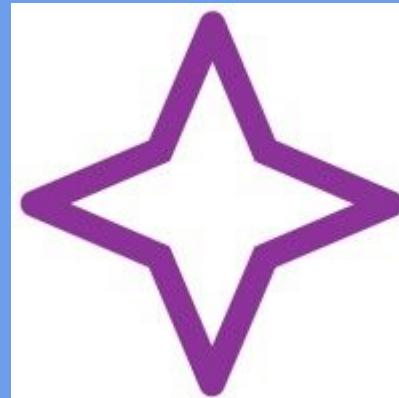


Supernova MGU Externship Data Analysis



Speakers



**Pitchayapa
Martin**
Analyst



**Eleonore
Rupprecht**
Business Analyst



**Jahvani
Muniz**
Student Analyst

Agenda

1. Introduction and overview
2. Premium Analysis
3. Competitor Analysis
4. Decline Rate Analysis
5. LLM Accuracy Analysis
6. Quote Journey
7. Q&A



Introduction



Objectives

- Identify premium trends to improve pricing accuracy
- Analyze decline rates to reduce lost opportunities
- Assess LLM use for automation and efficiency
- Map quote journey to spot drop-offs and improve flow
- Enable data-driven underwriting and operations
- Highlight areas for process and growth improvement

Executive Summary

- **Premium Trends:** Hospitality, C.E.& I, and Recreation had the highest premiums. Supernova's rates were consistently lower than competitor Trushield.
- **Decline Rate:** 32% of quotes were rejected. Highest rejection categories included **Retail, B&P Services, C.E.& I, Hospitality, and Health Services**. Top rejection reasons were ibc_code, decline_uw_rule, fus_grade, revenue, and content_limit.
- **LLM Accuracy:** The classification model showed 90% accuracy, with most errors in location-based fields.
- **Quote Journey:** 75% of quotes were incomplete, with major drop-offs at business location, years in business, and revenue stages.

Premium Analysis

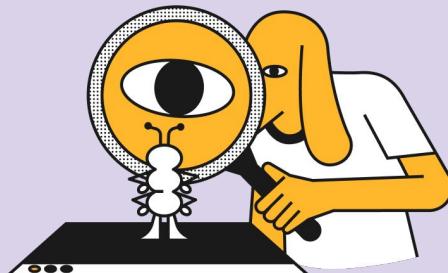
Objective + Methodology

Objective

- Understand how written premiums vary by industry and province
- Compare Supernova premiums to competitor premiums

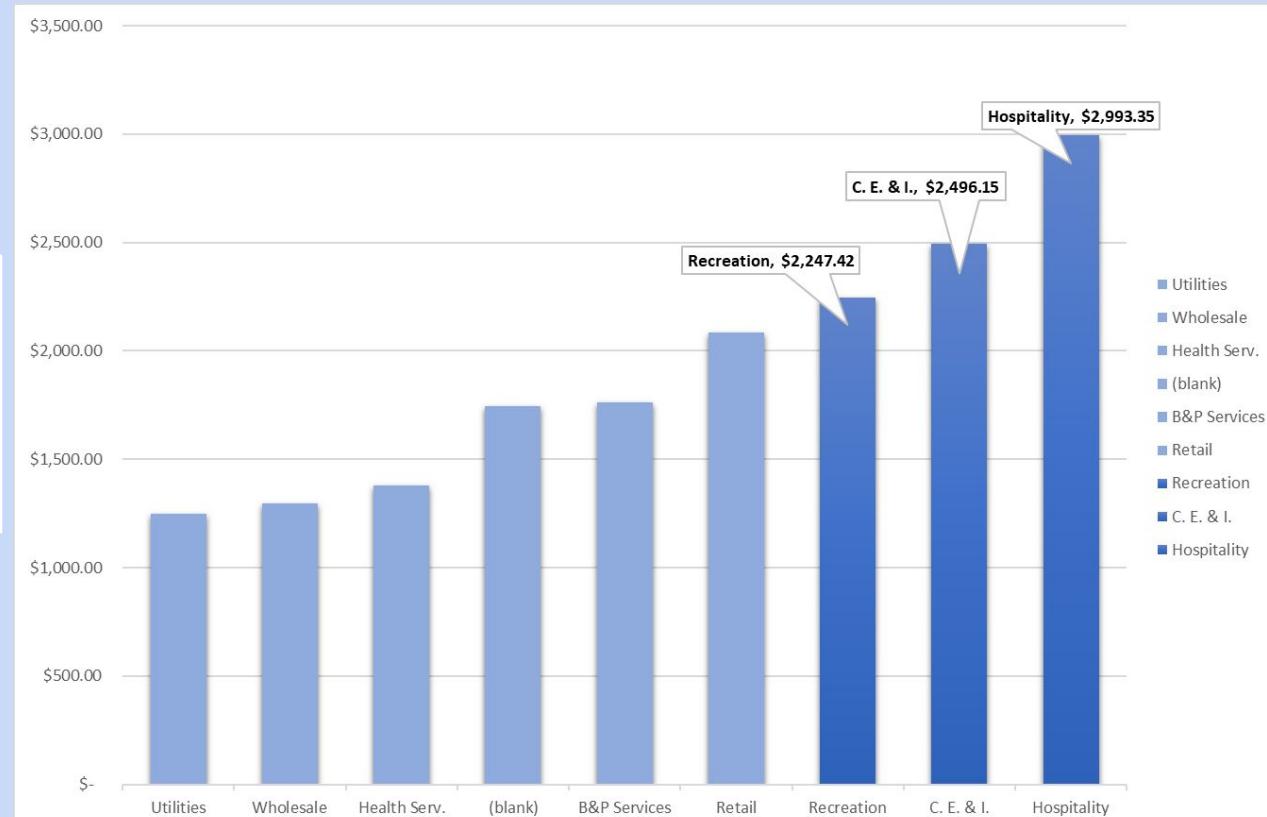
Methodology & Data

- Created pivot tables to summarize various tasks(competitor, average prem., total volume.)
- Developed bar charts to illustrate category/region premium rates



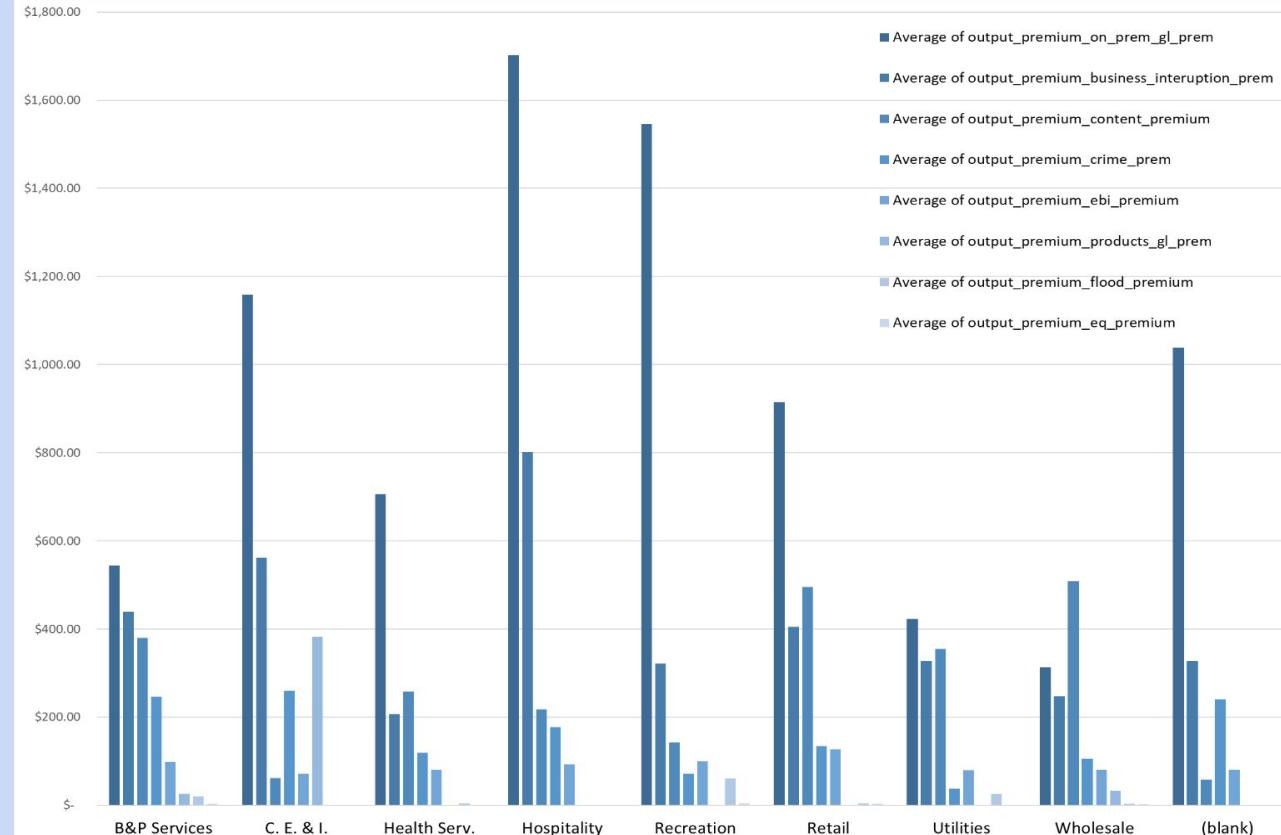
Average Total Premium by Category

- ❖ Top 3 Industries with the highest Premiums
Hospitality, C.E&I,
Recreation



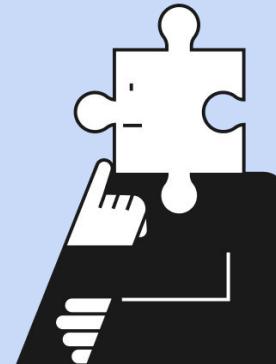
Average Type of Premium by Category

- ❖ Top 3 most expensive types of Premiums per Category
 1. General liability premium for on-premises.
 2. Premium for business interruption coverage.
 3. Premium related to contents insurance.



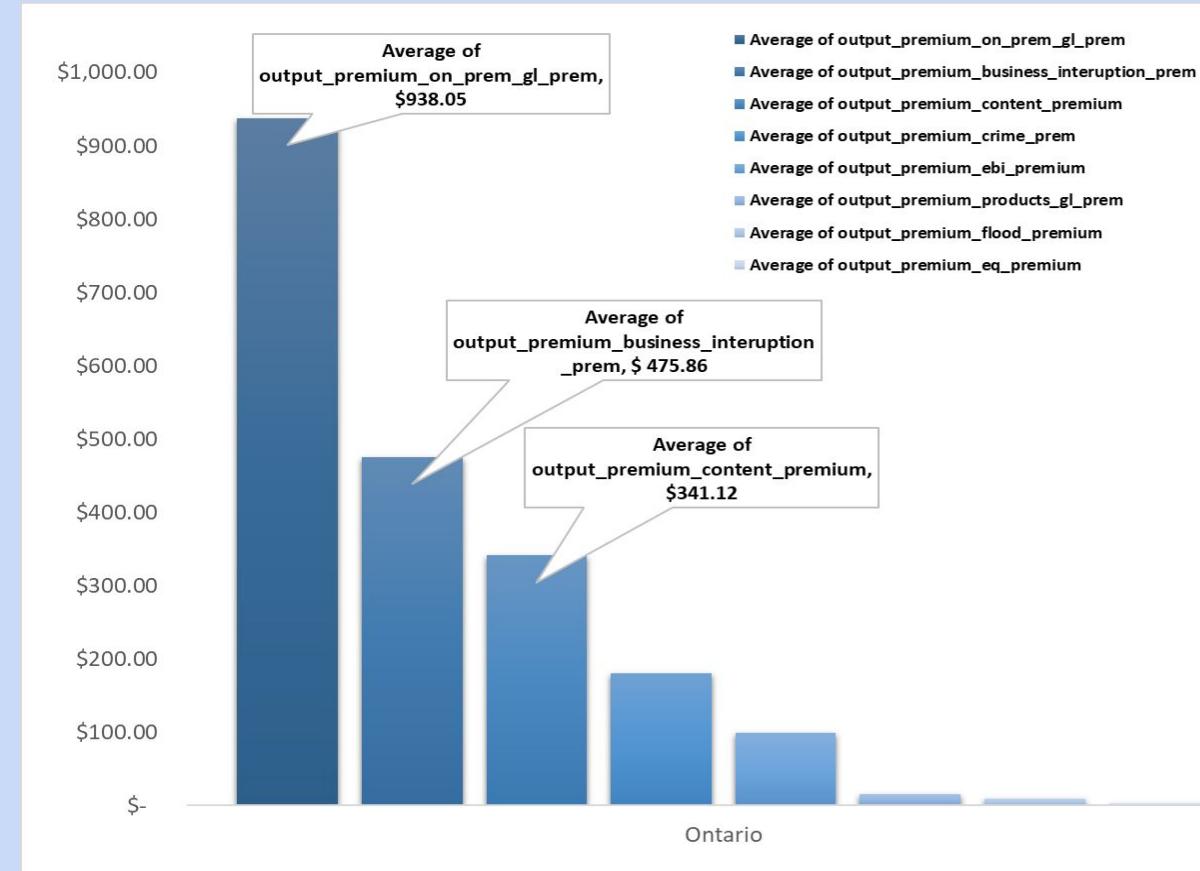
Average Premium by Region

- ❖ The data used in this analysis covers only the Ontario region.
- The Average Total Premium in Ontario is \$ 2,062.30



Average Type of Premium by Region

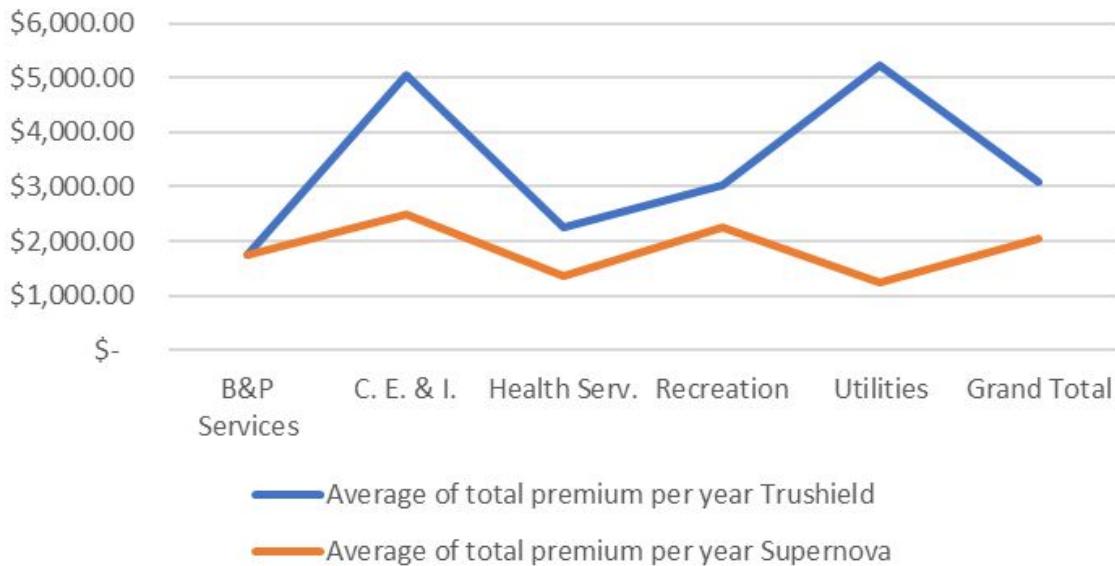
- ❖ Top 3 most expensive types of Premiums per Region
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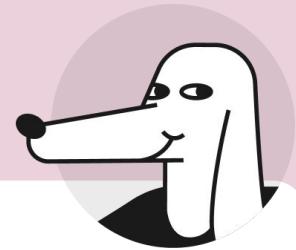
Competitor Analysis

- ❖ Average of total premium per year for Supernova is lower compared to Competitor Trushield in all Categories

Trushield vs Supernova Average Total Premium Price



Recommendations



1. Target High-Premium Industries

- Develop tailored packages for industries paying the highest premiums

2. Re-evaluate Pricing Strategy

- Investigate why customers might still choose competitor - higher perceived value?

3. Focus on competitive coverage for high cost premiums

- Ensure competitive coverage for most expensive premiums



Decline Rate Analysis

Objective + Methodology

Objective

- Understand the rate at which submissions are declined and the key reasons for those declinations.
- Identify patterns by industry to improve underwriting guidelines or broker communication.



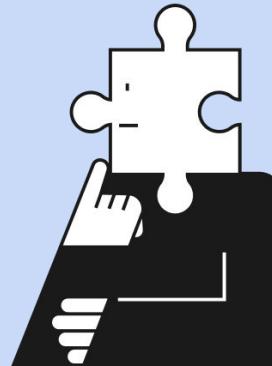
Methodology & Data

- Calculated overall and industry-specific decline rates
- Identified and quantify top decline reasons by industry
- Analyzed correlations with industry traits, brokers, and guidelines

Overall Decline Rate Overview

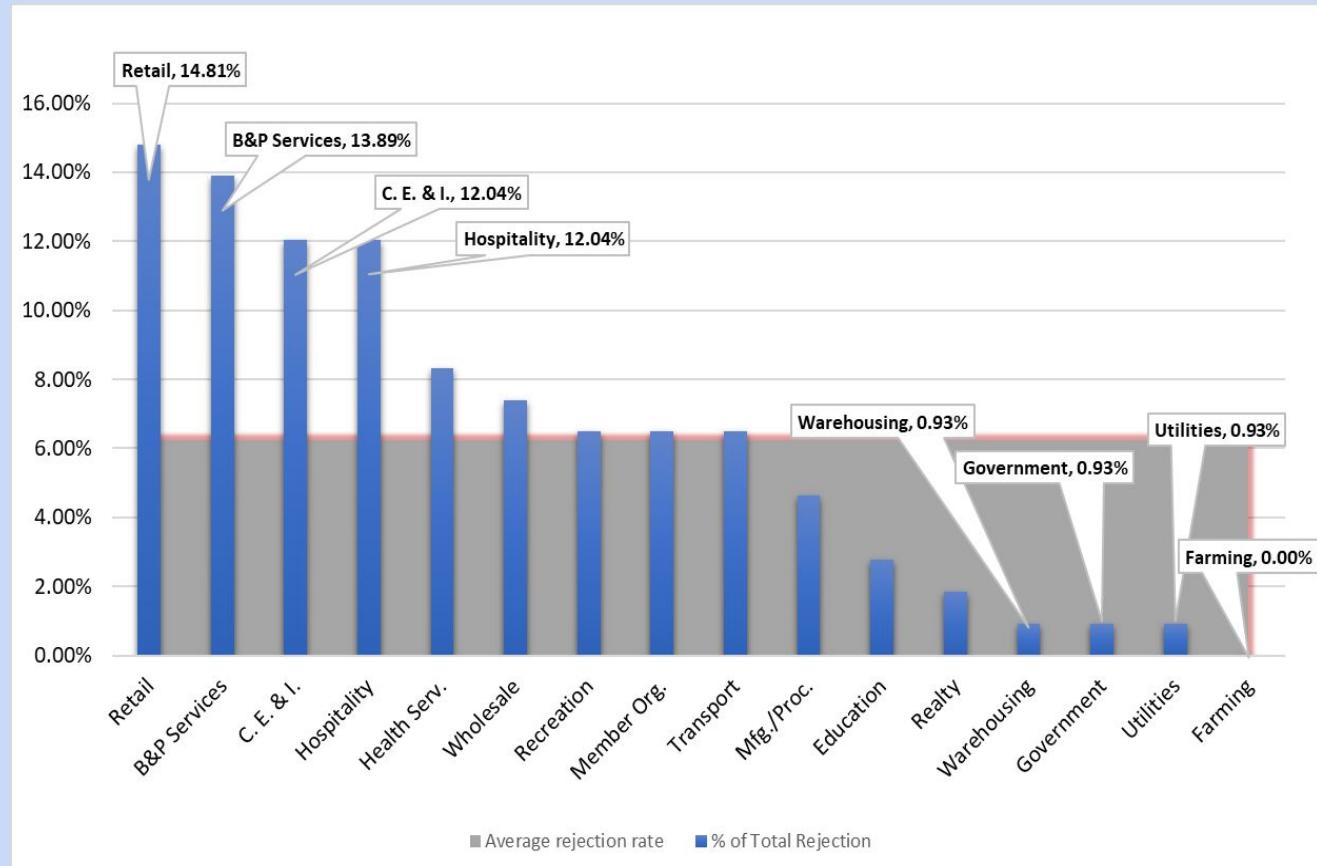
- ❖ 339 total values, 108 total declined values

Total Decline Rate= 32%



Decline Rate by Category, % of Total Rejection

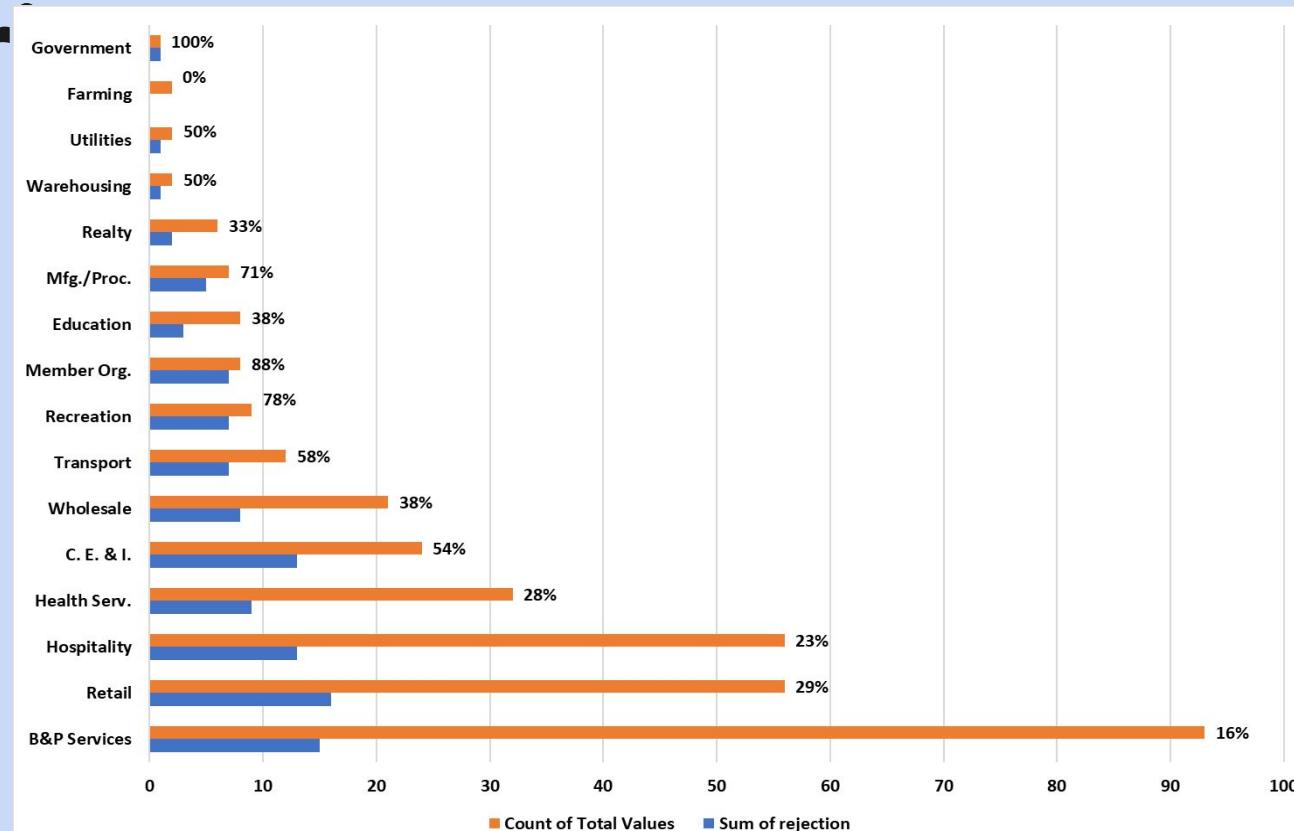
- ❖ The Top 5 Categories with the highest Rejection Rate:
 1. Retail
 2. B&P Services
 3. C. E. & I.
 4. Hospitality
 5. Health Serv.



% of Rejection within Categories

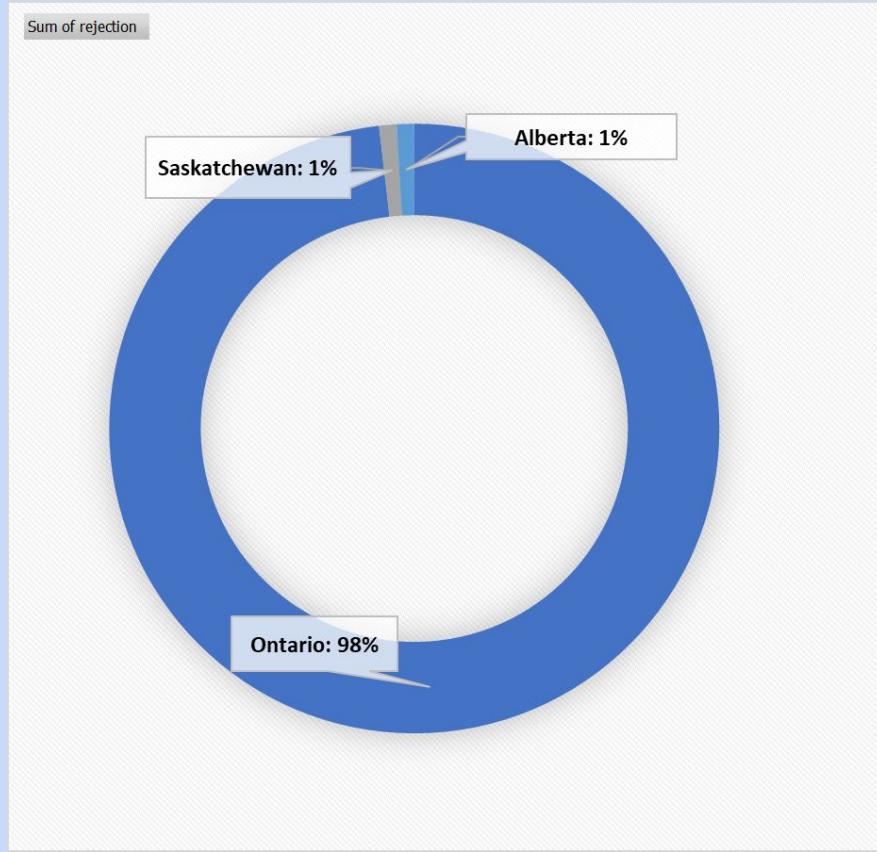
- ❖ The Top 5 Categories with the highest Rejection Rate, had the highest Count of Values in the Data Set.
- ❖ Top 5 Categories with highest Rejection within Categories:

 1. Government (100%)
 2. Member Org. (88%)
 3. Recreation (78%)
 4. Mfg./Proc (71%)
 5. Transport (58%)



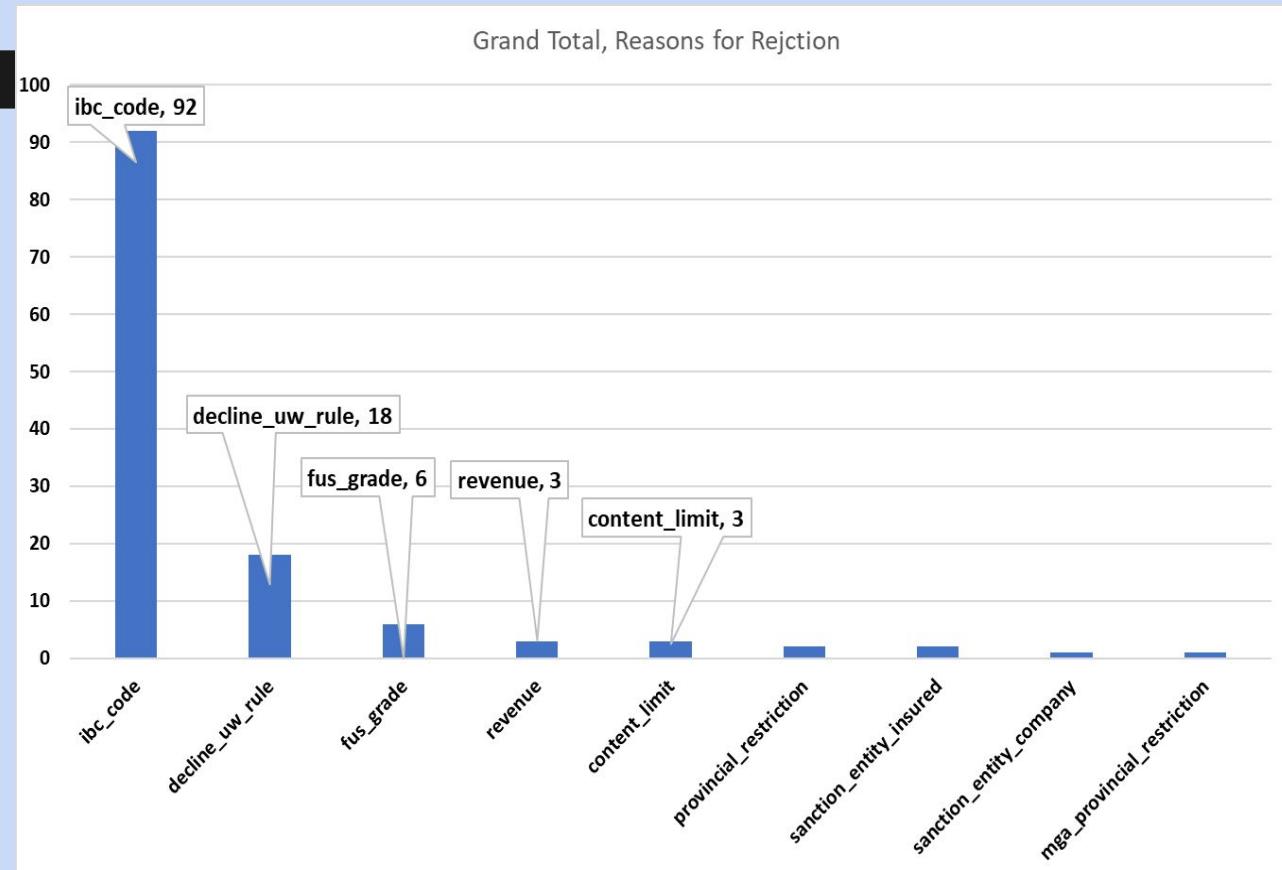
Decline Rate by Region

- ❖ 98% of Rejection are from Ontario, because most Data was from Ontario



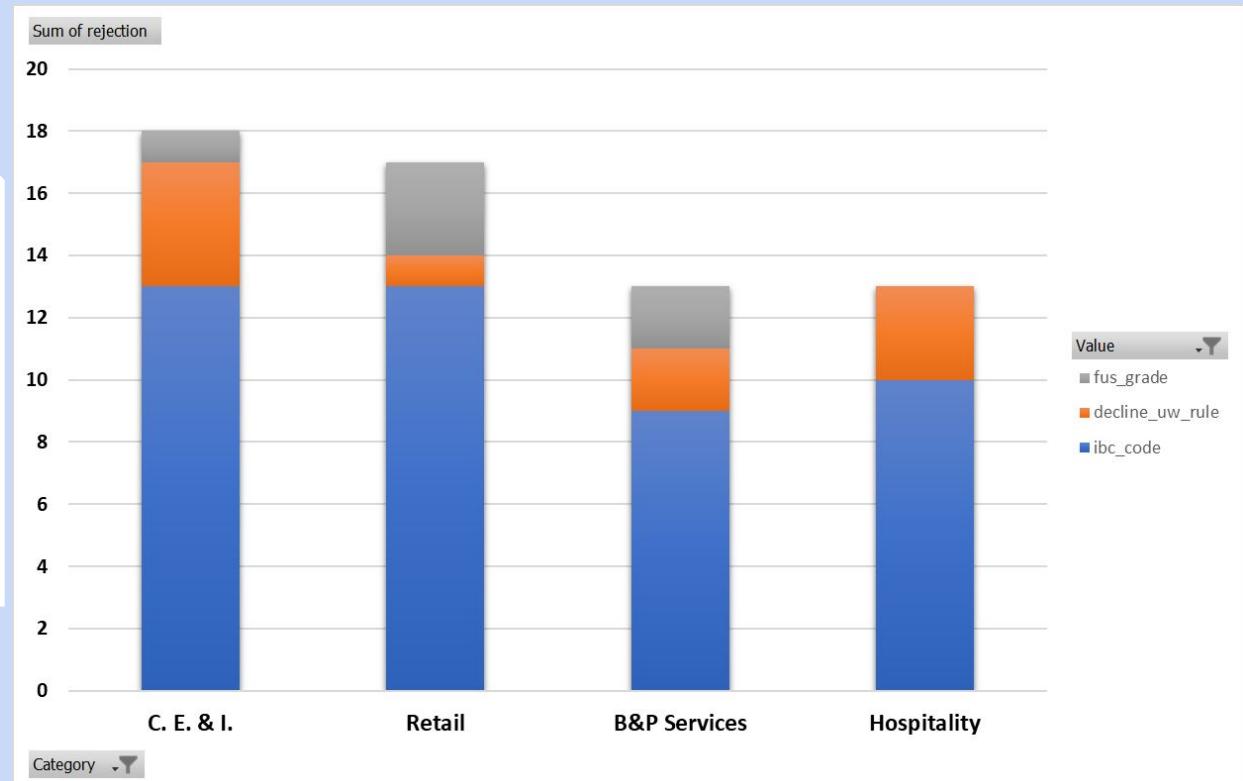
Reasons for Rejection

- ❖ 108 Total Rejections
- ❖ 128 Total Reasons for Rejections

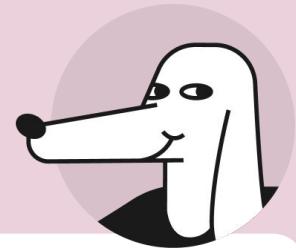


Top Declined Categories with Primary Rejection Cause

- ❖ For the industries, C. E.&l, Retail, B&P Services and Hospitality, the most prominent rejection reasons were
 1. Industry Code
 2. Fire Underwriters Survey
 3. Underwriting Rule



Recommendations



ibc_code (Industry Code):

- Review and expand accepted codes; guide brokers on eligible industries.

decline_uw_rule (Underwriting Rule):

- Reassess rule thresholds; consider manual review for borderline cases.

fus_grade (Fire Underwriters Survey):

- Adjust premiums based on FUS; allow exceptions where fire suppression measures are in place.

revenue:

- Broaden revenue bands; explore tiered product offerings.



content_limit:

- Set clearer broker guidelines; consider flexible content coverage tiers.



LLM Accuracy Analysis

Objective + Methodology

Objective

- To evaluate the effectiveness of the Large Language Model (LLM) used to assess and filter insurance quote submissions, specifically focusing on its decision-making accuracy when recommending quote rejections.



Methodology & Data

- Review each row and mark as accurate/inaccurate.
- Calculate one overall accuracy rate: **# of accurate rows ÷ total rows**

Correct results

Pet Valu : Online

{"answer_value": "Online",
"answer_reasoning": "The business sells merchandise both in-store and on their website, as indicated by the Google search results and image-related information, which mention products such as pet food, treats, toys, and more.."}

Validation : Yes/ Accurate

The screenshot shows the Pet Valu website interface. At the top, there's a navigation bar with links for 'Shop by Pet', 'Shop by Brand' (which is currently selected), 'Your Rewards™', 'Local Flyer', 'Store Locator', and 'Contact Us'. On the far right, there are 'Sign In' and a shopping cart icon. Below the navigation, a search bar says 'What can we help you find?' and a store location 'Burnhamthorpe' is listed as 'Open 9:00 AM-9:00 PM'. The main content area is titled 'ACANA' and displays a grid of pet food products. There are three dropdown filters on the left: 'Pet Type' (Dog and Cat), 'Product Type' (Chicken Free, Grain-free, Limited Ingredients, Natural/holistic, Soft & Chewy, and a 'Show More' option), and 'Flavour' (Beef, Chicken, Cranberry, Duck). The products shown include ACANA Singles Lamb & Apple Recipe Dog Food, ACANA Classics Red Meat Recipe Dog Food, ACANA Indoor Entree Cat Food, and ACANA Singles Pork & Squash Recipe Dog Food. Each product card includes a price range, a 'Your Rewards™ Program' badge, an 'Available for AutoShip' badge, a star rating, and a 'Top Rated' badge.

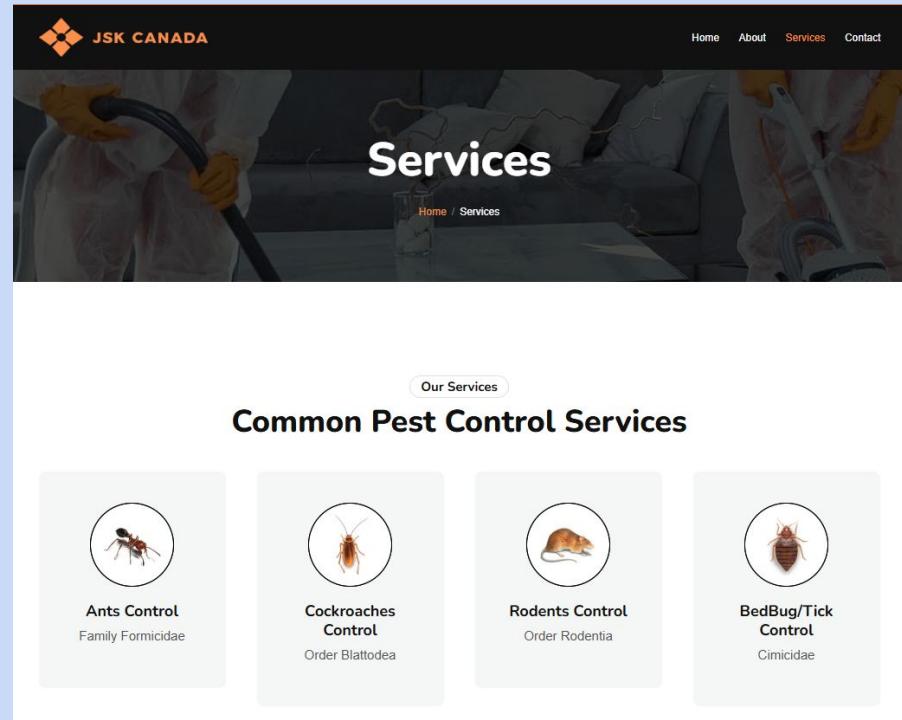
Correct results

JSK CANADA : delivery

{"answer_value": "No Value", "answer_reasoning": "The search results do not mention anything about JSK CANADA offering delivery or takeout options, instead, they provide information about the business being a pest control service, its location, and contact number, with no indication of food delivery or takeout services, suggesting that JSK CANADA does not offer any delivery option.", "urls":

[https://m.yelp.com/search?cflt=localservices&find_loc=Fergus%2C+ON,
https://www.yelp.ca/search?find_desc=Local+Services&find_loc=Fergus%2C+ON]}]

Validation : Yes/Accurate



The screenshot shows the JSK CANADA website. At the top, there is a navigation bar with links for Home, About, Services, and Contact. The main heading is 'Services'. Below this, a section titled 'Our Services' lists four common pest control services: Ants Control (Family Formicidae), Cockroaches Control (Order Blattodea), Rodents Control (Order Rodentia), and BedBug/Tick Control (Cimicidae). Each service is accompanied by a small circular image of the respective pest.

JSK CANADA

Home About Services Contact

Services

Home / Services

Our Services

Common Pest Control Services

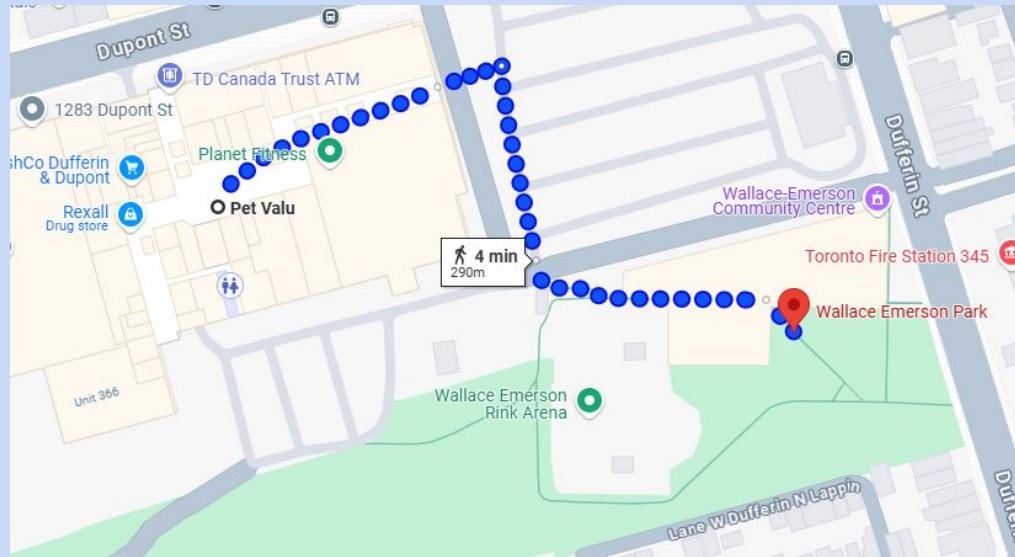
- Ants Control**
Family Formicidae
- Cockroaches Control**
Order Blattodea
- Rodents Control**
Order Rodentia
- BedBug/Tick Control**
Cimicidae

Incorrect results

Pet Valu : near_park

{"answer_value": "8", "answer_reasoning": "I assigned a criminal risk score of 8 to this area, indicating a relatively high risk. However, given the information provided, there are no parks within 500m of the business. Typically, areas with fewer parks tend to have lower foot traffic, which can sometimes contribute to a higher criminal risk score. But since the task specifically asks for the estimate based on the number of parks, and there are no parks, I should adjust my reasoning. The absence of parks suggests a potential for lower foot traffic, which could contribute to a higher risk score. Nevertheless, the lack of parks alone is not a definitive indicator of high crime, and other factors would typically be considered. In this case, given the instruction to estimate based solely on the number of parks, the score should reflect the potential impact of zero parks on foot traffic and, by extension, criminal risk. Thus, a moderate to high score might be more appropriate", "urls": []}

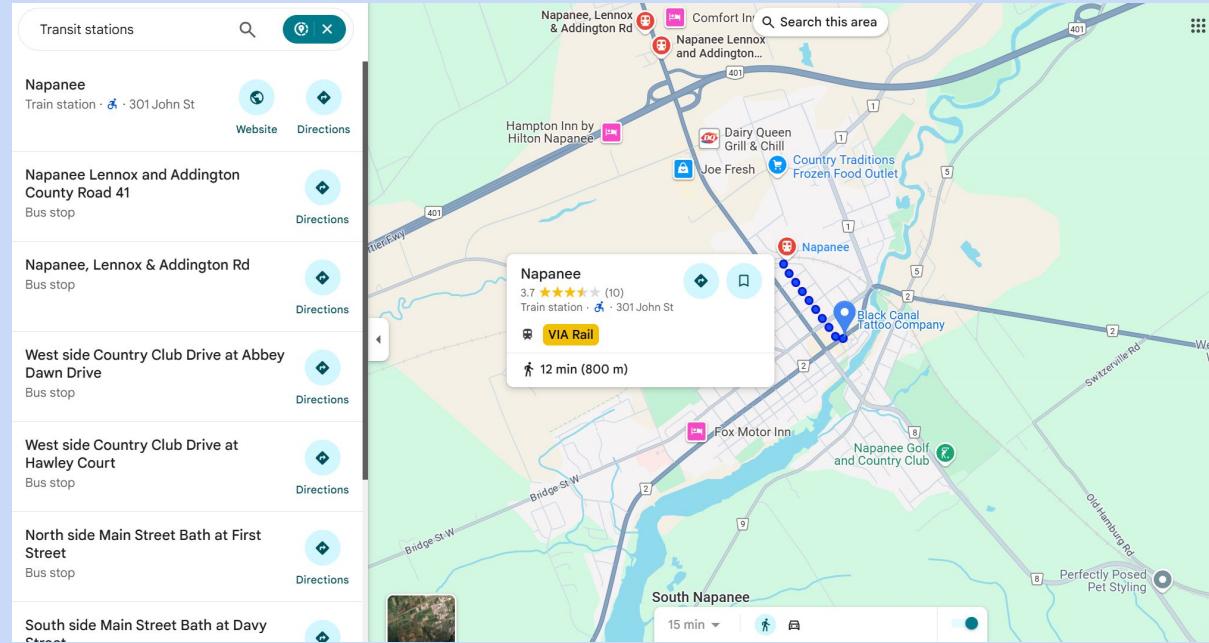
Validation : No/ Inaccurate



Incorrect results

Black Canal Tattoo Company : near_transportation_hubs

{"answer_value": "0", "answer_reasoning": "The area has no transit stations nearby, indicating a lack of transportation hubs. This suggests a low volume of foot traffic and minimal opportunities for criminal activity, resulting in a very low criminal risk score.", "urls": []}

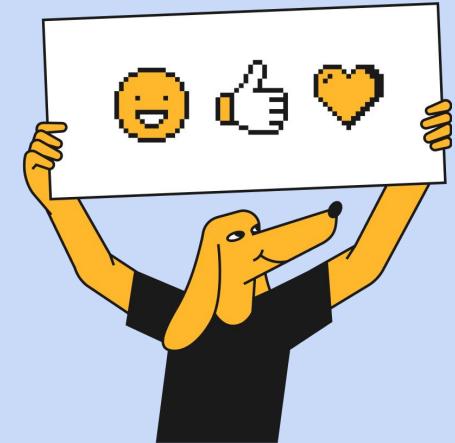


Validation : No/Inaccurate

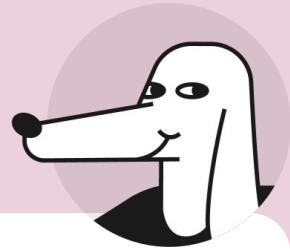
Accuracy stats

- 208 entries total
- ✓ 187 were correct
- * 21 were incorrect

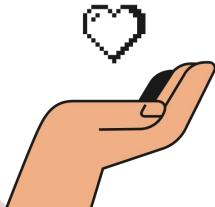
90.34%
accuracy rate



Recommendations



- Improve LLM Accuracy Beyond 90%
- Establish Human-in-the-Loop (HITL) Review
- Create Feedback Loops for Continuous Learning
- Customer Experience Safeguards



Quote Journey Analysis

Objective + Methodology

Objective

- Understand incomplete quote patterns
- Identify volume of drop offs in each stage

Methodology & Data

- Created pivot table
 - Displays the 9 stages of quote application
 - Count of incomplete in each stage

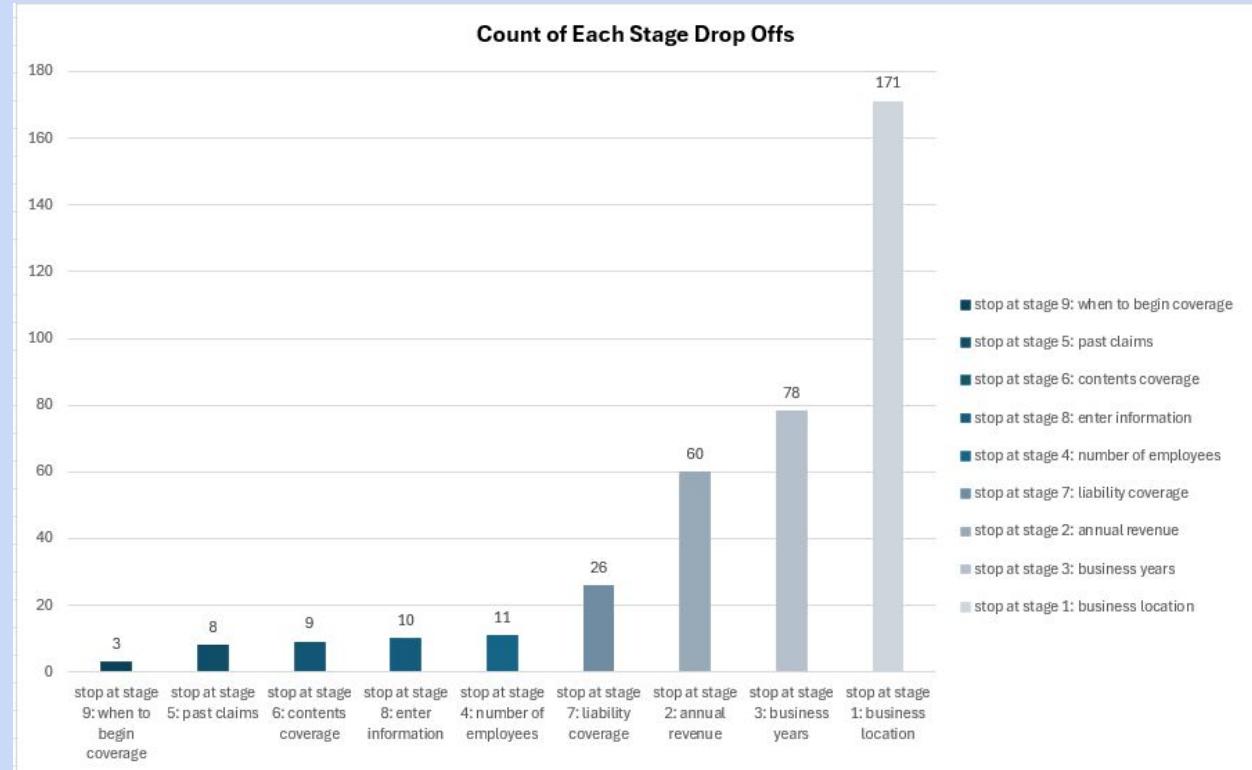


Quote Journey Pivot Table

- ❖ Top 4 Highest Dropoff Stages:
Stage 1, 3 ,2, 7

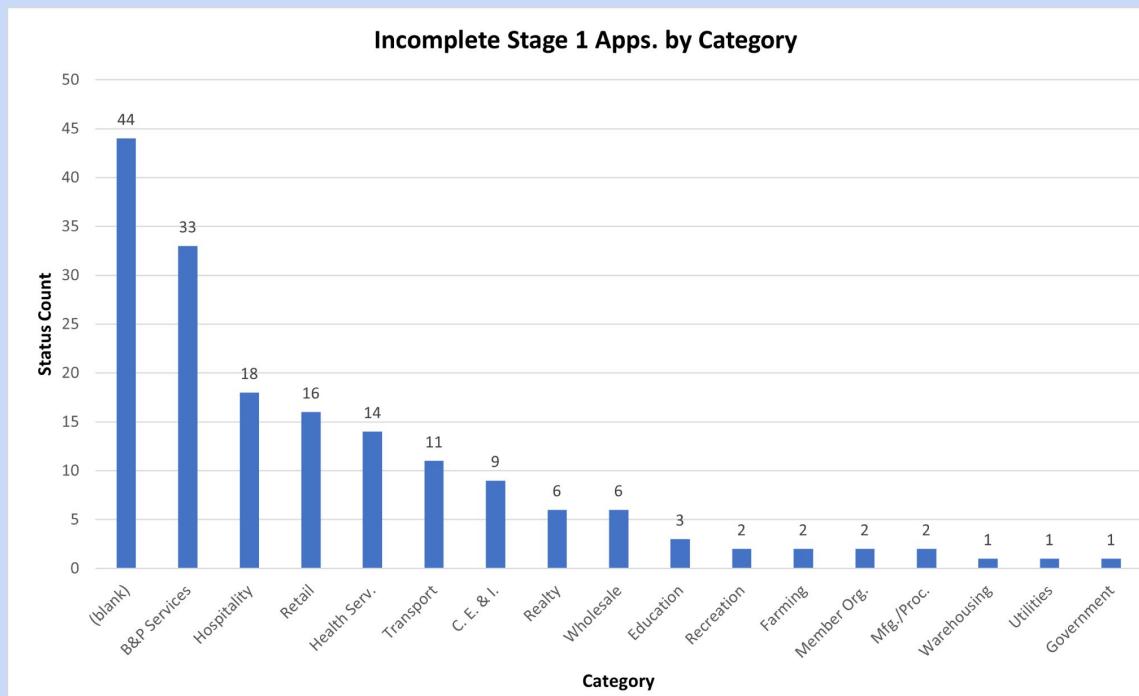
Application Stage	incomplete	Dropoff Rate
stop at stage 9: when to begin coverage	3	1%
stop at stage 5: past claims	8	2%
stop at stage 6: contents coverage	9	2%
stop at stage 8: enter information	10	3%
stop at stage 4: number of employees	11	3%
stop at stage 7: liability coverage	26	7%
stop at stage 2: annual revenue	60	16%
stop at stage 3: business years	78	21%
stop at stage 1: business location	171	45%
Grand Total	376	

Quote Journey Chart

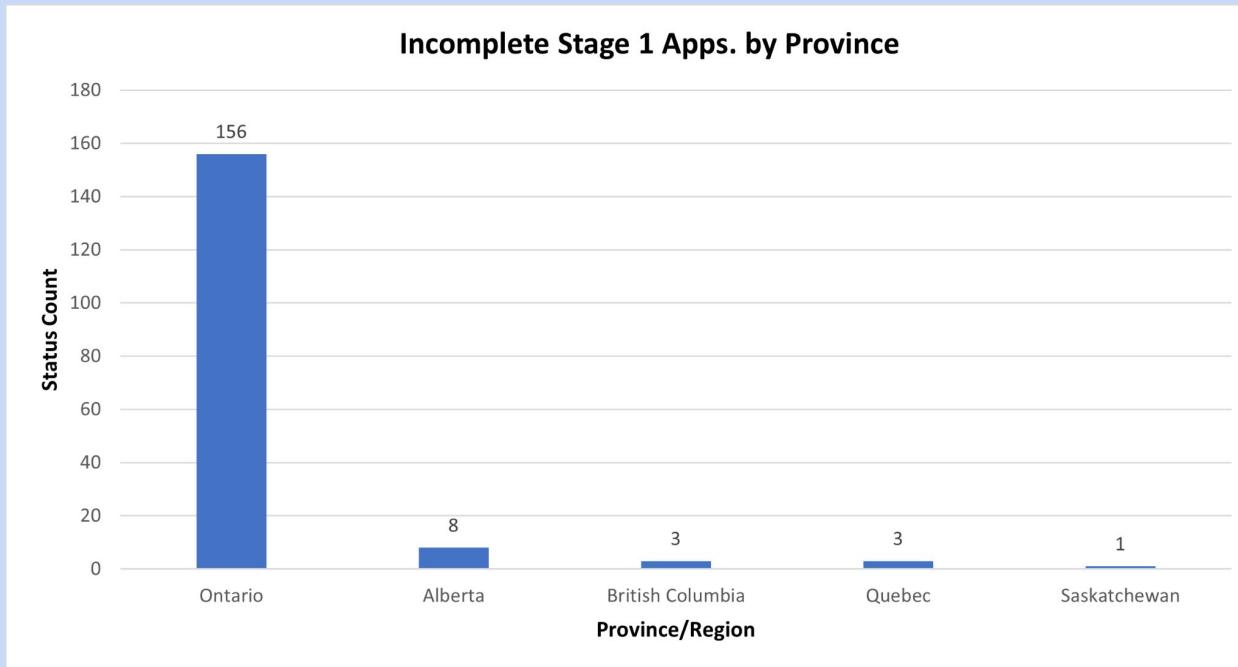


Incomplete Apps. Segmented by Categories

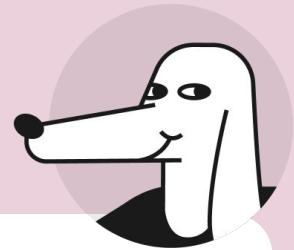
- Top 3 industries that drop off in stage 1
 - Blank
 - B&P Services
 - Hospitality



Incomplete Apps. Segmented by Region



Conclusions



- 75% of quote application status' are incomplete
- Stage 1 Category Top 3: **Blank**, B&P Services, and Hospitality
- Stage 1 Location Top 3: **Ontario**, Alberta. British Col. & Quebec



Recommendations/Assumptions

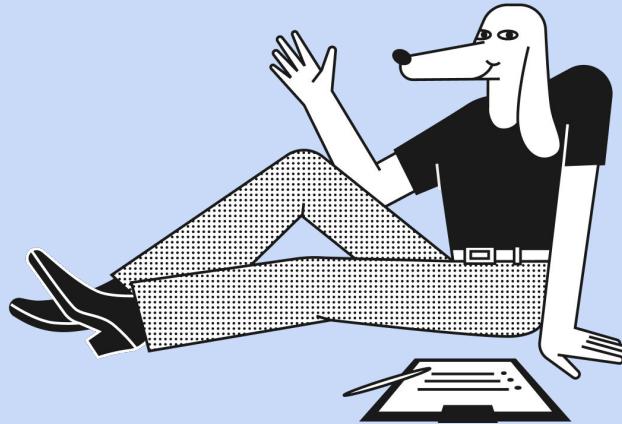


- Find the categories of the “blank” label
- Clearly state locations/provinces that are covered
- Send automated email to incomplete applications
 - Call to action
 - Offer assistance
- Too much time/investment
 - Anchor & Adjustment: Compare Supernova & Competitor Pricing
 - Add estimated time

Any Questions?



Thanks ✨for coming!



Accent slide

Thought one about
something interesting

Thought two about
something interesting

Some steps

1

Open VS Code

2

Create a new file

3

Write some code

tripleton

What?
A scalable product

Smaller text if you need it

How?
Great team, step by step

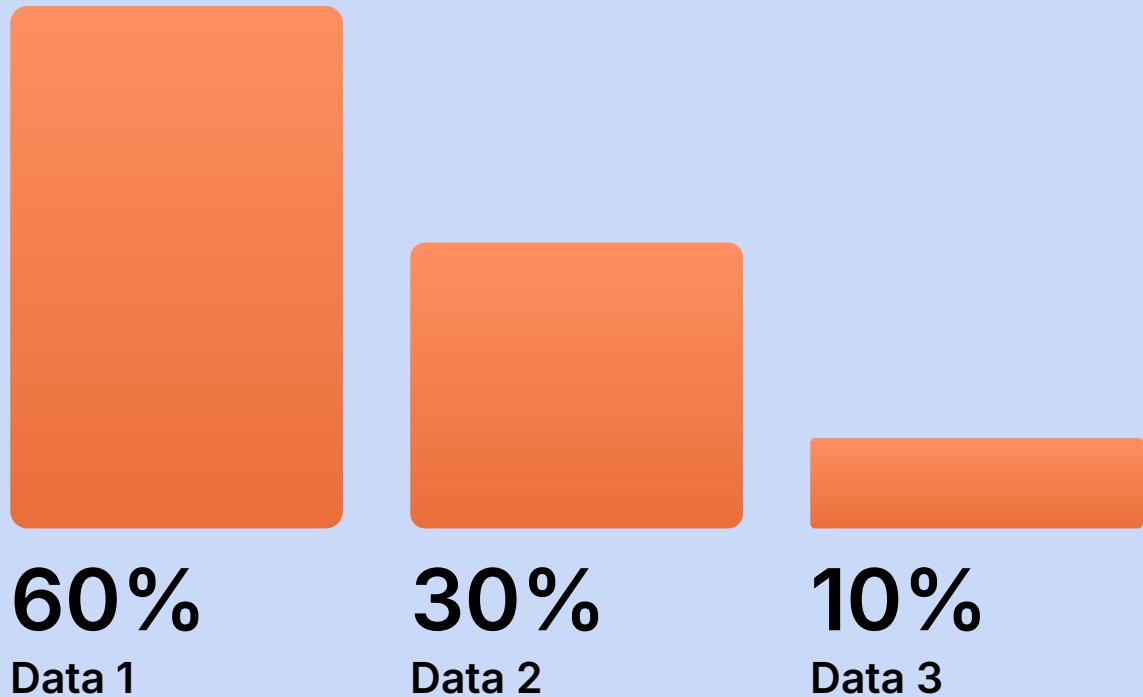
Smaller text if you need it

Points

1. Point one
2. Point two
3. Point three
4. Point four

Some data

Some caption



Additional assets ↓

Our photo stock

Our emoji! You can add them to headings or cards.

When using with headings, make it the same size as the heading text.



Our emoji! You can add them to headings or cards.

When using with headings, make it the same size as the heading text.



Emoji usage rules

Student ❤ support

You can add emoji to the title of the slide.
Make it the same size as uppercase letters

You can add emoji to a card, if there's
space to do so, but don't make it too small

Card title

Lorem ipsum dolor sit amet,
consectetur adipiscing elit,
sed do eiusmod tempor
incididunt ut labore et dolore
magna aliqua. Ut enim ad
minim veniam, quis nostrud
exercitation ullamco laboris
nisi ut aliquip ex ea commodo
consequat.



Emoji don'ts



Don't make it large

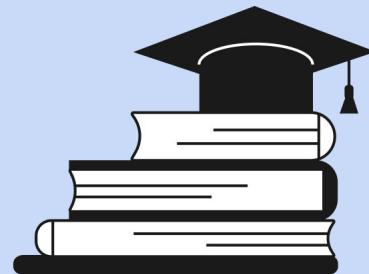
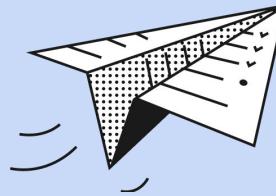
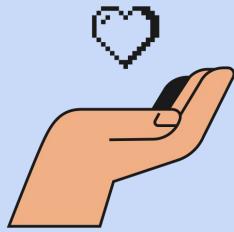


Don't make it tiny

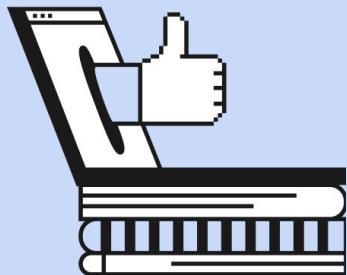


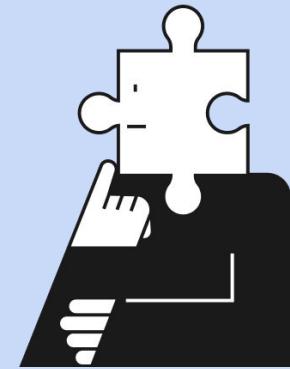
Don't rotate it

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Illustrations that you can add to slides. Please do not scale them!

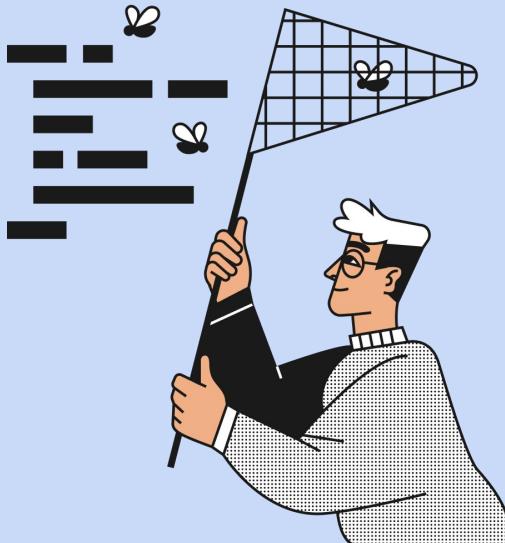
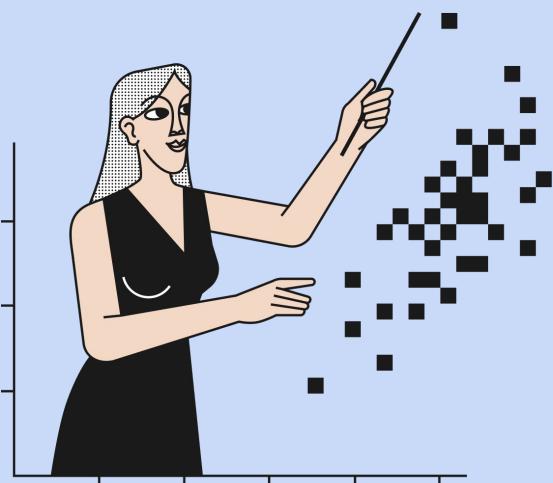




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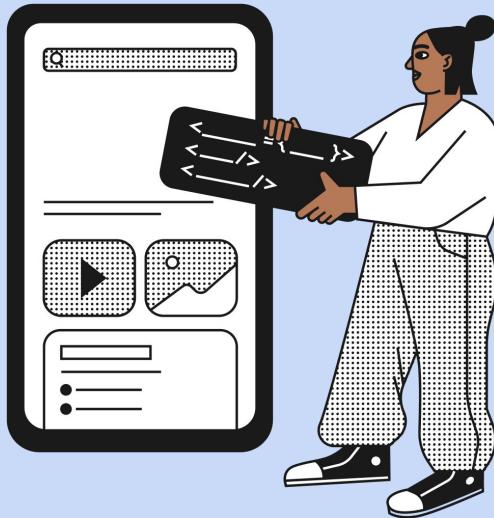
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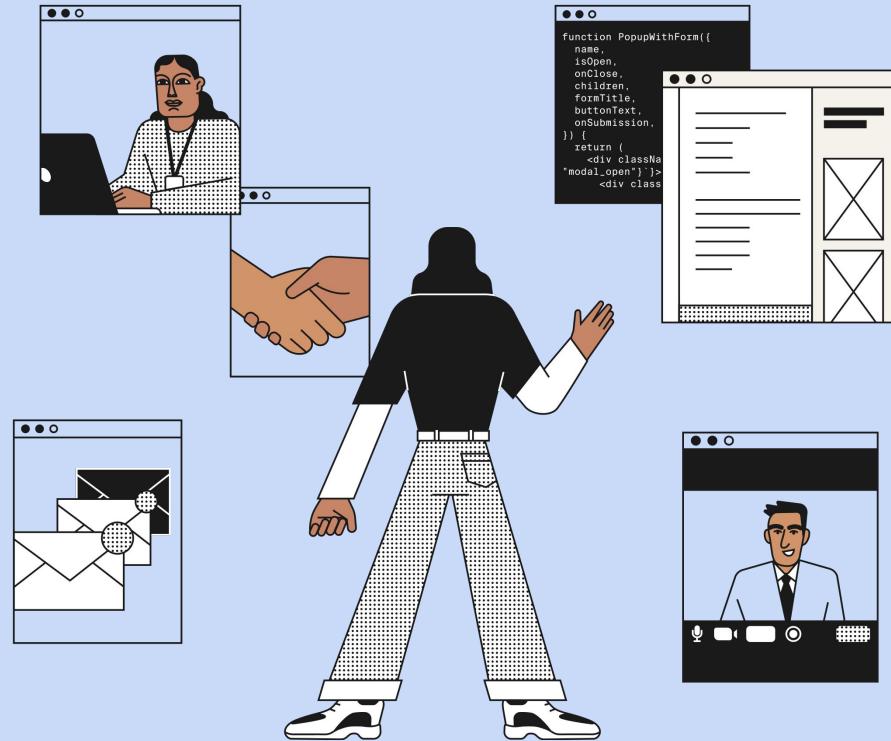
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Illustrations that you can add to slides. Please do not scale them!



Speakers/team



Name Surname
Role



Name Surname
Role



Name Surname
Role

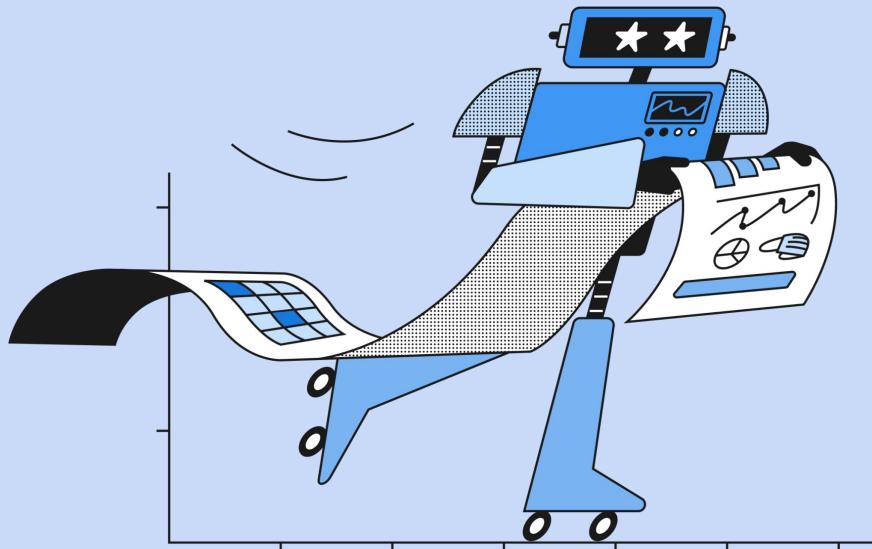


Name Surname
Role

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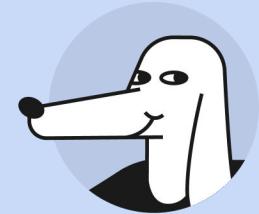


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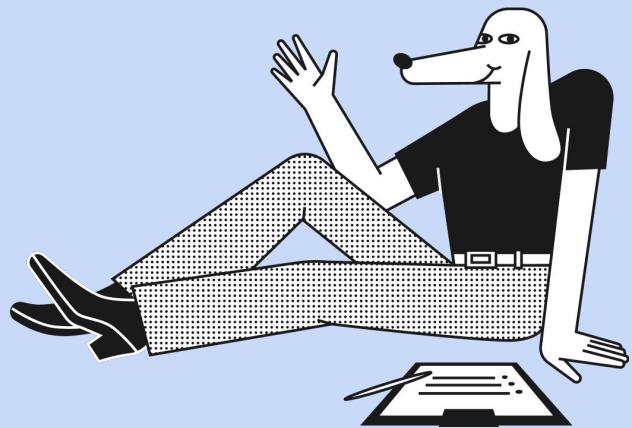


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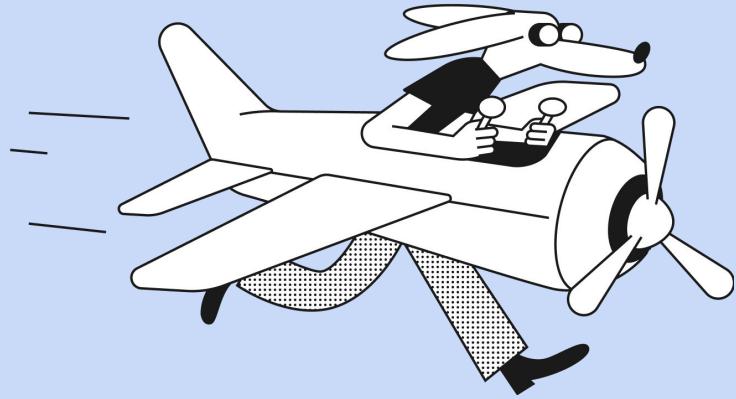
Sobachka (Doggy) is our career character,
but we also use it in other contexts sometimes



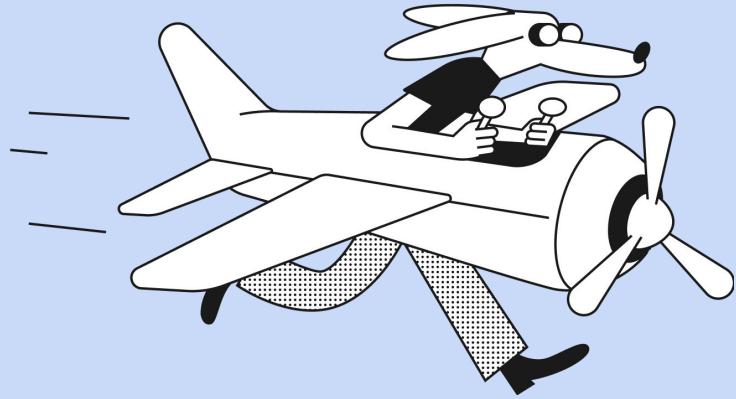
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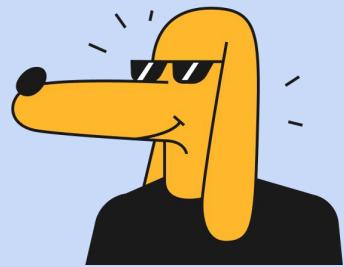
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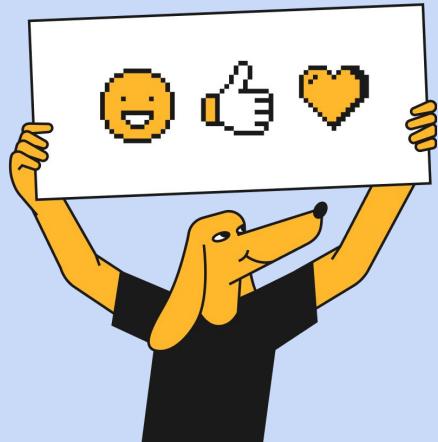
Illustrations that you can add to slides. Please do not scale them!



Illustrations that you can add to slides. Please do not scale them!



Illustrations that you can add to slides. Please do not scale them!



Speakers/team



Name Surname
Role



Name Surname
Role



Name Surname
Role



Name Surname
Role



Name Surname
Role



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Role



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Role



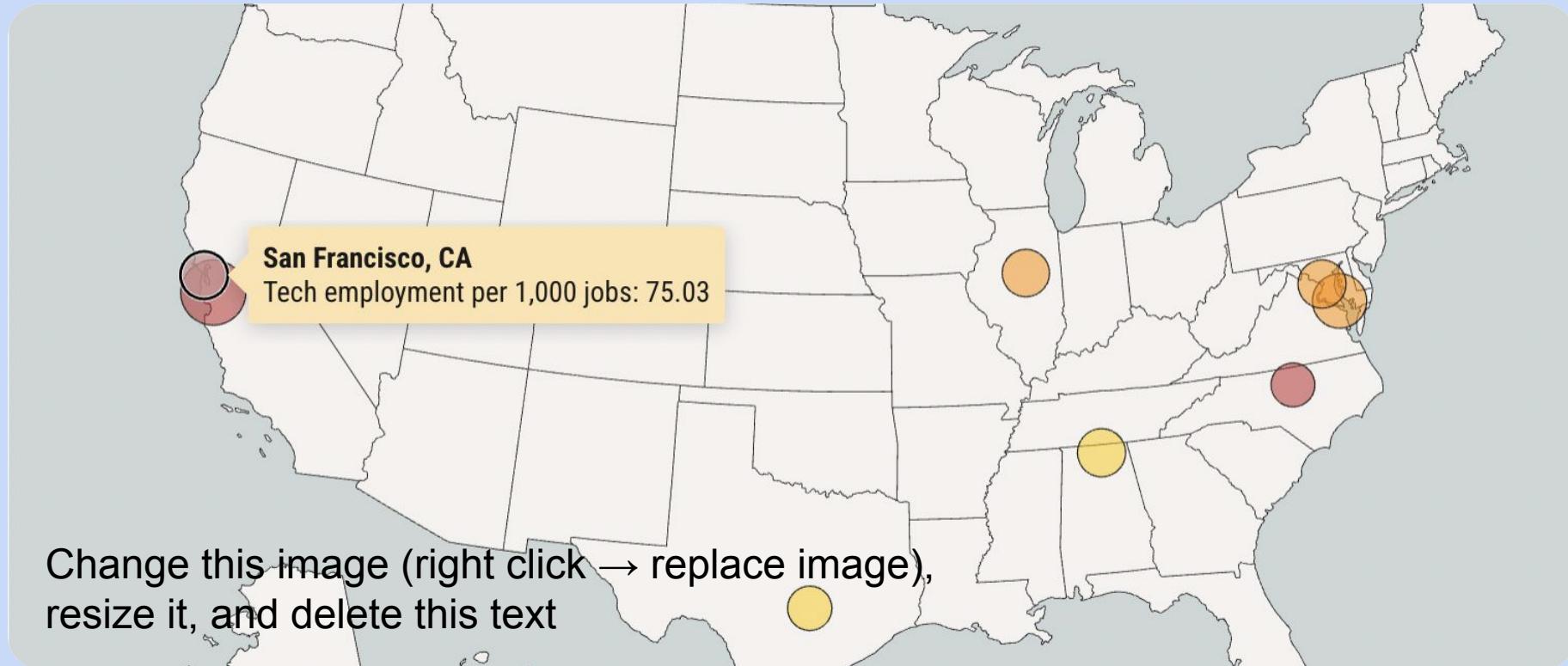
Name Surname
Role

Slide title

Slide title



Slide title



Slide title

Change the images, resize them, and delete this text

Tech employment per thousand jobs Annual mean wage Average rent Average percent of income spent on rent yearly

