# Data Analytics and Financial Forecasting

PSFOA Meeting
May 14 2014

Presented by Martin Chaw, Fiscal Manager
City of Bellevue Utilities Department

# + Agenda

- Today's presentation:
  - Build upon the tools/tips/tricks presented in "Excel Wizardry" by K.Lorentzen in September 2013
  - Learning Objectives
    - Managing and manipulating large amounts of data
    - Organizing and quickly building ad-hoc management reports
    - Using the tools/power of Excel to evaluate/assess/forecast financial trends

# + Background

- Data analytics
  - Disconnect between what I needed and what was available
- Needs:
  - As with any project, need access to large amounts of information
  - Look for trends and significant variances from plan
    - Monthly financial reports to Council
    - Historical research
    - Trends
  - Identify issues and plan for adjustments

# + What was readily available

- Financial system pre-packaged reports
  - Pluses:
    - Real-time evaluation of budget to actuals
    - Drill down to transactional details
    - Use report filter settings to query for information
  - Minuses:
    - Multiple reports, some can be quite lengthy
    - Reports can be inflexible
    - Duplicate entries / Export to Excel and manipulate
    - Time consuming

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Periods: 0 through 15

**Expenditure Group Budget Report**

City of Auburn
1/1/2014 through 12/31/2014

Page: 1

001 GENERAL

14 FINANCE

| Account Number | Adjusted Appropriation | Expenditures | Year-to-date Expenditures | Year-to-date Encumbrances | Balance | Prct Used |
|---|---|---|---|---|---|---|
| 514 FINANCIAL SERVICES | | | | | | |
| 514.100 FINANCE ADMINISTRATION | | | | | | |
| 514.100.10 SALARIES & WAGES | | | | | | |
| 514.100.11 REGULAR SALARIES & WAGES | 171,773.28 | 45,435.45 | 45,435.45 | 0.00 | 126,337.83 | 26.45 |
| 514.100.12 OVERTIME | 500.00 | 0.00 | 0.00 | 0.00 | 500.00 | 0.00 |
| 514.100.13 OTHER WAGES | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total SALARIES & WAGES | 172,273.28 | 45,435.45 | 45,435.45 | 0.00 | 126,837.83 | 26.37 |
| 514.100.20 PERSONNEL BENEFITS | | | | | | |
| 514.100.21 F.I.C.A. | 11,819.19 | 3,332.53 | 3,332.53 | 0.00 | 8,486.66 | 28.20 |
| 514.100.22 OTHER FRINGE BENEFITS | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 514.100.23 PENSIONS | 16,453.63 | 4,007.20 | 4,007.20 | 0.00 | 12,446.43 | 24.35 |
| 514.100.24 INDUSTRIAL INSURANCE | 736.10 | 138.36 | 138.36 | 0.00 | 597.74 | 18.80 |
| 514.100.25 HEALTH INSURANCE | 44,793.06 | 10,093.43 | 10,093.43 | 0.00 | 34,699.63 | 22.53 |
| 514.100.28 UNEMPLOYMENT CLAIMS | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total PERSONNEL BENEFITS | 73,801.98 | 17,571.52 | 17,571.52 | 0.00 | 56,230.46 | 23.81 |
| 514.100.30 SUPPLIES | | | | | | |
| 514.100.31 OFFICE & OPERATING SUPPLIES | 1,000.00 | 30.56 | 30.56 | 0.00 | 969.44 | 3.06 |
| 514.100.35 SMALL TOOLS & MINOR EQUIPMENT | 2,000.00 | 0.00 | 0.00 | 0.00 | 2,000.00 | 0.00 |
| Total SUPPLIES | 3,000.00 | 30.56 | 30.56 | 0.00 | 2,969.44 | 1.02 |
| 514.100.40 OTHER SERVICES & CHARGES | | | | | | |
| 514.100.41 PROFESSIONAL SERVICES | | | | | | |
| 514.100.42 COMMUNICATION | | | | | | |
| 514.100.43 TRAVEL | | | | | | |
| 514.100.46 INSURANCE | | | | | | |

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**Expenditures by Object Report**

City of Auburn
1/1/2014 through 12/31/2014

Page: 1

001 GENERAL
14 FINANCE
514 FINANCIAL SERVICES
100 FINANCE ADMINISTRATION

| Title/Object | Adjusted Appropriation | Expenditures | Year-to-date Expenditures | Year-to-date Encumbrances | Balance | Prct Used |
|---|---|---|---|---|---|---|
| 10 SALARIES & WAGES | | | | | | |
| 11 REGULAR SALARIES & WAGES | 171,773.28 | 45,435.45 | 45,435.45 | 0.00 | 126,337.83 | 26.45 |
| 12 OVERTIME | 500.00 | 0.00 | 0.00 | 0.00 | 500.00 | 0.00 |
| Total SALARIES & WAGES | 172,273.28 | 45,435.45 | 45,435.45 | 0.00 | 126,837.83 | 26.37 |
| 20 PERSONNEL BENEFITS | | | | | | |
| 21 F.I.C.A. | 11,819.19 | 3,332.53 | 3,332.53 | 0.00 | 8,486.66 | 28.20 |
| 23 PENSIONS | 16,453.63 | 4,007.20 | 4,007.20 | 0.00 | 12,446.43 | 24.35 |
| 24 INDUSTRIAL INSURANCE | 736.10 | 138.36 | 138.36 | 0.00 | 597.74 | 18.80 |
| 25 MEDICAL & LIFE INSURANCE | 44,793.06 | 10,093.43 | 10,093.43 | 0.00 | 34,699.63 | 22.53 |
| Total PERSONNEL BENEFITS | 73,801.98 | 17,571.52 | 17,571.52 | 0.00 | 56,230.46 | 23.81 |
| 30 SUPPLIES | | | | | | |
| 31 OFFICE & OPERATING SUPPLIES | 1,000.00 | 30.56 | 30.56 | 0.00 | 969.44 | 3.06 |
| 35 SMALL TOOLS AND EQUIPMENT | 2,000.00 | 0.00 | 0.00 | 0.00 | 2,000.00 | 0.00 |
| Total SUPPLIES | 3,000.00 | 30.56 | 30.56 | 0.00 | 2,969.44 | 1.02 |
| 40 OTHER SERVICES & CHARGES | | | | | | |
| 41 PROFESSIONAL SERVICES | 68,200.00 | 1,474.08 | 1,474.08 | 0.00 | 66,725.92 | 2.16 |
| 42 COMMUNICATION | 2,500.00 | 50.00 | 50.00 | 0.00 | 2,450.00 | 2.00 |
| 43 TRAVEL | 3,500.00 | 91.50 | 91.50 | 0.00 | 3,408.50 | 2.61 |
| 46 INSURANCE | 3,900.00 | 666.00 | 666.00 | 0.00 | 3,234.00 | 17.08 |
| 49 MISCELLANEOUS | 4,000.00 | 1,061.55 | 1,061.55 | 0.00 | 2,938.45 | 26.54 |
| Total OTHER SERVICES & CHARGES | 82,100.00 | 3,343.13 | 3,343.13 | 0.00 | 78,756.87 | 4.07 |
| 60 CAPITAL OUTLAY | | | | | | |
| Total CAPITAL OUTLAY | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 90 INTERFUND PAYMENTS FOR SERVICES | | | | | | |
| Total INTERFUND PAYMENTS FOR SERVIC | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total FINANCE ADMINISTRATION | 331,175.26 | 66,380.66 | 66,380.66 | 0.00 | 264,794.60 | 20.04 |

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Periods: 0 through 11

**Revenue Status Report**

City of Auburn
1/1/2014 through 11/30/2014

001 GENERAL

| Account Number | Adjusted Estimate | Revenues | Year-to-date Revenues | Balance | Prct Rcvd |
|---|---|---|---|---|---|
| 290 FUND BALANCE CONTROLS | | | | | |
| 291 FUND BALANCE CONTROLS | | | | | |
| 291.720 DESIGNATED FUND BALANCE | 342,183.00 | 0.00 | 0.00 | 342,183.00 | 0.00 |
| 291.740 UNDESIGNATED FUND BALANCE | 13,475,864.70 | 0.00 | 0.00 | 13,475,864.70 | 0.00 |
| Total FUND BALANCE CONTROLS | 13,818,047.70 | 0.00 | 0.00 | 13,818,047.70 | 0.00 |
| 310 TAXES | | | | | |
| 311 GENERAL PROPERTY TAXES | | | | | |
| 311.100 PROPERTY TAX | 15,699,417.00 | 209,140.01 | 209,140.01 | 15,490,276.99 | 1.33 |
| Total GENERAL PROPERTY TAXES | 15,699,417.00 | 209,140.01 | 209,140.01 | 15,490,276.99 | 1.33 |
| 313 RETAIL SALES AND USE TAX | | | | | |
| 313.100 SALES & USE TAX | 12,996,052.00 | 2,495,416.08 | 2,495,416.08 | 10,500,635.92 | 19.20 |
| 313.110 SALES TAX CREDIT FOR ANNEXATION | 1,404,590.00 | 330,337.04 | 330,337.04 | 1,074,252.96 | 23.52 |
| 313.170 PIERCE COUNTY PARK SALES TAX | 52,500.00 | 12,748.04 | 12,748.04 | 39,751.96 | 24.28 |
| 313.600 BROKERED NATURAL GAS TAX | 303,008.00 | 60,153.43 | 60,153.43 | 242,854.57 | 19.85 |
| 313.710 LOCAL SALES - CRIMINAL JUSTICE | 1,231,185.00 | 290,548.35 | 290,548.35 | 940,636.65 | 23.60 |
| Total RETAIL SALES AND USE TAX | 15,987,335.00 | 3,189,202.94 | 3,189,202.94 | 12,798,132.06 | 19.95 |
| 314 INTERFUND TAXES | | | | | |
| 314.520 INTERFUND WATER TAXES | 796,003.00 | 112,163.74 | 112,163.74 | 683,839.26 | 14.09 |
| 314.540 INTERFUND SEWER TAXES | 1,288,286.00 | 223,571.45 | 223,571.45 | 1,064,714.55 | 17.35 |

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*Reports provided good info but were limited in many respects*

- *Not able to see month to month activity*
- *Not able to group selected cost centers*
- *Needed a better mouse trap*

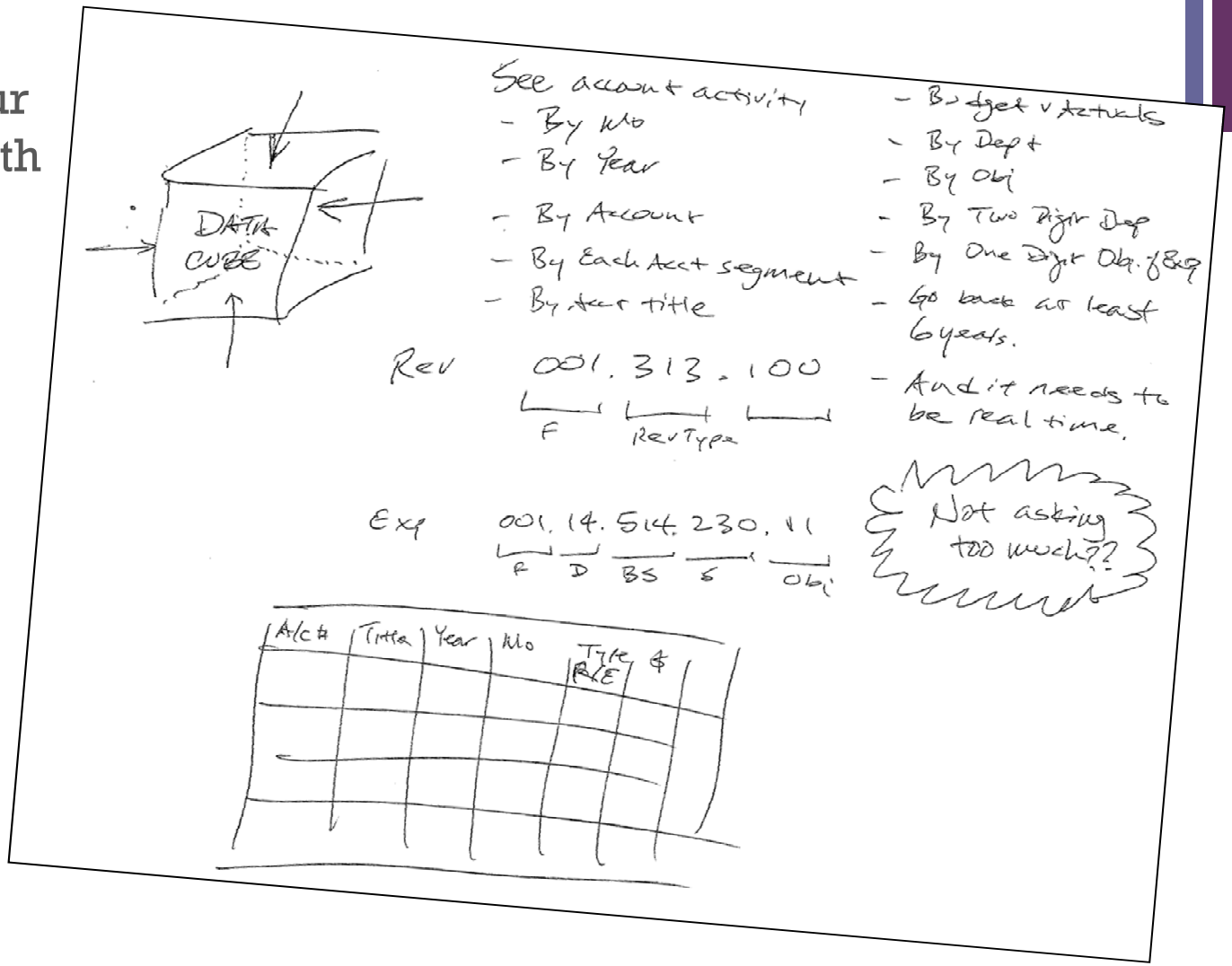
# + My Need

- Need: Ability to organize information into a data-cube
  - Attack information in multiple ways
  - Quickly plow through information
  - Group/sort data by:
    - Month, Year, Basub, object, object family, fund family

- Objectives
  - Data reporting flexibility
  - Self manipulate information
  - Quickly make sense of large volume of information
  - Create ad-hoc reports

# + How I attacked this problem

- Went to our IT folks with a vision



# My wish was granted!

| | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Fund Name | Account | First Two D | First One ( | Fun | Dep | Basu | Sul | Obj | Yea | perio | Title | debits | credits | Adjustme | Budge | Actual | Net Bude | Type |
| 54450 | L I D GUARANTEE | 249.111.100 | 11 | | 249 | 111 | 100 | | | 2012 | 2 | CASH | 4.9 | 0 | | | 4.9 | | B |
| 54451 | L I D GUARANTEE | 249.118.100 | 11 | | 249 | 118 | 100 | | | 2009 | | INVESTMENTS | | | | | | | B |
| 54452 | L I D GUARANTEE | 249.118.100 | 11 | | 249 | 118 | 100 | | | 2012 | | INVESTMENTS | | | | | | | B |
| 54453 | L I D GUARANTEE | 249.292.100 | 29 | | 249 | 292 | 100 | | | 2009 | 3 | REVENUE CONTROL | 0 | 38.52 | | | -38.52 | | B |
| 54454 | L I D GUARANTEE | 249.292.100 | 29 | | 249 | 292 | 100 | | | 2009 | 7 | REVENUE CONTROL | 0 | 40.77 | | | -40.77 | | B |
| 54455 | L I D GUARANTEE | 249.292.100 | 29 | | 249 | 292 | 100 | | | 2010 | 1 | REVENUE CONTROL | 10.53 | 20.37 | | | -9.84 | | B |
| 54456 | L I D GUARANTEE | 249.292.100 | 29 | | 249 | 292 | 100 | | | 2010 | 12 | REVENUE CONTROL | 0 | 11.44 | | | -11.44 | | B |
| 54457 | L I D GUARANTEE | 249.292.100 | 29 | | 249 | 292 | 100 | | | 2013 | 3 | REVENUE CONTROL | 0 | 4.85 | | | -4.85 | | B |
| 54458 | L I D GUARANTEE | 249.292.200 | 29 | | 249 | 292 | 200 | | | 2010 | | EXPENDITURE/EXPENSE CONTROL | | | | | | | B |
| 54459 | L I D GUARANTEE | 249.292.200 | 29 | | 249 | 292 | 200 | | | 2013 | | EXPENDITURE/EXPENSE CONTROL | | | | | | | B |
| 54460 | L I D GUARANTEE | 249.292.200 | 29 | | 249 | 292 | 200 | | | 2016 | | EXPENDITURE/EXPENSE CONTROL | | | | | | | B |
| 54461 | L I D GUARANTEE | 249.292.300 | 29 | | 249 | 292 | 300 | | | 2010 | 14 | OTHER FIN SOURCES CONTROL | 65801 | 0 | | | 65801 | | B |
| 54462 | L I D GUARANTEE | 249.292.400 | 29 | | 249 | 292 | 400 | | | 2011 | 14 | OTHER FINANCING USES CONTROL | 0 | 10000 | | | -10000 | | B |
| 54463 | L I D GUARANTEE | 249.292.700 | 29 | | 249 | 292 | 700 | | | 2012 | 0 | BALANCING ACCOUNT | 54387.56 | 54387.56 | | | 0 | | B |
| 54464 | L I D GUARANTEE | 249.311.300 | 31 | | 249 | 311 | 300 | | | 2013 | 1 | SALE OF TAX TITLE PROPERTY | 0 | 0 | 0 | 0 | 0 | 0 | R |
| 54465 | GENERAL | 001.11.511.600.25 | 11 | 2 | 001 | 11 | 511 | 600 | 25 | 2014 | 2 | MEDICAL & LIFE INSURANCE | 1482.6 | 0 | 0 | 0 | 1482.6 | 0 | E |
| 54466 | GENERAL | 001.11.511.600.31 | 11 | 3 | 001 | 11 | 511 | 600 | 31 | 2012 | 10 | OFFICE & OPERATING SUPPLIES | 116.69 | 0 | 0 | 0 | 116.69 | 0 | E |
| 54467 | GENERAL | 001.11.511.600.31 | 11 | 3 | 001 | 11 | 511 | 600 | 31 | 2013 | 1 | OFFICE & OPERATING SUPPLIES | 0 | 0 | 0 | 3000 | 0 | 3000 | E |
| 54468 | GENERAL | 001.11.511.600.42 | 11 | 4 | 001 | 11 | 511 | 600 | 42 | 2012 | 1 | COMMUNICATION | 0 | 0 | 0 | 7900 | 0 | 7900 | E |
| 54469 | GENERAL | 001.11.511.600.43 | 11 | 4 | 001 | 11 | 511 | 600 | 43 | 2009 | 5 | TRAVEL | 947.51 | 0 | 0 | 0 | 947.51 | 0 | E |
| 54470 | GENERAL | 001.11.511.600.43 | 11 | 4 | 001 | 11 | 511 | 600 | 43 | 2009 | 6 | TRAVEL | 108.1 | 0 | 0 | 0 | 108.1 | 0 | E |
| 54471 | GENERAL | 001.11.511.600.43 | 11 | 4 | 001 | 11 | 511 | 600 | 43 | 2009 | 10 | TRAVEL | 126 | 0 | 0 | 0 | 126 | 0 | E |
| 54472 | GENERAL | 001.11.511.600.43 | 11 | 4 | 001 | 11 | 511 | 600 | 43 | 2010 | 1 | TRAVEL | 0 | 0 | 0 | 30000 | 0 | 30000 | E |
| 54473 | GENERAL | 001.11.511.600.43 | 11 | 4 | 001 | 11 | 511 | 600 | 43 | 2010 | 2 | TRAVEL | 839.4 | 0 | 0 | 0 | 839.4 | 0 | E |
| 54474 | GENERAL | 001.11.511.600.43 | 11 | 4 | 001 | 11 | 511 | 600 | 43 | 2012 | 1 | TRAVEL | 618.6 | 0 | 0 | 30000 | 618.6 | 30000 | E |
| 54475 | GENERAL | 001.11.511.600.43 | 11 | 4 | 001 | 11 | 511 | 600 | 43 | 2014 | 1 | TRAVEL | 2299.5 | 0 | 0 | 30000 | 2299.5 | 30000 | E |
| 54476 | GENERAL | 001.11.511.600.46 | 11 | 4 | 001 | 11 | 511 | 600 | 46 | 2010 | 10 | INSURANCE | 776 | 0 | 0 | 0 | 776 | 0 | E |
| 54477 | GENERAL | 001.11.511.600.46 | 11 | 4 | 001 | 11 | 511 | 600 | 46 | 2013 | 3 | INSURANCE | 325 | 0 | 0 | 0 | 325 | 0 | E |
| 54478 | GENERAL | 001.11.511.600.46 | 11 | 4 | 001 | 11 | 511 | 600 | 46 | 2013 | 6 | INSURANCE | 325 | 0 | 0 | 0 | 325 | 0 | E |
| 54479 | GENERAL | 001.11.511.600.46 | 11 | 4 | 001 | 11 | 511 | 600 | 46 | 2013 | 9 | INSURANCE | 325 | 0 | 0 | 0 | 325 | 0 | E |
| 54480 | GENERAL | 001.11.511.600.49 | 11 | 4 | 001 | 11 | 511 | 600 | 49 | 2010 | 11 | MISCELLANEOUS | 6290.41 | 0 | 0 | 0 | 6290.41 | 0 | E |
| 54481 | GENERAL | 001.11.511.600.49 | 11 | 4 | 001 | 11 | 511 | 600 | 49 | 2011 | 9 | MISCELLANEOUS | 141.45 | 0 | 0 | 0 | 141.45 | 0 | E |
| 54482 | GENERAL | 001.11.511.600.49 | 11 | 4 | 001 | 11 | 511 | 600 | 49 | 2012 | 3 | MISCELLANEOUS | 5341.55 | 0 | 0 | 0 | 5341.55 | 0 | E |
| 54483 | GENERAL | 001.11.511.600.49 | 11 | 4 | 001 | 11 | 511 | 600 | 49 | 2013 | 10 | MISCELLANEOUS | 573.86 | 0 | 0 | 0 | 573.86 | 0 | E |
| 54484 | GENERAL | 001.11.511.600.49 | 11 | 4 | 001 | 11 | 511 | 600 | 49 | 2016 | | MISCELLANEOUS | | | | | | | E |
| 54485 | GENERAL | 001.11.511.600.97 | 11 | 9 | 001 | 11 | 511 | 600 | 97 | 2009 | 3 | INTERFUND PRINTING SERVICES | 775 | 0 | 0 | 0 | 775 | 0 | E |
| 54486 | GENERAL | 001.11.511.600.97 | 11 | 9 | 001 | 11 | 511 | 600 | 97 | 2009 | 6 | INTERFUND PRINTING SERVICES | 775 | 0 | 0 | 0 | 775 | 0 | E |
| 54487 | GENERAL | 001.11.511.600.97 | 11 | 9 | 001 | 11 | 511 | 600 | 97 | 2010 | 2 | INTERFUND PRINTING SERVICES | 1875 | 0 | 0 | 0 | 1875 | 0 | E |
| 54488 | GENERAL | 001.11.511.600.97 | 11 | 9 | 001 | 11 | 511 | 600 | 97 | 2010 | 5 | INTERFUND PRINTING SERVICES | 1875 | 0 | 0 | 0 | 1875 | 0 | E |
| 54489 | GENERAL | 001.11.511.600.97 | 11 | 9 | 001 | 11 | 511 | 600 | 97 | 2011 | 5 | INTERFUND PRINTING SERVICES | 1458 | 0 | 0 | 0 | 1458 | 0 | E |
| 54490 | GENERAL | 001.11.511.600.97 | 11 | 9 | 001 | 11 | 511 | 600 | 97 | 2011 | 8 | INTERFUND PRINTING SERVICES | 1458 | 0 | 0 | 0 | 1458 | 0 | E |
| 54491 | GENERAL | 001.11.511.600.97 | 11 | 9 | 001 | 11 | 511 | 600 | 97 | 2011 | 11 | INTERFUND PRINTING SERVICES | 1458 | 0 | 0 | 0 | 1458 | 0 | E |
| 54492 | GENERAL | 001.11.511.600.97 | 11 | 9 | 001 | 11 | 511 | 600 | 97 | 2012 | 2 | INTERFUND PRINTING SERVICES | 1483 | 0 | 0 | 0 | 1483 | 0 | E |
| 54493 | GENERAL | 001.11.511.600.97 | 11 | 9 | 001 | 11 | 511 | 600 | 97 | 2013 | 2 | INTERFUND PRINTING SERVICES | 1083 | 0 | 0 | 0 | 1083 | 0 | E |
| 54494 | GENERAL | 001.11.511.600.97 | 11 | 9 | 001 | 11 | 511 | 600 | 97 | 2014 | 2 | INTERFUND PRINTING SERVICES | 1092 | 0 | 0 | 0 | 1092 | 0 | E |
| 54495 | GENERAL | 001.11.511.600.98 | 11 | 9 | 001 | 11 | 511 | 600 | 98 | 2012 | 10 | INTERFUND FACILITIES | 5225 | 0 | 0 | 0 | 5225 | 0 | E |
| 54496 | GENERAL | 001.11.511.600.98 | 11 | 9 | 001 | 11 | 511 | 600 | 98 | 2013 | 1 | INTERFUND FACILITIES | 5650 | 0 | 0 | 67800 | 5650 | 67800 | E |
| 54497 | GENERAL | 001.11.511.600.99 | 11 | 9 | 001 | 11 | 511 | 600 | 99 | 2015 | | INTERFUND IS SERVICES | | | | | | | E |
| 54498 | GENERAL | 001.11.513.100.11 | 11 | 1 | 001 | 11 | 513 | 100 | 11 | 2010 | 2 | REGULAR SALARIES & WAGES | 23509.98 | 1629.22 | 0 | 0 | 21880.76 | 0 | E |
| 54499 | GENERAL | 001.11.513.100.11 | 11 | 1 | 001 | 11 | 513 | 100 | 11 | 2010 | 8 | REGULAR SALARIES & WAGES | 22075.94 | 0 | 0 | 0 | 22075.94 | 0 | E |
| 54500 | LOCAL STREET FUND | 103.00.595.100.98 | 00 | 9 | 103 | 00 | 595 | 100 | 98 | 2009 | 3 | INTERFUND FACILITIES | 267 | 0 | 0 | 0 | 267 | 0 | E |
| 54501 | LOCAL STREET FUND | 103.00.595.100.98 | 00 | 9 | 103 | 00 | 595 | 100 | 98 | 2009 | 6 | INTERFUND FACILITIES | 267 | 0 | 0 | 0 | 267 | 0 | E |
| 54502 | LOCAL STREET FUND | 103.00.595.100.98 | 00 | 9 | 103 | 00 | 595 | 100 | 98 | 2009 | 9 | INTERFUND FACILITIES | 267 | 0 | 0 | 0 | 267 | 0 | E |
| 54503 | LOCAL STREET FUND | 103.00.595.100.98 | 00 | 9 | 103 | 00 | 595 | 100 | 98 | 2012 | 6 | INTERFUND FACILITIES | 392 | 0 | 0 | 0 | 392 | 0 | E |
| 54504 | LOCAL STREET FUND | 103.00.595.100.98 | 00 | 9 | 103 | 00 | 595 | 100 | 98 | 2012 | 9 | INTERFUND FACILITIES | 392 | 0 | 0 | 0 | 392 | 0 | E |
| 54505 | LOCAL STREET FUND | 103.00.595.100.98 | 00 | 9 | 103 | 00 | 595 | 100 | 98 | 2012 | 12 | INTERFUND FACILITIES | 392 | 0 | 0 | 0 | 392 | 0 | E |
| 54506 | LOCAL STREET FUND | 103.00.595.100.98 | 00 | 9 | 103 | 00 | 595 | 100 | 98 | 2013 | 1 | INTERFUND FACILITIES | 400 | 0 | 0 | 4800 | 400 | 4800 | E |

# + Sample reports created using my DataCube

## CITY OF AUBURN
## POLICE DEPARTMENT

F:\Budget Directory\2015-16 Budget\Mandatory v Discretionary\[Mandatory v Discretionary - 2011-2014.xlsx]Police 4/10/2014

| Name | Object | 2011-12 Biennium 2011A | 2012A | 2013-14 Biennium 2013A | 2014CB | 2015-16 Biennium 2015Prelim | 2016Prelim |
|---|---|---|---|---|---|---|---|
| **POLICE - Admin** | 1. Salaries / Wages | 475,266 | 415,134 | 421,502 | 414,048 | 451,595 | 453,684 |
| Account: 21.521.100 | 2. Benefits | 152,265 | 142,420 | 167,063 | 190,479 | 181,616 | 197,515 |
| | 3. Supplies | 34,466 | 63,537 | 42,334 | 64,900 | 64,900 | |
| | 4. Services | 1,948,945 | 1,975,124 | 2,045,181 | 2,356,500 | 2,352,000 | |
| | 5. Intergovt'l | 18,554 | - | 13,252 | 16,500 | 16,500 | |
| | 6. Capital | - | - | - | - | - | |
| | 7. Debt Principal | - | - | - | - | - | |
| | 8. Debt Interest | - | - | - | - | - | |
| | 9. Interfund Payments | 1,315,848 | 1,272,658 | 1,571,700 | 1,529,900 | 1,522,400 | |
| | **Total** | **3,945,343** | **3,868,872** | **4,261,032** | **4,572,327** | **4,589,011** | |
| **POLICE - Ops** | 1. Salaries / Wages | 6,235,879 | 6,310,458 | 6,760,624 | 7,453,825 | 7,597,575 | |
| Account: 21.521.200 | 2. Benefits | 2,093,313 | 2,254,663 | 2,448,392 | 3,186,088 | 2,929,313 | |
| | 3. Supplies | 84,909 | 69,382 | 92,357 | 88,500 | 97,600 | |
| | 4. Services | 786,271 | 661,953 | 669,301 | 609,775 | 626,775 | |
| | 5. Intergovt'l | - | - | - | - | - | |
| | 6. Capital | | | 24,987 | | | |

## 2013 General Fund Financial Status Report

| Data as of Jan 17 2014 | Jan | Feb | Mar | Apr | May |
|---|---|---|---|---|---|
| **Period Beginning Fund Balance** | **16,348,942** | **16,029,230** | **15,675,823** | **14,417,554** | **19,015,442** |
| **Taxes** | | | | | |
| General Prop Taxes (311) | 30,759 | 138,611 | 453,641 | 5,087,236 | 1,770,566 |
| Sales and Use Taxes (313.100) | 996,741 | 1,157,918 | 868,349 | 917,726 | 1,060,367 |
| Sales Tax Credit for Annexation (313.110) | 125,582 | 160,114 | 118,042 | 120,571 | 138,974 |
| Pierce Co Parks Sales Tax (313.170) | 4,482 | 5,863 | 4,503 | 4,464 | 5,359 |
| Brokered Natural Gas Tax (313.600) | 30,564 | 33,609 | 33,905 | 27,733 | 26,600 |
| Local Sales Tax - Crim Justice (313.710) | 120,209 | 147,809 | 110,211 | 106,398 | 125,490 |
| Interfund (Public) Utility Taxes (314.x) | 353,083 | 258,989 | 247,990 | 262,685 | 253,183 |
| Admission & Private Utility Taxes (316.x) | 1,406,804 | 188,988 | 144,282 | 1,612,405 | 462,769 |
| Leashold and Gaming Taxes (317.x) | 7,618 | 74,724 | 1,923 | 60,229 | 633 |
| **Total Taxes** | **3,075,843** | **2,166,626** | **1,982,845** | **8,199,447** | **3,843,941** |
| **Other Revenues** | | | | | |
| Business Licenses (321.900) | 60,211 | 11,750 | 10,404 | 10,211 | 6,387 |
| Building/Plumbing/Elect Permits (322.1x) | 152,924 | 517,049 | 151,308 | 210,279 | 227,725 |
| Pet Licenses (322.300) | 3,555 | 9,017 | 12,802 | 10,177 | 15,227 |
| Other Licenses and Permits (32x) | 20,406 | 18,052 | 35,049 | 21,210 | 8,677 |
| Charges and Fees for Services (34x) | 155,814 | 156,031 | 257,554 | 194,076 | 207,326 |
| Interest and Investment Earnings (361) | 4,087 | 3,856 | 3,974 | 4,128 | 2,636 |
| Fines and Forefeits (35x) | 123,323 | 96,588 | 136,130 | 131,630 | 130,170 |
| Rent, Contrib, and Other (362-69) | 34,534 | 19,992 | 32,267 | 26,417 | 56,470 |
| Intergovt'l (33x) includes SST | 343,765 | 77,351 | 732,432 | 176,023 | 302,010 |
| Interfund Transfers (39x) | 140,450 | 6,141 | 3,400 | 14,379 | 3,863 |
| **Total Other Revenues** | **1,039,068** | **915,827** | **1,375,321** | **798,530** | **960,491** |
| **Total Taxes and Other Revenues** | **4,114,911** | **3,082,453** | **3,358,165** | **8,997,977** | **4,804,431** |

## Cemetery Fund #436
## Monthly Working Capital
## 2012 - 2013 To Date

**2013**

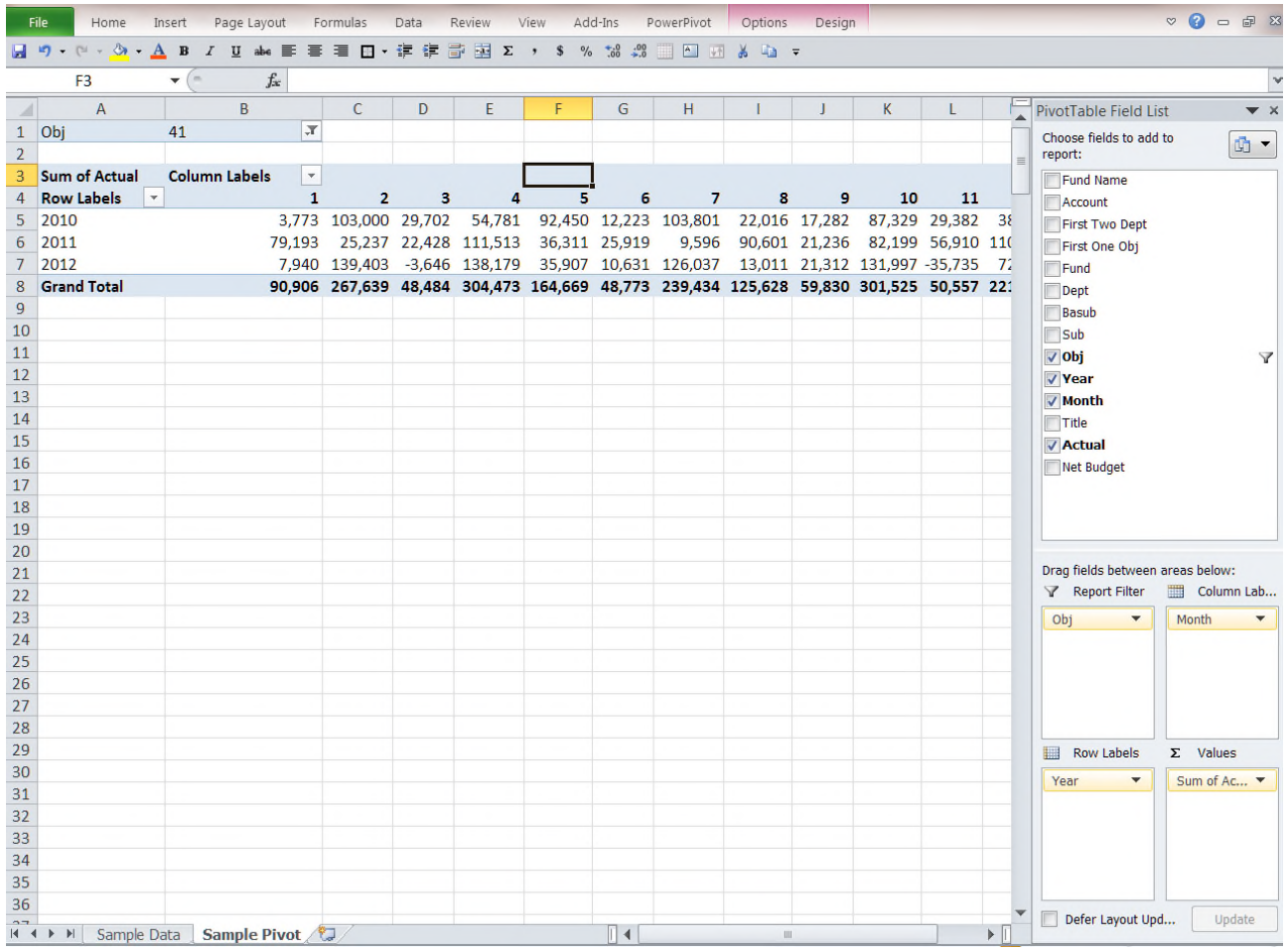
| | January | February | March | April | May | June |
|---|---|---|---|---|---|---|
| Lot Sales | 21,428.25 | 28,652.50 | 38,666.50 | 21,890.00 | 39,110.00 | 19,550.00 |
| Openings and Closings | 18,305.00 | 11,430.00 | 24,124.26 | 14,865.00 | 13,290.27 | 18,894.50 |
| Marker Sales | 12,890.00 | 21,809.00 | 11,829.71 | 20,185.00 | 5,840.00 | 8,625.00 |
| Liners | 8,420.00 | 3,860.00 | 9,245.00 | 5,545.00 | 6,245.00 | 5,250.00 |
| Settings | 4,150.00 | 4,255.00 | 4,815.00 | 3,530.00 | 3,680.00 | 3,523.08 |
| Vases | 1,938.55 | 2,895.00 | 1,350.00 | 3,215.00 | 2,330.00 | 660.00 |
| Recordings | 1,000.00 | 900.00 | 1,300.00 | 700.00 | 1,100.00 | 700.00 |
| Vault Installations | 1,285.00 | 495.00 | 2,475.00 | 990.00 | 1,980.00 | 1,485.00 |
| Other (Staff overtime setup fees) | 1,385.00 | 2,180.00 | 1,365.00 | - | 1,835.00 | 1,090.00 |
| **Total Operating Revenue** | **70,801.80** | **76,476.50** | **95,170.47** | **70,920.00** | **75,410.27** | **59,777.58** |
| Salaries & Wages | 36,273.84 | 28,282.47 | 29,635.61 | 30,660.54 | 37,971.16 | 33,592.70 |
| Benefits | 15,747.95 | 14,996.94 | 15,295.41 | 15,730.03 | 17,096.56 | 16,099.31 |
| Supplies | 3,106.88 | 8,888.46 | 19,756.59 | 8,385.89 | 23,369.56 | 14,472.41 |
| Other Service Charges | 2,510.14 | 4,328.28 | 4,166.73 | 4,610.70 | 3,545.09 | 6,182.81 |
| Interfund Operating Rentals/Supplies | 4,683.00 | 4,683.00 | 4,683.00 | 4,683.00 | 4,683.00 | 4,683.00 |
| Depreciation & Amortizaton | 4,806.93 | 4,806.98 | 4,806.93 | 4,806.98 | 4,806.93 | 4,806.96 |
| **Total Operating Expenses** | **67,128.74** | **65,986.13** | **78,344.27** | **68,877.14** | **91,472.30** | **79,837.19** |
| **Operating Income or Loss** | **3,673.06** | **10,490.37** | **16,826.20** | **2,042.86** | **(16,062.03)** | **(20,059.61)** |
| Interest Revenue | 30.32 | 27.57 | 36.30 | 34.33 | 29.14 | 22.90 |
| Miscellaneous | - | - | - | - | 55.00 | - |
| Debt Service Interest | - | - | - | - | (11,133.72) | - |
| **Total Non-operating Revenues (Expenses)** | **30.32** | **27.57** | **36.30** | **34.33** | **(11,049.58)** | **22.90** |
| **Net Income or (Loss)** | **3,703.38** | **10,517.94** | **16,862.50** | **2,077.19** | **(27,111.61)** | **(20,036.71)** |
| Depreciation | 4,806.93 | 4,806.98 | 4,806.93 | 4,806.98 | 4,806.93 | 4,806.96 |
| **Total Items Not Effecting W/C** | **4,806.93** | **4,806.98** | **4,806.93** | **4,806.98** | **4,806.93** | **4,806.96** |
| **Net W/C from Operations** | **8,510.31** | **15,324.92** | **21,669.43** | **6,884.17** | **(22,304.68)** | **(15,229.75)** |
| Operating Transfers-In | - | - | - | - | - | - |
| **Total Recources Other Than Operations** | - | - | - | - | - | - |
| Increase in Fixed Assets-Construction | - | - | - | - | - | - |
| Debt Service Principal | - | - | - | - | - | - |
| **Total Uses Other Than Operations** | - | - | - | - | - | - |
| **Net Change in W/C** | **8,510.31** | **15,324.92** | **21,669.43** | **6,884.17** | **(22,304.68)** | **(15,229.75)** |
| **Working Capital, Beginning of Period** | **182,098.05** | **190,608.36** | **205,933.28** | **227,602.71** | **234,486.88** | **212,182.20** |
| **Working Capital, End of Period** | **190,608.36** | **205,933.28** | **227,602.71** | **234,486.88** | **212,182.20** | **196,952.45** |

| | | | | |
|---|---|---|---|---|
| | 273,436 | 157,661 | 128,860 | 172,311 |
| | 5,240 | 6,038 | 3,471 | 1,734 |
| | 124,919 | 119,433 | 113,407 | 97,968 |
| | 70,141 | 38,956 | 26,596 | 25,893 |
| | 742,458 | 280,491 | 151,493 | 759,531 |
| | 81,358 | 42,050 | 22,354 | 6,404 |
| | **1,540,432** | **861,699** | **645,616** | **1,224,698** |
| | **3,317,355** | **4,040,699** | **2,593,078** | **3,314,716** |

# How did I produce these reports?

- Using convenient tools of MS Excel
  - **Pivot tables**: Interactive tool enabling user to summarize large amounts of data quickly and simply.
  - **Sumif function**: Formulaic function enabling user to sum range of cells meeting a single criteria
  - **Sumifs function**: Formulaic function enabling user to sum range of cells meeting multiple criteria
  - **Choose function**: Executing specific set of commands based upon selected criteria (great for modeling and toggling between options)
  - **Left, Right, Mid functions**: Parsing character strings for further data analytics

# + PIVOT Tables



| Obj | 41 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sum of Actual | Column Labels | | | | | | | | | | | |
| Row Labels | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | |
| 2010 | 3,773 | 103,000 | 29,702 | 54,781 | 92,450 | 12,223 | 103,801 | 22,016 | 17,282 | 87,329 | 29,382 | 38 |
| 2011 | 79,193 | 25,237 | 22,428 | 111,513 | 36,311 | 25,919 | 9,596 | 90,601 | 21,236 | 82,199 | 56,910 | 110 |
| 2012 | 7,940 | 139,403 | -3,646 | 138,179 | 35,907 | 10,631 | 126,037 | 13,011 | 21,312 | 131,997 | -35,735 | 72 |
| Grand Total | 90,906 | 267,639 | 48,484 | 304,473 | 164,669 | 48,773 | 239,434 | 125,628 | 59,830 | 301,525 | 50,557 | 22 |

# + SUMIF function

=sumifs(criteria_range,criteria,sum_range)

O4 | $f_x$ =SUMIF($J$3:$J$34,N4,$L$3:$L$34)

| | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | | | | | | Month | Actual |
| 2 | Fund Name | Account | Fund | Dept | Basub | Sub | Obj | First One Obj | Year | Month | Title | Actual | | 1 | - |
| 3 | GENERAL | 001.19.518.200.24 | 001 | 19 | 518 | 200 | 24 | 2 | 2012 | 1 | INDUSTRIAL INSURANCE | - | | 2 | 337 |
| 4 | GENERAL | 001.19.518.200.25 | 001 | 19 | 518 | 200 | 25 | 2 | 2010 | 1 | MEDICAL & LIFE INSURANCE | - | | 3 | 4,083 |
| 5 | GENERAL | 001.19.518.200.42 | 001 | 19 | 518 | 200 | 42 | 4 | 2012 | 1 | COMMUNICATION | - | | 4 | 12,267 |
| 6 | GENERAL | 001.19.524.200.11 | 001 | 19 | 524 | 200 | 11 | 1 | 2010 | 8 | REGULAR SALARIES & WAGES | 71,697 | | 5 | 11,841 |
| 7 | GENERAL | 001.19.524.200.11 | 001 | 19 | 524 | 200 | 11 | 1 | 2010 | 11 | REGULAR SALARIES & WAGES | 77,985 | | 6 | - |
| 8 | GENERAL | 001.19.524.200.11 | 001 | 19 | 524 | 200 | 11 | 1 | 2011 | 11 | REGULAR SALARIES & WAGES | 82,584 | | 7 | 596 |
| 9 | GENERAL | 001.19.524.200.21 | 001 | 19 | 524 | 200 | 21 | 2 | 2010 | 12 | F.I.C.A | 5,657 | | 8 | 85,336 |
| 10 | GENERAL | 001.19.524.200.21 | 001 | 19 | 524 | 200 | 21 | 2 | 2011 | 9 | F.I.C.A | 6,055 | | 9 | 6,323 |
| 11 | GENERAL | 001.19.524.200.23 | 001 | 19 | 524 | 200 | 23 | 2 | 2011 | 3 | PENSIONS | 3,759 | | 10 | 3,030 |
| 12 | GENERAL | 001.19.524.200.23 | 001 | 19 | 524 | 200 | 23 | 2 | 2012 | 5 | PENSIONS | 5,726 | | 11 | 162,562 |
| 13 | GENERAL | 001.19.524.200.24 | 001 | 19 | 524 | 200 | 24 | 2 | 2010 | 11 | INDUSTRIAL INSURANCE | 558 | | 12 | 5,657 |
| 14 | GENERAL | 001.19.524.200.24 | 001 | 19 | 524 | 200 | 24 | 2 | 2012 | 7 | INDUSTRIAL INSURANCE | 596 | | Total | **292,031** |
| 15 | GENERAL | 001.19.524.200.24 | 001 | 19 | 524 | 200 | 24 | 2 | 2012 | 10 | INDUSTRIAL INSURANCE | 571 | | | |
| 16 | GENERAL | 001.19.524.200.28 | 001 | 19 | 524 | 200 | 28 | 2 | 2010 | 8 | UNEMPLOYMENT CLAIMS | 11,817 | | | |
| 17 | GENERAL | 001.19.524.200.31 | 001 | 19 | 524 | 200 | 31 | 3 | 2010 | 8 | OFFICE & OPERATING SUPPLIES | 647 | | | |
| 18 | GENERAL | 001.19.524.200.31 | 001 | 19 | 524 | 200 | 31 | 3 | 2011 | 10 | OFFICE & OPERATING SUPPLIES | 209 | | | |
| 19 | GENERAL | 001.19.524.200.31 | 001 | 19 | 524 | 200 | 31 | 3 | 2011 | 11 | OFFICE & OPERATING SUPPLIES | 260 | | | |
| 20 | GENERAL | 001.19.524.200.35 | 001 | 19 | 524 | 200 | 35 | 3 | 2012 | 1 | SMALL TOOLS AND EQUIPMENT | - | | | |
| 21 | GENERAL | 001.19.524.200.35 | 001 | 19 | 524 | 200 | 35 | 3 | 2012 | 4 | SMALL TOOLS AND EQUIPMENT | 2,584 | | | |
| 22 | GENERAL | 001.19.524.200.41 | 001 | 19 | 524 | 200 | 41 | 4 | 2011 | 10 | PROFESSIONAL SERVICES | 2,250 | | | |
| 23 | GENERAL | 001.19.524.200.42 | 001 | 19 | 524 | 200 | 42 | 4 | 2011 | 2 | COMMUNICATION | 337 | | | |
| 24 | GENERAL | 001.19.524.200.44 | 001 | 19 | 524 | 200 | 44 | 4 | 2010 | 1 | ADVERTISING | - | | | |
| 25 | GENERAL | 001.19.524.200.48 | 001 | 19 | 524 | 200 | 48 | 4 | 2010 | 1 | REPAIRS & MAINTENANCE | - | | | |
| 26 | GENERAL | 001.19.524.200.49 | 001 | 19 | 524 | 200 | 49 | 4 | 2010 | 1 | MISCELLANEOUS | - | | | |
| 27 | GENERAL | 001.19.524.200.49 | 001 | 19 | 524 | 200 | 49 | 4 | 2011 | 9 | MISCELLANEOUS | 268 | | | |
| 28 | GENERAL | 001.19.524.200.49 | 001 | 19 | 524 | 200 | 49 | 4 | 2012 | 3 | MISCELLANEOUS | 324 | | | |
| 29 | GENERAL | 001.19.524.200.49 | 001 | 19 | 524 | 200 | 49 | 4 | 2012 | 5 | MISCELLANEOUS | 4,940 | | | |
| 30 | GENERAL | 001.19.524.200.93 | 001 | 19 | 524 | 200 | 93 | 9 | 2010 | 5 | EQUIPMENT RENTAL CHARGE-FL | 1,175 | | | |
| 31 | GENERAL | 001.19.524.200.93 | 001 | 19 | 524 | 200 | 93 | 9 | 2010 | 8 | EQUIPMENT RENTAL CHARGE-FL | 1,175 | | | |
| 32 | GENERAL | 001.19.524.200.93 | 001 | 19 | 524 | 200 | 93 | 9 | 2010 | 11 | EQUIPMENT RENTAL CHARGE-FL | 1,175 | | | |
| 33 | GENERAL | 001.19.524.200.93 | 001 | 19 | 524 | 200 | 93 | 9 | 2012 | 4 | EQUIPMENT RENTAL CHARGE-FL | 650 | | | |
| 34 | GENERAL | 001.19.524.200.98 | 001 | 19 | 524 | 200 | 98 | 9 | 2011 | 4 | INTERFUND FACILITIES | 9,033 | | | |
| 35 | | | | | | | | | | | | **292,031** | | | |
| 36 | | | | | | | | | | | | | | | |

# + SUMIFS function

=sumifs(sum_range,criteria_range1,criteria1,criteria_range2,criteria2,…)

P4 =SUMIFS($L$3:$L$34,$J$3:$J$34,$N4,$I$3:$I$34,P$1)

| | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | | | | | | | 2010 | 2011 | 2012 | **Total** |
| 2 | Fund Name | Account | Fund | First Two Dept | Basub | Sub | Obj | First One Obj | Year | Month | Title | Actual | | 1 | - | - | - | - |
| 3 | GENERAL | 001.19.518.200.24 | 001 | 19 | 518 | 200 | 24 | 2 | 2012 | 1 | INDUSTRIAL INSURANCE | - | | 2 | - | 337 | - | 337 |
| 4 | GENERAL | 001.19.518.200.25 | 001 | 19 | 518 | 200 | 25 | 2 | 2010 | 1 | MEDICAL & LIFE INSURANCE | - | | 3 | - | 3,759 | 324 | 4,083 |
| 5 | GENERAL | 001.19.518.200.42 | 001 | 19 | 518 | 200 | 42 | 4 | 2012 | 1 | COMMUNICATION | - | | 4 | - | 9,033 | 3,234 | 12,267 |
| 6 | GENERAL | 001.19.524.200.11 | 001 | 19 | 524 | 200 | 11 | 1 | 2010 | 8 | REGULAR SALARIES & WAGES | 71,697 | | 5 | 1,175 | - | 10,666 | 11,841 |
| 7 | GENERAL | 001.19.524.200.11 | 001 | 19 | 524 | 200 | 11 | 1 | 2010 | 11 | REGULAR SALARIES & WAGES | 77,985 | | 6 | - | - | - | - |
| 8 | GENERAL | 001.19.524.200.11 | 001 | 19 | 524 | 200 | 11 | 1 | 2011 | 11 | REGULAR SALARIES & WAGES | 82,584 | | 7 | - | - | 596 | 596 |
| 9 | GENERAL | 001.19.524.200.21 | 001 | 19 | 524 | 200 | 21 | 2 | 2010 | 12 | F.I.C.A | 5,657 | | 8 | 85,336 | - | - | 85,336 |
| 10 | GENERAL | 001.19.524.200.21 | 001 | 19 | 524 | 200 | 21 | 2 | 2011 | 9 | F.I.C.A | 6,055 | | 9 | - | 6,323 | - | 6,323 |
| 11 | GENERAL | 001.19.524.200.23 | 001 | 19 | 524 | 200 | 23 | 2 | 2011 | 3 | PENSIONS | 3,759 | | 10 | - | 2,459 | 571 | 3,030 |
| 12 | GENERAL | 001.19.524.200.23 | 001 | 19 | 524 | 200 | 23 | 2 | 2012 | 5 | PENSIONS | 5,726 | | 11 | 79,718 | 82,844 | - | 162,562 |
| 13 | GENERAL | 001.19.524.200.24 | 001 | 19 | 524 | 200 | 24 | 2 | 2010 | 11 | INDUSTRIAL INSURANCE | 558 | | 12 | 5,657 | - | - | 5,657 |
| 14 | GENERAL | 001.19.524.200.24 | 001 | 19 | 524 | 200 | 24 | 2 | 2012 | 7 | INDUSTRIAL INSURANCE | 596 | | **Total** | 171,885 | 104,754 | 15,391 | **292,031** |
| 15 | GENERAL | 001.19.524.200.24 | 001 | 19 | 524 | 200 | 24 | 2 | 2012 | 10 | INDUSTRIAL INSURANCE | 571 | | | | | | |
| 16 | GENERAL | 001.19.524.200.28 | 001 | 19 | 524 | 200 | 28 | 2 | 2010 | 8 | UNEMPLOYMENT CLAIMS | 11,817 | | | | | | |
| 17 | GENERAL | 001.19.524.200.31 | 001 | 19 | 524 | 200 | 31 | 3 | 2010 | 8 | OFFICE & OPERATING SUPPLIES | 647 | | | | | | |
| 18 | GENERAL | 001.19.524.200.31 | 001 | 19 | 524 | 200 | 31 | 3 | 2011 | 10 | OFFICE & OPERATING SUPPLIES | 209 | | | | | | |
| 19 | GENERAL | 001.19.524.200.31 | 001 | 19 | 524 | 200 | 31 | 3 | 2011 | 11 | OFFICE & OPERATING SUPPLIES | 260 | | | | | | |
| 20 | GENERAL | 001.19.524.200.35 | 001 | 19 | 524 | 200 | 35 | 3 | 2012 | 1 | SMALL TOOLS AND EQUIPMENT | - | | | | | | |
| 21 | GENERAL | 001.19.524.200.35 | 001 | 19 | 524 | 200 | 35 | 3 | 2012 | 4 | SMALL TOOLS AND EQUIPMENT | 2,584 | | | | | | |
| 22 | GENERAL | 001.19.524.200.41 | 001 | 19 | 524 | 200 | 41 | 4 | 2011 | 10 | PROFESSIONAL SERVICES | 2,250 | | | | | | |
| 23 | GENERAL | 001.19.524.200.42 | 001 | 19 | 524 | 200 | 42 | 4 | 2011 | 2 | COMMUNICATION | 337 | | | | | | |
| 24 | GENERAL | 001.19.524.200.44 | 001 | 19 | 524 | 200 | 44 | 4 | 2010 | 1 | ADVERTISING | - | | | | | | |
| 25 | GENERAL | 001.19.524.200.48 | 001 | 19 | 524 | 200 | 48 | 4 | 2010 | 1 | REPAIRS & MAINTENANCE | - | | | | | | |
| 26 | GENERAL | 001.19.524.200.49 | 001 | 19 | 524 | 200 | 49 | 4 | 2010 | 1 | MISCELLANEOUS | - | | | | | | |
| 27 | GENERAL | 001.19.524.200.49 | 001 | 19 | 524 | 200 | 49 | 4 | 2011 | 9 | MISCELLANEOUS | 268 | | | | | | |
| 28 | GENERAL | 001.19.524.200.49 | 001 | 19 | 524 | 200 | 49 | 4 | 2012 | 3 | MISCELLANEOUS | 324 | | | | | | |
| 29 | GENERAL | 001.19.524.200.49 | 001 | 19 | 524 | 200 | 49 | 4 | 2012 | 5 | MISCELLANEOUS | 4,940 | | | | | | |
| 30 | GENERAL | 001.19.524.200.93 | 001 | 19 | 524 | 200 | 93 | 9 | 2010 | 5 | EQUIPMENT RENTAL CHARGE-FL | 1,175 | | | | | | |
| 31 | GENERAL | 001.19.524.200.93 | 001 | 19 | 524 | 200 | 93 | 9 | 2010 | 8 | EQUIPMENT RENTAL CHARGE-FL | 1,175 | | | | | | |
| 32 | GENERAL | 001.19.524.200.93 | 001 | 19 | 524 | 200 | 93 | 9 | 2010 | 11 | EQUIPMENT RENTAL CHARGE-FL | 1,175 | | | | | | |
| 33 | GENERAL | 001.19.524.200.93 | 001 | 19 | 524 | 200 | 93 | 9 | 2012 | 4 | EQUIPMENT RENTAL CHARGE-FL | 650 | | | | | | |
| 34 | GENERAL | 001.19.524.200.98 | 001 | 19 | 524 | 200 | 98 | 9 | 2011 | 4 | INTERFUND FACILITIES | 9,033 | | | | | | |
| 35 | | | | | | | | | | | | **292,031** | | | | | | |

# + CHOOSE function

=choose(index_num,value_1,value_2,value_3,value_4,…)

=CHOOSE($O$3,L6*(1+$P$6),L6*(1+$P$7),L6*(1+$P$8),L6*(1+$P$9))

P27

| | A | B | C | D | E | F | G | H | I | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | Fund Name | Account | Fun | First Two De | Basul | Sut | Ob | First One C | Year | Month | Title | Actual | Forecast |
| 3 | GENERAL | 001.19.518.200.24 | 001 | 19 | 518 | 200 | 24 | 2 | 2012 | 1 | INDUSTRIAL INSURANCE | - | - |
| 4 | GENERAL | 001.19.518.200.25 | 001 | 19 | 518 | 200 | 25 | 2 | 2010 | 1 | MEDICAL & LIFE INSURANCE | - | - |
| 5 | GENERAL | 001.19.518.200.42 | 001 | 19 | 518 | 200 | 42 | 4 | 2012 | 1 | COMMUNICATION | - | - |
| 6 | GENERAL | 001.19.524.200.11 | 001 | 19 | 524 | 200 | 11 | 1 | 2010 | 8 | REGULAR SALARIES & WAGE | 71,697 | 74,565 |
| 7 | GENERAL | 001.19.524.200.11 | 001 | 19 | 524 | 200 | 11 | 1 | 2010 | 11 | REGULAR SALARIES & WAGE | 77,985 | 81,104 |
| 8 | GENERAL | 001.19.524.200.11 | 001 | 19 | 524 | 200 | 11 | 1 | 2011 | 11 | REGULAR SALARIES & WAGE | 82,584 | 85,887 |
| 9 | GENERAL | 001.19.524.200.21 | 001 | 19 | 524 | 200 | 21 | 2 | 2010 | 12 | F.I.C.A | 5,657 | 5,883 |
| 10 | GENERAL | 001.19.524.200.21 | 001 | 19 | 524 | 200 | 21 | 2 | 2011 | 9 | F.I.C.A | 6,055 | 6,297 |
| 11 | GENERAL | 001.19.524.200.23 | 001 | 19 | 524 | 200 | 23 | 2 | 2011 | 3 | PENSIONS | 3,759 | 3,910 |
| 12 | GENERAL | 001.19.524.200.23 | 001 | 19 | 524 | 200 | 23 | 2 | 2012 | 5 | PENSIONS | 5,726 | 5,955 |
| 13 | GENERAL | 001.19.524.200.24 | 001 | 19 | 524 | 200 | 24 | 2 | 2010 | 11 | INDUSTRIAL INSURANCE | 558 | 580 |
| 14 | GENERAL | 001.19.524.200.24 | 001 | 19 | 524 | 200 | 24 | 2 | 2012 | 7 | INDUSTRIAL INSURANCE | 596 | 620 |
| 15 | GENERAL | 001.19.524.200.24 | 001 | 19 | 524 | 200 | 24 | 2 | 2012 | 10 | INDUSTRIAL INSURANCE | 571 | 594 |
| 16 | GENERAL | 001.19.524.200.28 | 001 | 19 | 524 | 200 | 28 | 2 | 2010 | 8 | UNEMPLOYMENT CLAIMS | 11,817 | 12,290 |
| 17 | GENERAL | 001.19.524.200.31 | 001 | 19 | 524 | 200 | 31 | 3 | 2010 | 8 | OFFICE & OPERATING SUPPL | 647 | 673 |
| 18 | GENERAL | 001.19.524.200.31 | 001 | 19 | 524 | 200 | 31 | 3 | 2011 | 10 | OFFICE & OPERATING SUPPL | 209 | 217 |
| 19 | GENERAL | 001.19.524.200.31 | 001 | 19 | 524 | 200 | 31 | 3 | 2011 | 11 | OFFICE & OPERATING SUPPL | 260 | 270 |
| 20 | GENERAL | 001.19.524.200.35 | 001 | 19 | 524 | 200 | 35 | 3 | 2012 | 1 | SMALL TOOLS AND EQUIPME | - | - |
| 21 | GENERAL | 001.19.524.200.35 | 001 | 19 | 524 | 200 | 35 | 3 | 2012 | 4 | SMALL TOOLS AND EQUIPME | 2,584 | 2,688 |
| 22 | GENERAL | 001.19.524.200.41 | 001 | 19 | 524 | 200 | 41 | 4 | 2011 | 10 | PROFESSIONAL SERVICES | 2,250 | 2,340 |
| 23 | GENERAL | 001.19.524.200.42 | 001 | 19 | 524 | 200 | 42 | 4 | 2011 | 2 | COMMUNICATION | 337 | 350 |
| 24 | GENERAL | 001.19.524.200.44 | 001 | 19 | 524 | 200 | 44 | 4 | 2010 | 1 | ADVERTISING | - | - |
| 25 | GENERAL | 001.19.524.200.48 | 001 | 19 | 524 | 200 | 48 | 4 | 2010 | 1 | REPAIRS & MAINTENANCE | - | - |
| 26 | GENERAL | 001.19.524.200.49 | 001 | 19 | 524 | 200 | 49 | 4 | 2010 | 1 | MISCELLANEOUS | - | - |
| 27 | GENERAL | 001.19.524.200.49 | 001 | 19 | 524 | 200 | 49 | 4 | 2011 | 9 | MISCELLANEOUS | 268 | 279 |
| 28 | GENERAL | 001.19.524.200.49 | 001 | 19 | 524 | 200 | 49 | 4 | 2012 | 3 | MISCELLANEOUS | 324 | 337 |
| 29 | GENERAL | 001.19.524.200.49 | 001 | 19 | 524 | 200 | 49 | 4 | 2012 | 5 | MISCELLANEOUS | 4,940 | 5,138 |
| 30 | GENERAL | 001.19.524.200.93 | 001 | 19 | 524 | 200 | 93 | 9 | 2010 | 5 | EQUIPMENT RENTAL CHARG | 1,175 | 1,222 |
| 31 | GENERAL | 001.19.524.200.93 | 001 | 19 | 524 | 200 | 93 | 9 | 2010 | 8 | EQUIPMENT RENTAL CHARG | 1,175 | 1,222 |
| 32 | GENERAL | 001.19.524.200.93 | 001 | 19 | 524 | 200 | 93 | 9 | 2010 | 11 | EQUIPMENT RENTAL CHARG | 1,175 | 1,222 |
| 33 | GENERAL | 001.19.524.200.93 | 001 | 19 | 524 | 200 | 93 | 9 | 2012 | 4 | EQUIPMENT RENTAL CHARG | 650 | 676 |
| 34 | GENERAL | 001.19.524.200.98 | 001 | 19 | 524 | 200 | 98 | 9 | 2011 | 4 | INTERFUND FACILITIES | 9,033 | 9,394 |
| 35 | | | | | | | | | | | | **292,031** | **303,712** |
| 36 | | | | | | | | | | | **YtY % chg** | | **4.0%** |
| 37 | | | | | | | | | | | | | |

| Selection |
|---|
| **3** |

| Models | Esclator | Description |
|---|---|---|
| 1 | 2.0% | Pessimistic forecast |
| 2 | 3.0% | Baseline forecast |
| 3 | 4.0% | Optimistic forecast |
| 4 | -5.0% | Recessionary forecast |

*CHOOSE function is convenient for modeling and quickly toggling between multiple scenarios*

# + Left, Mid, Right functions

| Sample text string | Function | Result | Meaning |
|---|---|---|---|
| 001.19.518.200.24 | =LEFT(C3,4) | 001. | Fund # |
| 001.19.518.200.24 | =MID(C4,8,3) | 518 | Division # |
| 001.19.518.200.24 | =RIGHT(C5,2) | 24 | Object |
| 001.19.518.200.24 | =mid(C6,16,1) | 2 | Object family |

*This function is convenient for parsing a single string of data into more meaningful parts.*

| | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | |
| 2 | Fund Name | Account | Fund | Dept | Basub | Sub | Obj | First One Obj |
| 3 | GENERAL | 001.19.518.200.24 | 001 | 19 | 518 | 200 | 24 | 2 |
| 4 | GENERAL | 001.19.518.200.25 | 001 | 19 | 518 | 200 | 25 | 2 |
| 5 | GENERAL | 001.19.518.200.42 | 001 | 19 | 518 | 200 | 42 | 4 |
| 6 | GENERAL | 001.19.524.200.11 | 001 | 19 | 524 | 200 | 11 | 1 |
| 7 | GENERAL | 001.19.524.200.11 | 001 | 19 | 524 | 200 | 11 | 1 |
| 8 | GENERAL | 001.19.524.200.11 | 001 | 19 | 524 | 200 | 11 | 1 |
| 9 | GENERAL | 001.19.524.200.21 | 001 | 19 | 524 | 200 | 21 | 2 |
| 10 | GENERAL | 001.19.524.200.21 | 001 | 19 | 524 | 200 | 21 | 2 |
| 11 | GENERAL | 001.19.524.200.23 | 001 | 19 | 524 | 200 | 23 | 2 |
| 12 | GENERAL | 001.19.524.200.23 | 001 | 19 | 524 | 200 | 23 | 2 |
| 13 | GENERAL | 001.19.524.200.24 | 001 | 19 | 524 | 200 | 24 | 2 |
| 14 | GENERAL | 001.19.524.200.24 | 001 | 19 | 524 | 200 | 24 | 2 |
| 15 | GENERAL | 001.19.524.200.24 | 001 | 19 | 524 | 200 | 24 | 2 |
| 16 | GENERAL | 001.19.524.200.28 | 001 | 19 | 524 | 200 | 28 | 2 |
| 17 | GENERAL | 001.19.524.200.31 | 001 | 19 | 524 | 200 | 31 | 3 |
| 18 | GENERAL | 001.19.524.200.31 | 001 | 19 | 524 | 200 | 31 | 3 |
| 19 | GENERAL | 001.19.524.200.31 | 001 | 19 | 524 | 200 | 31 | 3 |
| 20 | GENERAL | 001.19.524.200.35 | 001 | 19 | 524 | 200 | 35 | 3 |
| 21 | GENERAL | 001.19.524.200.35 | 001 | 19 | 524 | 200 | 35 | 3 |
| 22 | GENERAL | 001.19.524.200.41 | 001 | 19 | 524 | 200 | 41 | 4 |
| 23 | GENERAL | 001.19.524.200.42 | 001 | 19 | 524 | 200 | 42 | 4 |
| 24 | GENERAL | 001.19.524.200.44 | 001 | 19 | 524 | 200 | 44 | 4 |
| 25 | GENERAL | 001.19.524.200.48 | 001 | 19 | 524 | 200 | 48 | 4 |
| 26 | GENERAL | 001.19.524.200.49 | 001 | 19 | 524 | 200 | 49 | 4 |
| 27 | GENERAL | 001.19.524.200.49 | 001 | 19 | 524 | 200 | 49 | 4 |
| 28 | GENERAL | 001.19.524.200.49 | 001 | 19 | 524 | 200 | 49 | 4 |
| 29 | GENERAL | 001.19.524.200.49 | 001 | 19 | 524 | 200 | 49 | 4 |
| 30 | GENERAL | 001.19.524.200.93 | 001 | 19 | 524 | 200 | 93 | 9 |
| 31 | GENERAL | 001.19.524.200.93 | 001 | 19 | 524 | 200 | 93 | 9 |
| 32 | GENERAL | 001.19.524.200.93 | 001 | 19 | 524 | 200 | 93 | 9 |
| 33 | GENERAL | 001.19.524.200.93 | 001 | 19 | 524 | 200 | 93 | 9 |
| 34 | GENERAL | 001.19.524.200.98 | 001 | 19 | 524 | 200 | 98 | 9 |

# + Concatenate function

| | A | B | C |
|---|---|---|---|
| 1 | Fund Number | Title | Combined String |
| 2 | 102 | Zoological Fund | Zoological Fund-102 |
| 3 | 103 | Transportation Fund | Transportation Fund-103 |
| 4 | 104 | Trails Fund | Trails Fund-104 |

*=CONCATENATE(B2,"-",A2)*

*This function is convenient for parsing a single string of data into more meaningful parts.*

# + Financial Forecasting

- Armed with datacube and all of its powers
- What to do with it
  - Trends
  - Historical patterns
  - Correlations
  - Forecasting

# + Financial Forecasting

- Challenges
  - Seasonality
  - One time events (ie, outliers)
  - Organizational changes
  - Policy/Legislative changes

- Mitigating these challenges
  - Knowing your data
  - Being aware of one-time significant events that can affect your analysis (ie, Outliers)
  - Ask & Dig (evaluating transactional information to understand what is happening)

# + Historical patterns

- High level observations can be quickly identified with a simple table such as this

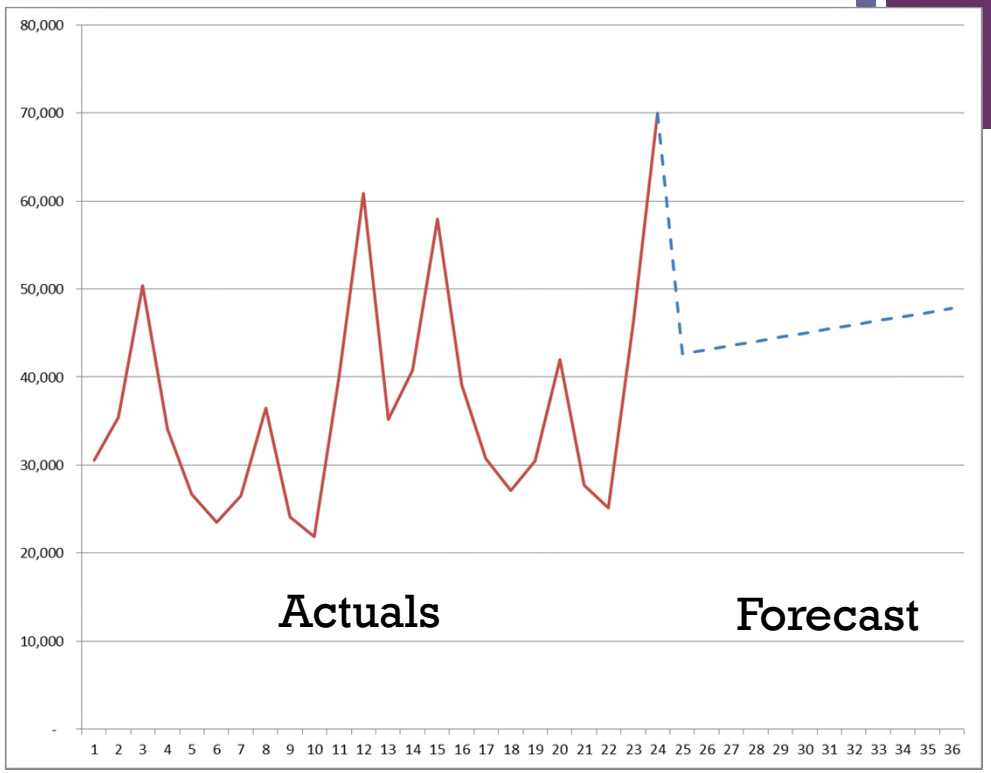
| Sum of Actual Column Labels | | | | | | |
|---|---|---|---|---|---|---|
| Row Labels | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
| 1 | 6,626 | 3,945 | 52,583 | 29,394 | 60,211 | 41,903 |
| 2 | 4,258 | 4,347 | 21,706 | 60,389 | 11,750 | 20,197 |
| 3 | 4,707 | 3,627 | 11,091 | 13,567 | 10,404 | 7,014 |
| 4 | 3,952 | 4,342 | 8,896 | 6,665 | 10,211 | |
| 5 | 4,289 | 1,987 | 8,944 | 5,104 | 6,387 | |
| 6 | 102,500 | 22,171 | 4,738 | 6,237 | 4,114 | |
| 7 | 49,110 | 53,961 | 4,891 | 4,186 | 3,543 | |
| 8 | 12,061 | 13,403 | 4,506 | 3,156 | 3,341 | |
| 9 | 6,272 | 6,850 | 3,764 | 1,025 | 6,195 | |
| 10 | 6,277 | 4,940 | 2,729 | 3,983 | 3,914 | |
| 11 | 5,229 | 3,468 | 8,109 | 5,926 | 17,419 | |
| 12 | 3,810 | 92,229 | 83,779 | 92,326 | 98,673 | |
| Grand Total | 209,090 | 215,268 | 215,735 | 231,957 | 236,162 | 69,114 |

- Significant observations:
  - Change in billing process starting 2011?
  - Not surprisingly majority of renewals paid in December and into first months of next year
  - Next steps: triangulate this data with renewal activity

# + the TREND Function

- TREND function

- Applies a straight line forecast to historical data using a line of best fit



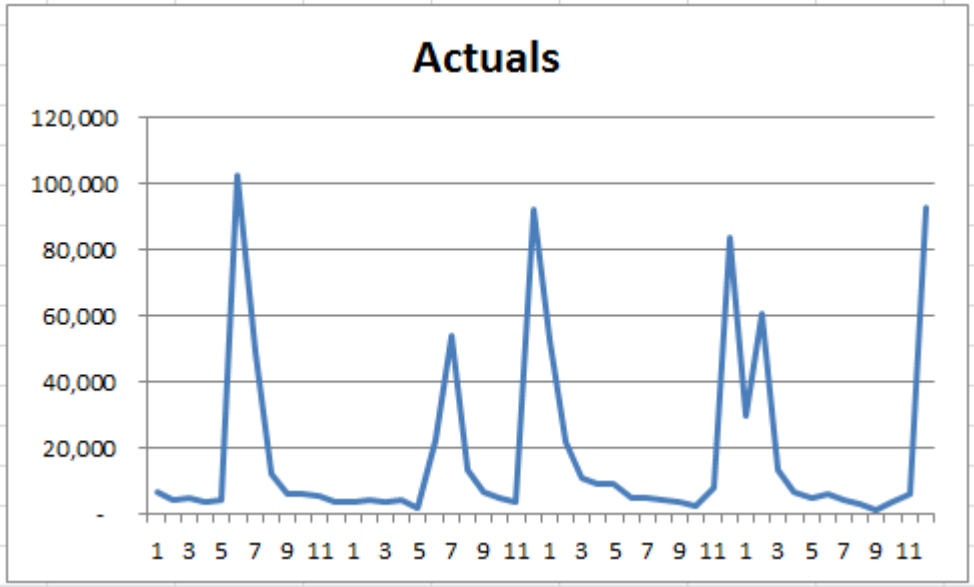
# How to Build a TREND function

- =TREND($C$2:$C$25,$B$2:$B$25,B26)
- Where:
  - Historical Actuals (referred to as *known Y's C2-C25*)
  - Historical Periods (*referred to as known X's A2-A25*)
  - Your forecast period (*referred to as new X A26-A37*)
- Things to be aware of:
  - Outliers can skew the trend line (in which case you will want to ignore these)
  - Have a sufficiently sized historical dataset (*one month does not make a trend*)
  - Study data and organize into more meaningful periods (e.g. Quarterly, Semi-Annually, Annually) to see patterns

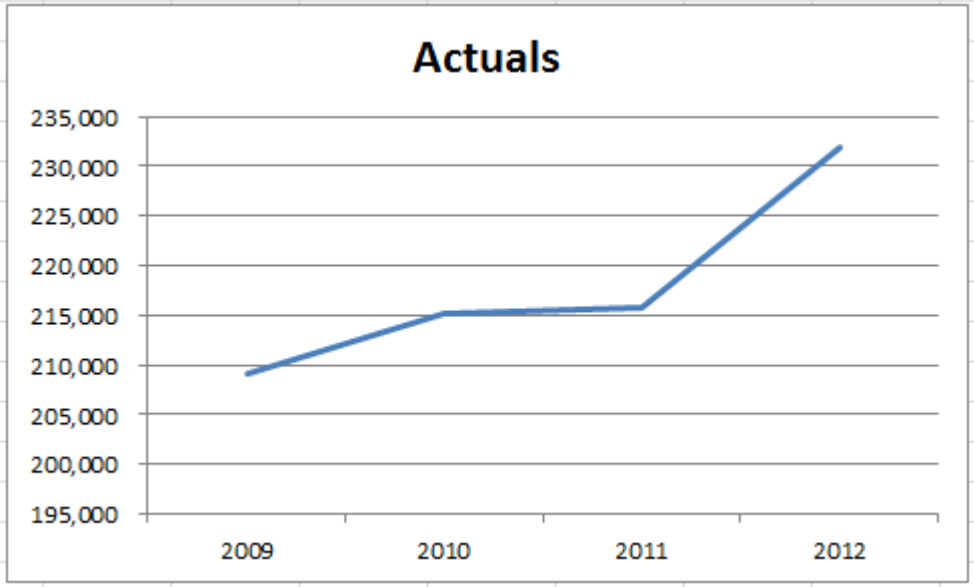
| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | Period | Series | Actuals | Forecast | Annual Totals |
| 2 | Jan-12 | 1 | 30,578 | | |
| 3 | Feb-12 | 2 | 35,458 | | |
| 4 | Mar-12 | 3 | 50,409 | | |
| 5 | Apr-12 | 4 | 34,066 | | |
| 6 | May-12 | 5 | 26,711 | | |
| 7 | Jun-12 | 6 | 23,552 | | |
| 8 | Jul-12 | 7 | 26,485 | | |
| 9 | Aug-12 | 8 | 36,467 | | |
| 10 | Sep-12 | 9 | 24,105 | | |
| 11 | Oct-12 | 10 | 21,843 | | |
| 12 | Nov-12 | 11 | 40,151 | | |
| 13 | Dec-12 | 12 | 60,843 | | 410,666 |
| 14 | Jan-13 | 13 | 35,165 | | |
| 15 | Feb-13 | 14 | 40,777 | | |
| 16 | Mar-13 | 15 | 57,970 | | |
| 17 | Apr-13 | 16 | 39,176 | | |
| 18 | May-13 | 17 | 30,717 | | |
| 19 | Jun-13 | 18 | 27,085 | | |
| 20 | Jul-13 | 19 | 30,458 | | |
| 21 | Aug-13 | 20 | 41,936 | | |
| 22 | Sep-13 | 21 | 27,721 | | |
| 23 | Oct-13 | 22 | 25,119 | | |
| 24 | Nov-13 | 23 | 46,173 | | |
| 25 | Dec-13 | 24 | 69,969 | 69,969 | 472,266 |
| 26 | Jan-14 | 25 | | 42,647 | |
| 27 | Feb-14 | 26 | | 43,116 | |
| 28 | Mar-14 | 27 | | 43,585 | |
| 29 | Apr-14 | 28 | | 44,054 | |
| 30 | May-14 | 29 | | 44,522 | |
| 31 | Jun-14 | 30 | | 44,991 | |
| 32 | Jul-14 | 31 | | 45,460 | |
| 33 | Aug-14 | 32 | | 45,928 | |
| 34 | Sep-14 | 33 | | 46,397 | |
| 35 | Oct-14 | 34 | | 46,866 | |
| 36 | Nov-14 | 35 | | 47,334 | |
| 37 | Dec-14 | 36 | | 47,803 | 542,703 |
| 38 | | | | | |

# Trend Function

- Trend function would not have worked well with monthly data



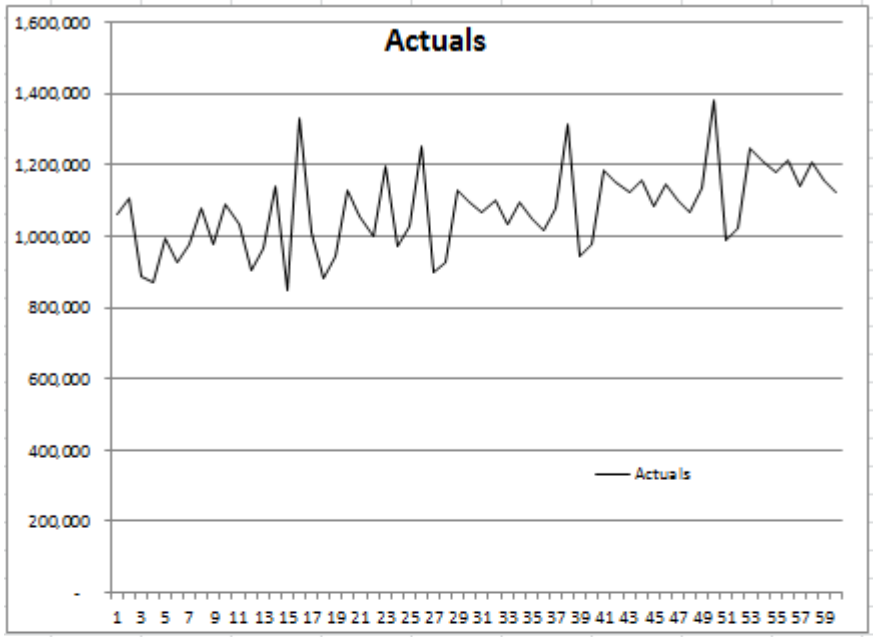

- … But would have likely work well with the annual data

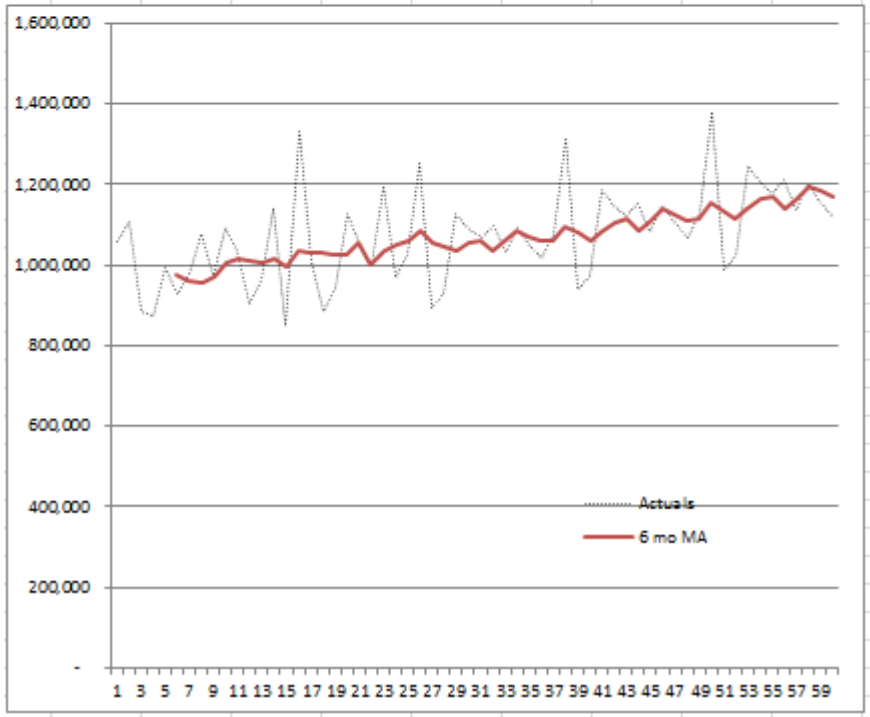



*Note: this is the same data as presented on slide 17*

# + Moving Averages

- Moving Averages can be used to smooth out the raw data and help you spot trends
- 3- or 6-month averages generally provide a good trend line



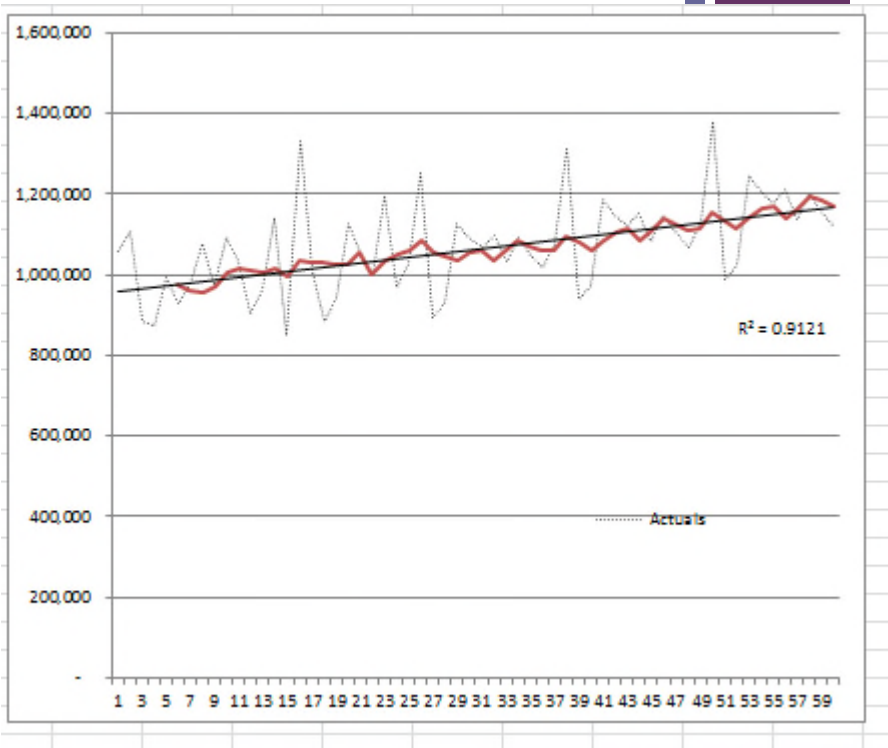



# Trendlines

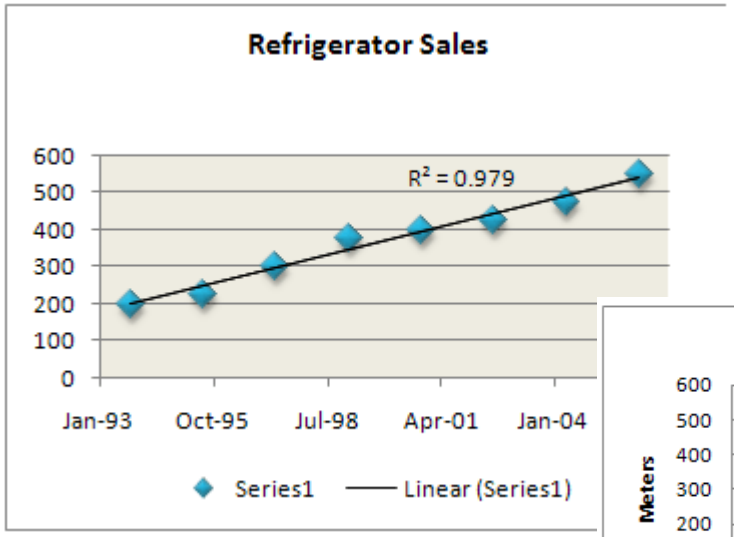
- Forecasting tool in MS Excel
- Attempts to predict trend based upon regression analysis
- Best fit measured by R Squared value (1.0 means a perfect fit)

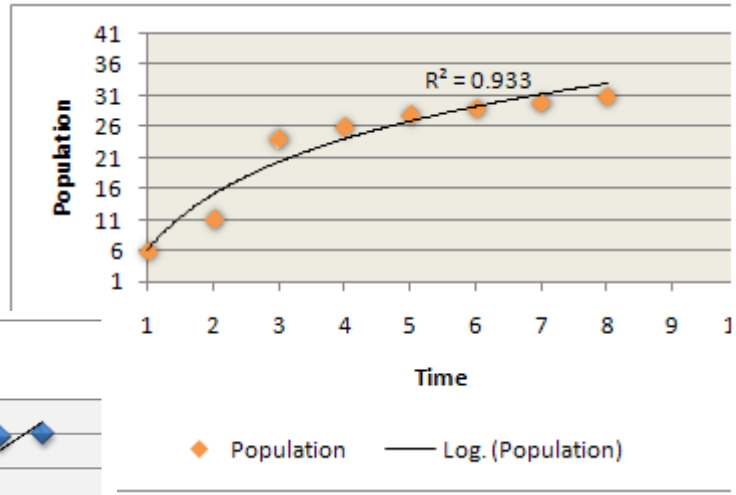
# + Trendlines

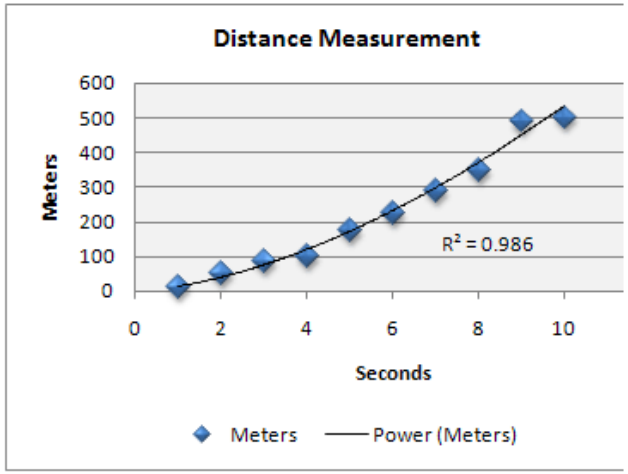
- This trendline is fitted to the 6 month moving average
- R Squared value is high, meaning that data points are closely clustered around the line of best fit

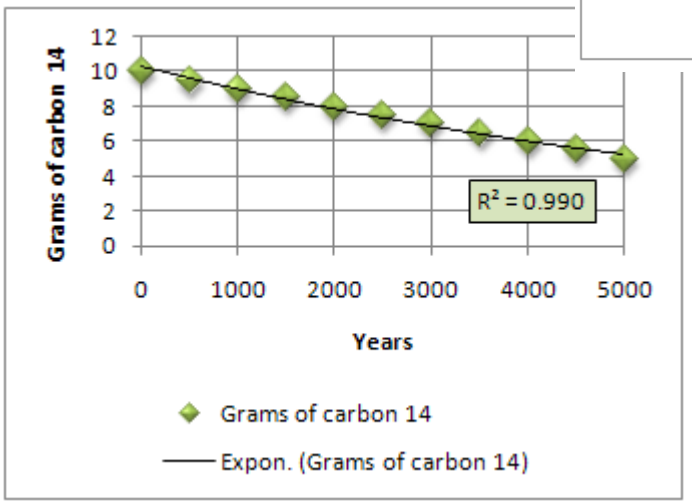


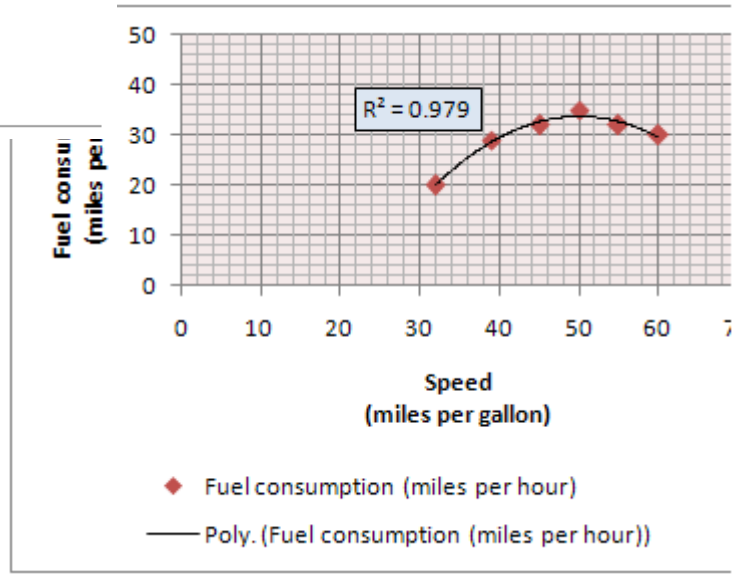
# + Different Types of Trendlines



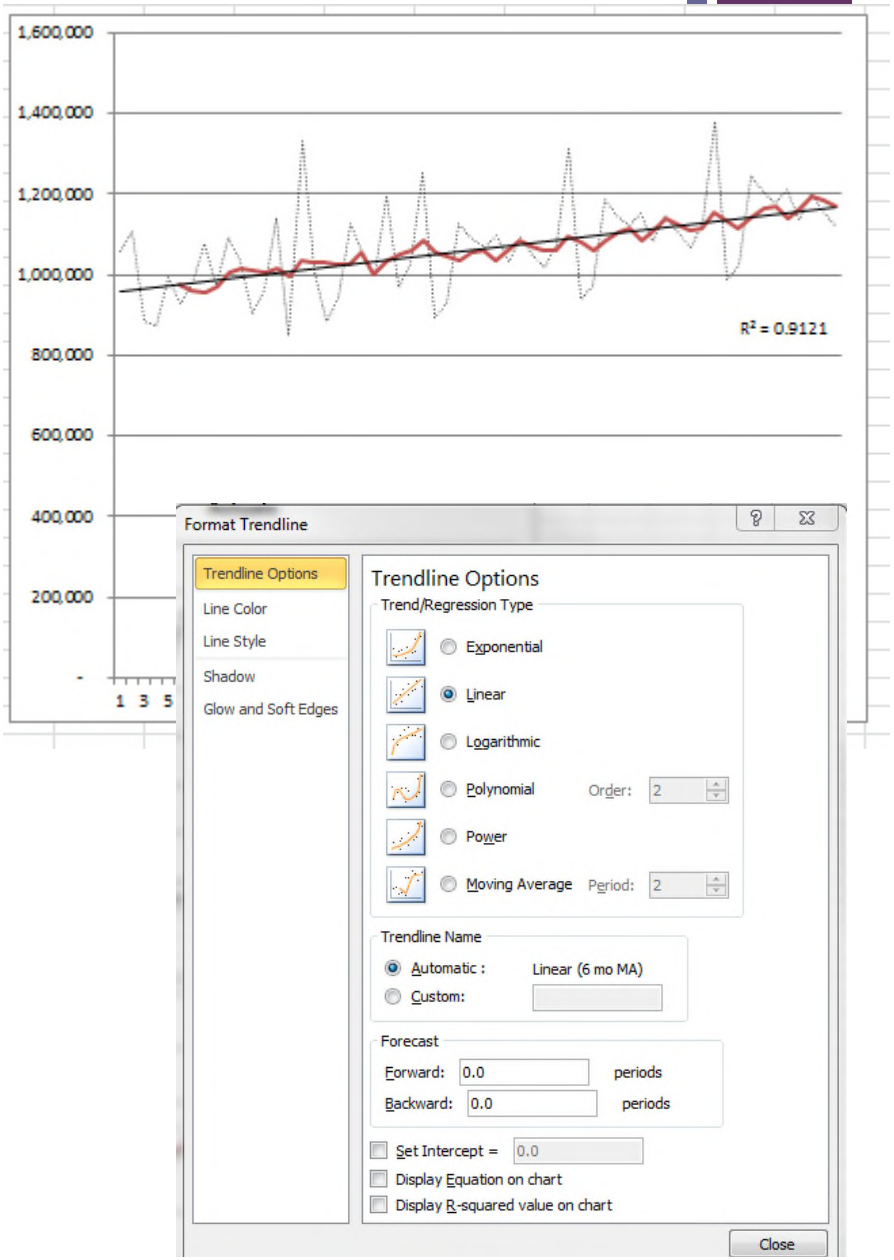



# How to Create a Trendline

- Select your data series on the chart
- Right click
  - Select "add Trendline"
  - Select type of line
  - Select additional information to display



# + Final Thoughts

- Get access to information
  - Organization
  - Sufficient history/granularity
- Know your data
  - Outliers
  - Organizational/Policy changes can affect information
- Tell a really good story using it
  - Always a story to be told
  - Uncover it by evaluating / assessing the information
  - Forecasting is more art than science
- Share it and empower those around you

- End of Presentation