



# Urban Ministries of Durham

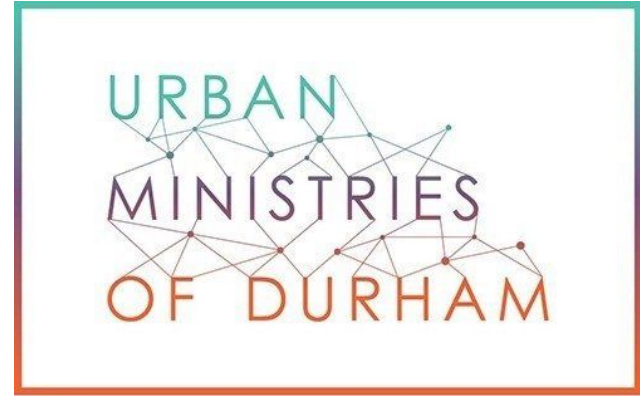
Project 1, BIOS611, Fall 2019

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# What is Urban Ministries of Durham (UMD)?

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- A Durham-based non-profit organization that provides food, clothing, shelter and supportive services to our neighbors in need.
- Main service is to provide food, shelter, clothing and supportive services for over 6,000 men, women and children annually.



**FOOD, SHELTER AND A FUTURE**

# Goals and Research Questions



## Goals

- Find meaningful insights to improve UMD's services in the future

## Research Questions

- How many clients visited more than one single year (i.e. multiple times over the years)?
- Are there specific service/goods in increased demand recently?
- Are there specific trends in demand in certain seasons?
- Are there higher demand of support from the organization than before? Should the organization be prepared for more budget in order to support the future demands?

# Data Source



- Data was provided from the UMD organization which contains a collection of data with 79838 observations from 1990's to current year 2019.
- Original dataset consists of:
  - 79,838 observations
  - 18 variables
- After preprocessing,
  - 79,787 observations
  - 10 variables

# After Preprocessing...



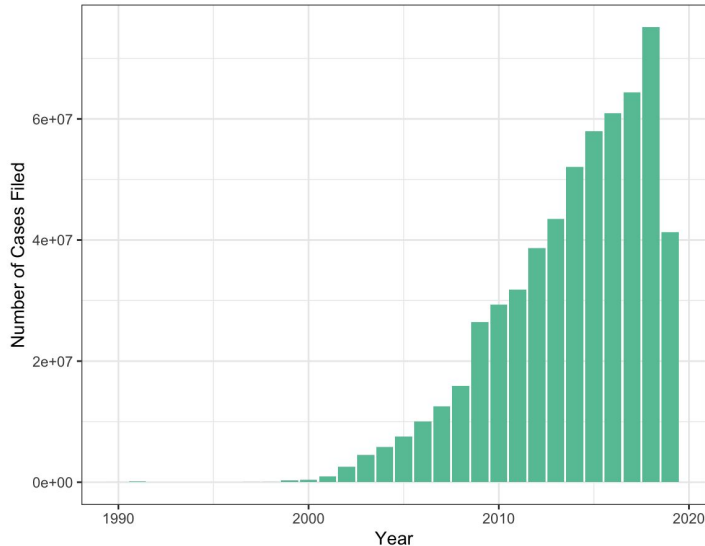
- For the services/goods provided with missing values were imputed with 0 (non-received)
- Removed unused variables.
- Removed observations with abnormal dates (before founding year(1983), future)

Variable	Details
Date	Date
Client File Number	Unique ID
Bus Tickets (Number of)	Number of Bus Tickets Provided
Food Provided for	Number of Food Provided
Food Pounds	Weight of Food Provided in lbs
Clothing Items	Number of Clothes Supported
Diapers	Number of Diapers Provided
School Kits	Number of School Kits Provided
Hygiene Kits	Number of Hygiene Kits Provided
Financial Support	Monetary support provided in dollars

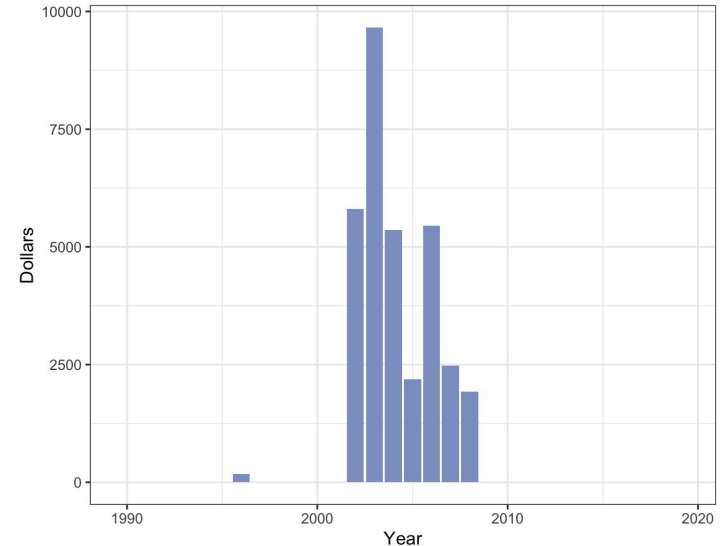
## Q1: Are there higher demand of support from the organization than before? Should the organization be prepared for more budget in order to support the future demands?

- The number of clients (organizations) are and increasing drastically by each year
- Service/goods support is increasing, while financial support is decreasing (since mid 2000s) over time.

Number of Cases Filed Over Time

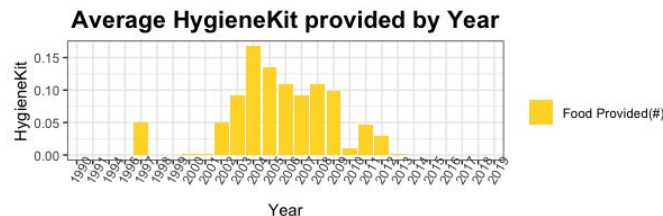
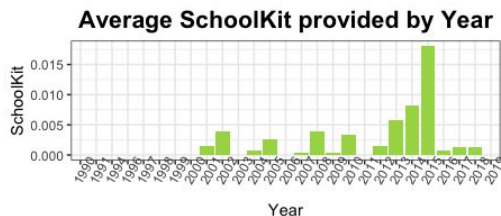
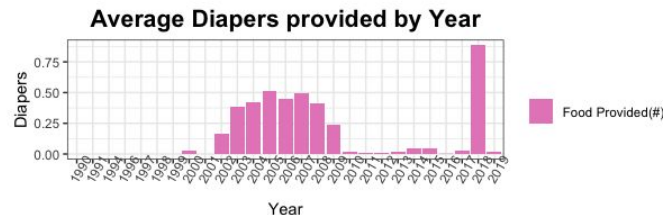
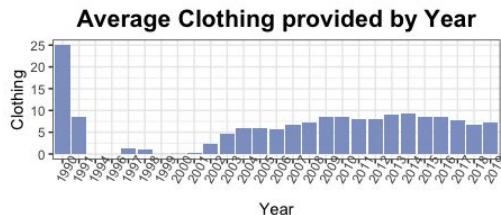
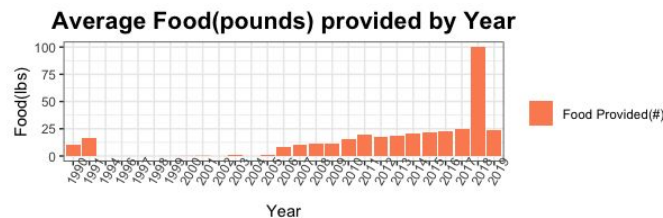
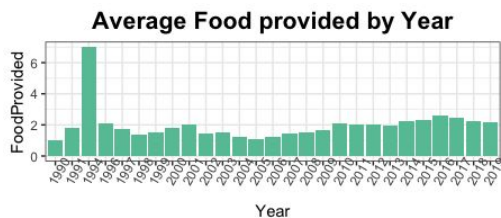


Amount of Dollars in Financial Support Over Time



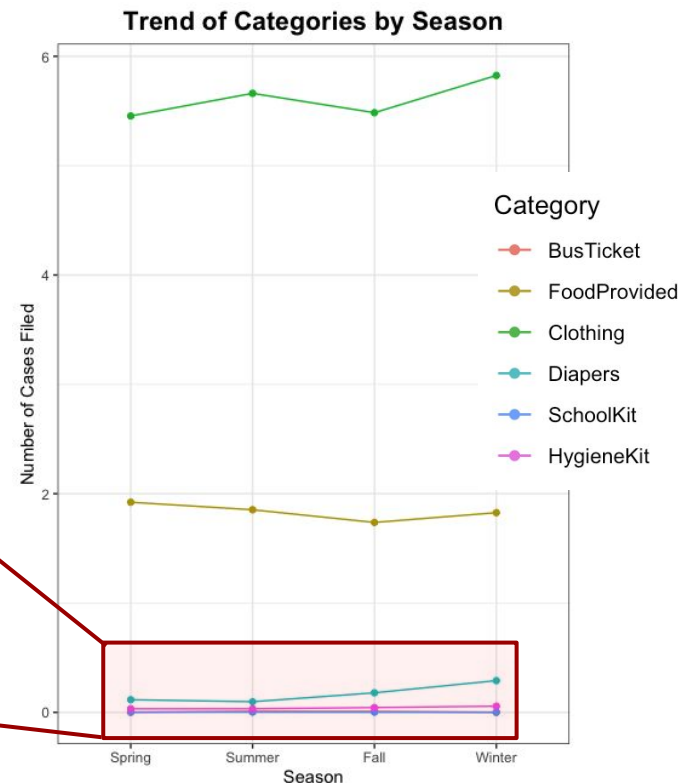
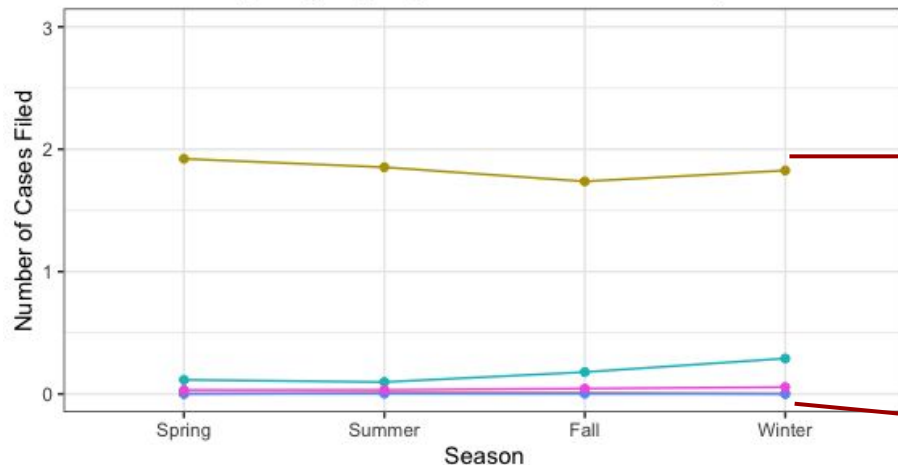
## Q2: Are there specific service/goods in higher demand recently?

- Not enough BusTicket data to see a trend
- Higher trend in needs of Diapers and Schoolkits



### Q3: Are there specific trends in higher demand in certain seasons?

- Slightly higher demands of clothings in winter can be seen.
- Also, slightly higher demands in diapers in winter.
- Abnormal value in diapers in Jan 2018 which might caused bias.





# Q3: Are there specific trends in higher demand in certain seasons?

- Multiple Comparisons for **Clothings**

Season	n	n.complete	mean.sd	pval.anova	median.IQR	pval.KW
Spring	24.000	24	5.45 +/- 3.62	1	6.8 (1.64,8.26)	0.997
Summer	24.000	24	5.5 +/- 3.34		6.33 (2.25,8.3)	
Fall	24.000	24	5.4 +/- 3.46		6.38 (2.82,8.2)	
Winter	24.000	24	5.46 +/- 3.42		6.57 (2.23,8.14)	

Season	pm.p.Tukey	pm.p	wilcoxon.p.holm	wilcoxon.p
Summer - Spring	1.000	0.959	1.000	0.984
Fall - Spring	1.000	0.960	1.000	0.820
Winter - Spring	1.000	0.991	1.000	0.975
Fall - Summer	1.000	0.916	1.000	0.918
Winter - Summer	1.000	0.966	1.000	0.975
Winter - Fall	1.000	0.950	1.000	0.893

- Multiple Comparisons for **Diapers**

Season	n	n.complete	mean.sd	pval.anova	median.IQR	pval.KW
Spring	24.000	24	0.12 +/- 0.17	0.32	0.01 (0,0.19)	0.896
Summer	24.000	24	0.1 +/- 0.16		0.01 (0,0.1)	
Fall	24.000	24	0.17 +/- 0.29		0.01 (0,0.38)	
Winter	24.000	24	0.29 +/- 0.68		0.01 (0,0.39)	

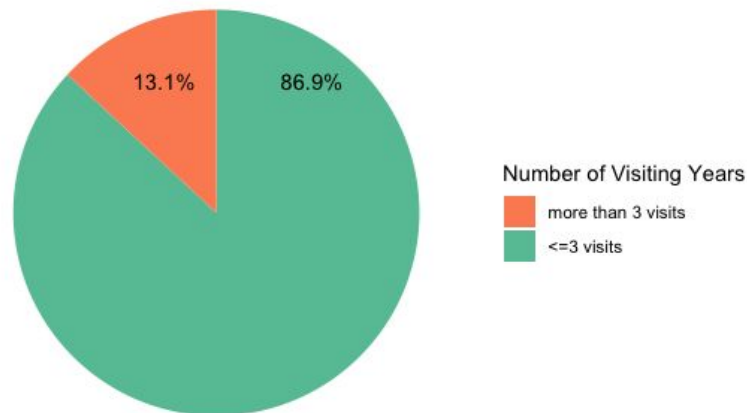
Season	pm.p.Tukey	pm.p	wilcoxon.p.holm	wilcoxon.p
Summer - Spring	0.998	0.665	1.000	0.872
Fall - Spring	0.960	0.420	1.000	0.604
Winter - Spring	0.425	0.243	1.000	0.602
Fall - Summer	0.902	0.261	1.000	0.649
Winter - Summer	0.321	0.190	1.000	0.530
Winter - Fall	0.731	0.449	1.000	0.874

## Q4: How many clients did they visit more than one single year?



- Only around 13% of the clients have visited and got aided more than three times.
- Indicates that our clients discontinue their visits in couple of years.
  - Reason is unknown, but can be helpful in analyzing or improving the service of UMD.

**Proportion of Number of Visits Years per Client**



# Conclusion



- UMD is growing fast!
  - ⇒ Find more financial supports, better priced products (but with same quality), etc.
- Increase of demands in diapers and school kits
  - ⇒ More clients with children, hence consider adding more service/goods for babies and youngs
- Slightly increasing demand in clothings and diapers in winter
  - ⇒ Be prepared for the coming season!
- Majority of clients do not have continued visitings.
  - ⇒ Identifying the reason to this discontinuity is important (No need? Not satisfied? Hard to reach?)
  - ⇒ Satisfaction surveys can be helpful

Q&A

# Conclusion



- Around 87% of our clients have revisited and need more than one time aids.
- The one who got the most aids 249 times between 2001 and 2019 and this is 50 times the average 5.2 cases.
- The average number of cases filed per year per client is 2.55 cases.
- There was no specific items or services in higher demand in recent 3 years.
- There was no item that have higher demand in certain seasons.
- The number of clients (organizations) are getting more and increasing as time goes by.
- Service/good support is increasing, while financial support is decreasing (since mid 2000s) over time.

## Q1: How many clients visited more than one single year?

- One who got the most aids is 249 times between 2001 and 2019 (50 times the average, 5.2 cases)
- One who got the most aids per year is 36 times in 2012.

