

An aerial photograph of the University of British Columbia Okanagan Campus during the 'golden hour' of sunset. The image shows modern multi-story brick and wood-clad buildings, green lawns, and a winding road. The sky is filled with soft, orange-tinted clouds. A semi-transparent white box is overlaid on the left side of the image, containing the title and speaker information.

# Developing data science skills in student researchers

Through a regional innovation research project

2022 International Conference on  
Economics and Business Information

Kim Buschert, Faculty of Management Librarian  
University of British Columbia Okanagan Campus (Kelowna, British Columbia, Canada)







# Land acknowledgement





# Okanagan Patents Project

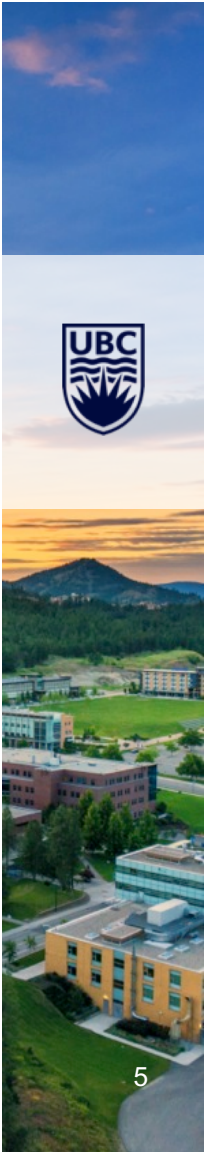


## Reference question:

Is there a way we might be able to find out how many USA or World patents have been filed by Kelowna companies since 1950, by company, by year?

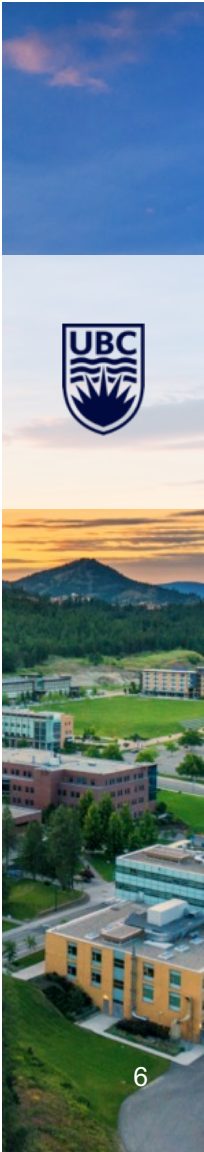
## Response:

Maybe?  
(Followed by many clarifying questions and discussions.)



## Related work

**Recent History of  
Occupational Structure  
and Regional Economic  
Strategy in  
Non-Metropolitan  
Regions**



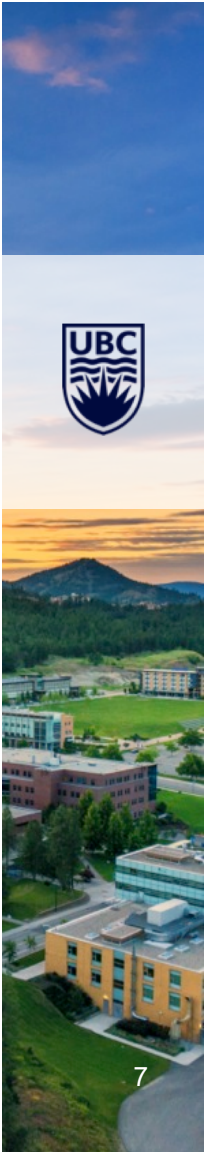
## Solution

### Hire an undergraduate research assistant to

- Search for patents using openly available databases
- Organize into a single dataset (clean, standardize, sort)
- Conduct analysis and visualize the data
- Research grant funded and campus work-study program

### Expansion

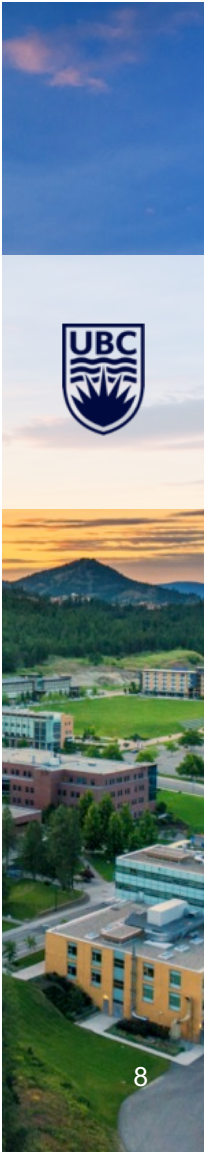
- All of Okanagan region = 17 communities
- Back to beginning of settlement (or as far as we could get)
- To end of 2021





## Librarian role

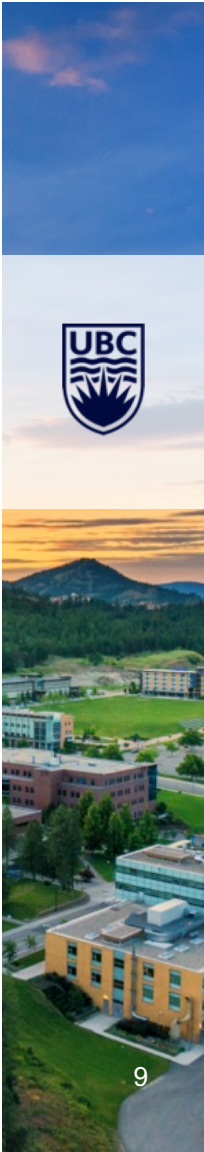
- Determine actual information need and scope the project
- Recruit, hire, onboard, train, manage students
- Work Study funding application & coordination
- Liaise with researchers about data gathered and further needs





## Student recruitment

- Three postings: August 2020, April 2021, December 2021
- Fully remote, but must reside in Canada
- Qualifications
  - Completed first year (with first-year English completed)
  - Ability to: learn Excel, conduct searching, track and organize work, communicate, self-direct and balance multiple priorities
- Surprisingly good response first two postings
- Surprisingly few applications last posting



**Part 1**  
**Sept 2020 –**  
**April 2021**

- Gather patents
- Create dataset

**Part 2**  
**June-Aug**  
**2021**

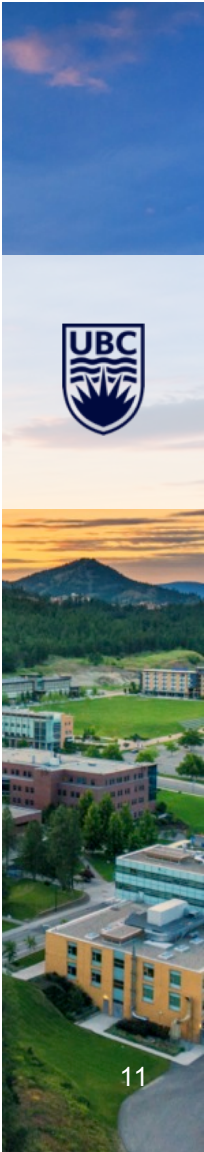
- Clean data
- Expanded communities
- Visualizations 1

**Part 3**  
**Sept 2021 –**  
**Apr 2022**

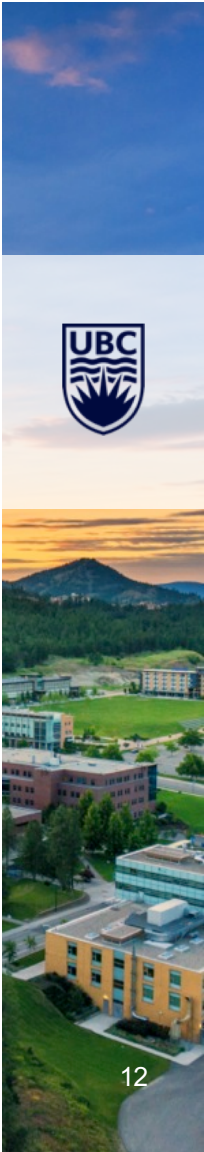
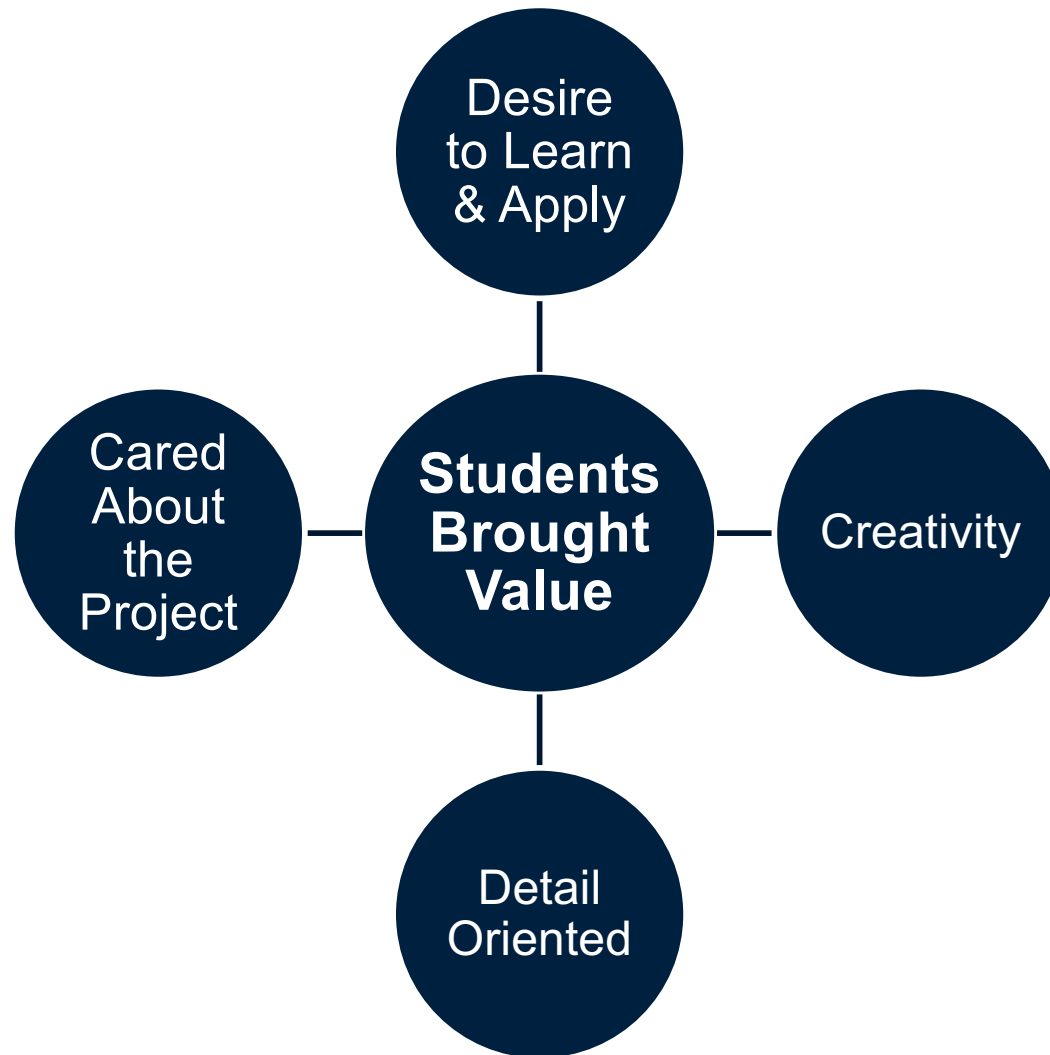
- Coding (CPCs, NAICS)
- Update dataset to end 2021
- Visualizations 2

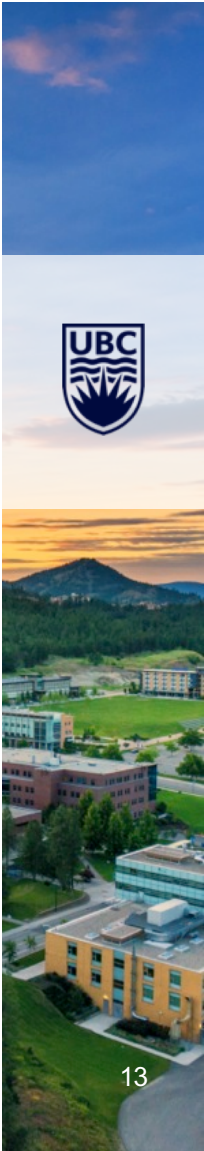
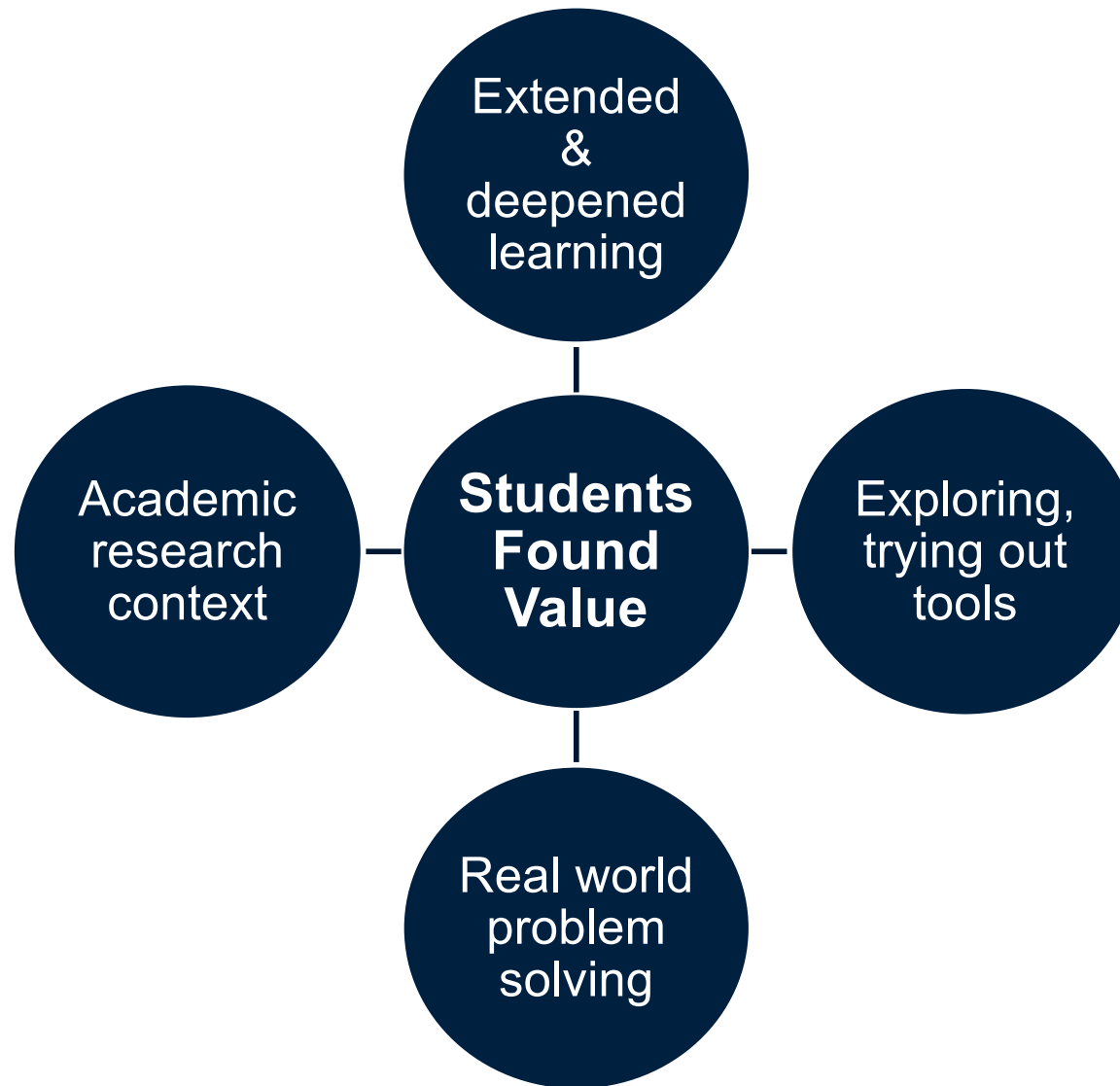
## Training & professional development

- Introduction to patents
- How patents are published
- The different databases and searching
- Data publishing overview
- PD - required by Work Study program
  - Students chose Python, Tableau, Git & Git Hub, Excel
  - Faculty research group socials







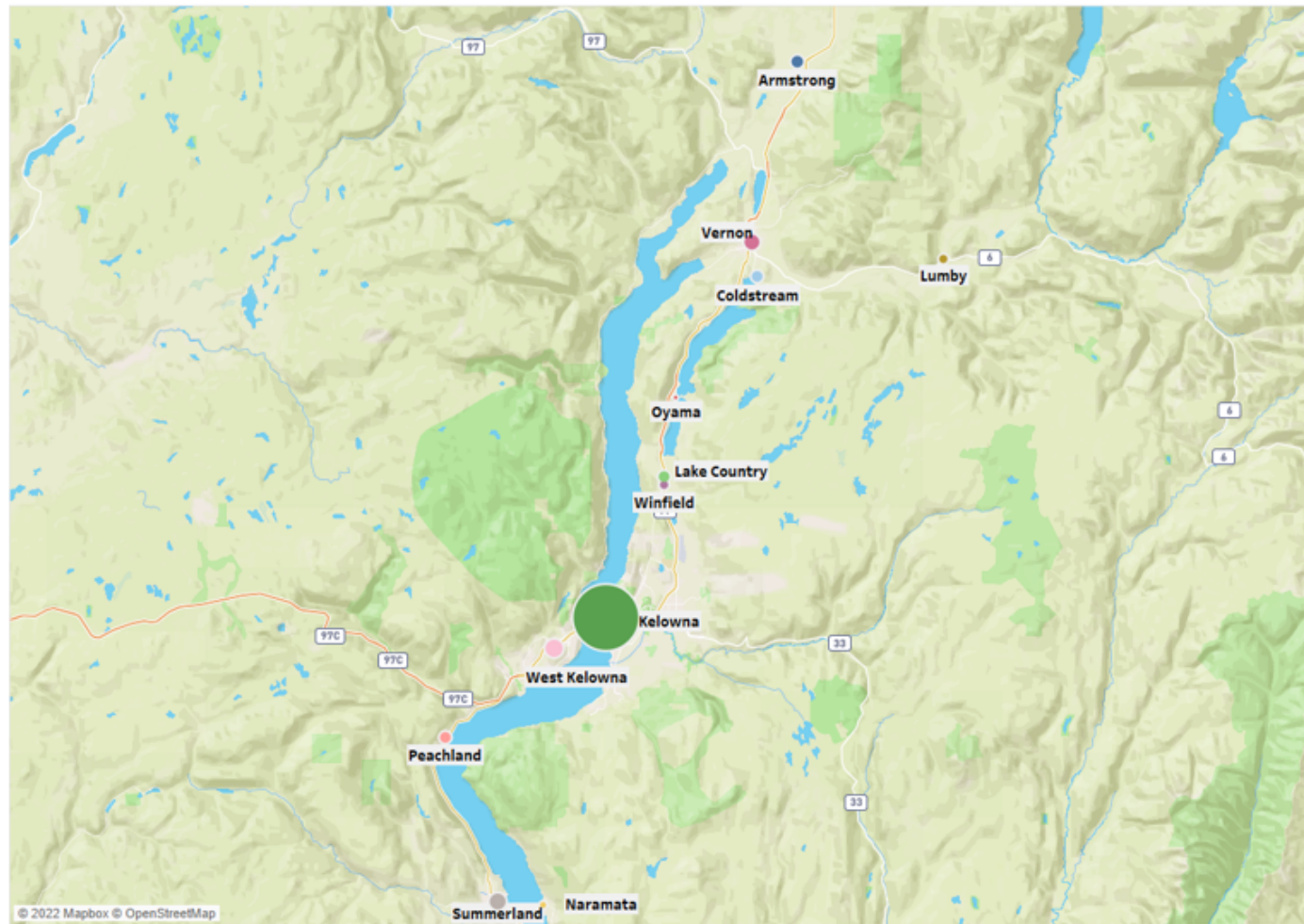


# Visualization examples

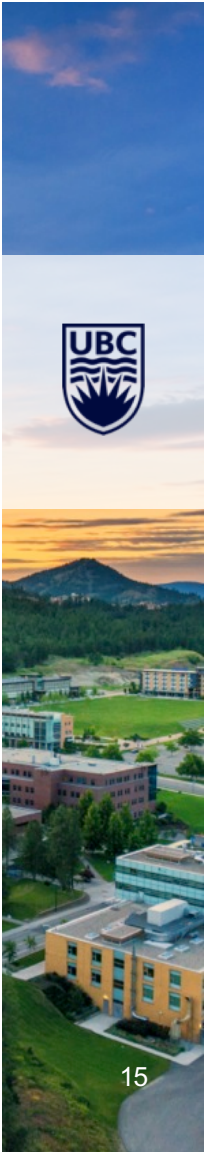




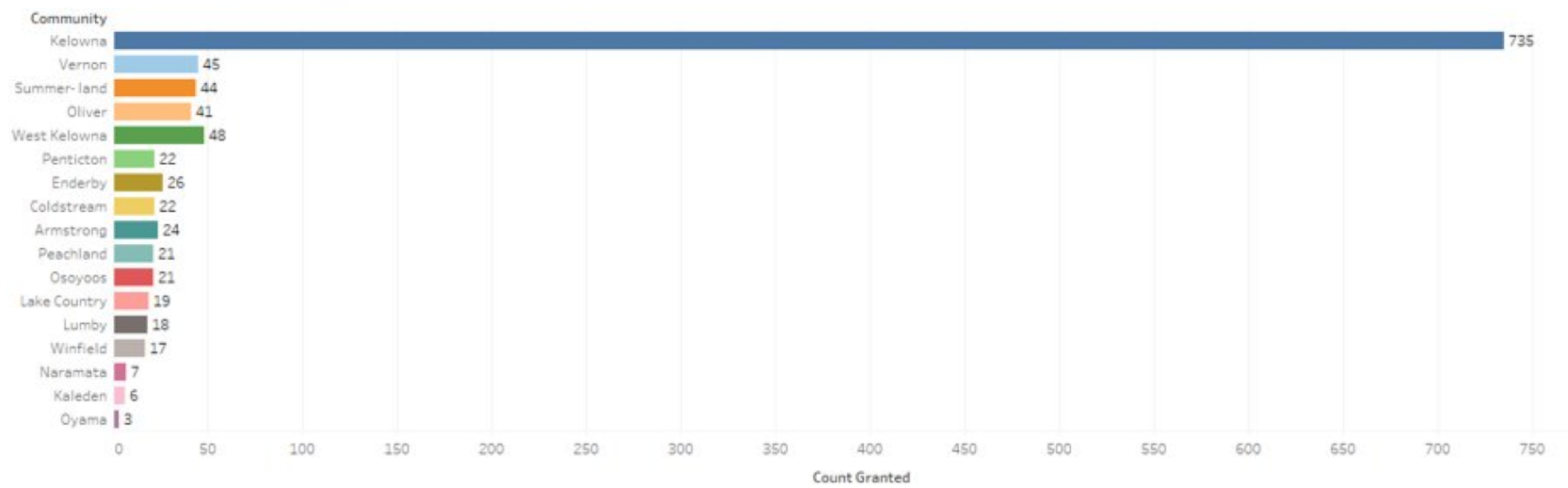
Number of Granted Patents by Community in the Okanagan 1990-2021



Map based on Longitude (generated) and Latitude (generated). Color shows details about Cities. Size shows sum of 1990-2021. The marks are labeled by Cities. Details are shown for Cities.



Okanagan Granted Patent Count by City 1895 - 2021



## Main CPC Classification Breakdown for Okanagan Patents 1895-1939

B - Performing operations; transporting				A - Human Necessities		F- Mechanical Engineering; Lighting; Heating; Weapons; Blasting		E - Fixed Constructions				
B62- LAND VEHICLES FOR TRAVELLING OTHERWISE THAN ON RAILS												
B60- VEHICLES IN GENERAL												
B68- SADDLERY; UPHOLSTERY		A01 - AGRICULTURE; FORESTRY; ANIMAL HUSBANDRY; HUNTING; TRAPPING; FISHING		A47- FURNITURE; DOMESTIC ARTICLES OR APPLIANCES; COFFEE MILLS; SPICE MILLS; SUCTION CLEANERS IN GENERAL		F03- MACHINES OR ENGINES FOR LIQUIDS; WIND, SPRING, OR WEIGHT MOTORS; PRODUCIN...		F04- POSITIVE - DISPLACEMENT MACHINES FOR LIQUIDS; PUMPS FOR LIQUIDS OR ELASTIC FLUIDS	F41- WEAPONS	E05- LOCKS; KEYS; WINDOW OR DOOR FITTINGS; SAFES		
B65- CONVEYING; PACKING; STORING; HANDLING THIN OR FILAMENTARY MATERIAL								D - Textiles; Paper		G - Physics		H - Electricity
B01 - PHYSICAL OR CHEMICAL PROCESSES OR APPARATUS IN GENERAL	B03 - SEPARATION OF SOLID MATERIALS USING LIQUIDS OR USING PNEUMATIC TABLES OR...	B05- SPRAYING OR ATOMISING IN GENERAL; APPLYING FLUENT MATERIALS TO SURFACES, IN GENERAL	B27- WORKING OR PRESERVING WOOD OR SIMILAR MATERIAL; NAILING OR STAPLING MACHINES IN...	A24- TOBACCO; CIGARS; CIGARETTES; SIMULATED SMOKING DEVICES; SMOKERS' REQUISITES		A62 - LIFE-SAVING; FIRE-FIGHTING		D06- TREATMENT OF TEXTILES OR THE LIKE; LAUNDERING; FLEXIBLE MATERIALS NOT OTHERWISE PROVIDED FOR		D05- SEWING; EMBROIDERED RING; TUFTING	G01- MEASURING; TESTING	H01- BASIC ELECTRIC ELEMENTS



**Main CPC Classification Breakdown for Okanagan Patents 1895-2021**





THE UNIVERSITY OF BRITISH COLUMBIA

**Thank you!**

THE UNIVERSITY OF BRITISH