

A Guide to the MTC Ticket Office Terminal (TOT) Dashboard

Introduction

The TOT Dashboard is a new tool designed to provide an accessible representation of data generated by Clipper Card transactions completed through Ticket Office Terminals (TOT) across the Clipper Card system.¹ Designed and maintained by Resource Development Associates (RDA), the tool is reviewed on a monthly basis by Operations Staff at the Metropolitan Transportation Commission (MTC), and by participating Transit Agencies, to assess whether they are meeting their monthly Clipper Card distribution goals. The following document serves as a guide for the monthly update and maintenance that goes into the TOT Dashboard. Given RDA’s data collaboration with MTC and Cubic, the third-party vendor operating the Clipper system, this document offers future considerations for dashboard development when collaborating with large, public entities.

What is included in the dashboard?

The TOT Dashboard conveys data on Clipper Card transactions delivered by Transit Agencies participating in the Clipper program (i.e. operators), as well as Third Party Vendors selling and distributing Clipper products. The following is a list of operators whose data are included in the dashboard.²

- | | | |
|----------------------------|---------------------------|-----------------------|
| 1. AC Transit ³ | 8. Petaluma | 15. Tri Delta Transit |
| 2. BART | 9. Santa Rosa City Bus | 16. Union City |
| 3. SamTrans/Caltrain | 10. SF Muni | 17. VTA |
| 4. County Connection | 11. SMART | 18. West CAT |
| 5. FAST | 12. SolTrans ⁴ | 19. Wheels |
| 6. Golden Gate Transit | 13. Sonoma County Transit | |
| 7. Napa County | 14. Suisun Train Depot | |

Third party vendors include:

1. Nematode - oversees Bay Crossings at the San Francisco Ferry Building
2. Faneuil - oversees The Hub at the Bay Area MetroCenter, and the Clipper Customer Service Center at the Embarcadero BART/Muni Metro station
3. Cubic – oversees discount Clipper cards

A sample TOT Dashboard is included at the end of this document and with a description of the goals for each section.

Dashboard Framework

Program choice. Data visualization software has grown in popularity over the past decade, as Power BI, Tableau, or free online tools make visualization increasingly seamless. For this project however, Excel is used as the program of choice. RDA has previously developed an Excel dashboard to track transactions for Senior and Youth Clipper cards, and as a third party consultant, RDA relies on familiarity and access of understanding. While Excel conferred cost-savings, the fact that it is not dashboard software led to some challenges. Excel customization using developer tools that are not commonly understood, and since it is formula-driven it is sensitive to changes. This makes it difficult to share the original dataset or allow others to modify the document. For the time being, the dashboard is shared as a PDF to staff which serves their purposes. Some staff have requested underlying data, so this is shared by creating a separate PDF spreadsheet that allows them to review the raw numbers without tampering with the data.

¹ Further information on the Clipper Program is available on their website: <https://www.clippercard.com/>

² While there are a total of 22 operators, Vacaville City Coach and Marin Transit are not included in this list. Vacaville and Marin Transit accept Clipper cards, but they do not sell Clipper cards or products directly.

³ Data from AC Transit TOT #672035 are included in the underlying data, but they are excluded from the dashboard (institutional passes).

⁴ SolTrans includes data from the Vallejo Transit Center.

Dashboard design. The design took months. Balancing data streamlining with the vision. “Purpose” or “insights” questions are at the core of dashboard development. Storyboarding is key. Simultaneously the spreadsheet needs to be set up in a cohesive manner. Tabs are split between data entry, “lookup criteria” and the dashboard itself.

Steps and File Management. The program follows the three simple steps: 1) data collection, 2) data cleaning, and 3) dashboard input. The data is managed and organized in folders that follow this step structure (see table below). Each step is handled in different documents and programs, so the structure relies on following the folder outline, rather than a single program. In addition, the dashboard is presented in a static format (PDF), so is it very important to save documents in the appropriate folder and to follow naming conventions to keep track of the correct document.

Table 1. Dashboard Steps and Folder Organization

Step and Folder name	Sub-Folders
1. Data Collection	<ul style="list-style-type: none"> • Source 1: TOT data downloaded from Crystal Reports Server (.xls) • Source 2: Pre-Issued Card data provided by MTC (.xls) • Source 3: Crystal Reports Server - Adult card data (.xls)
2. Cleaning Data	<ul style="list-style-type: none"> • Raw data (csv) • Cleaned data (csv) • .do file (STATA)
3. Dashboard Input	<ul style="list-style-type: none"> • Year_Month#_MonthName (.xls) • Dashboard for distribution (PDF)

1. Data Collection

The dashboard integrates data from multiple sources.

Crystal Reports Server. The source data is taken directly from the TLS020 reports available on the Crystal Reports server.⁵ You first need to download TLS020 data for current month from Crystal reports. This is developed for cubic which conduct this across the county and the world. Part of the reason why the dashboard exists is because this data is so dense.

Pre-issued Senior Clipper cards. There are a series of cards (primarily Senior discount cards) whose sales data are not captured in the TLS020 report. and supplemented by reports of manually pre-issued Senior cards and pre-issued Adult Clipper cards (Crystal Report TLPO11) used by Cubic’s fulfillment department We collect these data by receiving it directly from Cubic staff through the following process: Micah emails the RDA team the pre-issued card data. As an example, below are the documents I received for October of 2018: 2018 Faneuil October, AC Transit October2018, Operator Apps October 2018. We save the document from Micah in the data collection folder, under “Pre-issued cards.”

2. Cleaning the data

The Crystal reports file is messy. Cubic has gathered data but it is not built to be digestible. It is built to be scalable and to some extent still relies on manual data entry by staff. Therefore the info provided by tots is not straightforward for exec. Some names may be different from the typical use of operators FSTFTC. Sometimes the tots do not have names, or there are new tots that appear. a maor part of using stata is to automate the process of relabeling according to what we want to digest.

We need to run the document through a STATA script that with smooth it out. is important that this document is a CSV file.

Your document is now ready for STATA. Open the “.do” file that has been edited most recently. The STATA document takes the following steps to clean the spreadsheet. You should run through each step separately by highlighting and clicking “do” one by one (see appendix).

⁵ The TLS020 report does track sales completed online or by phone or in person at retailers, ticket vending machines (TVMs) or Clipper Add Value Machines (AVMs).

1. Load and set up file for analysis
2. Pull the totals for TOTs
3. Label the TOTs according to the relevant agency
4. Add additional time info (Create and populate columns for calendar and fiscal year)
5. Combine and reorganize everything for entry into the tot dashboard

3. Adding the data to the TOT Dashboard

Add Cleaned Crystal Reports Data. Create a folder that corresponds to the most recent month that was added. For instance, I created an “October ’18” file. Create a new TOT dashboard that corresponds to the current month. To do this, go to the previous path in step 1. Look for a folder that corresponds to the prior month (in this case, September). Go to this folder and copy the most recent edition of the dashboard in this folder. Save it in the new folder. Rename the new file so that it corresponds to the current month. For instance, I saved the October document as: “RDA_monthlyTOT_October-18_ABR_20181106_v001” ← v001 = version 1. It is now ready for updating. Open your new dashboard file. Go to the reference data tab. Scroll to the bottom (tip, CTRL+DOWN ARROW will do this quickly for you). Simultaneously open the output that you created in STATA. As a reminder, it is in this path. Copy the data in the STATA output, and paste it at the bottom of the “reference data” tab in the new TOT dashboard file.

QA to make sure that the output from STATA matches the document. Although the STATA csv document has been organized so that the headers and columns match the TOT dashboard, it helps to double-check just to be sure. The columns in the “reference data” tab that are not yellow are built by formulas. Copy these formulas in the data that you added. Here’s how you know the columns should be copied. The headers are ORANGE, GREEN, OR BLUE in the dashboard. The columns in the data you added have “na” as a placeholder for these data.

Add the pre-issued card data into the dashboard. Go to the file where you saved the most recent documents from Cubic (Micah). As a reminder it should be here. Open the version of the TOT dashboard that you created, and go to the “manual data” tab. This is where you are going to enter the manual data. Go back to the folder where you saved the data from Micah and open the ACT document. Find the tab that has the current month listed, and copy the data under “totals” into the TOT dashboard manual data tab. The headers in both documents should match, so add the data in the corresponding location per the headers. Note: in the ACT document, we do NOT add data that is under “replacements.” Do the same thing for the Operator Apps data.

Takeaways

Several features distinguish visualization for business insights from research-oriented visualization. The TOT Dashboard is oriented around a narrative that speaks to MTC client’s goals; as a result client responsiveness will sometimes call for a suspension of visualization conventions or scale accuracy.

The developer confronts tradeoffs between accurate scales,
Leaderships need for speedy, readable documents

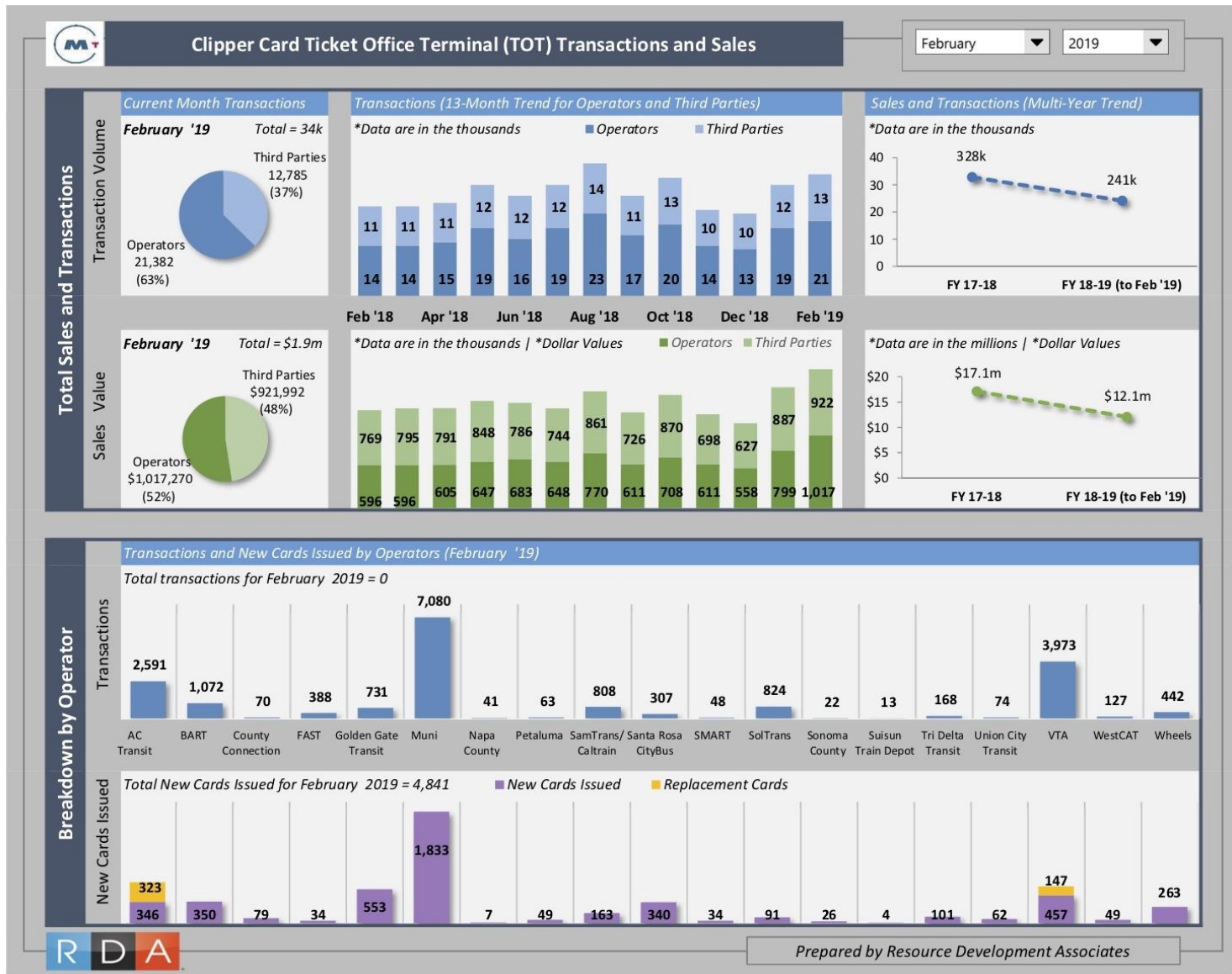
Consistency is important, and the product must evolve in tandem with the conversation.

The simpler the tool is, the more complex the backend can become.

Appendix A. Sample TOT Dashboard (Page 1)

The first page compares the volume of transactions and sales across numerous time horizons.

This page also allows audiences to assess the extent to which operators and third party vendors contributed to overall sales and transactions. As time passes in the fiscal year, the trend line will expand.



Appendix B. Sample TOT Dashboard (Page 2)

The second page highlights card distribution to target populations (adult, seniors, and youth⁶)

As well as third party vendor's role in distributing replacement cards. As time passes in the fiscal year, the trend line will expand.



⁶ The dashboard does not reflect the issuance of new Regional Transit Connection (RTC) Discount Card Program for adults with disabilities.

Appendix C. Crosswalk Data

Crosswalk Between TLS020 Data and The Data Portrayed in the Dashboard

From TLS020 Report		Relabeled For Dashboard
Participant	Location	
AC transit	AC Transit District Head Office	AC Transit
	Unknown*	
BART	Bart Lake Meritt	BART
County Connection	County Connection	County Connection
Bay Crossings Ferry Kiosk TOT	Zbay Crossings (Ferry Kiosk)	Ferry Building
Caltrain	Caltrain San Carlos HQ	Caltrain
Corridor 101	Petaluma Transit	Petaluma
	SRAHAL	Santa Rosa City Bus (6720A1)
	Unknown (same TOT as SRAHAL)	
East Bay	Wheels #3	Wheels
	LA VTA Wheels #1	
	Tri Delta	Tri Delta Transit
	Westcat	WestCat
	Unknown	Wheels (TOT #6720A9, LAVTA - Wheels #3) County Connection (TOT #67209A)
Faneuil TOT	Faneuil Hub	Hub
	Faneuil, INC	Embarcadero
	Unknown	Hub (TOT# 6720A6, Hub)
		Embarcadero (TOT# 6720A7, Faneuil Inc.) Embarcadero (TOT# 6720A8, Faneuil Inc.)
Golden Gate Transit	GOLDEN GATE BUS 3RD AND HETHERTON	Golden Gate Transit
	Unknown*	
Napa Solano	FAIRFIELD AND SUISUN TRANSIT	FAST
	FSTFTC	
	Napa County Transportation and Planning Agency	Napa County
	Suisun City Train depot	Suisun Train Depot
	Solano County Transit	SolTrans
	Vallejo transit center	
Unknown	FAST (TOT#6720B0, FAIRFIELD AND SUISUN TRANSIT)	
SF MUNI	SF Muni Powell kiosk	SF MUNI
	Presidio	
	South Van ness	
	Unknown*	
SMART	Sonoma-Marin Area Rail Transit	SMART
Sonoma	Sonoma County Transit	Sonoma County
TSB	Clipper SB Concord	Cubic
	Fulfilment Dept	
	Unknown*	
Union City	Union city transit – City hall	Union City Transit
	Unknown*	
VTA	VTA River Oaks Headquarters	VTA
	VTA DOWNTOWN CUSTOMER SERVICE	
	Unknown*	



Appendix C. TOT Serial #s and their Corresponding Locations/Agencies

TOT Serial #	Location	Participant	Name used in dashboard
67200D	AC TRANSIT DISTRICT HEAD OFFICE	AC Transit	AC Transit
672009	AC TRANSIT DISTRICT HEAD OFFICE	AC Transit	AC Transit
672013	AC TRANSIT DISTRICT HEAD OFFICE	AC Transit	AC Transit
672019	AC TRANSIT DISTRICT HEAD OFFICE	AC Transit	AC Transit
672035	AC TRANSIT DISTRICT HEAD OFFICE	AC Transit	AC Transit
672062	AC TRANSIT DISTRICT HEAD OFFICE	AC Transit	AC Transit
67200B	AC TRANSIT DISTRICT HEAD OFFICE	AC Transit	AC Transit
6720B3	unknown	AC Transit	AC Transit
6720BC	unknown	AC Transit	AC Transit
672081	BART LAKE MERRITT	BART	BART
672082	BART LAKE MERRITT	BART	BART
6720A4	ZBAY CROSSINGS (FERRY KIOSK)	Bay Crossings Ferry Kiosk TOT	Ferry Building
672049	Caltrain San Carlos HQ	Caltrain	Caltrain
672052	Caltrain San Carlos HQ	Caltrain	Caltrain
6720A1	Unknown	Corridor 101	Santa Rosa City Bus
672087	PETALUMA TRANSIT	Corridor 101	Petaluma
672093	WestCAT	East Bay	WestCAT
672090	LA VTA - Wheels #1	East Bay	Wheels
672094	LA VTA - Wheels #3	East Bay	Wheels
672092	Tri Delta	East Bay	Tri Delta Transit
67209A	Unknown	East Bay	County Connection
6720A9	Unknown	East Bay	Wheels
6720A7	Faneuil, Inc	Faneuil Hub	Embarcadero
6720A8	Faneuil, Inc	Faneuil Hub	Embarcadero
6720A6	FANEUIL HUB	Faneuil Hub	Hub
672063	GOLDEN GATE BUS 3RD AND HETHERTON	Golden Gate Transit	Golden Gate Transit
67207B	GOLDEN GATE BUS 3RD AND HETHERTON	Golden Gate Transit	Golden Gate Transit
6702C6	Unknown	Golden Gate Transit	Golden Gate Transit
672084	FAIRFIELD AND SUISUN TRANSIT	Napa Solano	FAST
67207F	FAIRFIELD AND SUISUN TRANSIT	Napa Solano	FAST
6720B0	FAIRFIELD AND SUISUN TRANSIT	Napa Solano	FAST
672077	FSTFTC	Napa Solano	FAST
672072	Napa County Transportation & Planning Agency	Napa Solano	Napa County
672073	Napa County Transportation & Planning Agency	Napa Solano	Napa County
6720BF	Unknown	Napa Solano	?
672076	SOLANO COUNTY TRANSIT	Napa Solano	SolTrans
672088	SONOMA COUNTY TRANSIT	Napa Solano	SolTrans
672075	Vallejo Transit Center	Napa Solano	SolTrans
67207A	Suisun City Train Depot	Napa Solano	Suisun Train Depot
672050	SF Muni Powell Kiosk	SF Muni	SF Muni
672020	SF MUNI PRESIDIO	SF Muni	SF Muni
67204C	SF MUNI PRESIDIO	SF Muni	SF Muni
672065	SF MUNI South Van Ness	SF Muni	SF Muni
672095	SF MUNI South Van Ness	SF Muni	SF Muni
67209B	SF MUNI South Van Ness	SF Muni	SF Muni
672097	Unknown	SF Muni	SF Muni
6720B4	Unknown	SF Muni	SF Muni
6720B5	Unknown	SF Muni	SF Muni
6720A2	Sonoma-Marín Area Rail Transit	SMART	SMART



TOT Serial #	Location	Participant	Name used in dashboard
67209F	Unknown	TSB	Clipper
67207C	Clipper SB Concord	TSB	Cubic
672042	Clipper SB Concord	TSB	Cubic
672043	Clipper SB Concord	TSB	Cubic
672053	Clipper SB Concord	TSB	Cubic
672067	Clipper SB Concord	TSB	Cubic
6720A0	FULFILMENT DEPT	TSB	Cubic
6720A5	UNION CITY TRANSIT -CITY HALL	Union City	Union City Transit
672046	VTA DOWNTOWN CUSTOMER SERVICE	VTA	VTA
672083	VTA DOWNTOWN CUSTOMER SERVICE	VTA	VTA
67207E	VTA DOWNTOWN CUSTOMER SERVICE	VTA	VTA
67208B	VTA DOWNTOWN CUSTOMER SERVICE	VTA	VTA
672040	VTA RIVER OAKS Headquarters	VTA	VTA

New Serial Numbers that Appeared After July 2017

TOT	Location	Participant	Name used in dashboard	Month it appeared
6720BF	Unknown	Napa Solano	?	<ul style="list-style-type: none"> October 2018
672009	AC TRANSIT DISTRICT HEAD OFFICE	AC Transit	AC Transit	<ul style="list-style-type: none"> October 2018 November 2019 December 2018 January 2019
6720C1	Unknown	Caltrain	Samtrans/CalTrain	<ul style="list-style-type: none"> January 2019
6720C6	Golden Gate Transit	Unknown	Golden Gate Transit	<ul style="list-style-type: none"> December 2018, February 2019
6720C0	Golden Gate Transit	Unknown	Golden Gate Transit	<ul style="list-style-type: none"> November 2018