did not assess which criteria is correct to accurately report on the business permit revenue collection status. Given differences in reporting revenue, there is the risk that the task force cannot agree on the appropriate sources and criteria.
3. By cancelling instances of redundant reports and reducing frequency of reporting in the Municipality, stakeholders' flow of information will be curtailed and recipients will feel negatively impacted. The task force must attempt to accommodate genuine business needs for the reports that were previously distributed.

Best Practices: OECD (2014), Working Smarter in Tax Debt Management

Quick Win #2 - Estimate revenue more precisely

Current State: The calculation of the revenue estimate depends on information that is provided by the SII and the permit payers themselves. Firms are required to inform the Municipality of their distribution of employees and capital in instances where they operate branches, but not headquarters, within the Municipality. Businesses are also required to report their investment levels for the prior year, as the amount of capital in the company affects the business permit price. Oftentimes, firms do not do this proactively and only react when they are overbilled for a business permit, thus adding redundant work for the Revenue Department. Moreover, businesses that close or move to other municipalities do not notify Santiago about their departure. With stale information, the Municipality has difficulty accurately calculating the population of legitimate business permits each semester. The following table shows the initial estimate, the number of business permits recalculated, and the estimate at the end of the period.

Semester	Initial Estimate	Recalculated amount	Final Estimate	Recalculation/Initial Estimate
2° 2016	\$43,932,788,307	\$10,150,127,399	\$33,782,660,908	23%
2° 2017	\$42,192,306,505	\$11,623,688,658	\$30,568,617,847	28%
2° 2018	\$44,518,178,686	\$10,580,490,239	\$33,937,688,447	24%

This mismatch of information has an impact on forecasting revenues, monitoring the revenue collection process, informing the Legal Department of non-compliance, and weakens the Municipality's operations.

What: The Municipality could do a lot to nudge and improve behaviors. Firms and business should comply with the law by providing information on time, and while technically not a direct responsibility of the Municipality, revenue improvements should result. Quick Win # 2, proposes a more proactive action, acknowledging taxpayers' behavior, communicating with constituents that a fair and precise process requires businesses to provide relevant, accurate and timely information. For this Quick Win, being with companies who only operate branches in the Municipality, because these firms, who are not providing branch headcount information, are the top contributors to the distorted revenue forecasts within the Municipality.

Why: Having a better revenue estimate will benefit the Municipality in several ways. First, it will reduce the time spent performing recalculations and reduce the number of arrears as taxpayers will be more informed. Countries like Sweden and Australia call this 'preventive communication' - this has allowed those countries to reduce duplicate work and increase the compliance rate.

How:

1. Define a process: Design a new process, identifying the owner team of person, establish dates and channels of communication. The Communications Department should be a support team.
2. With the help of IT, identify which taxpayers have their headquarters outside the Municipality. Revenue Department already knows all the businesses for which a recalculation was made in the previous period, which is all stored on the Municipality's Revenue Database.
3. Collect the contact information and focus on filling in the missing information.
4. Generate an indicator or a way to measure the effects of the process on the revenue estimate.

When: Now that a new semester is starting, the Revenue Department should use this opportunity to enact these reforms by starting with the businesses who only operate branches within the Municipality.

Possible Roadblocks

- Access to contact information: sometimes the contact information can be limited, especially because the SII doesn't provide that personal information. However, almost 50% of the taxpayers pay through the internet, and when a new business permit is generated, the form asks for an email and the contact information of the Legal Representative.
- No access to communication platforms (massive emails or SMS): It is vital to diversify the ways that the Municipality communicates with taxpayers incorporating massive emails or SMS platforms.

Quick Win #3 - Segment payers based on bill size

Current State

Our third quick win is to segment payers based on bill size with the objective of prioritizing interventions and inspector visits to maximize the Municipality's recuperation rates. We recommend the same segmentation approach throughout the Municipality and across departments, according to simple and easily communicable criteria.

The distribution of the size of permits billed by the Municipality is highly skewed: 24 businesses charged with the highest amount in the first payment period of 2019 contribute towards 12% of the overall billable, which is the same amount charged to the smallest 59,000 contributors.

Despite this, inspector visits and other interventions are not prioritized systematically due to the lack of agreed-upon segmentation criteria across functions.

What: Accordingly, we recommend the adoption of a common set of rules to segment payers based on bill size to prioritize and monitor recollection efforts.

Why: Adopting a common set of rules will enable a rational planning of arrears collection and case handling. The main rationale to do this is to direct the Municipality's resources (e.g., the arrears inspection team) where they can achieve the highest results. The segmentation criteria will also enable the development of new Key Performance Indicators (KPIs), such as the compliance rate per payer and the average time to collect arrears per payer segment.

How: We recommend adopting a rank-based segmentation system such as the following:

- **Segment A:** Businesses charged the highest permit amount (24 businesses in the first period of 2019, with a bill equivalent to CLP 192M or US\$ 288k)
- **Segment B:** Top 100 businesses by billing except businesses in segment A (in the first payment period of 2019, these were 76 businesses, with bills ranging between CLP 65M and 188M or US\$ 97k to 288k)
- **Segment C:** 101st to 1,000th businesses by billing (900 businesses, with bills ranging between CLP 5M and 65M or US\$ 7.5k and 97k)
- **Segment D:** 1001st to 10,000th businesses by billing (9000 businesses, with bills ranging between CLP 200k and 5M or US\$ 300 and 7.5k)
- **Segment E:** Bottom businesses (59k in the first period of 2019, with a bill lower than CLP 200k or US\$ 300)

We recommend this segmentation approach because it is intuitive, easily communicable, and easily implemented in Excel and because it highlights the strong skew in the distribution of bill sizes. When using one such system, however, users should be warned of two facts:

- The number of payers in Segments A, B and E is subject to change; accordingly, aggregates expressed in absolute terms (instead of ratios) may not be comparable from period to period.
- Payers may switch segment from one payment period to the next.

Who: A segmentation criterion of this kind should be developed by the Revenue Department, as this is the department most affected by the benefits of segmentation. IT may be required for support in case it is decided to include segmentation within the Municipality's IT systems.

When: A segmentation approach should be adopted as soon as possible (May 2019) and before the next payment period begins.

Possible Roadblocks:

1. Input data identifying the size of the bill is not always correct, reflecting the challenges outlined in Quick Win #2.
2. Institutional inertia and opposition on behalf of inspectors.
3. Possible questions over legality and fairness of inspections prioritized by bill size.

Best Practices: See Chapter 2 of OECD (2014).

Quick Win #4 - Warn businesses of penalty of non-payment

Current State: Payers will get a bill letter in every payment cycle. Currently, the Revenue Department is responsible for sending those bill letters, collaborating with delivery contractors. Communications proofreads while Revenue decides the content of the messages. As of today, the letters only have factual information, such as how to pay the business permit fee and when the payment cycle will end. However, the letters don't provide any information about the consequences of non-compliance. Based on our interviews with small businesses in Santiago, some license holders are not clear about the penalties.

What: We recommend adding financial consequences, such as the fine amount, and possible legal penalties in the letter to inform the payers of the cost of non-compliance.

Why: Clearly stating the penalties raises the taxpayers' subjective perception of legal penalties. They will be more incentivized to pay the business permits on time to prevent penalties. Another reason could be that payers may not have the ability or time to calculate the potential consequences of non-payment. Providing precise and salient information can reduce the risk of non-compliance. Adding this kind of deterrence information in letters is a popular method in many cities and is handy in terms of increasing business permits revenue collection.

How: There can be one paragraph in the letter that says that if you don't pay on time, we will send an inspector to your business. You will receive a fine of up to some maximum amount and need to be present in court for further legal penalties.

Who: The Revenue Department owns the content of letter, so they should be responsible for this recommendation. Communications can provide a professional opinion and work together with Revenue to improve the bill letters.

When: Before July 2019 so that the new bill letter can be used in the next semester.

Possible Roadblocks

- The current letter format has lasted for a long time, and it's challenging to change.
- Payers may disregard the bill, which will decrease the impact of deterrence information
- Needs communications expertise to convey clear and effective information to payers.

Best Practices: Junin, Argentina provided taxpayers with a simplified example of the cost of non-compliance by computing how much the cost of a hypothetical debt of AR\$1000 would be after a year. This initiative increased the compliance rate by 12%. For more information see Castro, L. & Scartascini, C. (2015).

Quick Win #5 - Put Arrears Amount in Inspectors' App

Current State: Inspectors' phone application does not have access to the arrears amount data in the Revenue Database. Currently, if inspectors want to know how much arrears businesses have outstanding, they have to call the Municipality and inquire verbally about this information. Each phone call lasts on average three minutes per business inspected.

What: By putting the arrears amount in the inspectors' mobile application, we recommend giving inspectors easier and quicker access to information about arrears when they are out in the field.

Why: Having the arrears amount in the inspectors' mobile application means inspectors do not need to call the Municipality every time they want to know how much a business owes in arrears. This translates to

three minutes of time saved per inspector per inspection and an estimated +\$770K pesos of potential revenue per day per inspector. Moreover, inspectors can prioritize their visits based on the arrears amount.

Who: The Revenue Department working with IT to add the arrears field to the inspector's application.

When: This should be done as soon as possible, before the next cycle of revenue collection starts so that inspectors conducting business visits in July already have the arrears information handy.

Possible Roadblocks

1. IT may have limited resources to implement this change.
2. There may be technological limitations that prevent the arrears information from appearing in the inspector's app - which the Revenue Department and IT should work together on resolving
3. Challenges around ensuring the inspectors use the mobile application to its full capacity, i.e. consistently using the app and regularly updating information.

Best Practices: See pages 8 and 11 in Cotton, M., Dark, G., (2017), and Chapter B.2. Inspectorate Information System in World Bank (2006).

Quick Win #6 - Use Inspectors' Data in Revenue Database

Current State: The Revenue Department updates business closure based on data it receives from the SII, every month, however, that data is already two months old. As a result, there exists a lag between the time a business closes and the time this closure gets reflected in the Revenue Database. This lag leads to inflated arrears calculations in instances where a business is closed but in the Revenue Database it is still accumulating arrears on for business permits. Fortunately, inspectors make frequent field visits to businesses and collect information on business closures in their mobile applications. This data remains stored in the Inspections database, and while not currently incorporated into the Revenue Database, could be easily merged with revenue data.

What: We recommend incorporating information collected by inspectors about whether businesses are closed into the Revenue Database. Information stored inspectors' mobile app about business closures should flow into the Revenue Database. The Revenue Department can use it to update information about closed businesses and can cross-check it with information they receive from SII.

Why: Closed businesses will be identified earlier and arrears can be calculated more accurately.

Who: The Revenue Department will need to work together with IT to implement this process improvement.

When: This quick win should be implemented as soon as possible, before the next cycle of revenue collection starts so that information collected by inspectors in July gets into the Revenue Database.

Possible Roadblocks

1. Possible legal limitations for marking a business as closed based on an inspector's visit.
2. Inspectors must use the mobile application to its full capacity and input fully accurate data.
3. Requires cross-checking data with the SII and testing whether the information received is accurate.

Best Practices: See pages 8 and 11 in Cotton, M., Dark, G., (2017) and Chapter B.2. Inspectorate Information System in World Bank (2006).

Recommendation #1 - Standardized reporting on Revenue

Current State: As already enucleated in Quick Win 1, information on revenue collection is currently produced by several stakeholders across the Municipality. This leads to several reports, often partial and contradictory, circulating within the Municipality due to *ad-hoc* requests. Also, this creates confusion, duplicate work and inaccuracies across the collection pipeline, and results in a reduced capacity to rationalize the collection process.

What: Building on the criteria decided as part of Quick Win 1, we further recommend formalizing a revenue reporting process such that Revenue Department is the exclusive issuer of information on revenue collection. This will establish the reports released by the Revenue Department (according to the specifications of Quick Win 1) as the single version of truth on revenue collection. Thus, information will flow unilaterally from the Revenue Department to the various stakeholders involved in strategic planning (Municipal Administrator, SECPLAN, the DEF, and the task force).

Why: To eliminate any potential source of confusion on revenue collection, or duplicate work, and to streamline the reporting process.

How: Once all relevant stakeholders have agreed upon the reporting criteria prescribed in Quick Win 1, establish a formal information flow that ensures that the Revenue Department is the sole provider of information on collection. The process can be as simple as a monthly email with a few key statistics to the whole staff or a more comprehensive report to the key stakeholders, such as the Municipal Administrator, SECPLAN, the Administration and Finance Department, and the task force. It is advisable that one person within the Revenue Department be designated as the single point of contact (with designated back-up support) for all information concerning the reports.

Who: The Revenue Department should be the sole owner of the process.

When: This should be implemented following the completion of Quick Win #1.

Possible Roadblocks

1. Capacity constraints on the Revenue Department, which may be overburdened by the reporting process.
2. Reduced frequency of reporting due to eradication of ad-hoc reporting, which may find opposition especially among the leadership of the Municipality.

Best Practices: Establishing a single version of the truth is a commonly accepted best practice in large organizations both private and public.

Recommendation #2 - Improve Revenue Receivables Estimates

What: As with Quick Win #2, which was starting with the business that has the headquarters outside the municipality, informing those businesses about the procedures, deadlines, and information required from them for a proper permit price calculation. And, there are other important groups to communicate with, such as

1. New business
2. Closed Business
3. Businesses with stale arrears
4. Virtual offices

Who: The Revenue Department should work together with IT and the Communications Department to develop new reports, or the development of a contact data base, as well as a communications campaign with specific messages for each of the groups.

When: This should be implemented for the collection process in January 2020, after piloting Quick Win #2 and seeing the effects in the actual period.

How: Each group might require different strategies and challenges. Nonetheless, the steps to implement this recommendation are the same. Since this recommendation has a longer horizon, it might require more time collecting the contact information and the identification of each of the payers of each group.

Possible Roadblocks: Resources and time available within the IT and Communications Department can become a constraint to implement this recommendation as new reports and messaging strategies need to be developed.

Recommendation #3 - Incorporate management tools in Revenue Department

Current State: The Revenue Department does not have an annual planning process. The team of individuals in the Department has done carried out the business permit collection process so many times that the status quo is second-nature to them. However, many of the actual challenges in the collection process might be due to the lack of planning and measurement. At the same time, this report is proposing new methods, new tasks and new challenges that if not properly accounted for in operating plans, their impacts would be dulled.

What: This is a **major recommendation with wide-ranging implications.**

1. Annual planning: Develop a yearly plan for the business permit collection process. It is essential that this is more than a Gantt chart listing essential dates and deadlines established by law. Instead, the plan should consider the number of resources needed, set goals, and establish targets. Considering not only Revenue Department inputs, but also those from collaborators who are in contact with the business permit holders, such as inspectors or other personnel who serve taxpayers is crucial. This planning process should be communicated internally.
2. Performance indicators: establish in principle no more than five indicators that allow effective measuring of progress and performance. According to the literature, these indicators can be defined across three levels.
 1. Strategy: indicators focused on measuring revenue and efficiency at a general level. For example, % payment of patents on time, arrears collected vs. the total arrears balance, cost of collection, operating leverage, or the cost to the Municipality to raise CLP\$1,000,000, Size of the debt approaching the statute of limitations.
 2. Operations: Measure particular steps of the revenue collection process. For instance, scheduled/executed visits, collection amounts by average count of visits, number of cases referred to court, number of business closed or cases in judicial collection.
 3. Individual: based on particular and critical elements. Some examples include the time spent per case and percentage of payments made through different channels.
3. Goals and target definition: it is important that goals are defined for each of these indicators. Generally, historical information and estimates suffice.
4. Monitoring and evaluation: During the collection process, it is essential to collect information that aids the Municipality in measuring these indicators and comparing their status against the established goals

and objectives. When those objectives are not reached, the indicators will help the Municipality identify root causes.

Why: Planning and measurement are basic tools that managers need to monitor and control the progress and effectiveness of a process.

How: As a first step, the leadership team should establish a calendar of key activities on each step of the process. This calendar should be simple and functional and should consider inputs from everyone involved in the business permit collection process. Also, indicators should be quantifiable, socialized, and agreed prior to implementation. They must reflect the Revenue Department's goals and must be linked to the desired success or outcome. For each indicator, a target and periodicity should be established. Also, these indicators should be seen as a tool to promote continuous improvement and not as high-stakes instruments to measure and punish performance.

When: Like the task force, this should be done as soon as possible considering the coming collection process. Many of the recommendations need to be implemented sequentially and without a plan, it would be hard to follow the progress and later evaluate the plan's implementation.

Possible roadblocks

1. Quality of input data: because of data quality issues, indicators might not accurately reflect progress. Data availability is critical when teams are constructing indicators.
2. Daily work: planning and measurement can be very time consuming, and because of the daily responsibilities is sometimes seen as a waste of time. For that reason, it is important to begin with simple and functional indicators. It will be helpful to assign the monitoring and project management of the indicators' implementation to one team member within the Department.
3. Agreement on indicators: What to measure and when can become a burden sometimes. Indicators might be perceived as people's performance metrics and not as instruments for improvement.
4. IT infrastructure: IT and Revenue should work together to develop a report and the calculation rules for each indicator. Until now, collaboration has been a big challenge between the two teams.

Best practices: Chapter 5 of OECD (2014), Working Smarter in Tax Debt Management; Goldsmith, Steven. A Permanent Place for Data Analytics, Governing Magazine, March 2019.

Recommendation #4 - Structure a process for the coercive tools for compliance

Current State: The Municipality's enforcement tools are very limited. ~~The Law of Municipalities does not empower municipalities does not empower them to use these tools.~~ When businesses should be closed for nonpayment or when they should be sent to judiciary collection is arbitrary and not defined. Until now, the Municipality has not followed a standardized process. Instead, they have been reacting and making decisions on an ad-hoc basis.

What: To establish this process, the Revenue Department in connection with the other teams involved should discuss the following questions:

1. How many times should the inspectors visit a business?
2. Under what conditions a business should be closed? When should it happen and what should be the minimum debt amount that triggers closure?
3. When and under what conditions a business should be sent to judiciary collection? What should be the minimum amount and maturity of the debt that triggers court referral? For judicial referrals, it is essential

that the Municipality monitors the statute of limitations of businesses' debt. The Revenue Department will need to work with Legal (see Recommendation #5) prior to the statute's stipulations.

4. What should be the procedure for closed businesses or businesses that moved out of the Municipality?

Why: A structured compliance process will make it easier for Revenue Department to assess workloads and the resources needed for the collection process. Second, it will be easier to establish indicators and monitor the collection processes progress. Third, it will make the process more transparent for taxpayers and help educate them about how the process works, especially in the case of non-compliance. Fourth, enhanced collaboration between departments will strengthen transparency and information sharing across the Municipality.

How: Collaborate with the Legal Department in the definition of the coercive process. Incorporate the perspective of the Inspection teams as well. Draw the process, using the ISO format, because it is a common language for teams within the Municipality. Hence, it would be easier to communicate internally.

When: Hopefully prior to the beginning of the enforcement process of the July 2019 second semester.

Possible roadblocks

1. Legal constraints: It is critical to work with the Legal Department in the standardization of the process.
2. Arrears over the statute of limitation: As happened in the past, a great number of the cases sent to Legal were over the statute of limitation, losing out on the chance of collecting on the arrears.
3. Politics: Closing a business always can be harmful from a political perspective.

Recommendation #5: Strengthen communication between the Revenue and Legal Departments

Current State: The Legal Department is responsible for prosecuting non-payment of business permits in the Juzgado Policial. Attorneys within the department perform gather case materials and perform due diligence and work with magistrates to enforce payment. The legal process is governed by national law regarding municipal revenue-raising powers. Municipalities have three years to prosecute negligent permit-holders, after which the statute of limitations proscribes enforcement. Ultimately, magistrates of the Juzgado Policial have final authority to set repayment terms, fines, interest owed, and if under situations of grievous negligence, asset seizure. Currently, the backlog of cases is not significant: the attorney responsible for prosecuting negligent permit-holders estimates the delay to be 1-2 months, on average. Moreover, the Legal department is hiring an additional attorney with the goal of clearing the backlog entirely.

The Legal Department is heavily reliant on the Revenue Department. It is the Revenue Department that initiates the legal process by referring instances of non-payment to Legal for prosecution. Revenue is responsible for supplying relevant business permit documentation, financial and payment information, and histories of attempts to request payment from the permit-holder. However, Legal has identified recurring instances where the cases that are referred by Revenue are already proscribed by the statute of limitations. This means that the Municipality has no recourse to collect revenue owed.

What: Create defined business rules within the Revenue Database that automatically notify the Legal Department of cases that should be referred to the Juzgado Policial. The trigger for sending a notification should be set conservatively to allow the Legal Department sufficient time to prosecute a case. Because the Municipality has digitized many of its processes, relevant case information regarding attempted inspector visits, instances of communication, payment histories, etc. are stored within the Revenue

Database and associated systems. Although not critical, the automatic notification of a case to be prosecuted can be combined with a cache of case documents tagged to the business permit in question.

Why: Automation reduces time spent in both the Legal and Revenue Departments performing administrative tasks. Moreover, it reduces the burden on the Revenue Department to review all outstanding arrears and track referrals to the Legal Department. Combined, the likelihood of the Municipality losing the opportunity to collect revenue it is owed because of the statute of limitations is significantly reduced.

How:

1. Management within the Legal and Revenue Departments have the strongest understanding of their business needs and constraints. Therefore, the two departments should map out the required time to gather casework relevant, legal due diligence, and litigation process for non-payment. Understanding these timelines is the first step to setting a notification threshold.
2. The Revenue Department, with the assent of Legal, should set a maximum threshold for the arrears balance, beyond which the permit-holder is referred for prosecution. The Revenue Department has two options to determine the threshold:
 - a. Set an absolute balance threshold (e.g. refer all cases with arrears greater than \$100,000 CLP)
 - b. Set a proportionate threshold that is a percentage of the original permit price (e.g. an arrears balance of 175% of the annual permit price)
3. Synthesize the above two steps into an IT update that installs an automatic notification process in the Revenue Database.
4. Review documentation needed to initiate legal proceedings in the Juzgado Policial and determine their source (whether manual and on paper or digitized in the Municipality's databases). For digitized documents, leverage common identifiers, such as the business permit number, that is consistent across document sources for a specific case. The Revenue and Legal Department should then agree on the format that the information needs to be transmitted to the Municipality's attorneys and then collaborate with IT to automate the case information retrieval process as much as possible.
5. Conduct semi-annual or annual meetings between the Revenue Department and Legal with the specific purpose of adjusting the threshold in light of changes in the Municipality's operating environment. Changes should be informed by both departments' assessments of the burden (time, expense, and manpower required) of prosecuting a case.

Who: Both the Revenue Department and the Legal Department are jointly responsible for creating an automated notification process and ensuring its adequate functioning through periodic monitoring and review, that improves communication and notification around prosecution of negligent permit-holders and leads to a significant reduction of instances where the Municipality is not able to prosecute non-payment because of the statute of limitations. Jointly, the two departments will dictate the business rules that IT will follow when updating the revenue database to feature automated notifications.

When: Agreement on the business requirements of a notification system will require a holistic review of the legal process and thus is not possible to launch before the 2019's second semester begins. The Municipality should target early 2020 to implement a notification system.

Possible Roadblocks

1. The Municipality will have to strike a delicate balance when automating arrears referrals to the Legal Department. Currently, cases are arriving too late. However, given the amount of arrears, the Municipality will need to be conscious of the risk of **overloading** the Legal Department with case referrals.

2. Arrears balances are correlated with the price of the business permit. Given the process for determining the price is a function of the permit-holders' equity, prioritizing prosecution of the highest-value arrears raises questions of **legal fairness** if smaller businesses are able to avoid payment without penalty.

Best Practices: OECD (2014), Working Smarter in Tax Debt Management

Recommendation #6: Develop a Data-Driven Inspections Process

Current state: Inspections within the Municipality are split between the Revenue and Inspections Departments, resulting in a redundancy of tasks. Further, there are no criteria to prioritize inspection visits.

What: Conducting data-driven inspections means to deploy resources and according to the proportional level of risk (i.e. arrears amounts and non-compliance risk), based on available businesses information.

Why: Data-driven inspections will allow the municipality to better collect highest-impact arrears. With prioritization, there will be more efficient use of human resources, and improved data integration.

How:

1. According to Quick-Win #5, inspectors will be able to see the arrears amount on their mobile device. This will allow them to strategize their visits base on the number of arrears by prioritizing visits to the businesses with the larger amount of arrears.
2. The Municipality should ensure that all inspectors update all fields in their mobile application when visiting a business to increase data availability for future use.
3. The Municipality can promote the use of the application by having yearly technology training for the inspectors before inspections cycle beings.
4. At the end of the inspections cycle, there should be a performance evaluation based on the KPI that the task-force or the sub-working group has developed to measure efficiency and effectiveness of the inspections. (**Example indicators** for the evaluation can be found in **Dobrolyubova, E. (2017)** in the **Annotated Bibliography**.)
5. In the future, after the Municipality has established the predictive risk analytics, the Inspections Department will be able to use this data to predict high-risk businesses. Thus, it can schedule the visit according to the risk prior to arrears balances growing.

Who: The Inspections Department should be the main owner of this recommendation and combine information provided by the Revenue and IT Department.

When: The first stage of the data-driven recommendation, where large arrears are prioritized, should be done before the inspection cycle in August 2019 or directly after Quick-Win #5. The second stage, conducting preventive risk-focus visits, comes after the establishment of predictive risk analytics in 2020.

Possible Roadblocks

1. Risk calculation can be biased due to low information accuracy.
2. To ensure that all the inspectors upload all the information using the application, the department needs to make sure that the handheld devices and application is available for all the inspectors, and it is able to be use in all areas of inspections. Also, more advanced risk-focused inspections will be based on more advanced technology that will presumably take a longer time to develop.
3. The new prioritization rules, risk-focus visits, and digitized information gathering may involve routine change that to which inspectors with longer tenures may struggle to adapt.

4. The greater availability of business information may lead to higher possibility of corruption.

Best Practices: The New York City Fire Department; OECD (2016) Best Practice Principles for Regulatory Enforcement and Inspections; The World Bank (2006) How to Reform Business Inspections.

Recommendation #7: Revamp IT Liaisons and hire more data scientists

Current State: The IT Department is responsible for all aspects of IT, data management, and data analysis at the Municipality, including maintaining and supporting all communications and computer systems, maintaining databases and web interfaces, building dashboards and applications for use within the Municipality, and generating data reports. IT also runs technology-related innovation projects, such as ensuring that by 2020, 57% of citizen services are digitized (currently 25% of services are digitized.) The Department's staff is made up of 10 Tech/User Support employees and 17 Development & Operations employees. Given its wide-ranging responsibilities and high workload, the IT Department faces significant human resource constraints.

One of IT's responsibilities is producing internal, dynamic, web-based dashboards that all departments can access, including El Sitio de Estadística, which integrates all of the systems across departments. A municipal employee can assess El Sitio to consult the status of commercial licenses, visits by a tax inspector, the fines that have been paid and are still outstanding, etc. However, El Sitio is not searchable so if users want to make a query on a specific subset of data (e.g. all dry cleaners that have not paid their business permit) they cannot do so independently and must make a formal data report request to the IT Department. The format of these data reports is not standardized even for recurring data requests (e.g. IT shares information with the Finance Department in the September-October budget forecasting cycle every year, however, the format of the data report changes every year). As a result, the 17 Development & Operations employees dedicate a significant amount of their time to producing customized data outputs for the specific needs of departments throughout the year.

Moreover, IT and other departments do not collaborate sufficiently on creating dashboards and applications that serve them (e.g. in sharing inputs or designing KPIs). Currently, IT is developing a web-page for the Revenue Department with detailed information on payers who are in arrears. The website will include a predictive analytics tool able to identify businesses that are likely to be non-compliant. However, many of the specifications in this website were determined independently by IT, rather than through a close collaboration between IT and Revenue. Furthermore, the momentum to build IT tools that benefit the Municipality often comes from upper management rather than from departments. For instance, upon request from the Municipal Administrator to streamline and digitize the process of closing down businesses, IT was able to prioritize its resources and build the tool built in very little time.

What: We strongly recommend increasing the human resource capacity of the Development & Operations team within IT and fostering better communication between IT and departments. We have identified three steps the Municipality could take in this direction. First, designate IT liaisons within departments and if necessary, provide training in data management, and basic software (Excel). Second, hire 3-5 new data scientists to the Development & Operations team. Third, designate members within IT to interact with specific departments and their IT liaisons.

Why: Hiring data scientists and and more effective communication between IT and departments will enable better provision of IT services for the Municipality. Hiring data scientists will ease the heavy workload placed on existing IT staff and allow the IT department to focus on longer-term strategic initiatives in addition to

their day-to-day requirements. Increased communication between departments around needs will enable the creation of standardized data reports and improved dashboards and applications.

How:

1. The first data analyst hired into the Development & Operations team would support implementation of short and long-term recommendations, e.g. standardizing reporting, and segmenting payers by bill size. This analyst should be fluent in Excel, R/Python, Tableau/other visualization/BI suites.
2. The second analyst is needed for building dashboards & developing the predictive analytics capacity of the city. This analyst should have fluent in Excel, SQL, R/Python (especially data science libraries-- R: tidyverse, caret; Python: Numpy/Pandas, Scikit-learn/other ML libraries e.g. Keras, TensorFlow, PyTorch.)
3. The third analyst is needed for longer-term projects and data quality and data security management. This analyst should be fluent in Excel, SQL, R/Python (R: tidyverse; Python: Numpy/Pandas, Scikit-learn/other ML libraries e.g. Keras, TensorFlow, PyTorch), Big data software e.g. Hadoop, and have a familiarity with cybersecurity.
4. The fourth and fifth analysts should enhance the general capacity of the IT department and work on long-term strategic initiatives. These analysts should have skills in Excel and R/Python.
5. IT liaisons within departments will be the point people for communication with IT. They will have technical abilities, including strong Excel skills, but also understand the needs of departments.
6. In designating members within IT to interact with specific departments and their IT liaisons, IT can leverage existing inter-departmental relationships and formalize those relationships with a layer of accountability.

Who: The IT Department will be responsible for hiring new data analysts and designating members within IT to interact with specific departments. The Planning Department needs to ensure there is enough budget allocated for hiring new data analysts. The Revenue Department and other municipal departments are responsible for designating IT liaisons and ensuring the liaisons clearly communicate department needs regarding data reports and dashboards.

When: The Municipality should aim to gradually hire new data scientists: two by the end of 2019 and the remaining three by the end of 2020. Designating IT liaisons within departments and designating members of IT to interact with specific departments and IT liaisons should be done by the summer of 2019.

Possible Roadblocks

- Budgetary constraints.
- Training departmental staff to liaise effectively with IT, data management, and basic software (Excel).
- Change of culture at the municipality to one that prioritizes data analysis.

Best Practices: The Australian Taxation Office argued for the significant importance of tying in business functions with data scientists and project managers for effective delivery. See also Chapter 3 of **OECD (2016)**. <https://doi.org/10.1787/9789264256453-en>

Recommendation #8: Establish predictive risk analytics

Current state: There is no diversified strategy in the Municipality to handle segment responses to payers based on their risk profiles. Yet, this can be a way for the Municipality to allocate its resources more efficiently, for instance by sending tailored messages to high-risk businesses and targeting more onerous interventions like preemptive phone calls. During our week in Santiago, we found that this is within reach

for the Municipality: in recent months, the IT Department has been working on a pilot version of a rules-based solution to assess the risk that a business will not pay based on previous compliance records. Risk analytics of this kind are a promising new area for tax administrations, and the work already done by the IT Department is a good platform to implement ever more sophisticated metrics.

What: Based on OECD best practices, we recommend the testing and adoption of predictive risk analytics in the revenue collection pipeline. The IT and Revenue Departments should collaborate to establish a set of indicators that flag ahead of the deadline payers at a high risk of non-compliance.

Ideally, risk metrics should leverage:

- Business-level data on previous payment behavior (e.g., time to pay, responsiveness to messages by the Municipality, previous delays).
- Business-level data on firms' economic/financial performance (e.g., income statement data, balance sheets data, profitability/other ratios).
- Macroeconomic and industry-wide data.

The Revenue Department should then develop a diversified set of strategies to handle different risk levels.

Why: Targeted preemptive interventions demonstrably lead to higher compliance rates.

How:

1. Collaboratively review with key stakeholders currently available data on payers to extract relevant attributes (e.g., past behavior and compliance rates)
2. Evaluate possibility to source external data on payers (e.g., economic/financial performance and macro data)
3. Identify possible indicators of risk and build upon pilot currently developed by IT
4. Track the performance of the risk models and iterate through different versions as new patterns emerge on what works. Preserve all the data throughout the various iterations and payment periods.
5. Establish a diversified communication strategy based on risk profiles.

After there are a few years' worth of data, it will become possible to move away from rules-based models and onto more sophisticated machine learning models to classify risk, such as:

- *Logistic regression*
- *K-nearest neighbors*
- *Decision trees*
- *Random Forests*
- *Support Vector Machines*
- *Neural Networks*

Who: The IT and Revenue Departments, together with the task force, should work collaboratively.

When: Start before 2020 and continue perpetually with ever more complex metrics.

Possible Roadblocks:

- Quality of input data and external information accuracy.
- Capacity constraints on the IT Department.
- Communication of strategic importance of risk-based analytics to key stakeholders within the Municipality.

Best Practices: See Chapter 2 of OECD (2014), Chapter 2 of OECD (2016) and Jani, M. (2012). Also, the Australian Taxation Office has implemented several machine learning models to assess risk.

Recommendation #9 - Establish a working group for behavioral strategies

Current State: The Municipality does not employ behavioral strategies when communicating with payers. A natural fit for rolling out behavioral communications would be the Communications Department, which currently focuses on social media and brand building, not official communications such as payments for business permits.

What: We recommend the creation of a sub-working group under the cross-functional task force to conduct behavioral experiments and develop communication strategies.

Why: These experiments can help to test the effectiveness of behavioral strategies and thus, increase revenue collection and build stronger relationships with business permit holders.

How: To effectively devise behavioral strategies to nudge payers to comply, the Municipality must:

1. Gain support from Municipal Administrator
2. Hold regular meetings with structured goals
3. Engage IT and Legal for data collection and legal verification, respectively
4. Test ideas and learn to improve before choosing a preferred strategy
5. Achieve some quick wins to show the value of experiments
6. Keep testing and be comfortable occasional failures. Failure is an opportunity to learn.
7. Collaborate with outside researchers such as NGOs and universities for their research and statistical expertise.

The working group can potentially experiment on following policies:

1. Add handwritten signatures on the letter envelope.
2. Add reciprocity language in letters to inform the payers of the quality and quantity of service they receive from the Municipality with their taxes and fees.
3. Use multiple communication channels such as email, phone calls, letters, in-person visits, etc. for different payer segments.
4. Tailor communication strategy to payer risk level.

Who: These tests should be jointly owned by a sub-working group in the task force which includes the Communications Department.

When: Because the recommendation involves significant experimentation and testing, it should be prioritized in for next year.

Possible Roadblocks

- The sub-working group needs time to build an experimental work style and change the culture.
- It is often difficult to transfer insights from experiments into applicable policies.

Best Practices Examples:

- Syracuse, NY added handwritten message on the envelope (“You need to read this-- Martha”) and got \$1.5M overdue tax payment.
- Scottsdale, AR set up teams within different departments and representatives from each department meet monthly to discuss what they’re learning.

Recommendation #10 - Survey business permit payers' perceptions

Current State: According to our client interviews, employees are not clear about why people don't pay the business permits.

What: Our recommendation is to survey payers' attitudes. This should be the first task for the behavioral strategy working group because a better understanding of payer's attitude will help to design future experiments.

Why: Targeted interventions which are based on payer's attitude will be effective and can increase revenue collection.

How: According to literature research, understanding attitudes has 3 important components:

1. Perception of government accountability
2. Perception of the burden of the payment
3. Understanding of business permits laws

City Hall can design a survey which has questions in those three areas and then once they have can answer those questions, make specific policy changes to improve attitudes. For example, if people think the government is not accountable enough, the Municipality can increase transparency and bring attention to City Hall's public works and achievements.

Who: These tests should be jointly owned by **all participants** of the sub-working group in the task force, including the Communications Department.

When: Because the recommendation involves significant experimentation and testing, it should be prioritized in for next year.

Possible Roadblocks

- The working group needs to carefully design the content of the survey and figure out how to encourage or force the payers to fill out the survey.
- They may need external support to analyze the survey results and implement targeted solutions.

Best Practices: Kenya: Used surveys and found out that the high rate of corruption among government officers creates a bad perception among taxpayers which is likely to influence their tax compliance. A sample survey is in Lumumba, M., Wanjohi, M., & Magutu, P. (2010).

Annotated Bibliography

Must reads:

OECD (2014), Working Smarter in Tax Debt Management, <https://doi.org/10.1787/9789264223257-en>

The report provides operational, strategic and organizational guidance on managing arrears effectively. The most relevant sections are:

- Chapter 2, The Application of Advanced Analytics, which includes a section on segmentation of payers and risk-based metrics
- Chapter 3, Tax Debt Treatment Strategies, which provides some best practices in strategies for arrears management
- Chapter 5, Organisational aspects of tax debt management, which provides best practices in the organization of Revenue Bodies around advanced analytics

OECD (2016), Advanced Analytics for Better Tax Administration: Putting Data to Work <https://doi.org/10.1787/9789264256453-en>

The report provides guidance on the current state of adoption of advanced analytics in the most efficient Tax Administrations, as well as some practical guidance on organization. The report can be useful to the Municipality of Santiago to formulate long-term objectives in advanced analytics. Most relevant sections are:

- Chapter 2, Advanced analytics activities, which provides a few examples on the current state of adoption among best-performers
- Chapter 3, Advanced analytics in the wider organization, which provides useful insights on how to overcome structural and cultural barriers to a data-driven tax administration
- Chapter 4, Managing advanced analytics projects effectively, which provides useful best practices in project management, evaluation, and change management

OECD (2018), Regulatory Enforcement & Inspections Toolkit <https://doi.org/10.1787/9789264303959-en>

This toolkit presents a checklist of 12 criteria that correspond to the 11 OECD Best Practice Principles for Regulatory Enforcement and Inspections and a twelfth criterion for a “reality check” of actual performance. The 12 criteria are: Evidence-based enforcement; Selectivity; Risk focus and proportionality; Responsive regulation; Long-term vision; Co-ordination and consolidation; Transparent governance; Information integration; Clear and fair process; Compliance promotion; Professionalism; Reality check.

Cotton, M., Dark, G., (2017), Use of Technology in Tax Administrations 2; Core Information Technology Systems in Tax Administrations, IMF Technical Notes and Manuals 17/02, International Monetary Fund, <https://www.imf.org/~media/Files/Publications/TNM/2017/tnm1702.ashx>

The report includes a comprehensive review of the functionalities that should be included in a Tax Administration’s IT system, including a section specific to the management of arrears.

World Bank (2006), Good practices for business inspections: guidelines for reformers (English). Washington, DC: World Bank. <http://documents.worldbank.org/curated/en/286811468329950178/Good-practices-for-business-inspections-guidelines-for-reformers>

This guide provides good practices for business inspection in checklist form. The checklist aims to guide a project team through the various aspects of an inspection system. For each aspect of the inspection system, the checklist also defines elements that can be considered ideal, reasonable, and bad practice and outlines steps that can be taken to achieve good practice.

Recommended Readings:

OECD (2016), Technologies for Better Tax Administration: A Practical Guide for Revenue Bodies, <https://doi.org/10.1787/9789264256439-en>

The report provides guidance on emerging technologies that are relevant to Tax Administrations and a maturity model to assess practices on handling big data. Useful to understand what is possible in the long-term.

OECD (2014), Increasing Taxpayers' Use of Self-service Channels <https://doi.org/10.1787/9789264223288-en>

The report provides guidance on best practices to increase taxpayers' use of self-service channels like online portals. This may help the Municipality to understand how it can improve its current payment portal.

Cotton, M., Dark, G., (2017), Use of Technology in Tax Administrations 1: Developing an Information Technology Strategic Plan (ITSP), IMF Technical Notes and Manuals 17/02, International Monetary Fund, WDC <https://www.imf.org/~media/Files/Publications/TNM/2017/tnm1701.ashx>

Guidance on how to develop an IT Strategic Plan aligned with the organization's objectives and current state.

Dobrolyubova, E. (2017), Evaluating Performance of Government Inspection Bodies: A Possible Approach, NISPAcee Journal of Public Administration and Policy, 10(2), 49-72. doi: <https://doi.org/10.1515/nispa-2017-0011>

This article provides the recommendation on both developing a framework to define and evaluate the efficiency of regulatory enforcement and applying this framework to several areas of inspection activities. It also provides some examples of indicators used for measuring regulatory enforcement and inspections as the table below illustrates:

Dimension	Possible Performance Indicators
1. Administrative burden on businesses	<ul style="list-style-type: none">● Share of businesses covered by inspections● Inspection frequency and duration● Total time for 1 inspection● Direct administrative costs
2. Targeting inspections	<ul style="list-style-type: none">● Allocation of inspections among the groups of businesses with different risk profiles
3. The use of technology	<ul style="list-style-type: none">● Percentage of inspections using new tools (check-lists, inspector identification, advance notices, etc.), out of total number of inspections
4. Information and compliance support	<ul style="list-style-type: none">● Percentage of businesses participating in information activities● Business satisfaction with information provided by inspection bodies● Perceptions of businesses in terms of clarity and transparency of regulations
5. Resource allocation	<ul style="list-style-type: none">● Allocation of financial and human resources on different tasks<ul style="list-style-type: none">○ Information (consultation)○ Analysis and planning○ Inspection and enforcement

The City of New York (2018), Mayor's Management Report. <https://www1.nyc.gov/site/operations/performance/mmr.page>

The report provides the City's own measurement of whether agencies are delivering services efficiently, effectively and expeditiously. The most relevant sections are:

- Small Business First (p.49), which includes performance indicators reflecting the commitment and impact of the Small Business First Initiative on business owners.
- Department of Consumer Affairs (p.143), which provides performance indicators covering consumers protection, and business assistant and education.

Books:

Smarter New York City: How City Agencies Innovate. Edited by André Corrêa d'Almeida, Columbia University Press, 2018.

Through a series of case studies produced by a multidisciplinary team from New York City universities and research institutes, the book describes the drivers and constraints behind urban innovation and provides practical and replicable lessons for cities around the world, particularly reliance on team building.

Academic Papers:

1. **Castro, L., & Scartascini, C. (2015).** *Tax compliance and enforcement in the pampas evidence from a field experiment.* *Journal of Economic Behavior & Organization*, 116, 65-82. <https://www.sciencedirect.com/science/article/pii/S0167268115001067>
2. **Pijnenburg, M., Kowalczyk, W., van der Hel-van Dijk, L. (2017),** *A Roadmap for Analytics in Taxpayer Supervision, The Electronic Journal of e-Government Volume 15 Issue 1 2017,* https://www.researchgate.net/publication/325923659_A_Roadmap_for_Analytics_in_Taxpayer_Supervision
3. **Jani, M., (2012),** *Data mining in tax administration - Using analytics to enhance tax compliance,* Aalto University, Aalto, <http://urn.fi/URN:NBN:fi:aalto-201301151101>
4. **Lumumba, M., Wanjohi, M., & Magutu, P. (2010).** *Taxpayers attitudes and tax compliance behaviour in Kenya: How the Taxpayers' Attitudes Influence Compliance Behavior among SMEs Business Income Earners.*

Websites:

1. **7 behavioral insights tips from pioneering cities in the field** <https://medium.com/@BloombergCities/7-behavioral-insights-tips-from-pioneering-cities-in-the-field-1943a3fd2947>
2. **Managing a Cross-Functional Team** <https://www.lynda.com/Leadership-Management-tutorials/Managing-Cross-Functional-Team/659267-2.html>
3. **Working on a Cross-Functional Team** <https://www.lynda.com/Leadership-Management-tutorials/Working-Cross-Functional-Team/624206-2.html>
4. **Goldsmith, S., (2019), A Permanent Place for Data Analytics, Governing Magazine,** <https://www.governing.com/blogs/bfc/col-new-york-city-mayor-office-data-analytics-codified-law.html>

Expert and Practitioner Interviews on Best Practices

Yvonne Quintian, Assistant Director, Miscellaneous Revenue, Office of Management and Budget (OMB), The City of New York. February 19, 2019. Summary of the interview:

Enforcement

- The city does not bill for licenses; the amount that is reported in the budget is fees that are paid upfront by license holders. OMB reminds license holders of their renewal obligations only.
- For non-compliance, the OMB will issue a 'work without a permit' notice that can be up to 10x to 20x the value of the permit itself. Additionally, a stop-work order is mandated until the permit is paid.
- A business needs to post a license/permit to be in compliance with its requirements
- The Office of Consumers Affairs uses a mix of complaints, information and enforcement staff to collect.
- Penalty charge should be high enough to discourage non-compliance (a fee greater than the value of the permit), or you should freeze/seize assets (padlock buildings) or force them to sell out.
- NYC also uses "bad press," saying that company X is a bad company because they didn't pay a license. If not using some kind of "stick" then must use some sort of "carrot" to incentivize companies to pay.
- Any summons greater than \$25K must be levied through the court; less than \$25K summons issued under 'proper service' can be executed by a marshal/sheriff.

Technology, data, and calculation

- A handheld device is used for inspection and enforcement, avoiding handwriting problems. Also helps businesses understand what they need to abide by.
- The OMB forecasts trends accurately due to very good historical revenue collection and enforcement data and it can easily be alerted if a change in permit compliance happens.
- The one-stop business portal does not increase the collection amount, but it does increase the expectation for consumers that filings will be quick.
- A centralized data system should track everything, including outstanding fines, using unique identifiers.
- There are too many City agencies and too many fees and fines for NYC to assess the risk of a payer not paying.

Rohan Baxter, Senior Director, Data Science & Special Purpose Acquisition, Smarter Data Organization: Australian Taxation Office (ATO), February 24, 2019. Summary of the interview:

Technology and Data Management

- ATO uses machine learning to enable the system to prompt in real time if anything seems wrong while taxpayers are filing online and to alert the obvious potential non-compliance close to real-time.
- Machine learning and automated back offices works (400-500 automated work activities a year) lead to faster processing, improved services level, fewer phone calls and fewer complaints.
- Credit card merchant accounts are a critical source of data, providing monthly how much money flows into the businesses' accounts, good for cross-checking with the business tax filing data.
- ATO is developing the Natural System that can fill the tax form for the payer automatically.

Communication

- Speeches to taxpayers should be narrative, real, and meaningful to increase the understanding of the people. However, it can be difficult to come up with interesting stories that appeal to the public.
- ATO leverages a Key Taxpayer Engagement (KTE) approach as a single contact point for the taxpayers.

Management and Enforcement

- ATO considers two dimensions when prioritizing projects: (1) Business value: Revenue, Productivity scoring, efficiency gains, policy goals; and (2) Implementation: platform to do? data?, how much will

we require from the IT?, how much we need to pay for this? Any new skills required? And use machine learning to do the prioritized scoring.

- Positions they needed for their Smart Data Initiative: (1) Data Analysts who do profiling and modeling; (2) Business analysts who manage the data in excel and other software; and (3) A Project Manager.
- They experienced that there were trust issues between different departments when they first developed the Smart Data Initiatives. Now, the communication has improved with the cross-functional team.
- To run a business in Australia, a business needs to get a unique ID, which is free.

Carlos Scartascini, Leader IDB Behavioral Economics Group, Inter-American Development Bank (IDB), February 28, 2019. Summary of the interview:

The key is to understand why people do not pay: Do they know they have to pay? Is it hard to do the payment? Here are some common reasons for non-compliance:

1. They think if they don't pay nothing will happen
2. The government will waste money so they don't pay
3. Other people don't pay, so they don't pay
4. People don't know that the tax exist
5. Very hard for them to pay
6. They don't understand the tax or think they don't have to pay
forget to pay the tax

Inspectors can be very cost-benefit effective: In Junin case, the marginal cost of each inspector visit was \$8.00 and on average they can get \$2,000 repayment. But of course they already had the inspectors, it was just marginal cost such as lunch money, getting them out of the office etc. Whether it is cost-benefit efficient depends on several things: Do you want to incentivize current payments, or do you want to get someone with large arrears? It also depends on the amount of the taxes.

All communication needs to reach the people who make the decisions in business: Usually it's the owner of the business who decide pay or not to pay the tax. If our interventions (e.g. inspectors, calls) cannot reach the decision makers, the impact will be decreased.

Michael Nutter, Former Mayor of City of Philadelphia, PA., USA. March 6, 2019. Summary of the interview:

Communicating consequence of non-compliance: The consequences of not paying taxes should be made very clear and they should be threatening: if a business does not pay the taxes or permits it owes, it will face steep fines and the owner may face prison time. The City Administration should also signal in the clearest possible terms that it will prosecute non-compliant businesses with the full force of the law, and that it will not stop at anything. Of course, the City Administration should then follow up on any threat it makes and consider enforcement one of its highest priorities.

Messages of positive reinforcement: Together with the threats for non-compliant businesses, the City Administration should also send out messages of positive reinforcement in case of, e.g., early payment, or even payment in full within the deadline. Similarly, a good strategy is to communicate to the taxpayer how the money it contributes gets used.

Use the press when possible: The City Administration's overarching narrative should be that businesses who do not pay what they owe are robbing citizens of essential services. To this effect, publishing lists of non-compliant businesses is very effective, and they can be reported on by the press. Similarly, the press can be a good vehicle to communicate positive reinforcement messages, such as thanking businesses for their timely contribution to the city budget.

Role of a Mayor in delivering the message: Both types of messages--on consequences and positive reinforcement--should be delivered by the Mayor directly where possible. This is both to signal that tax collection and enforcement is of highest priority and to ensure that the message is delivered by a person (rather than an impersonal bureaucracy). The Mayor recalled an instance where he personally held a press conference in front of the headquarters of a fraudulent business, taking to the extreme the

technique of “naming and shaming.” Depending on the specific circumstances, taking active ownership of such outspoken messages may not be possible, in which case they might consider delivering only messages of positive reinforcement.

William Eimicke, Professor of Professional Practice in International and Public Affairs, Columbia SIPA. Also New York City Fire Department (FDNY), April 2, 2019. Summary of the interview:

Organizational communications: The most efficient communication tools within an organization are email and face-to-face meetings. Email is efficient because it is fast and provides a record and timestamp, which are evidence that is hard to deny. So, it should be done carefully. Aside from email, face-to-face meetings.

Managing Silos in organization: A common strategy to break organizational silos is to create a task-force. In the case of the municipality that wants to improve revenue collection, the task-force should consist of all the departments involved in the collection process. The team should be the direct appointment from the mayor and the leader of the task-force should be senior manager or top civil servant in charge of the issue, and there should be a document that records the appointment of the team. The responsibility of the task-force is to report recommendations on the tasks assigned within a specific timeline. In his experience as a Deputy Fire Commissioner for Strategic Planning and Policy of the New York City Fire Department (FDNY), most task-forces there had temporary status. However, it will depend on the mayor whether the task-force should later turn into the permanent team or not, and to whom the team continues to report. Another crucial requirement for the task-force is that it has to have regular time-limited meeting time.

Modernizing the organization with data-driven strategy and risk-based inspection: Professor Eimicke led various innovations at FDNY, including the computerized risk-based inspection. At the beginning, the FDNY hired IBM to help build the database and create an algorithm. Now, the system is run internally and the FDNY has hired their own data scientists to be responsible for the system. However, he thinks outsourcing data science is more efficient because the outsource company like IBM has more experience and more resources in-hand; it is more difficult for the government sector to attract top talented data scientists. The process of developing computerized risk-based inspection for the FDNY has taken years to be completed because it required changing legislation, getting everyone to cooperate, and training people to collect data. However, it has resulted in a more efficient system. They are now able to use available information to identify the likelihood of a fire incident. And once you have get it going, it becomes the new normal.