

# Recent Trends in Metrorail System Ridership

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*November 2014*

## **Executive Summary**

As Metro reported to the Board of Directors in October 2014, Metrorail ridership has been declining steadily over the last four years, likely due to a variety of factors. This memo seeks to explain where, when, and why rail ridership has been changing, using in-depth analysis of data from the Metrorail automatic fare collection (AFC) system.

- The biggest losses in ridership are from regular commute markets: full-fare, weekday, peak trips.
  - Student trips are also down due to changes in student fare policy.
  - Weekend, weekday-evening, and senior travel are all up.
- Of these regular commute markets, the biggest losses have stemmed from suburban stations, those in Fairfax, Montgomery and Prince George's Counties, to downtown stations near federal agency offices. Ridership from inner jurisdictions (DC, Arlington, and Alexandria) is flat (AM Peak).
- Trips paid for using SmartBenefits have decreased 6,400 per average weekday, likely as a result of the decrease in the federal transit benefit cap. Regular stored value ridership is up 3,900 trips per average weekday, a combination of background ridership growth and customers supplementing benefit travel with out-of-pocket fares.
- When assessing change in ridership by card-use behavior, it is concluded that Metrorail has lost approximately 6,000 full-fare daily customers due to the decrease in transit benefit.
- Excluding SmartBenefits users, ridership is actually *up* about 2%.

## **Metro is Losing Full-Fare Commute Trips**

All of the ridership loss between 2013 and 2014 (May to May) is on weekdays. Weekday ridership has decreased by around 9,000 trips per average weekday, a loss of 1.3%. On the other hand, weekend ridership is up by around 20,000 trips per weekend day, between 7 and 10%. This could be the result of a shift in trackwork scheduling from station closure and bus bridges to single tracking. Such a shift decreases the impacts on riders and improves the quality of fare collection data.

This loss of 9,000 trips per day is the net effect of various classes of riders behaving differently. Senior/Disabled ridership is actually up by nearly 3,000 trips, an increase of 9%. However, Full Fare ridership is down around 8,000 trips (a drop of 1.2%), while student trips decreased by nearly 4,000 (a drop of 37%).

The increase in senior/disabled trips could be motivated by several factors, including higher peak and off-peak fares encouraging seniors to switch to Senior SmarTrip cards. Also, Metro's Accessibility

Services has been implementing MetroAccess demand management, including providing travel training and free Metrorail trips for customers.

The decrease in student trips is likely due to two policy considerations. First, the “students ride free” program for Metrobus may have undercut sales of Metrorail student passes. Secondly, the move from paper- to SmarTrip-based student passes may have reduced some amount of fraudulent student pass purchase and usage.

In summary, weekday full fare ridership accounts for the bulk of the ridership loss between 2013 and 2014, approximately 8,000 full fare trips per weekday.

### ***Most Ridership Loss is from Outer Jurisdictions to the Core at Peak Times***

Focusing on the biggest area of loss – full-fare, weekday ridership – most losses are focused on the traditional peak times. There is a slight uptick in ridership in the Evening and Late Night periods, meaning that the ridership loss in the AM Peak, Mid-Day and PM Peak periods is actually greater than 8,000. In fact, across those three periods, Metrorail lost 8,700 trips between 2013 and 2014. This loss breaks out across the day as follows: AM Peak, -2,800; Mid-Day, -2,050; Evening, -3,850. This translates to decreases of 1.3%, 1.6% and 1.6% respectively.

Looking at the AM Peak ridership loss by jurisdiction of entry station suggests that the biggest losses are from riders originating in outer counties – Fairfax, Montgomery, and Prince George’s. Ridership is nearly flat from stations in DC (down 75 or 0.1%), but down more significantly from Maryland and Virginia, with decreases of 1,500 from Maryland stations (down 2%) and 1,200 from Virginia stations (down 1.6%) between 2013 and 2014. Breaking this down even further by county, inner Virginia stations in Alexandria and Arlington are flat like the District (1.6% increase and 0.2% decrease, respectively) and the more distant counties see the bulk of the ridership losses, with Montgomery County down 600 (1.6%), Prince George’s County down 900 (2.4%), and Fairfax County down 1,200 (4.3%). In total ridership from the three outer counties accounts for all 2,800 loss in ridership between 2013 and 2014, with the inner jurisdictions balancing each other out.

This suggests that customers residing further from the core, and therefore with longer trips and higher fares, account for the ridership losses.

Looking at PM Peak entries suggests that the biggest losses are in commuters to the core. As noted above, Metrorail lost 3,850 trips in the weekday PM Peak between 2013 and 2014. The bulk of these PM Entries (people leaving work) were lost in the District (down 4,000 trips or 2.3%), with Maryland and Virginia being relatively flat. Maryland stations actually gained nearly 500 trips in the weekday PM Peak (1.7% increase) and Virginia stations lost just over 200 trips per weekday PM Peak (0.5% decrease). This result is expected, as the DC is the regional job core and we suspect that the bulk of AM- and PM-Peak travel is composed of commute trips.

In summary, most ridership loss has stemmed from commuters who travel from the outer jurisdictions, to the core, at peak times.

### ***Changes in Ridership by Station***

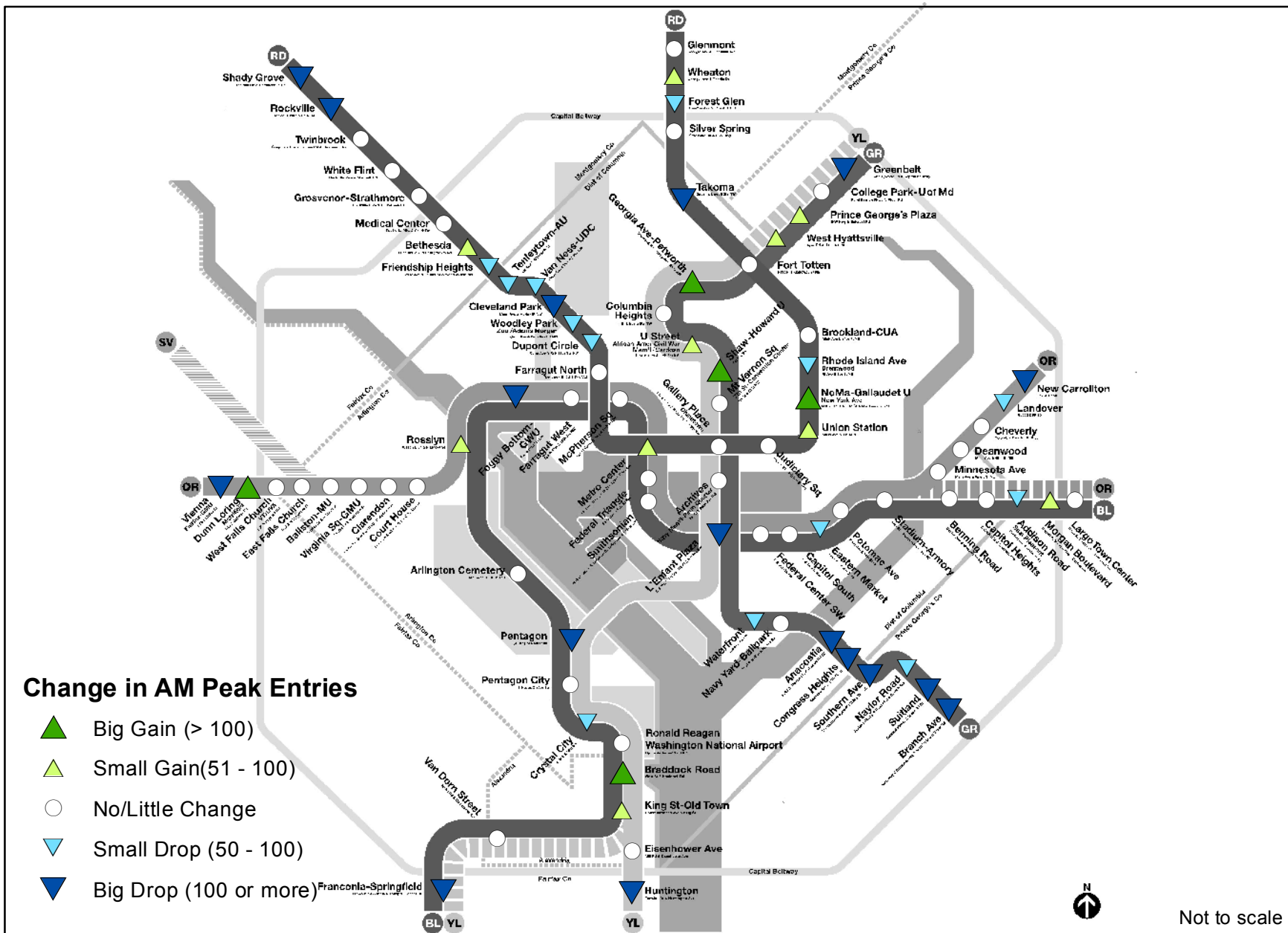
When looking at ridership change by station, it becomes even more evident that the most distant travelers are those most impacted.

In the first map below, the largest drops in AM Peak entries are those at the ends of the lines with large drive-access commute sheds. Some stations have increased, especially along the Green/Yellow line corridor in northwest DC, the Green Line in southeast DC, and the Red Line corridor in northeast DC. These increases are likely due to increased densification of the urban core via transit-oriented development along these corridors, including notable projects near Columbia Heights, NoMa, Waterfront and Congress Heights stations. The recent trends of Millennials wanting to live without cars and in city centers may contribute to these changes.

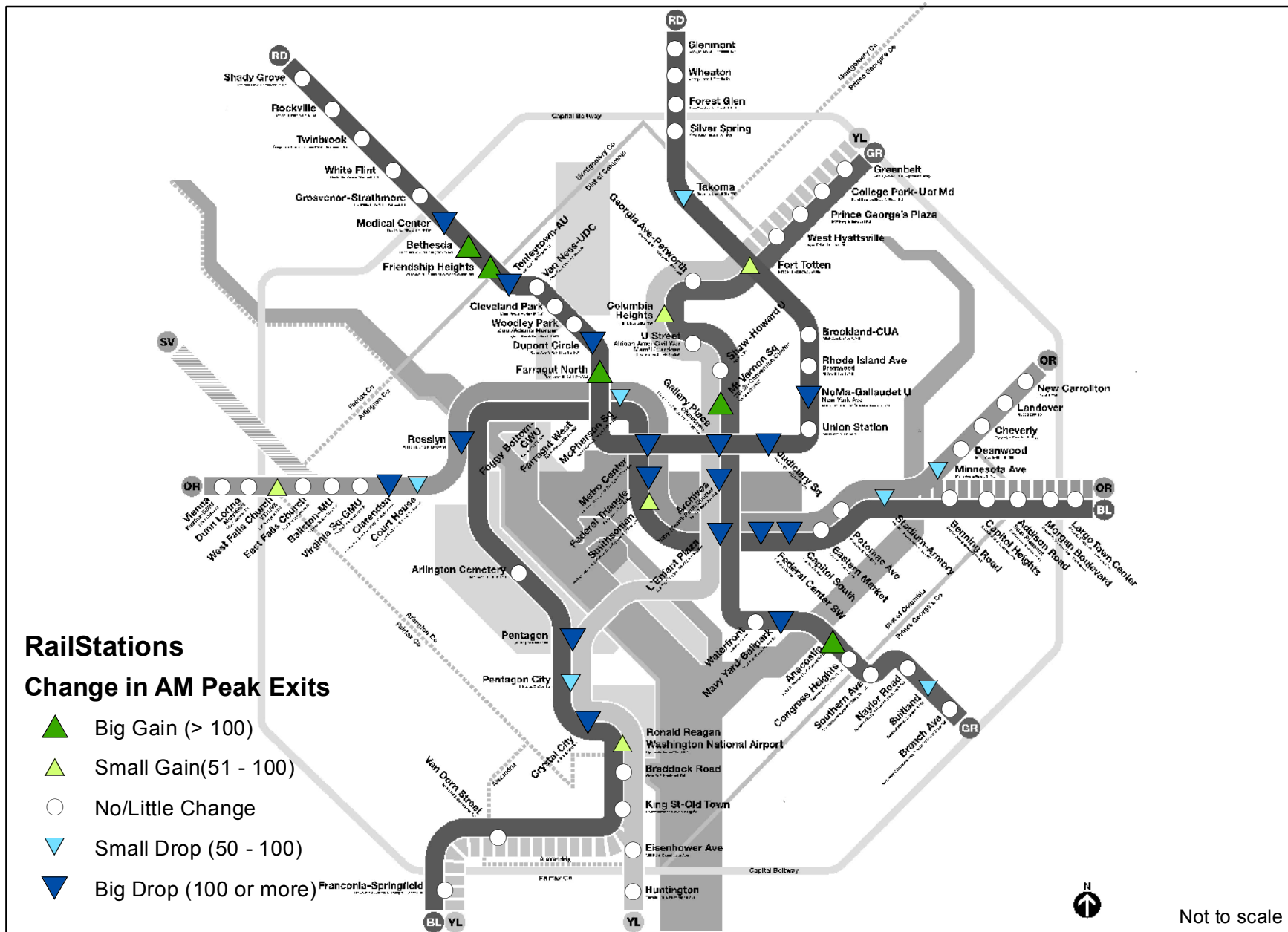
The second map below shows large drops in AM Peak station exits concentrated at stations surrounded by federal agencies throughout the regional core, including Federal Center SW, Federal Triangle, Foggy Bottom, Judiciary Square, L'Enfant Plaza, McPherson Sq, and Smithsonian. Increases are noted at two core stations that are less associated with the federal work locations (Farragut North and Mt Vernon Sq).

In summary, the maps illustrate the biggest changes in ridership are those from end-of-line stations and to core federal work locations.

# Change in AM Peak Entries, 2013 to 2014



# Change in AM Peak Exits, 2013 to 2014



## ***The Decline in the Transit Benefit is Hurting Ridership***

The federal transit benefit has been the subject of many policy changes and flip-flops over the past few years, including:

- Transit benefits must be stored in a separate purse on a SmarTrip card – distinct from parking or personal stored value
- Unused transit benefits can now be returned to the employer at the end of the month, while some employers allow benefits to roll over
- Many employers are now requiring employees to specify exact benefits amounts needed to cover work travel
- The maximum allowable monthly benefit has been raised, lowered, raised and then lowered again over the past four years

Metro fully implemented these policy changes for the beginning of calendar year 2012.

Many Metrorail customers can and do spend more than the current limit of \$130/month, so it makes sense that these policy changes would result in changes in ridership. For example, a customer riding from Shady Grove to downtown every day (\$5.90 one-way) spends \$236 per month (\$5.90 x 4 weeks x 10 trips per week). When this customer can only use transit benefit dollars for the first \$130/month, their financial burden increases significantly, and they may very well change their riding habits. It was possible under the 2013 benefits cap for a max-fare customer to be fully subsidized, whereas in 2014 only customers with a one-way fare of \$3.25 or lower would be fully subsidized.

Fortunately, Metrorail's fare collection system records from which purse a fare is paid, which allows us to identify the impacts of the changes of these benefits policies on ridership.

Going back to AM Peak Weekday Entries, recall that Metro experienced a drop of 2,800 riders. When separating these out by SmartBenefits versus regular stored value, SmartBenefits actually account for a 6,400 decrease and stored value customers saw an INCREASE of nearly 3,900 trips, with pass users accounting for an additional decrease of 300 trips. In percentage terms, SmartBenefits trips were down by 7%, pass use down by 8.6% but regular stored value ridership is up 3.0%. This evidence illustrates that indeed the reduction in the federal transit benefit cap negatively impacts ridership.

## ***Controlling for Benefits Change, Ridership Growth is Up***

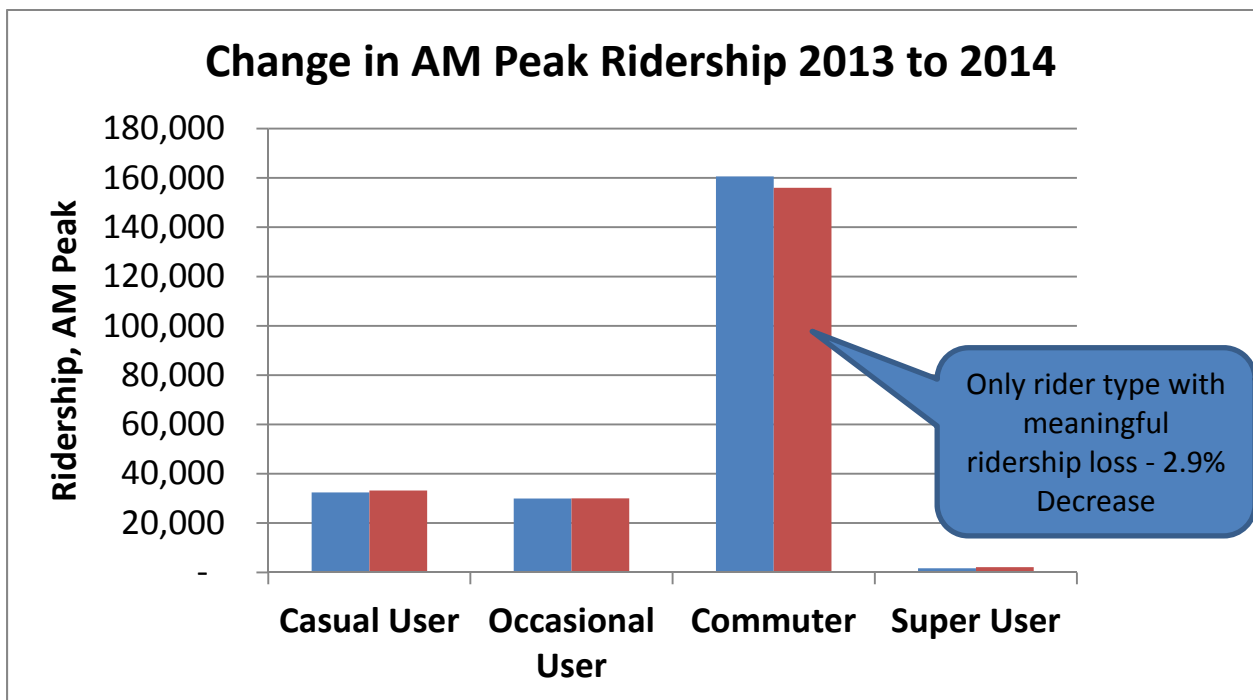
The fare system data can also be assessed by individual SmarTrip cards. Using an innovative technique, individual cards were classified based on their SmartBenefits usage per month: *Always*, *Sometimes* or *Never*. Looking at the change in ridership by this benefits classification shows how the change in benefits impacts individuals over the course of a month.

Comparing 2013 to 2014, we see a decrease of 27,000 cards *Always* using SmartBenefits and an increase of 21,000 cards using SmartBenefits *Sometimes*. The interpretation of this is of the 27,000 customers who had *Always* used SmartBenefits during a month, only 21,000 of them are now supplementing the

benefit and are only using SmartBenefits *Sometimes*. This results in a loss of 6,000 customers from Metrorail due to changes in the transit benefit cap. This result is of a similar order of magnitude as the 6,400 decrease in SmartBenefits trips during the AM Peak mentioned above. For those customers who never use SmartBenefits, weekday peak ridership is up with a background growth rate between 2% and 2.4%.

**Metro is Primarily Losing Frequent Riders**

Another way to assess the ridership change is by trip frequency. Metro fare media were classified by the number of times they were used during a week, with cards used between 20 and 44 times per week fitting the “Commuter” profile. Cards used less frequently were assigned the Casual User (1 to 4 trips) or Occasional User (5 to 19 trips) profiles and those above 44 trips classified as Super Users. When comparing ridership by trip frequency class, it was noted that the “Commuter” group was the only that showed a decrease (2.9%) whereas casual users grew by 2%, Super Users were jumped 26% and Occasional Users were flat.



This confirms that a small number of regular riders account for the majority of the ridership loss over the past year.

**Conclusion**

Metrorail ridership has decreased between 2013 and 2014. This decrease is isolated to weekday full fare riders and students. The drop in student travel is due to changes in student fare policy, including a policy that students ride Metrobus for free. The decrease in weekday full fare ridership is largely

attributed to rising fares and the decrease of the federal transit benefit from \$245 to \$130. In 2013, riders receiving the full benefit were fully subsidized regardless of trip length, whereas the new benefit max will fully subsidize only customers with a one-way fare of \$3.25. It is shown that only our most frequent “commuter” market is impacted, and that a background growth trend of around 2% can be seen for non-benefits travelers.